KENDRIYA VIDYALAYA SANGATHAN

DEHRADUN REGION

STUDY MATERIAL
(Informatics Practices)
Class – XI
2013-14

Chief Patron	:	**Shri Avinash Dikshit, IDAS** Commissioner, KVS , New Delhi
Patron	:	**Shri S.S. Chauhan**, Dy. Commissioner (I/c) KVS Dehradun Region
Guidance	:	**Shri P.K.Tamta**, Asstt. Commissioner KVS Dehradun Region
Co-ordinator	:	**Shri A.K.Maurya**, Principal KV No.1, HBK, Dehradun

Subject Contributors

- Mr. Chandra Kant Bhatt, PGT (Comp.Sc.), K V No.1, HBK, Dehradun
- Mr. Rajesh Kumar Mishra, PGT (Comp.Sc.),K V Upper Camp, Dehradun

PREFACE

It is my pleasure to present the Study Material of Class XII Informatics Practices for session 2013-14. This study material is written according to CBSE Syllabus of Computer Science for Class XII.

I am sure that the Study Material for Class XII Informatics Practices will help the students to understand the concepts and will improve the quality of performance of the students.

Wish you all the best .

(S.S.Chauhan)

Offg Deputy Commissioner

KVS RO, Dehradun

TIPS FOR STUDENTS!

For Preparation of Exams

1. *Plan your study judiciously.*
2. *Solve previous years question papers.*
3. *A proper timetable for study should be followed strictly.*
4. *Prepare those questions first, which you feel easy for you.*
5. *Make concise notes, point wise for exam time preparation/quick revision.*
6. *Important terms of a topic must be memorized.*
7. *Try to write answer in points.*
8. *Practice the solutions in writing rather than just reading.*
9. *Practice all similar type questions at a time.*
10. *Don't stretch the answer unnecessarily.*
11. *Try to illustrate your answer graphically, if possible.*
12. *Take a break from time to time in each study period.*
13. *Take healthy and timely diet & sound sleep during examinations.*
14. *Revise all the topics one day prior, to the day of examination.*
15. *Take good care of your health.*

For Writing Exams

1. *Don't waste unnecessary time on questions which you are not sure about*
2. *Read all the questions carefully, before answering.*
3. *Try to write answer in points.*
4. *Try to illustrate your answer diagrammatically, if possible.*
5. *Don't stretch the answer unnecessarily.*
6. *Attempt such questions first, for which you are confident that it will leave a good impression.*
7. *Practice all similar type of questions at a time.*
8. *Don't leave any question unanswered.*
9. *Important point should be underlined but be careful, don't waste your time.*

INDEX

Class XII (Theory)					
Unit	Topic	Period		Marks	
		Theory	Practical	Theory	Practical
1	NETWORKING AND OPEN STANDARDS	20	4	10	2
2	PROGRAMMING	42	40	25	16
3	RELATIONAL DATABASE MANAGEMENT SYSTEM	42	36	30	8
4	IT APPLICATION	6	20	5	4
		110	100	70	30

UNIT 1: NETWORKING AND OPEN STANDARDS

Computer Networking

- **Network:** A Computer Network is a number of computers (Usually called terminals interconnected by one or more transmission paths.
- **Need/Advantages of Networking :**

1. Resource Sharing 2. File and data sharing 3. Data security and centralized security
4. High Reliability 5. Communication Media 6. High Speed 7. Flexible working environment
8. Cost factor

Network Terminology

- **Nodes (Workstations)** - Nodes refer to the devices that are attached to a network and are seeking to share the resources. Ex.: Computer, Printer, Mobile, Fax etc.
- **Server** - A computer that facilitates the sharing of data, software and hardware resources on the network is said to be the server.
- **Network Interface Unit (NIU)** (MAC Address):- A network interface unit is interpreter that helps in establishing the communication between the server and the client.
- **IP Address** - Every machine on a Network has a unique identifying number called an IP Address.
- **Domain Name** - It is a way to identify and locate the computers connected to the internet. It must be unique.

Network Topologies

The term Network Topologies refer to the way in which the nodes of a network are physically connected together. The important network topologies are

1) **Bus Topology or Linear Topology:** In this topology a single length of the transmission medium is used onto which the various nodes are attached. The transmission from any station travels the length of the bus, in both directions and can be received by all other stations. The bus has a terminator at either end which absorbs the signal, removing it from the bus.

Characteristics:

- Short cable length and Simple wiring layout
- Single cable is used through which all data propagates and to which all nodes are connected
- Easy to extend
- There is no central point of failure on a bus because there is no hub.
- Entire network shuts down if there is break in the main cable.
- Terminators are required at both ends of the backbone cable.
- Difficult to identify the problem if the entire network shut down.
- Addition of nodes negatively affects the performance of the whole network.
- Only one computer can send messages at a time

2) **Ring Topology:** In a ring topology each node is connected to two and only two neighboring nodes. Data is accepted from one of the neighboring nodes and is transmitted onwards to another. Thus data travels only one direction.

- Every computer serves as a repeater to boost signals
- Short cable length.
- Suitable for optical fiber
- Difficult to add computers
- More expensive
- If one computer fails, whole network fails
- Data clashes can also occur if two machines send messages at the same time.

3) Star Topology: A start topology is designed with each node connected directly to the server via hub or switch. This topology is used in most existing information network. Data on a star network passes through the hub or concentrator before continuing to its destination.

- Easy to install and wire
- No disruptions to the network when connecting or removing devices.
- Easy to add new station as each station has direct cable connection to hub or switch.
- Two or more computers may send message at the same time
- One malfunctioning node does not affect the rest of the network.
- Required more cable length than a linear topology.
- All signals transmission through the hub; if down, entire network down

Network Devices

1. **MODEM (MODulator DEModulator):** Modem is a device that converts digital data originating from a terminal or computer to analog signals used by voice communication network such as the telephone system. At one end, modems convert the digital pulse to audible tones and convert audio tones back to digital pulses at the other

2. **RJ–45 Connector**: The RJ-45 is a single line jack for digital transmission over ordinary phone wire. It is a 8 wire connector which is commonly used to connect computers on the LAN(especially Ethernets). RJ – short for Registered Jack – 45

3. **Ethernet Card or NIC or NIU:**A NIC(Network Interface card) is a computer circuit board or card that is installed in computer so that it can connected to network. It is suitable for coaxial or twisted pair cables.

4. **Hub:** Hub is a device used to connect several computers together. It is a multi-port card. Hubs forward any data packets including e-mail, word processing documents or print request – they receive over one port from one workstation to all of their remaining ports

5. **Switches:** Switches are smart hubs that send data directly to the destination rather than everywhere within network. When the switch receives a packet, the switch examines the destination and source hardware address and compares them to a table of a network segments and addresses. If the segments are the same the packet is dropped and if the different then the packet is forwarded to the proper segments.

6. **Repeaters: A** repeater is a device that amplifies a signal being transmitted on the network. Since a signal loses strength as it passes along a cable, it if often necessary to boost the signal with this device.. The repeater electrically amplifies the signal it receives and rebroadcasts it.

7. **Router:** A device that works like a bridge but can handle different protocols is known as router. It is used to separate different segments in a network to improve performance and reliability.

Questions and Answers

Q1. What is MAC Address?

Ans In computer networking, a Media Access Control address (MAC) is a unique identifier assigned to most network adapters or network interface cards (NICs) by the manufacturer for identification, and used in the Media Access Control protocol sub-layer.

Q2. Write two advantages of networks.

Ans: Advantages of networks:

1. Data or information can be shared among the users.
2. Fast communication can be achieved.

Q3. Write two disadvantages of networks.

Ans Disadvantages of networks:

1. Sophisticated Hardware and software technology is required.
2. Expensive to install network.

Q4. What is communication channel? Name the basic types of communication channels available.

Ans What is communication channel? Name the basic types of communication channels available. Communication channels mean the connecting cables that link various workstations. There are 3 basic types of cables:

1. Twisted Pair cables
2. Coaxial cables
3. Fiber-optic cables

Q5. Define a network.

Ans: A computer network is a system in which computers (devices) are connected to share information and resources.

Q6. What is IP address?

Ans A unique number consisting of 4 parts separated by dots, e.g. 165.113.245.2 Every machine that is on the network has a unique IP number - if a machine does not have an IP number, it is not really on the Internet.

Q7. What is domain name? How is it alternatively known?

Ans The unique name that identifies an Internet site. Domain Names always have 2 or more parts, separated by dots. The part on the left is the most specific, and the part on the right is the most general. E.g.: matisse.net

Q8. What are the various types of networks?

Ans Network can be classified on the basis of their size, complexity and geographical spread. On the basis of geographical spread it can be classified as Local Area Network, Metropolitan Area Network and Wide Area Network.

Q9. What is the difference between MAN and WAN?

Ans A **metropolitan area network** (**MAN**) is a large computer network that usually spans a city or a large campus.WAN is a *network* that covers an area larger than a single building or campus such as across the cities or countries.

Q10. What is meant by Topology? Name some popular topologies.

Ans Network topology is defined as the interconnection of the various elements (links, nodes, etc.) of a computer network. In computer networking, topology refers to the layout of connected devices. Various network topologies are :

Bus topology, Star topology, Ring topology, Tree topology & Mesh topology

Q11. What are the similarities and differences between bus and tree topologies?

Ans In bus topology each machine is connected to a single cable. Each computer or server is connected to the single bus cable through some kind of connector.

Tree topology is a network with the shape of an inverted tree in which a single link between two nodes.

Q12. What are the limitations of star topology?

Ans i) Central node dependency: In this topology central node is a controller of the network. If the central node fails, the entire network will be failed.
ii) Difficult to expand: The addition of a new node to a network involves a connection all the way to the central node.

Unsolved Questions

1. What are the goals of network?
2. Write the applications of network?
3. What do you understand by domain name resolution?
4. What are communication channels? Discuss various channels available for networks?
5. Write advantages and disadvantages of the followings :
    - optical fiber
    - coaxial cables
    - twisted pair cables
    - radio waves
    - microwaves
    - Satellites
6. Discuss and compare various types of networks?
7. Explain mostly used topologies.
8. What are hubs? What are its types?
9. What is the role of a switch in a network?
10. Discuss repeater.
11. What are common threats to network security?
12. What is denial of services attacks?
13. How can you prevent/ counter threats of network security?
14. When do you think, ring topology becomes the best choice for a network?
15. Write the two advantages and two disadvantages of star topology in network.

16. Write the disadvantages if twisted pair cables.
17. Define Hub.
18. Define switch.

FREE AND OPEN SOURCE SOFTWARE

- **Free Software** - It means software is freely accessible, free to use, changed, improved, copied, and distributed without any payments.

Four kinds of freedom:

► Freedom to run the program for any purpose
► Freedom to redistribute copies.
► Freedom to study how the program works
► Freedom to improve the program and release your improvements to the public

- **Open Source Software -** The categories of software / programs whose Licenses do not impose many conditions.

Features:

1. Freedom to run and use the software
2. Modify the program
3. Redistribute copies of either original or modified program (without paying royalties to previous developers). It can be freely used for modifications, but it does not have to be free of charge. Its source code is available.

- **Criteria for the distribution of open source software**

1. Free distribution
2. Source code
3. Derived works
4. Integrity of the Author's Source code
5. No discrimination against fields of endeavor.
6. Distribution of License
7. License must not be specific to a product
8. License must not restrict other software.

- **FOSS (free and open software) - Free software- no payments Open source software**
- **OSS and FLOSS**

► OSS- Source code is available (Open source modified and redistributed software) free of cost or with nominal charge.
► FLOSS- (free liber and open source software)

- **FSF (free software foundation)**
  - Founded by Richard Stallman in 1985 to support GNU project.
  - Non-profit organization created for the purpose of supporting free software movement
- **GNU (free and open source)**
  - Objective: To create a system compatible to UNIX but not identical with it.
  - It offers a wide range of software, including applications & operating system.
- **Proprietary software (neither open nor freely available)**

- Definition- Its use is regulated and further distribution and modification is either forbidden or requires special permission by the supplier
- Source code is not available.

- **Freeware**
  - Free of cost
  - Copying and further distribution but not modification.
  - Source code is not available Example Internet Explorer

- **Shareware**
  - Right to redistribute copies
  - After a certain period of time license fee should be paid.
  - Source code is not available.
  - Modifications are not possible.
  - Objective- to increase user's will to pay for the software. Limits functionality after a trial period of 1-3 months.

- **Important Software's LINUX**
  - Linux: - free and open source software.
  - It can be downloaded from www.linux.org
  - Linux is a part of popular web server program LAMP (Linux, apache, MySql, PHP).

  Mozilla
  - Freeware
  - No source code available
  - free internet software It can be downloaded from www.mozilla.org

  Apache Server
  - The most common web server (or HTTP server) software on the Internet.
  - Apache is designed as a set of modules, enabling administrators to choose which features they wish to use and making it easy to add features to meet specific needs including handling protocols other than the web-standard HTTP.
  - Apache HTTP server is an open source web server.
  - It is component of LAMP.

- **Denial-of-services (DOS) attacks:**

  DOS are those attacks that prevent the legal users of System from accessing or using the resources, information or capabilities of the system. It may be of following types:
  - Denial of Access to Information: Such attacks cause deletion or changing of important information to non-readable format.
  - Denial of Access to Applications: Such attacks make the applications unusable or unavailable for legal user of the system.
  - Denial of Access to Communications: Such attacks includes cutting of communication wire, jamming radio communications, flooding a system with junk mail.

- **Threats to network security: It may be of following types:**

- **Snooping:** It refers to unauthorized access to someone else's data, email or computer activity.
- **Eavesdropping:** It refers to unauthorized listening / intercepting someone else's private communication / data/ information.

- **Standards:**

  Standards refer to an established set of rules or requirements which are approved by recognized body or widely used across various software platforms. For ex.: PDF (Portable documents format) is a technical standard widely used by the industry.

  There are of two types: Proprietary Standards and Open Standards.

  Proprietary standards are those for which users have to buy license to use them. For e.g. MS Office format .doc, .ppt, .xls etc

  Open Standards are internationally accepted technical standards that guarantee that data can be exchanged across platforms and for any applications. Open is feely open to all.

  Advantages of Open Standards:

  - Making the data accessible to all.
  - It ensures data is application and platform independence.
  - Diversity and Interoperability in the Industry i.e. it enables business and people to go for any technology of their choice as per their needs and budget.

  E.g.: ASCII Characters (TXT), HTML file(HTM/HTML), Joint Photographic Expert Group (JPG/JPEG), Portable Network Graphic (PNG) etc.

  Ogg Vorbis: It is a new audio compression which is open format developed by Xiph.org. It is roughly comparable to mp3; mpeg-4 formats and is completely free, open and unpatented. Hence it imposes no restrictions on its usage, types of usage, distributions, redistribution etc.

- **Indian Language Computing:**
  - Indian Language computing refers to ability to interact in diverse Indian language on electronic system.
- **How to represent character in Memory?**
  - **ASCII**: American Standard Code for Information Interchange is widely used alphanumeric code in most microcomputers and minicomputers and in many mainframes. It is 7 bit code hence it can represent standard 27 =128 characters.
  - **ISCII**: Indian Standard Code for Information Interchange (ISCII) is an eight bit code capable of coding 256 characters. It retains all ASCII characters and also offers coding for Indian Scripts.
- **Transliteration:**

  When we type Indian Language words phonetically in English script and tool will automatically convert them into corresponding language words called as transliteration.

  Unicode : Unicode provides a unique number for every character, no matter what the platforms, no matter what the program, no matter what the language. Unicode can represent 94140 characters. Unicode standard has incorporated Indian Scripts under the group named Asian scripts.

- **Indian Fonts: scripts included as Devnagari, Bengali, Gurumukhi, Gujarati, Oriya, Tamil, Telgu, kannada, and Malayalam.**

- A Font refers to a set of displayable text characters called glyphs, having specific style and size. There are two categories of font: **True Type Font** and **Open Type Font**.
- **True Type Font**: It is developed by Apple and licensed to Microsoft. It is 8 bit font which is compatible with Microsoft Windows and MAC OS.
- **Open Type Font**: It is the extension of the True Type Font Format which is 16 bits font and support 65536 characters (Unicode characters).
- **Indian Language Text Entry:**
  Many Tools / software have been developed to facilitate the typing of Indian Language text. There are two types text entries:
- **Phonetic Text Entry**: Words typed as per their pronunciation in English script and later on converted to Corresponding (Hindi/Gujarati) language work is known as phonetic text entry.
- **Key map based text entry:** When you type text from a keyboard having key mapping of Indian language characters, is known as key map based text entry.

Questions and Answers

Q1. What is OSS?

Ans Open Source Software is software available with source code and free to change/edit / redistribute and imposed no further restrictions on product or its usage.

Q2. Expand the terms: OSI, FLOSS, FSF, GNU, W3C, and PHP.

Ans **OSI :** Open source Initiative

FLOSS : Free Libre and Open Source Software.

FSF : Free software Foundation created for the purpose of supporting free Movement.

GNU : GNU's Not Unix Project established with an objective to create a system Compatible to UNIX but not identical with it.

W3C : World Wide WEB consortium is responsible for producing the software standards for World Wide Web.

PHP : Hypertext Pre-processor is a widely used open source programming language primarily for server side applications and developing dynamic web content.

Q3. What is free software?

Ans Free Software means the software is freely accessible and can be freely used, changed, improved, copies and distributed to others.

Q4. Define freeware and shareware.

Ans The freeware is the software available free of cost and allows copying and further distribution but does not allows modification as its source code is not available.

Shareware is as software which is available for redistribution for stipulated time but after some time some license fee is required to be paid.

Q5. What is openoffice.org?

Ans It is Office an application suite which is free software and directly competes with Microsoft Office. It is compatible with MS Operating System, UNIX, MAC OS.

Q6. What is font? What is OTF?

Ans A font is a set of displayable or printable text characters having specific style and size. Open Type Font: It is the extension of the True Type Font Format which is 16 bits font and support 65536 characters (Unicode characters).

Q7. What are different font categories?

Ans There are two categories of font: True Type Font and Open Type Font.

True Type Font: It is developed by Apple and licensed to Microsoft. It is 8 bit font which is compatible with Microsoft Windows and MAC OS.

Open Type Font: It is the extension of the True Type Font Format which is 16 bits fon and support 65536 characters (Unicode characters).

Q8. Define ODF.

Ans ODF is an Open Document file Format used for exchanging office documents such as memos, reports, spreadsheets, database, charts and presentations. Open document is open, XML based file format used for exchanging office documents such as memos, reports, spreadsheets, database, charts and presentations.

Q9. What is key map based text entry?

Ans When you type text from a keyboard having key mapping of Indian Languages characters is known as key map based text entry.

Q10. What is Unicode?

Ans10 Unicode provides a unique number for every character, no mater what the platforms, no matter what the program, no matter what the language. Unicode can represent 94140 characters.

Q11. What is ISCII?

Ans Indian Standard Code for Information Interchange (ISCII) is a coding scheme for representing various writing systems of India. It encodes the main Indic scripts and a Roman transliteration. When we type Indian Language words phonetically in English script and tool will automatically convert them into corresponding language words called as transliteration.

Q12. What is Indian Script key map known as?

Ans **Key map based text entry:** When you type text from a keyboard having key mapping of Indian language characters, is known as key map based text entry.

Unsolved Questions

1. What is open source software?
2. Compare Free software and open source software.
3. Compare OSS and floss.
4. Compare Proprietary software and free software.
5. Compare Free ware and shareware.
6. Compare Freeware and free software
7. Write Short notes on GNU.

8. Write short notes on LINUX.
9. Write Short notes on MOZILLA.
10. Write short notes on APACHE.
11. Write short notes on POSTGRE SQL.
12. Write short notes on PHP.
13. Write short notes on Open Office.
14. What are technological standard and its various categories?
15. Mention some advantages of open standards.
16. What is the significance of Unicode in terms of Indian Language Computing?
17. How phonetic text entry is different from key map based text entry?
18. What is Ogg Vorbis? Why?
19. How to represent character in Memory?
20. What is font and its types?

UNIT 2: PROGRAMMING

GUI Programming – A Review

- **Integrated Development Environment (IDE**): It is a software tool to help programmer toedit, compile, interpret and debug the program in the same environment. i.e Eclipse,NetBeans, VB etc.
- **JVM:** Java Virtual Machine (JVM) is a program which behaves as interpreter and translatesbyte code into machine language as they go called just in time compilation.
- **RAD**: Rapid Application Development is software programming technique that allows quickdevelopment of software application.
- **Source Code**: The core program or text which is written in a language like C,C++ or Java iscalled source code.
- **Object Code:** The program which only is understood by the computer in the form of machine instructions or binary instructions called object code. In Java JVM is used to generate object code in the form of byte code.
- **Byte code:** A byte code is long instruction that the Java compiler generates and Java interpreter executes. When the compiler compiles a .java file, it produces a series of bytecodes and stores them in a .class file. The Java interpreter (JVM) can execute the byte codesstored in the .class file.
- **GUI**: A graphical user interface (GUI) presents a pictorial interface to a program. GUI allowsthe user to spend less time trying to remember which keystroke sequences do what andspend more time using the program in a productive manner.
- **Token**:
  The smallest individual unit in a program is known as Token. Java has the following types of tokens: *keyword, Identifier, literal, punctuators and operators*.

  Keywords

  Keywords are words that have a specific predefined meaning in Java. They cannot be used as variable names. They are also known as reserve words. Eg. void, private, if, while etc.

  Literals:

  Items having fixed data values are referred to as Literals. They are also known as Constants. Various types of literals available in Java are :
  - *integer iterals*
  - *Floating literals*
  - *Boolean literals*
  - *Character literals*
  - *String literals*
  - *Null literals*

  Variable:

  Variable is a named storage location in computer memory whose contents can change during a program run.

  The characteristics of a variable are:

  (i) It has a name.
  (ii) It is capable of storing values.
  (iii) It provides temporary storage.
  (iv) It is capable of changing its value during program execution.

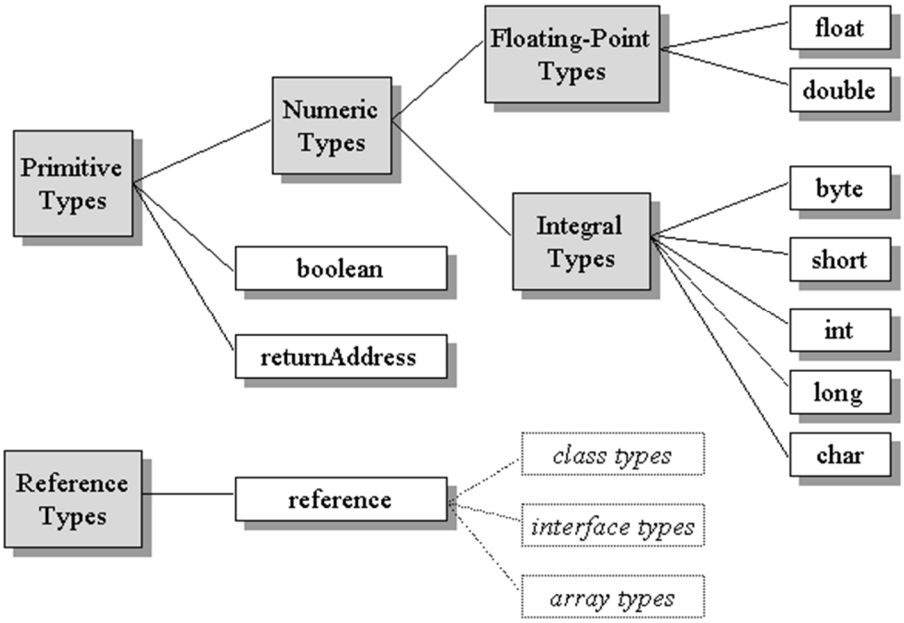
  Operators:

  Operators are special symbols that perform specific operations on one, two, orthree

operands, and then return a result.

Operators	Precedence
postfix	expr++ expr
unary	++exprexpr+exprexpr~ !
multiplicative	* / %
additive	+ -
shift	<<>>>>
relational	<><= >= instanceof
equality	== !=
bitwise AND	&
bitwise exclusive	OR ^
bitwise inclusive	OR |
logical	AND &&
logical	OR ||
ternary	? :
assignment	= += =*= /= %= &= ^= |= <<= >>= >>>=

Data type:
It states the way the values of that type are stored, and the range for that type.



- **Primitive Data Types:**

The Java programming language is statically typed, which means that all variables must first be declared before they can be used.

A primitive type is predefined by the language and is named by a reserved keyword. The eight primitive data types supported by the Java programming language are:

- **byte**: The byte data type is an 8bit signed two's complement integer. It has a minimum value of 128and a maximum value of 127 (inclusive).
- **short**: The short data type is a 16bit signed two's complement integer. It has a minimum value of 32,768and a maximum value of 32,767 (inclusive).
- **int**: The int data type is a 32bitsigned two's complement integer. It has a minimum

value of 2,147,483,648and a maximum value of 2,147,483,647 (inclusive).
- **long**: The long data type is a 64 bit signed two's complement integer. It has a minimum value of 9,223,372,036,854,775,808and a maximum value of 9,223,372,036,854,775,807
- **float**: The float data type is a single precision 32 bit IEEE 754 floating point.
- **double**: The double data type is a double precision 64 bit IEEE 754 floating point.
- **boolean:** The Boolean data type has only two possible values: true and false. Use this data typefor simple flags that track true/false conditions.
- **char**: The char data type is a single 16bitUnicode character. It has a minimum value of'\u0000' (or 0) and a maximum value of '\uffff ' (or 65,535 inclusive).

- **Reference Data Types:** These are constructed by using primitive data types, as per user need. Reference data types store the memory address of an object. Class, store the memory address of an object.

  Class, Interface and Array are the example of Interface Reference Data types.

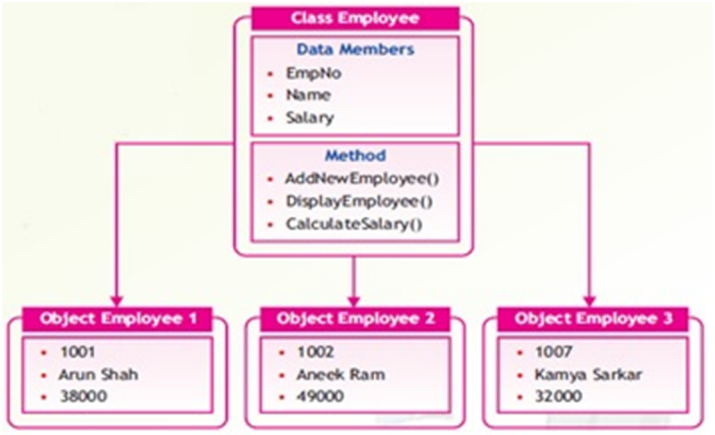
Basics of Object Oriented Programming

- **OOP**: Object Oriented Programming, emphasis on objects and the interaction between objects. An object is a self-contained entity that describes not only certain data but the procedures to manipulate that data.

- **Components** of Object Oriented Programming are as follows:
  1. Class
  2. Object
  3. Data Members & Methods
  4. Access Specifier and Visibility Modes

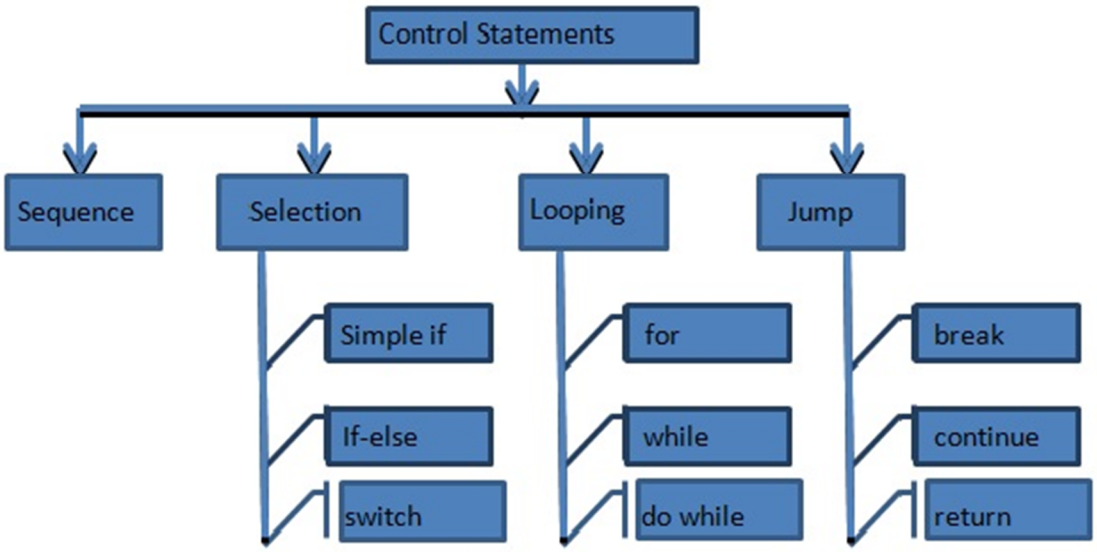
- **Class:** A class in OOP is a template for objects. In other words, a class is a specification of thedata and the functions to be encapsulated with data.

- **Object:** Objects in the real world can be represented by objects in the program.
  Each object contains data and code to manipulate data.



- **Constructors:** A class contains constructors that are invoked to create objects from the class blueprint. Constructor declarations look like method declarations—except that they use the name of the class and have no return type.

- **Control Flow Statements**: The statements inside your source files are generally executed from top to bottom, in the order that they appear. Control flow statements, however, breakup the flow of execution by employing decision making, looping, and branching, enabling your program to conditionally execute particular blocks of code.



Selection:

(i) Simple if:

The syntax of if statement is as shown below:

Syntax:

```
if (conditional expression)
{
        Statement Block;
}
```

(ii) if-else

The syntax of if-else statement is as shown below:

Syntax:

```
if (conditional expression)
{
        Statement Block;
}
else
{
        Statement Block;
}
```

(iii) if else ladder

These control structures are used to test for multiple conditions as against the simple if statement which can be used to test a single condition. The syntax of nested if else is as follows:

Syntax:

```
if (conditional expression1)
{
        statements1;
}
else if (conditional expression2)
{
        statements2;
}
else if (conditional expression3)
```

```
{
        statements3;
}
else
{
        statements4;
}
```

(iv) Switch:

The syntax of the switch statement is as follows:

```
switch (Variable/Expression)
{
case Value1: statements1 ; break ;
case Value2: statements2 ; break ;
default: statements3 ;
}
```

2. Looping:

(i) The syntax of the for loop is:

Syntax

```
for( initialization; test exp; increment/decrement exp)
{
statements;
}
```

(ii)The syntax of the while loop is as follows:

Syntax

```
while(test expression)
{
loop body
}
```

(iii) The syntax of the loop is as follows: Syntax :

```
do
{
loop body
}while (test expression);
```

3. Jump:

(i) break: The break is used to break from an enclosing do,while for,or switch statement.
Syntax: break;

(ii) continue: The continue statement stops the execution of the current iteration and causes control to begin with next iteration.
Syntax: continue;

(iii) return : Return is used to return value from the method Syntax:
Return <value>;

- **Commonly available Swing Controls in Java**

jFrame: A Frame is a container control, in which all the controls can be place.

jLabel: JLable allows placing un-editable text on the Frame/Panel

jTextField: JTextFiled allows placing editable text on the Frame/Pane. User can enter text in a textFiled during runtime.

jbutton: is used to initiate an action when it is clicked.

jList: is a group of values or items from which one or more selections can be made.

jComboBox: jComboBox is similar to jList but also allow to enter editable text during run time. It is a combination of jTextFiled and jList.
jPanel: Act like a frame, to group one or more controls.
jRadioButton: Allow us to choose a single item from a group of jRadioButton options.
jCheckBox: Allow us to choose one or more items from a group of jCheckBox options.
jPasswordField: Allow us to enter a text during the run time but shows an encrypted text instead of the original text
jTextArea: JTextArea is a multi-line text component to enter or edit text.
Focus: The control under execution is said to have the focus. The control having the focus obtains input form the user.
getText(): getText() method is used to obtain the text from a jTextFiled during the run time.
setText(): setText() method is used to set or change the text of a jTextFiled during run time.

- **Access Control of Inherited members :**

Access specifier tells a complier about the usability of a data member of a class in a java program. Java supports three types of access specifier:

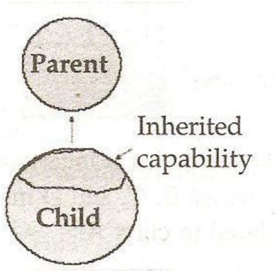
Public, Private ,Protected, default and private protected.

- **Public:**
  A Class member with public access specifier is usable outside the class. i.e. it can be used in any class in the program.
- **Protected**
  A class member with protected access specifier can be inherited by a child class but is not usable outside the parent class.
- **Private:**

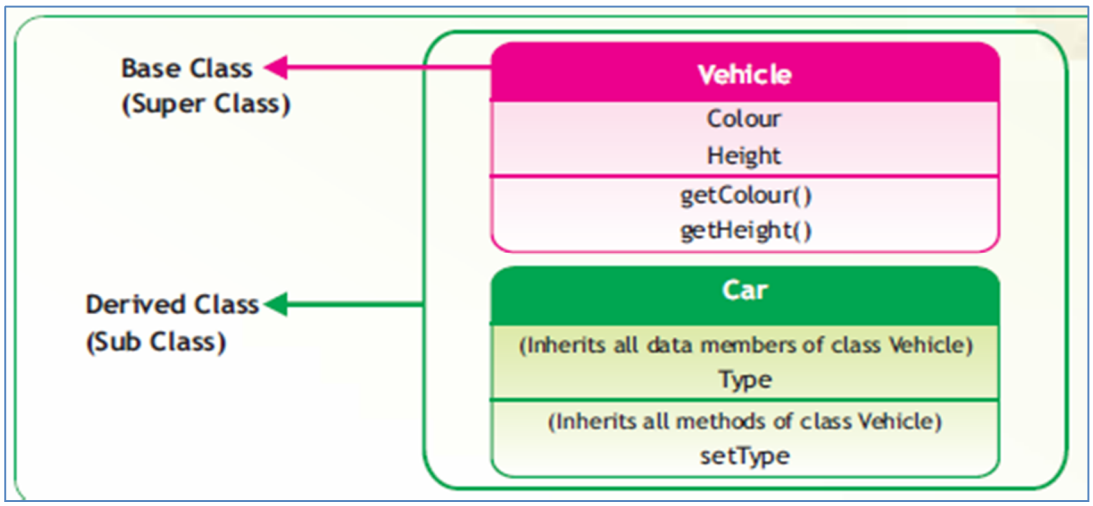
  Private members of a class can just be utilized inside the class and are hidden outside the class
  i.e. a private member cannot be used in any other class other than the class in which it is declared.
- **Default:** These members are accessible only in the class that are in the same package class ie in their own classes.
- **Private Protected:** These members are accessible only from subclasses whether in the same package or in the other package.

Member Type	*Inside own class*	*Inside subclasses*		*Inside non-subclasses*	
		In the same package	*In other packages*	*In the same package*	*In other packages*
public	Yes	Yes	Yes	Yes	Yes
protected	Yes	Yes	Yes	Yes	No
default (friendly)	Yes	Yes	Yes	No	No
private protected	Yes	Yes	Yes	No	No
private	Yes	No	No	No	No

- **Inheritance**: Inheritance is the capability of one class to inherit properties from an existing class. Inheritance supports reusability of code and is able to simulate the transitive nature of real life objects.



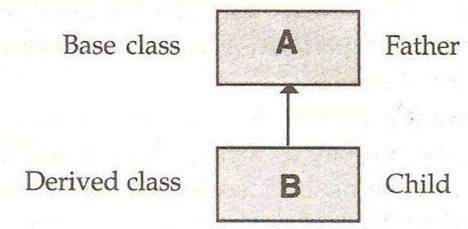
- **Derived/Sub and Base/Super classes:** A class from which another class is inheriting its properties is called base class. The class inheriting properties is known as a sub class or derived class.



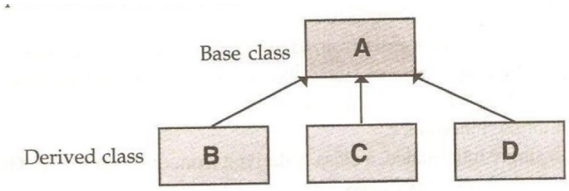
- **Need of Inheritance:** Inheritance helps in two ways:
  - *(i)* *Code Reusability:* Inheritance helps in adding new features to a class without modifying it. A pre-existing class can be directly be reused in a new class.
  - *(ii)* *Helps in expressing relationship among classes*

- **Types of Inheritance:**

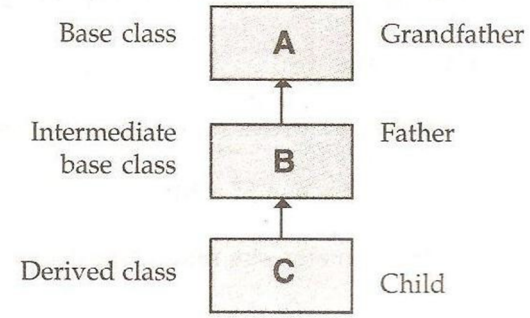
1. **Single (1:1)** : When a class inherits from a single base class.



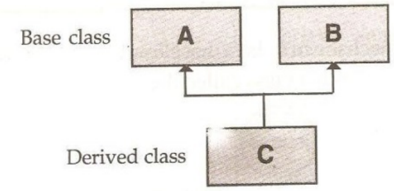
2. **Hierarchical (1:M) :** When several classes inherit from the same class.



3. **Multilevel (1:1:1)** : When a subclass is the base class of another class.



4. **Multiple Inheritance**: when a class inherit from the several base class.



- **Method overriding**: If Base class has a method with same signature as in sub class the method of subclass overshadows the method of base class , it is called Method overriding.
- **Method Overloading**: Two methods with same name but different signatures are there in the same scope of program.
- **Abstract Class:** The class that is used as only base class, no object of this class is used in the program.
- **Interfaces:** An interface defines a set of protocol. It declares a set of abstract methods i.e. methods with an empty body.
- **Dialog Type:**

  There are four built in dialog styles:

  1) OptionPane.showMessageDialog() : displays the message dialog
  2) OptionPane.showInputDialog() : displays the input dialog
  3) OptionPane showConfirmDialog() : displays the confirm dialog
  4) OptionPane showOptionDialog() : displays the option dialog

- **Example:**

```
1. String name=JOptionPane.showInputDialog("Enter Name");
2. String a=JOptionPane.showInputDialog("Enter age"); Int  ag = Integer.parseInt(a);
3. JOptionPane.showMessageDialog(null,"Eligible for vote","Title of the
   window",JOptionPane.ERROR_MESSAGE);

4. do
{ .
    .
  int  res = JOptionPane.showConfirmDialog(null,"Want to add More ??");
..
    }while(res==JOptionPane.YES_OPTION);
```

```
if(res==JOptionPane.NO_OPTION);
{……..
}
```

- **Commonly available functions in Math class in Java are:**

sin() Returns the trigonometric sine of an angle.
sin(double a)

cos() Returns the trigonometric cosine of an angle.
cos(double a)

log() Returns the natural logarithm (base) of a double value.
log(double a)

pow() This function returns you the number raised to the power of a first given value by another one.
pow(double a, double b)

sqrt() Returns a double value that is the square root of the parameter.
math.sqrt(100)

abs() Returns the absolute value of a number. Whereas the number can be int, float, double or long.
math.abs(100)

ceil() Returns the next whole number up that is an integer. math.ceil(1.1)

floor() Returns the largest (closest to positive infinity) double value that is not greater than the argument and is equal to a mathematical integer.
math.floor(99.1)

max() Returns the maximum value from the two given value. math.max(1,10)

min() Returns the minimum value from the two given value.
math.min(1,1)

round() Rounds to the nearest integer. So, if the value is more than half way towards the higher integer, the value is rounded up to the next integer.
math.round(1.01)

random() Returns a random number between 0.0 and 1.0
math.random()*100

- **Commonly available functions in String class in Java are:**

concat() : Converts the uppercase character into the lowercase character and returns converted lowercase character.

length() : Count and return the number of characters contained in the string

object. substring() : Return a part or substring of the String used to invoke the method.The first argument represents the starting location of the substring.

toLowerCase() : Converts the uppercase character into the uppercase character and returns converted lowercase character.

toUpperCase() : Converts the lowercase characterinto the uppercase character and returns converted uppercase character.

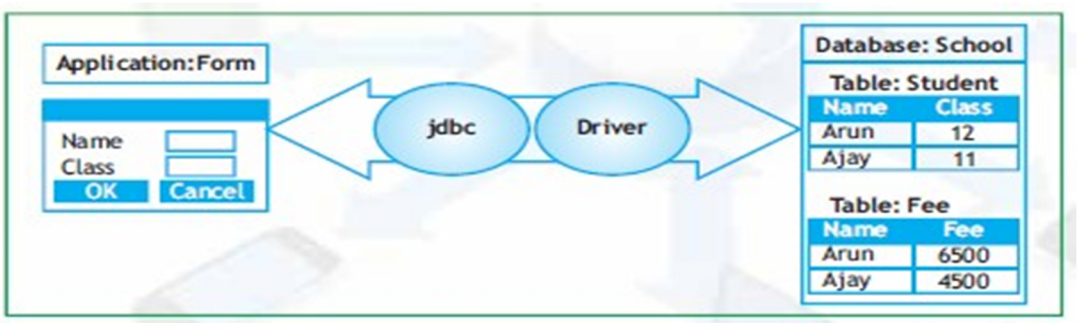
trim() : Returns a String after removing extra speces from any leading or trailing part of the string.

- **Swing Control Methods and Properties**: These are the Swing Controls available with NetBeans IDe and their concern methods and properties are given below.

Swing Controls	Methods	Properties
jButton	• getText() • setText()	Background • Enabled • Font • Foreground • Text
jLabel	• getText()	Background Enable d Font Foregr
jTextField	• getText() • isEditable() • isEnabled() • setText()	• Background • Editable • Enabled • Font • Foreground
jRadioButton	• getText() • setText() • isSelected() • setSelected()	• Background • Button Group • Enabled • Font • Foreground • Label
jCheckBox	• getText() • setText() • isSelected() • setSelected()	• Button Group • Font • Foreground • Label • Selected
jButtonGroup		• Add
jComboBox	•getSelectedItem() •getSelectedIndex() • setModel()	• Background • ButtonGroup • Editable • Enabled • Font • Foreground • Model •SelectedIndex
jList	• getSelectedValue()	• Background • Enabled • Font • Foreground • Model • SelectedIndex • SelectedItem • SelectionMode
jTable	• addRow() • getModel()	• model
JoptionPane	• showMessageDialog()	• getRowCount() • removeRow() • addRow()

Data Connectivity

- The two components essential to establish the database connectivity are enumerated below :
  - **The JDBC API** - software used to provide RDBMS access and execute SQL statements within java code.
  - **The JDBC Driver for MySQL** - software component enabling a java application to interact with a MySQL database.



- **Classes used for Database Connectivity**
  - Driver Manager Class
  - Connection Class
  - Statement Class
  - Resultset Class
- **Prerequisites for connecting to MySQL from JavaMySQL** provides connectivity for client applications developed in the Java Programming language via a JDBC driver known as MySQL Connector/J

- **Connection:** A connection is the session between the application program and the database. To do anything with database, one must have a connection object.
  - **Connecting to MySQL from Java :**
    Steps for Creating Database Connectivity Application There are mainly six steps :
    Step1 : Import the Packages Required for Database Programming.
    Step2 : Register the JDBC Driver
    Step3 : Open a Connection
    Step4 : Execute a Query
    Step5 : Extract Data from Result set
    Step6 : Clean up the Environment
  - Now to connect to a database, you need to know database's complete URL, the user's Id and password

    Example:

    jdbc:mysql://localhost:3306/cbse", "root", "abcd1234"

    In the above command:
    jdbc:mysql : is the Database Driver Connection
    3306 : is the Default Port no on which MySQL runs

cbse : is the Database Name
root : is the User Name
abcd1234 : is the Password

Resultset Methods

A result set (represented by a ResultSet object) refers to a logical set records that are fetched fromthe database by executing a query and made available to the application – program.

There are various resultset methods such as:_

- next() : moves the cursor forward on row.
- first() : moves the cursor to the first row in the ResultSet Object.
- Last() : moves the cursor to the last row in the ResultSet object.
- relative(in rows) :moves the cursor relative to its current position.
- Absolute(intrno) :positions the cursor on the rnothrow of the ResultSet object.
- getRow : Retrieves the current row number the cursor is pointing at. That is if cursor is at first row the getRow() will return 1.

Data Connectivity Application : To Display the Details in java Stored in contacts try

```
{
Class.forName("java.sql.DriverManager");
Connection con =
(Connection)DriverManager.getConnection
("dbc:mysql://localhost:3306/cbse",    "root","abcd1234");
Statement stmt = (Statement) con.createStatement();
String query="SELECT * FROM
Contact";
ResultSetrs=stmt.executeQuery(query);
while(rs.next())
// Till there are records in the result set
{
String mobile = rs.getString("Mobile");
String email = rs.getString("Email");
jTextField2.setText(mobile);
jTextField3.setText(email);
JOptionPane.showMessageDialog(null,"Click OK to continue!!!");
}

}
catch (Exception e)
{
JOptionPane.showMessageDialog(this,    e.getMessage());
}
}
}
```

Very Short answers types questions

1. Write command to display a message dialog to display prompt as “Hello World” , title as “My dialog” and icon as question icon.
Ans: JOptionPane.showMessageDialog(null,”HelloWorld”,”My dialog”,);

2. Name the different list type controls offered by Java Swing.
Ans: (i) jListBox
(ii) jComboBox

3. Name any two commonly used method of ListBox. Ans: getSelectedIndex() and getSelectedValue()

4. Write code to add an element (“New Course”) to a list (SubList) at the beginning of the list. Ans: SubList.add(0,”New Course”);

5. Describe the three common controls. Also give some of their properties. Ans:
(i) jButton text,icon
(ii)jLabel text,border
(iii) jTextField text,font

6. By default a combo box does not offer editing feature.How would you make a combo box editable. Ans: By setting its editable property to false.

7. Write the expression to print the value of a variable "x" of type int in a label**.** Ans: jLabel1.setText(“”+x);

8 What will be the contents of jTextField after executing the following statement?
jTextField.setText(‘B’ + ‘a’)
Ans:

9. In JDBC coding, what methods would be opted to move to last record of the recordsetrecSet? Ans: recSet.last();

10. Write Name the component classes of Swing API for the following components-
(a) frame (b) button Ans: (a) JFrame (b) JButton

11. What is the name of event listener interface for action events ? Ans: ActionPerformed

12. What does getpassword() on a password field return ? Ans: a character array

13. Name the inheritance type which is not supported by JAVA. Ans: multiple inheritance

14. What will be the value of jTextField1 after execution of following code :

jTextField1.setText("Informatics".subString(1,5));
Ans: nform

15. Name the character set supported by Java.

Ans: Unicode.

16. The statement i++; is equivalent to

Ans :i=i+1

17. Which method is used when we simply want to retrieve data from a table without modifying the contents of the table.
Ans: executeQuery()

18. Which method is used to instantiate a statement object using the connection object Ans: createStatement()

19. Name the 4 essential class libraries that we need to import for setting up the connection with the database and retrieve data from the database.
Ans: DriverManager, Connection, Statement, ResultSet

Short answers type questions

1. Write a java program to calculate the sum of all the no. divisible by 5 in the range 1 to 50. Ans: int sum=0;

```
for(int i=1;i<=50;++i) {
        if ( i % 5 == 0 )
                sum=sum+i;
}
jLabel1.setText(""+sum);
```

2. What do you mean by infinite loop. Write one program that has infinite loop Ans: A loop that nevers terminates is called infinite loop

```
for(;;)
{
}
```

3. Define method prototype. In java where the methods resides in.
Ans : The header statement of method including return type , method name, and argument list is called method prototype. In java method resides in class.

4. Write method in java that takes a number returns the sum of its digits.
Ans :intsumdig(int n)

```
{  int sum=0;
while(n!=0)
  {
int r=n%10;
      n=n/10;
sum=sum+r;
}
return sum;
```

}

5. What is the difference between a text field and a password field when both obtain text from user Ans: A TextField shows simple text and a passwordField shows encrypted text.

6. Write the purpose of the following statements:

i) int n=Integer.parseInt("1254");

ii) jButton1.doClick( );

Ans: (i) This statement convert the string "1254" into integer 1254

(ii) Programmatically perform a click.

7. What is event driven programming?

Ans:This programming style responds to the user events and is driven by the occurrence of user events.

8. What are containers? Give examples.

Ans: Containers are those controls inside them e.g., frame (JFrame), Panel (JPanel), label (JLabel) etc. are containers.

9. What is an identifier?

Ans:Identifiers are fundamental building block of a program and are used as the general terminology for the names given to different parts of the program viz. variables, objects, classes,functions, arrays etc.

10. What is casting? When do we need it?

Ans:Casting is a conversion, which uses the cast operator to specify the type name in parenthesis and is placed in front of the value to be converted.

For example: Result = (float) total / count ;

They are helpful in situations where we temporarily need to treat a value as another type.

11. What is the purpose of break statement in a loop?

Ans:In a loop, the break statement terminates the loop when it gets executed.

12. How is the if…else if combination more general than a switch statement?

Ans:The switch statement must be by a single integer control variable, and each case section must correspond to a single constant value for the variable. The if…else if combination allows any kind of condition after each if.

13. What is a container component?

Ans:A container is a special type of component that can hold other components.Some Swing Containers are jPanel, jFrame, jApplet, jWindow, jDialog and jInternalFrame. The components contained in a container are called child component.

14. How are protected members different from public and private members of a class?

Ans: Protected members can be directly accessed by all the classes in the same package, as that of the class in which the member is and sub classes of other package. Whereas private members can not be accessed outside the class, even in subclasses of the class and public members can be directly accessed by all other classes.

15.fine an abstract class and abstract method.

Ans: An Abstract Class is the one that simply represents a concept and whose objects can't be created. It is created through the use of keyword abstract.

Abstract methods are methods with no method statements. Subclasses must provide the method statements for the inherited abstract methods e.g. in the following code class.

16. Difference between while and do while loop

while Loop

While Loop is a entry control loop int x= 100;
while (x> 0)
{ }

do while Loop

System.out.println(x); x= x- 10;
Do while is a exit control
loop int x= 100;
do
{
System.out.println(x)
; x= x- 10;
}
while (x> 0) ;

17. What is the difference between an abstract class and an interface?

18. Ans: Abstract class defines few or none of the methods, but interface defines all the methods. Abstract classes should have subclasses else that will be useless. Interfaces must have implementations by other classes else that will be useless Only an interface can extend another interface, but any class can extend an abstract class.. All variable in interfaces are final by default

19. Differentiate between JDBC and ODBC?

20. Ans: JDBC (Java Database Connectivity) is developed by Sun Java for the purpose of connecting java applications with a variety of relation database systems like MySQL or Oracle.

On the other hand, ODBC (open database connectivity) is a system developed by Microsoft to connect Microsoft based programming application (like visual basic) with a variety of relation databases.

21. What are the main tasks of JDBC? Ans: Mainly JDBC perform the following:

a) Establishes a connection with a relation database
b) Sends SQL queries/ statements to the database
c) Process the results obtained from the database server.

22. What is the difference between private, protected and public access specifers?

Ans: Private (or class-private) restricts the access to the class itself. Only methods that are part of the same class can access private members.
Protected (or class-protected) allows the class itself and all its subclasses to access the member. Public means that any code can access the member by its name.

OutPut Finding Questions:

1 Write the output :

(i) System.out.printl("Hello".charAt(3));
(ii) System.out.printl("Good morning".substring(5));
Ans:

(i) l

(ii) morning

2. Write the output of the following

```
code : int x , y = 0;
for(x=1;x<=5;++x)
y = x++;
--y ;
```

Ans: 7 4

3. Find the output of the code: 2

```
int
f=1,i=2;
do
{ f*=i;
}while(++i<5);
System.out.println(f);
```

Ans: 24

4. What would the following code do :

```
Connection con;
statement created String str="select * from emp";
Resultsetrs=stmt.executeQuery(str); rs.last();
int r= rs.getRow();
JOptionPane.showMessageDialog(null,""+r);
```

Ans : if emp table has 5 records it will display 5

5. What will be the output of the following code segment:

```
String firstName = "Johua ";
String lastName = "Yacomo";
String fullName = firstName + lastName;
jTextField1.setText("Full Name: ");
jTextField2.setText(fullName);
```

Ans: Full Name : JohuaYacomo

6. What will be the value of j and k after execution of the following code:

```
int j=10,k=12;
if(k>=j)
{k=j; J=k;
}
```

Ans: 10 10

7. How many times, the following loop gets executed?

```
i=0;
while (i> 20)
{
//Statements
}
```

Ans: 0 times

8. How many times, the following loop gets executed?

```
i=0;
do
{
//Statements
}while (i> 20);
```

Ans: 1 time

9. What will be the contents of jTextield1 and jTextField2 after executing the following statement: StringBuffer s= new StringBuffer(“Common Wealth”);

```
int c=s.capacity(); s.insert(0,'E');
s.reverse();
jTextField1.setText(“”+c);
jTextField2.setText(s.toString());
```

Ans: 29

htlaeWnommoCE

10. What will be the contents of jTextield after executing the following statement: int num=4;

```
num=num+1; if(num>5)
jTextField1.setText(Integer.toString(num));
else
jTextField1.setText(Integer.toString(num*4));
```

Ans : 7

11. Find the output of the following code: int First = 7;

```
int Second = 73;
First++;
if (First+Second> 90) jlabel1.setText("value is 90 ");
else
jlabel1.setText("value is not 90 ");
```

Ans :value is not 90

12. Find the output

```
int Number1 = 7,Number2=8; int Second = 73;
if (Number1>0 || Number2>5) if (Number1>7)
jTextField1.setText("Code Worked"); else
jTextField1.setText("Code MightWork"); else
jTextField1.setText("Code will not Work");
```

Ans :Code MightWork

13. How many times will the following loop get executed?

```
x = 5;
y = 36;
while ( x <= y)
{

x
+
=
6
.
;
}
```

Ans: 6

14. What will be the content of the jTextArea1 after executing the following code? Int Num = 1;

```
do
```

```
{
jTextArea1.setText(Integer.toString(++Num) + "\n"); Num = Num + 1;
}while(Num<=10)
```
Ans: 10

15. What will be the contents of jTextfield1 and jTextfield2 after executing the following code: 2

```
String s="KENDRIYA VIDYALAYA GUNA"
jtextfield1.setText(s.length()+" ");
jtextfield2.setText(Math.round(2.34)+"");
```

Ans : 23 2

16. What will be the value of s after executing the following code?

```
double i,sum=2
for(i=3;i<8;++i)
{ if(i%4= =0)
        { break; sum=Math.pow(sum,i);
  }
else sum+=i/2;
                                        }
```

Ans: 150.0625

17. What will be the content of jTextField1 and jTextField2 after executing the following code: String st="New to Information Technology";
jTextField1.setText(st.replace("Technology","Practices");
jTextField2.setText(st.substring(7));
Ans: New to
Information Practices
Information Technology

18. Predict the output for tan & tan1 if sac equals 7?

```
int tan = 0, tan1 = 4
; if ( sac == 2 )
{ tan = 4 ; tan1 = 0; }
else if (sac == 8)
{ tan = 0 ; tan1 = 4; }
        JOptionPane.showMessageDialog( null , " tan = " + tan +" ,
tan1 = " + tan1 ) ; Ans: tan = 0        tan1=4
```

19. Give the output for the following code fragment:

```
v = 20 ;
do
{
JOptionPane.showMessageDialog( null , v + "  " ) ;
} while ( v< 50 ) ;
JOptionPane.showMessageDialog( null , " Bye
" ) ;
```

Ans: Infinite loop

20. Give the value of x after executing following Java code. Also find how many times the following loop will execute? :

```
int a=10; int b=12; int x=5; int y=6;
while (a<=b)
{
if (a%2= =0)
x=x + y;
else
```

```
x=x-y;
a=a+1;
}
```
Ans:11

21. What will be the output produced by following code fragment? (1) flaot x=9;

```
float
y=5;
int z=(int)(x/y);
switch(z)
{
case1:x=x+2;
case2: x=x+3;
default:x
=x+1;
}
System.out.println("value of

x:"+x);
```
Ans: 15

22. Predict the output of the following code fragments: int i,j,n;

```
n=0;i=1;
do
{ n++; i++;
}
while(i<=5);
```
Ans: 5

23. What will be the output of the following program code when the user will press JButton: Public class svm

```
{       int a;
        svm(int p)
        {       a=p;
                } void
        assign(int no)
        {       a=no;
                } intdisp()
        {       return a;       }
}
private void jButton1ActionPerformed(java.awt.event.ActionEventevt)
{
svm os=new svm(15); System.out.println("  " + os.disp()); os.assign(35);
System.out.println("      " + os.disp());
}
```

Ans: 1535

24. What will be the contents of jTextField1 and jTextField2 after executing the following code:

```
String s = "Sun Micro Systems"; jTextField1.setText(s.length()+"");
jTextField2.setText(s.toLowerCase());
```
Ans:
jTextField1 : 17
jTextField2 : sun micro systems

25. What values will be assigned to the variable ua ,ub, uc and fail after execution of the following program segment:

```
int i=0,ua=0,ub=0,uc=0,fail=0;
while(i<=5) {
switch ( i++ )
{
        case  1 :++ua;
        case  2 : ++ub; uc++;break;
        case  3 :
        case  4 : ++uc; ua++;ub++;break;
        default : ++fail;
}
```

Ans: ua=1 ub=1 uc=0

26. Predict an output of the following code fragments:

```
int i = 1,   j = 0,   n = 0;
while(i<4) {
for(j=1;j<= i ; j++)
        {       n+= 1;
                i = i+1;
```

Ans : 6

```
}
        System.out.println(n);
        }
```

27. Give the output of the following code:

```
int m=100;
        while(m>0)
        {
        if
        (m<1
        0)
        break
        ;
        m=m-
        10;
        }
        System.out.println("m is "+m);
```

Ans: 0

Errors finding questions:

1. The following code has some errors. Rewrite the corrected code .

```
int i=2,j=5;
while j>i
{  jTextField1.getText("j is
greater"); j--; ++i;
}JOptionPane.showMessageDialog("Hello");
```

Ans:

```
int i=2,j=5;
while( j>i)
{  jTextField1.getText("j is
greater"); j--; ++i;
}JOptionPane.showMessageDialog("Hello");
```

2. Identify the errors : 2

```
switch(ch)
{       case 'a'   :
        case 'A' :
        case 'e' :
        case 'E' :
        case 'i' :
        case 'i' :
        case 'u' :
        case 'U' : ++vowels;
                break;
        default :
        ++others;
```

Ans: two case constants doesn't have the same value

3.

```
int i,j=5;
i==j+5;
if(i=j)
  {
jTextField1.setText("i and j are unequal");
jTextField2.setText("they are not equal"); break;
   }
else jTextField1.setText("i and j are
equal"); Ans:
int i,j=5;
i=j+5;
if(i==j)
  {
jTextField1.setText("i and j are unequal");
jTextField2.setText("they are not equal"); break;
   }
else jTextField1.setText("i and j are equal");
```

Rewrite the code after making correction . Underline the corrections int sum;value;inct;

```
int i;
for(i==0;i<=10;i++
) sum=sum+i;
```

```
inct++;
```

Ans :

```
int
sum,value,inct;
int i;
for(i=0;i<=10;i++
) sum=sum+i;
inct++;
```

5 The following code has some error(s). Rewrite the correct code underlining all the corrections made. int y=3;

```
switch(y);
{ case 1: System.out.print("Yes its One");
case>2: System.out.println("Yes its more
than Two"); break;
case else: System.out.print("Invalid Number):
```

Ans:

```
int
y=3;
switch
(y)
{ case 1: System.out.print("Yes its One");
        break;
case 2: System.out.println("Yes its more than
Two"); break;
default:System.out.print("InvalidNumber):
}
```

6. The following has some error(s).Rewrite the correct code underlining all the corrections made:

```
Int i,j=5; i==j+5;
if(i=j)
{


}
else Ans:
```

jtextfield1.setText("I and j are unequal"); jtextfield1.setText("I and j are not equal");breaks;

```
jtextfield1.setText("I and j are equal") int i,j=5;
  i=j+5; if(i==j)
  {jTextField1.setText("I and j are unequal");
            }
        else
            jTextField1.setText("I and j are equal")
```

7. Rewrite the following Java code after underling the corrections made. int x = = 0;

```
int n= Integer
parseInt(Jlabel1.getText); Ans:
int x=0;
```

int n= Integer parseInt(JLabel1.getText());

8. Find out errors if

```
any: M=1;
N=0;
For(;m+n<19;++n)
System.out.println("hello");
M=m+10;
```

Ans:

```
m=1
;
n=0;
for(;m+n<19;++n)
System.out.println("hello");
m=m+10;
```

9. The following code has some error(s). Rewrite the correct code underlining all the corrections made. int y=6,p;

```
do
{ y=3.14*y;
        p=y%10;
```

Ans:

```
if p=2 System.out.print("Two"); while(y>1)
nt 6,p; do
{ y=3.14*y; p=y%10;
if (p==2) System.out.print("Two");
}while(y>1);
```

Rewrite questions:

1. Rewrite the following program code using a for loop: int i,sum=0;

```
while(i<10)
{ sum +=i;
  i+=2;
}
```

Ans:

```
int i,sum=0;
for(i=0;i<10;i+=2)
{ sum +=i;
}
```

2. Rewrite the following code using while

```
loop : inti,j;
for(i=1;i<=4;i++)
{       for(j=1;j<=i;++j)
        {       System.out.print(j);
```

Ans:

```
}
System.out.println();
}

int i=1,j; while(i<=4)
{  j=1;
while(j<=i)
{          System.out.print(j);
++j;
}    i++;
System.out.println();
}
```

3. Write a equivalent while loop for the following

```
code: intsz=25;
for(int i=0,sum=0;i<sz;i++)
sum+=i;
System.out.println(sum);
```

Ans:

```
int sz=25;
int i=0,sum=0;
while(i<sz)
{ sum+=i; i++;}
System.out.println(sum);
```

4. Rewrite the following if-else segment using switch-case

```
statement char ch='A';
if(ch=='A')
System.out.println("Account");
if((ch=='C') || (ch=='G'))
System.out.println("Admin");
if(ch=='F')
System.out.println("Advisor");
```

Ans:

```
char ch='A'; switch(ch)
{
   case ‘A':
     System.out.println("Account");
     break;
case 'C':
case 'G’:
```

```
            System.out.println("Admin");
            break;
        case 'F':
            System.out.println("Advisor");
    }
```

5. Rewrite the following code using while

```
loop: int i,j;
for(i=1,j=2;i<=6;i++,j+=2)
System.out.println(i++);
System.out.println("Finished!!!");
```

Ans:

```
int i=1,j=2;
while(i<=6)
{System.out.println(i++); i++;
 j+=2;}
 System.out.println("Finished!!!");
```

6. Rewrite the following code using for

```
loop. int  i=0;
while(++i<20)
 {  if( i==8)
     break;
     System.out.println(i++);
 }
```

Ans:

```
int i;
for(i=1;i<20;++i)
     {  if( i==8)
     break;
System.out.println(i++);
     }
```

7. Rewrite the code using switch statement:

```
If(k==1) Day="Monday";
 elseif(k==2) Day="Tuesday";
 elseif(k==3) Day="Wednesday";
else
Day="-";
```

Ans:

```
 switch(k)
{
case 1: Day="Monday"; break;
case 2: Day="Tuesday"; break;
case 3: Day="Wednesday"; break;
default: Day="";
}
```

8. Write the equivalent switch case for the following code :

```
If  (num1 = =1 )
jTextField1.setText("Number is one");
```

else If (num1 = =2) jTextField1.setText(“Number is two”);
else If (num1 = =3) jTextField1.setText(“Number is three”); else
jTextField1.setText(“Number is more than three”);
Ans:

```
Switch(num1)
{
Case 1 : jTextField1.setText(“Number is one”); break;
case 2 :
jTextField1.setText(“Number is two”); break;
case 3 :
jTextField1.setText(“Number is three”); break;
default:
jTextField1.setText(“Number is more than three”);
}
```

9. Given the following code fragment :

```
If(a==0)
System.out.println(“zero”);
If(a==1)
System.out.println(“one”);
If(a==2)
System.out.println(“two”);
If(a==3)
System.out.println(“three”);
```

Write an alternative code (Using if) that saves on number of comparsons Ans:

```
if(a==0)
System.out.println(“zero”);
else if(a==1)
System.out.println(“one”);
else if(a==2)
System.out.println(“two”);
else if(a==3)
System.out.println(“three”);
```

10. Rewrite the following code fragment using switch :

```
if(ch = = ‘E’)
        east++;
if(ch = = ‘W’)
        west++;
if(ch = = ‘N’)
        north++; if(ch
= = ‘S’)
        south++;
```

Ans:

```
Switch(ch)
{
Case ‘E’:
east++;
break; case
‘W’: west++;
break; case
```

```
'N': north++;
break; case
'S': south++;
break;
default :
jOptionPane.showMessageDialog(null,    "unknown");
}
```

11 Rewrite the following code using for loop:

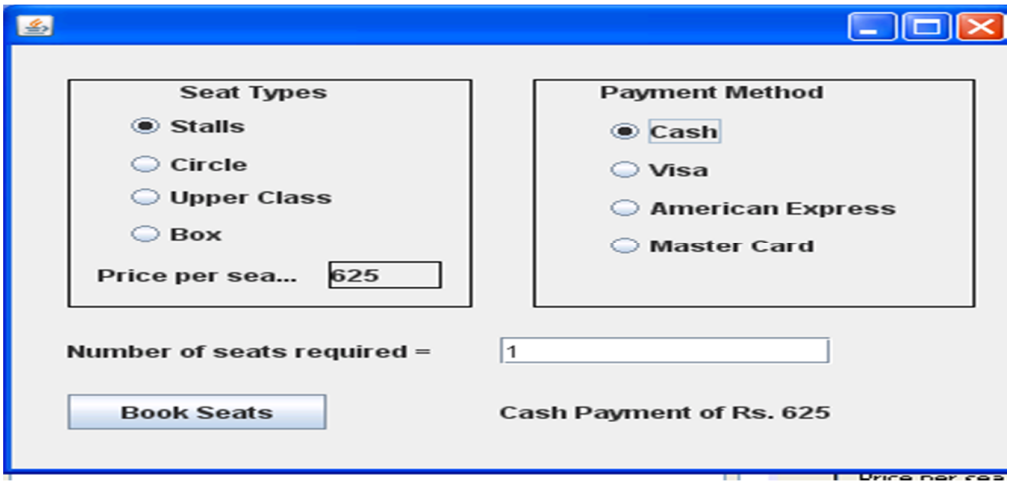
```
int  i = 0; while(++i
   <20)
     {
          if(i = = 8) break;
          System.out.println(++i);
     }
```

Ans:

```
for(int  i = 0;++i <20;)
{
          if(i = = 8) break;
          System.out.println(++i);
     }
```

Design Questions:

1. Design an application for Theatre Booking system. And answers the following questions :



(a) When the user select different seat type, then its price should be displayed in the Label.

(b) If the user enters an invalid no of seats i.e. less than I, then an error message should be displayed in the dialog box.

(c) When the user click at the Book Seats button , then total amount (calculated as no. of seats x price per seat) should be displayed along with payment method, next to the push button.

(c) Price per seat depend upon the seat type :

Stall 625/-
Circle 750/- Upper
Circle 850/- Box
1000/-

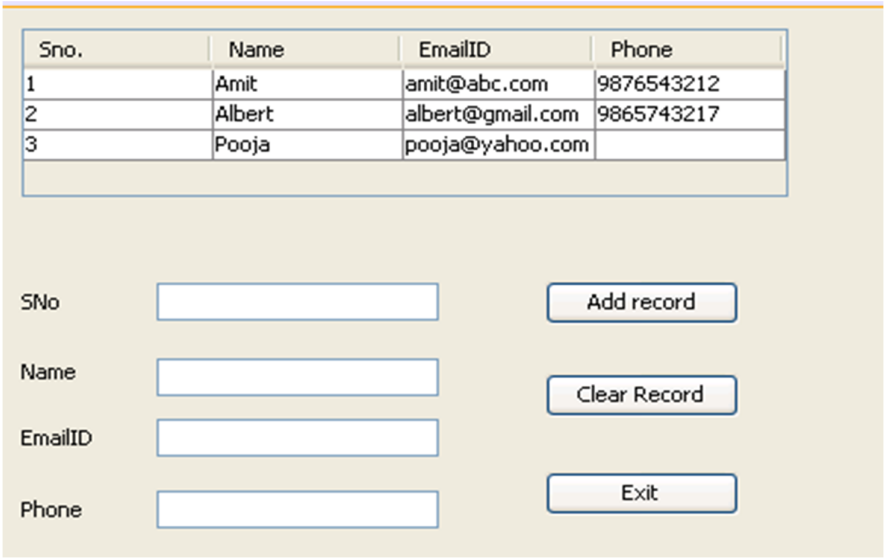
Ans:

(a) if(jRadioButton1.isSelected()==true) jLabel2.setText("625"); if(jRadioButton2.isSelected()==true) jLabel2.setText("750"); if(jRadioButton3.isSelected()==true) jLabel2.setText("850"); if(jRadioButton4.isSelected()==true) jLabel2.setText("1000");

(b) int s=Integer.parseInt(jTextField1.getText()); if(s<1) JOptionPAne.showMessageDialog(null,"Error");

(c) int s=Integer.parseInt(jTextField1.getText()); int p=Integer.parseInt(jLabel2.getText()); int tp=s*p; if(jRadioButton5.isSelected()==true) jLabel5.setText("Cash Payment of " +tp); if(jRadioButton6.isSelected()==true) jLabel5.setText("Visa Payment of " +tp); if(jRadioButton7.isSelected()==true) jLabel5.setText("American Exress Payment of " +tp); if(jRadioButton8.isSelected()==true) jLabel5.setText("Master Card Payment of " +tp);

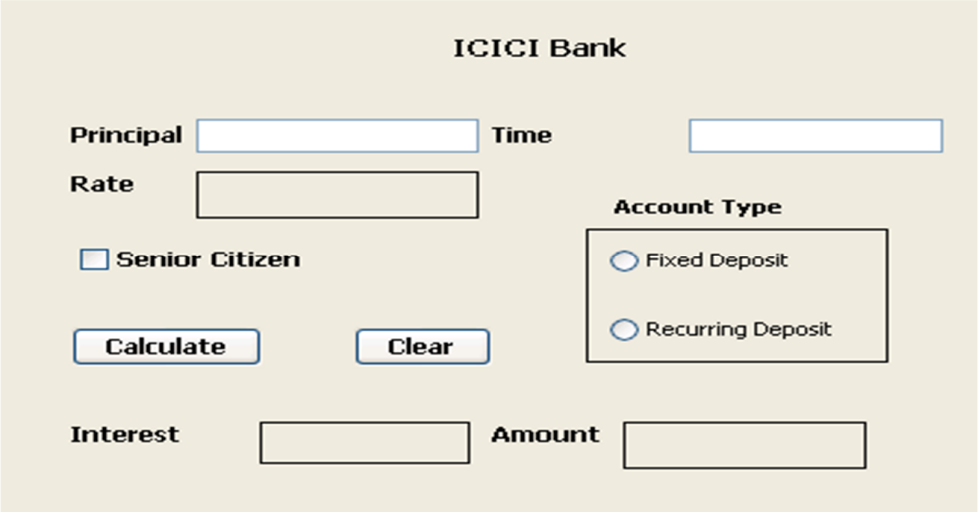
2. Write a java program that lets you create an address book in a table. The details to be added in Address Book are : SNo,Name, Email Id, Phone.



Ans:

```
DefaultTableModel tm= (DefaultTableModel) jTabel1.getModel();
int sno= Integer.parseInt(jTextField1.getText());
String name = jTextField2.getText();
String email = jTextField3.getText();
long ph= Integer.parseInt(jTextField4.getText());
Object nr[]={sno,name,email,ph}; tm.addRow(nr);
```

3. Design the following application and answer the questions that follow :



(a) Write the code for the Clear button to clear all the textfields and checkbox. Set the default choice in the radio button as Fixed Deposit.

(b) Write the code for the calculate button to calculate compound interest and amount and display the values in the txtInterest and txtAmount depending on principal, rate and time. Rate is calculated based on the time according to the following table:

Account	Time	Rate
Fixed Deposit	<= 1	10%
	>1 and <=5	12%
	>5	15%
Recurring Deposit	<= 2	11%
	>2 and <=7	12%
	>7	15%

An additional rate of 2% is given to the senior citizens i.e. if the chkSR checkbox is checked. Ans:

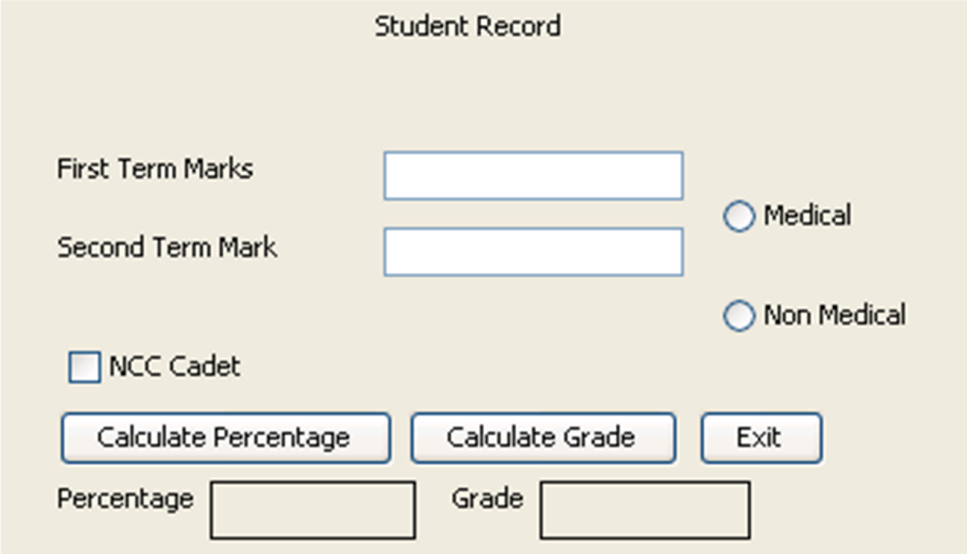
(a) jTextField1.setText(“”); jTextField2.setText(“”); jTextField3.setText(“”);
jRadioButton1.setSelected(true); jCheckBox1.setSelected(false);

(b) int p= Integer.parseInt(jTextField1.getText());

(c) int t= Integer.parseInt(jTextField2.getText()); if(jRadioButton1.isSelected()==true)
{
if(t<=2) r=11;
else if(t>2 && t<=7) r=12;
else
r=15;
}
else
{
if(t<=1) r=10;
else if(t>1 && t<=5) r=12;
else
r=15;
}

float ci= p*Math.pow((1+(r/100)),t); float amt= p+ci; txtInterest.setText(“”+ci);
txtAmount.setText(“”+amt);

4. Answers the following questions:



The grading criteria for the two streams is given below :

Stream	Percentage	Grade
Medical	>=80 60-80 <60	A B C
Non-Medical	>=75 50-75 <50	A B C

(a) Write code for Calculate Percentage button to calculate the Percentage after finding the total marks of I
term and II term . Also ensure that NCC cadet gets an increment of 3% in their percentages.

(b) Write code for Calculate grade button to calculate the grade depending upon on the stream selected according to the given criteria.

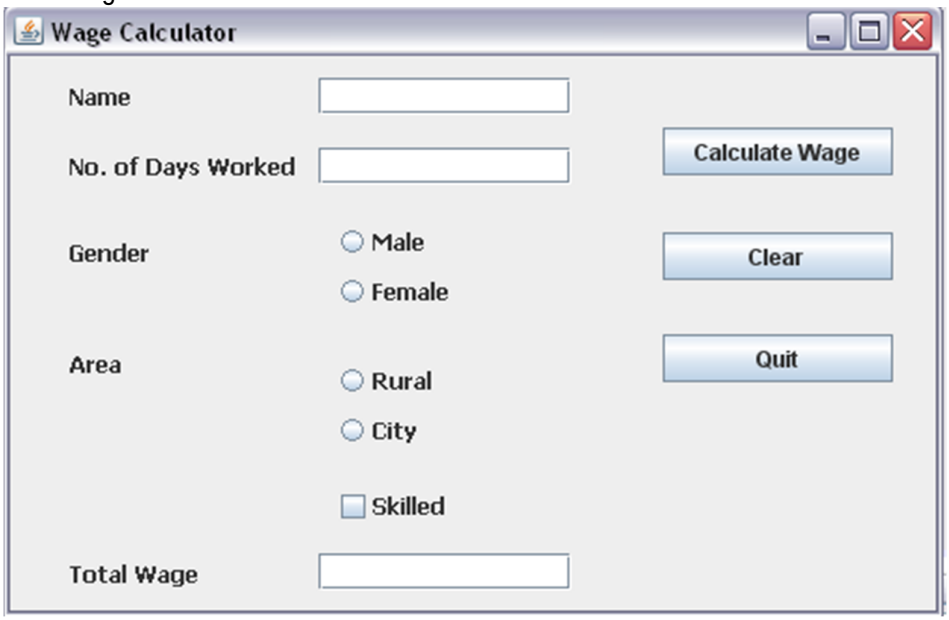
Ans:

(a)
```
float f=
Integer.parseInt(jTextField1.getText()); float
s= Integer.parseInt(jTextField2.getText());
float tot = f+s;
float p= tot/2;
if(jCheckBox1.isSelected()==true)
    p=p+3;
jLabelp.setText(“”+p);
```

(b)
```
String g;
if(jRadioButton1.isSelected()==true)
{
  if(p>=80) g=”A”;
else if(p>=60 &p<80) g=”B”;
else
  g=”C”;
}
else
{   if(p>=75) g=”A”;
else if(p>=50 &p<75) g=”B”;
else
  g=”C”;}
```

```
jLabelp.setText(“”+p);
jLabelg.setText(“”+g);
```

5. Mr. Madhav works in a construction company. To calculate total wages he has developed the following GUI in NetBeans.



Male and female labours are respectively paid Rs. 150/- per day and Rs. 170/- per day. Skilled labourers are paid extra at the rate of Rs. 100/- day. Male and female labourers from rural areas are paid 10% less per day.

(a) When Calculate Wage button is clicked, the total wages is calculated as per the given criteria and displayed in total wage text box.

(b) When Clear button is clicked, all the text boxes should be cleared and radio button, check box should be deselected.

(c) Close the application when Quit button is pressed.

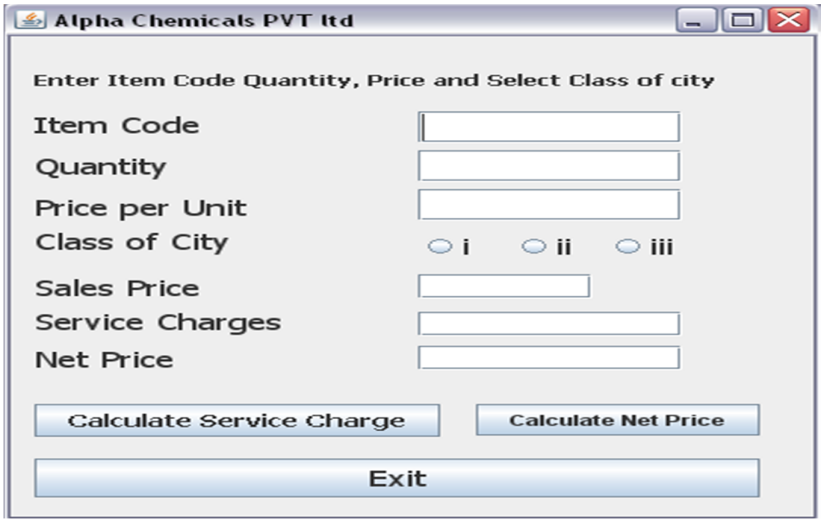
Ans:

(a)
```
int d =Integer.parseInt(jTextField2.setText()); int w;
if(jRadioButton1.isSelected()==true) w=150;
else              w=170;
if(jCheckBox1.isSelected()==true) w=w+100;
if(jRadioButton3.isSelected()==true) w=w-(w*10)/100;
int cw=d*w; jLabel6.setText(“”+cw);
```

(b)
```
jTextField1.setText(“”); jTextField2.setText(“”);
jRadioButton1.setSelected(false);
jRadioButton2.setSelected(false);
jRadioButton3.setSelected(false);
jRadioButton4.setSelected(false);
jCheckBox.setSelected(flase);
```

(c)
```
System.exit(0);
```

6. Mr. JigneshDesai an owner of Alpha Chemicals PVT ltd has asked his programmer Sweta to develop the following GUI application in Netbeans:



Service Charges Rates are as follows :

Class of City	Rate of Service Charges
i	10% of sales price
ii	15% of sales price
iii	20% of sales price

Write java code for the following:
(a)To calculate service charges depending on the selection of radio button. This code will execute after click on the calculate service charges?
(b)To calculate net price when Calculate Net price button will be clicked. (c)When exit button will be clicked application should be automatically closed.

Ans:

(a)
```
float q=Float.parseFloat(jTextField2.getText());
float p=Float.parseFloat(jTextField3.getText()); float sp=q*p;
jLabelsp.setText(“”+sp);
float sc;
if(jRadioButton1.isSelected()==true) sc=(10*sp)/100;
elseif(jRadioButton2.isSelected()==true) sc=(15*sp)/100;
else  sc=(20*sp)/100; jLabelsc.setText(“”+sc);
```

(b)
```
float   sp=Float.parseFloat(jLabelsp.getText());
float   sc=Float.parseFloat(jLabelsc.getText());
float  np=sp+sc; jLabelnp.setText(“”+np);
```

(c)
```
System.exit(0);
```

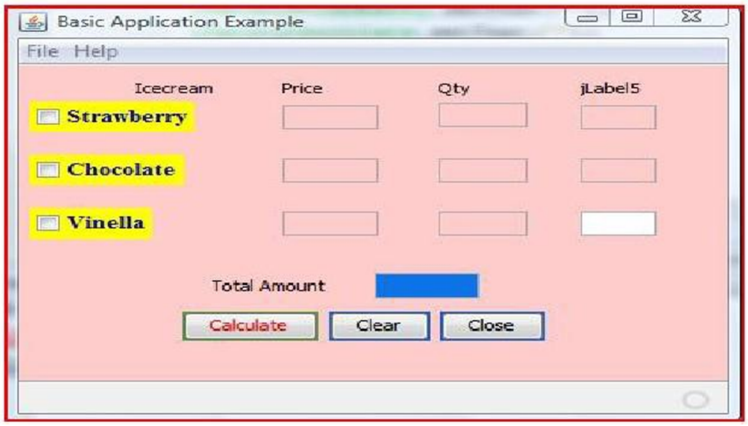
7. Assume the following interface built using Netbeans used for bill calculation of a ice-cream parlor. The parlor offers three verities of ice-cream - vanilla, strawberry, chocolate. Vanilla ice- cream costs Rs. 30, Strawberry Rs. 35 and Chocolate Rs. 50. A customer can chose one or more ice-creams, with quantities more than one for each of the variety chosen. To calculate the bill parlor manager selects the appropriate check boxes according to the verities of ice-cream chosen by the customer and enter their respective quantities.

Write Java code for the following:

a. On the click event of the button 'Bill', the application finds and displays the total bill of the customer. It first displays the rate of various ice-creams in the respective text fields. If a user doesn't select a check box, the respective ice-cream rate must become zero. The bill is calculated by multiplying the various quantities with their respective rate and later adding them all.

b. On the Click event of the clear button all the text fields and the check boxes get cleared.

c. On the click event of the close button the application gets closed.



Ans: (a)

```
private void jBtnCalculateMouseClicked(java.awt.event.MouseEvent evt)
    {
        if(jchkStrawberry.isSelected()==true) jTxtPriceStrawberry.setText("35");
      else
      {
        jTxtPriceStrawberry.setText("0"); jTxtQtyStrawberry.setText("0");
      }
      if(jChkChocolate.isSelected()==true) jTxtPriceChocolate.setText("50");
      else
      {
        jTxtPriceChocolate.setText("0"); jTxtQtyChocolate.setText("0");
      }
      if(jChkVinella.isSelected()==true) jtxtPriceVinella.setText("30");
      else
      {
        jtxtPriceVinella.setText("0"); jTxtQtyVinella.setText("0"); }

      int r1,r2,r3,q1,q2,q3,a1,a2,a3,gt;
      r1=Integer.parseInt(jTxtPriceStrawberry.getText());
      r2=Integer.parseInt(jTxtPriceChocolate.getText());
      r3=Integer.parseInt(jtxtPriceVinella.getText());
      q1=Integer.parseInt(jTxtQtyStrawberry.getText());
      q2=Integer.parseInt(jTxtQtyChocolate.getText());
```

```
            q3=Integer.parseInt(jTxtQtyVinella.getText());
            a1=r1*q1;
            jTxtAmtStrawberry.setText(""+a1);
            a2=r2*q2;
            jTxtAmtChocolate.setText(""+a2);
            a3=r3*q3;
            jTxtAmtVinella.setText(""+a3);
            gt=a1+a2+a3;
            jTxtTotalAmt.setText(""+gt);
        }
(a)  private void jBtnClearActionPerformed(java.awt.event.ActionEvent evt)
        {
            jTxtPriceStrawberry.setText("");
            jTxtPriceChocolate.setText("");
            jtxtPriceVinella.setText("");
            jTxtQtyStrawberry.setText("");
            jTxtQtyChocolate.setText("");
            jTxtQtyVinella.setText("");
            jTxtAmtStrawberry.setText("");
            jTxtAmtChocolate.setText("");
            jTxtAmtVinella.setText("");
            jchkStrawberry.setSelected(false);
            jChkChocolate.setSelected(false);
            jChkVinella.setSelected(false);
        }

    (c ) private void jBtncloseActionPerformed(java.awt.event.ActionEvent evt)
        {
            System.exit(0);
        }
```

WEB APPLICATION DEVELOPMENT

World Wide Web is an example of an information protocol/service that can be used to send and receive information over the internet. It supports:

- Multimedia Information (Text, Movies, Pictures, Sound, Programs etc...)
- Hyper Text Information :(Information that contains links to other information resources)
- Graphical User Interface :(So users can point and click to request information instead of typing in text commands)

The World Wide Web is an example of an information protocol/service that works using a Client/Server software design. A service that uses Client/Server design requires two pieces of software to work: Client software (e.g. Web Browser) to request information, and Server software (Web server) to answer requests and provide their information. Most Web applications are designed this way.

Uniform Resource Locator: The uniform resource locator (URL) is the unique identifier of a web page. The address or URL of the current page you are on appears in the "Address Bar" of the web browser.

What is Web Server: Web server delivers (serves) content, such as web pages, using the Hypertext Transfer Protocol (HTTP), over the World Wide Web.

What is Web Browser: A web browser is a client that initiates communication by making a request for a specific resource. The server then responds with the content of that resource, or an error message if unable to do provide the contents due to any reason.

Client Server Computing: It refers to a network set-up in which programs and information reside on the server and clients connect to the server for network access.

Dynamic Web Page: A dynamic document is created by web server whenever a browser requests the documents.

Static Web Page: A static document is a fixed content document that is created by web server whenever a browser requests the documents.

HTML – It stands for Hyper Mark-up Language. It is the subset of SGML (Standard Generalized Markup Language) The head of the HTML document is where you enter the title of the page. Headings are typically displayed in larger and/or bolder fonts than normal body text. HTML has six levels of heading, numbered 1 to 6, with 1 being the largest. The BACKGROUND is the image attribute in <BODY> tag where you can place graphic object to make more attractive Web page. The BGCOLOR attribute is used to set the background color of your Web page with <BODY> tag.

Question and Answers

1. Identify the web browser software from the following options:
   (a) Apache Web Server (b) MS Word (c) HTML (d) Mozilla Firefox
   Ans. (d) Mozilla Firefox
2. A_____document is created by web server whenever a browser requests the documents.
   (a) active (b) static (c) dynamic (d) none of the above

Ans. (c) Dynamic

3. A_____document is a fixed content document that is created by web server whenever a browser requests the documents.
   (a) active (b) static (c) dynamic (d) none of the above
   Ans. (b) Static
4. Identify the web server software from the following options:
   (a) Apache (b) MS Word (c) HTML (d) Mozilla Firefox
   Ans. (a) Apache
5. The address of a resource on the net is known as:
   (a) ISP (b) HTTP (c) URL (d) WWW
   Ans. (c) URL
6. A program that serves requested HTML files and pages.
   (a) Web Address (b) Web Page (c) Web Server (d) None of these
   Ans. (c) Web Server
7. **What is Uniform Resource Locator?**
   Ans: The uniform resource locator (URL) is the unique identifier of a web page. The address or URL of the current page you are on appears in the "Address Bar" of the web browser. You can go directly to a web page if you know its URL by simply typing the URL in the address bar. You can click in the address bar at any time and overwrite the current address with another URL to jump to a different web page.The most general form of a URL syntax is as follows:
   Protocol://domain name/<directory path>/<object name> For example:
   http://www.openoffice.org/dev_docs/features/3.2/rc2.html
8. **What is Web Server?**
   Ans: Web server delivers (serves) content, such as web pages, using the Hypertext Transfer Protocol (HTTP), over the World Wide Web.
9. **What is Web Browser?**
   Ans: A web browser is a client that initiates communication by making a request for a specific resource. The server then responds with the content of that resource, or an error message if unable to do provide the contents due to any reason.
10. **HTML tags must be written within:**
    (a) < > (b) { } (c) [ ] (d) ( )
    Ans: (a) <>
11. **Which of the following is the correct structure of HTML tags?**
    (a) < HTML> </HTML> <HEAD> </HEAD> <BODY> </BODY>
    (b) <HTML> <HEAD> </HEAD> </HTML> <BODY> </BODY>
    (c) <HTML> <HEAD> <BODY> </BODY> </HEAD> </HTML>
    (d) <HTML> <HEAD> </HEAD> <BODY> </BODY> </HTML>
    Ans: (d) <HTML> <HEAD> </HEAD> <BODY> </BODY> </HTML>
12. **What is HTML?**
    Ans: HTML stands for Hyper Text Markup Language. It is a markup language used to create HTML documents. An HTML document defines a web page.
13. **Define <html> tag**

Ans: The <html> tag identifies the document. An HTML document begin with <html> ends with </html>.

14. **Give two differences between HTML and XML.**

Ans: The three differences between HTML and XML are:

1. HTML is designed to display data and hence, focused on the 'look' of the data, whereas XML is designed to describe and carry data and hence, focuses on 'what data is'.
2. In HTML tags are predefined, while in XML, tags can be created as per needs.
3. HTML tags are not case sensitive, whereas XML tags are case sensitive

15. What **is** an unordered list?

Ans: Bulleted/unordered list <UL> tag is used to indicate a list item as contained in an unordered or bulleted form.

16. **What is ordered list?**

Ans: The numbered/ordered list <OL> tag is used to indicate a list item as contained in an ordered or numbered form.

17. **What is table? What are the basic commands for creating a table?**

Ans: Table is a collection of rows and column.
Followings are important tags
<Table> :- used to give identification to a table
<TH> :- To provide headings in a table
<TR>:- (Table Row) to create Row in a table
<TD> :- (Table Data) to create columns in a row

18. **What do you understand by ALINK? Explain with an example.**

Ans: Links which are currently being visited in web page are known as Active Links (ALINK).
Example:

```
<BODY TEXT = "#FFFFFF" ALINK="#FF0000">
<A HREF="www.kvsangathan.nic.in"> Kendriya Vidyalaya Sangathan </A><BR>
<A HREF = www.cbse.nic.in> Central Board of Secondary Education </A>
</BODY>
```

19. **What is FORM tag? Explain with example.**

Ans: To create or use forms in a web page <FORM> tag is used. Form is means to collect data from the site visitor. It is done with the help of controls that collect data and send it over.
Example: <FORM method = "POST" action=submitform.asp>

20. **What is INPUT tag? Explain with example.**

Ans: Text boxes are single line text input controls that are created using <INPUT> tag whose TYPE attribute has a value as "Text". Example:

```
<FORM method = "POST" action=submitform.asp> First Name:
Page 72 of 106
<INPUT TYPE="text" NAME = "fname"/> <BR> Last Name:
<INPUT TYPE="text" NAME = "lname" />
</FORM>
```

21. **What is the purpose of select tag?**

Ans: <SELECT> tag is used to create a drop down box in which many options are available; user can make selection from the list. Example:

```
<SELECT name = "stream">
<OPTION value="Science"> Science</OPTION>
```

<OPTION value="Commerce"> Commerce </OPTION>
<option value="Humanities"> Humanities </OPTION>
</SELECT>

22. **XML expand to_____**
    Ans. - eXtensible Markup Language
23. **An XML document has a logical structure and a__structure**.
    Ans. -Physical
24. **First generic markup language is**
    Ans-SGML
25. **CSS means**
    (a) Colored system software (b) combined style sheet
    (c) Colored style sheet (d) cascading style sheet
    Ans.–(d)
26. **XML is case sensitive(T/F)**
    Ans. -T
27. **Define DTD?**
    Ans. -DTD is a set of rules that defines what tags appear in an XML document.
28. **To link an XML document with a stylesheet**
    (b) Create XML document (b) create a separate CSS stylesheet for XML file
    (c) Link the two files (d) All of the above
    Ans. -All of the above
29. **Two important software that validates or process XML documents are**
    (c) XML validator (b) XML Parser (c) both (a) and (b) (d) None of these
    Ans.-(c)
30. **I enclose all other elements of an XML document. Who am I?**
    (d) Processing Instruction (b) Parsed data (c) Root data (d) Attribute
    Ans. - Root data
31. **XML documents can be viewed as web page properly if proper stylesheet file is also available along with XML file.(T/F)**
    A**ns.**-T
32. **The XML file confirming to syntax rules or grammar rules is called**
    (e) Correct document (b) valid document
    (c) Well-formed document (d) confirmed document
    Ans. - well-formed document
33. **What is markup language?**
    Ans.-A markup language is a set of rules/tags that defines the structure and format of text while presenting text.
34. **What is XML?**
    Ans. - XML is eXtensible Markup Language which allows creating application specific structured document by allowing creation of new tags. These structured documents can later be presented in human-understandable manner in different ways.
35. **Expand the following terms**

(i) XML (ii) EDI (iii) CSS (iv) DTD

Ans.-(i) XML-extensible Markup Language

(ii) EDI-Electronic Data Interchange

(iii) CSS- Cascading Style Sheet

(iv) DTD- Document Type Definition

36. Compare HTML and XML briefly Ans. - HTML versus XML

	HTML	XML
1	HTML document formats and displays	XML documents carry data along with their
2	HTML tags are predefined	New tags can be created as per our
3	HTML may not have closing tags.	XML must have closing tags.
4	HTML tags are not case sensitive	XML tags are case sensitive.
5	HTML documents are directly viewable In a browser.	XML documents are viewed only if Proper style sheet file is also available along with

37. Describe features of XML

Ans. - Features of XML:

1. XML is designed to carry data not to display data.
2. XML was created to structure, store and to send information.
3. XML is self-descriptive. Tags are not pre-defined; rather they are created to describe the content in appropriate manner.
4. XML is free and extensible.
5. XML is platform independent.
6. XML can separate Data from HTML. XML stores and describes data, which can later be formatted and presented in desired way.
7. XML can be used to create new languages, since it is a Meta language.
8. XML is supported and recommended by World Wide Web Consortium (W3C).

Unsolved Questions:

1.In the URL, *http://www.mycorp.com/pr/master.htm,* what is the http component?

2. In the URL, *http://www.mycorp.com/pr/master.htm,* what is the www.mycorp.com component?

3. In the URL, *http://www.mycorp.com/pr/master.htm*, what is the /pr/master.htm component?

4. What do you mean by Web Browser, and Web Server?

5. Which protocol is used to upload/ transfer the file from host to server Internet?

6. What is WWW? How does it function?

7.A web browser & web server are an application of client/server computing concept. Comment on this statement?

8. What is URL ? What are its components?

9. Differentiate between Static and Dynamic Web Service?
10. What do you need to do work with HTML?
11. Write as HTML code line to set the background image as CLOUDS.GIF.
12. Write an HTML code line to set the BGCOLOR as YELLOW.
13. Write the HTML codes to set the BGCOLOR as PURPLE and a text "I am in Class X-A" as BLUE.
14. Write the HTML codes to set the BGCOLOR as LIME, header 1 <H1> text "Text Example with size and color" as BLUE, text font size as 30 and color="RED".
15. Write the HTML codes to set the BGCOLOR as NAVY, header 1 <H1> text "Text Example with size color, and font face" as WHITE, text font size as 20, color "RED" and font face "ARIAL".
16. What is the use of <FONT> tag in HTML code? Write any two options used with this tag.
17. Which tag is used to insert heading of third level on a web page?
18. How would you display in the title bar of browser?
19. How
 tag is different from <P> tag?
20. What is the purpose of using the tag <H1>...<H6>?
21. How can the font size of a single line on a web page be changed?
22. Which tag do we use to change the size and style (face) of the text of an HTML file viewed on a web browser? Also explain any two attributes used with this tag.
23. Distinguish between <SUP> and <SUB> tags with example.
24. What types of list are supported by HTML?
25. Which three tags let you create the (i) un numbered lists? (ii) numbered lists?
26. What is a table? Which tag is used to create tables in HTML?
27. Which attributes are used to give border to a table?
28. Which attribute lets you control the display of select border sides of a table?
29. Which attributes is used to control the inside table border?
30. How is spacing in cells of table controlled?
31. What is the role of ALIGN attribute of <TABLE> tag?
32. How can you specify following in table?
    (a) background image (b) background colour.
    (c) Table height. (d) Table width.
33. What tag is used to specify : (i) Table data (ii) Table header (iii) Table row?
34. Name the attributes used for following?
    (i) Setting the cell width. (iii) Setting cells background colour.
    (ii) Changing the cell span. (iv) Aligning cell contents vertically.
35. What for are <TH> and <TR> tags used?
36. What are forms? Which methods and actions are commonly used with Forms?
37. Write the tags to define the following :
    (i) A text box (ii) A text area (iii) A radio button
    (iv) A check box (v) A Password box (vi) A Pop up box
    (vii) Submit button (viii) A label.
38. Write HTML code to produce these controls
    (i) a text box (ii) a text area with 10 rows and 30 columns
    (iii) A password text box (iv) A pop up box to choose class from it.

UNIT III : DATABASE MANAGEMENT SYSTEM

MYSQL REVISION TOUR

- **Structure Query Language -** A non-procedural UGL used for querying upon relational database
- **DDL (Data Definition Language) -** Part of the SQL that facilitates defining creation/modification etc. of database object such as tables, indexes, sequences etc.
- **DML (Data Manipulation Language) -** Part of the SQL that facilitates manipulation (additions/deletions/modification) of data which is residing in the database tables.
- **Meta Data -** Facts/data about the data stored in table.
- **Data Dictionary -** A file containing facts/data about the data stored in table
- **Relational Data Model -** In this model data is organized into tables i.e. rows and columns. These tables are called relations.
- **The Network Data Model -** In this model data are represented by collection of records & relationships among data. The collections of records are connected to one another by means of links.
- **The Hierarchical Data Model -** In this model records are organized as trees rather than arbitrary graphs.
- **Object Oriented Data Model -** Data and associated operations are represented by objects. An object is an identifiable entity with some characteristics and behavior.
- **Relation -** Table in Database
- **Domain -** Pool of values from which the actual values appearing
- **Tuple -** A row of a relation
- **Attribute -** A column of relation
- **Degree -** Number of attributes
- **Cardinality -** Number of tuples
- **View -** Virtual table that does not really exist in its own right
- **Primary Key -** Set of one or more attributes that can uniquely identify tuples with in the relation.
- **Candidate Key -** A Candidate Key is the one that is capable of becoming Primary key i.e., a field or attribute that has unique value for each row in the relation.
- **Alternate Key -** A candidate key that is not primary key is called alternate key.
- **Foreign Key -** A non-key attribute, whose values are derived from the primary key of some other table.
- **Integrity Constraints -** Integrity Constraints are the rules that a database must comply all the times. It determines what all changes are permissible to a database.

- **Accessing Database in MySql :**
  Through USE keyword we can start any database Syntax:
  USE <database Name>; Example: USE STUDENT;
- **CREATING TABLE IN MYSQL**
  Through Create table command we can define any table.
  CREATE TABLE <tablename> (<columnname> <datatype>[(<Size>)],……..);
  CREATE TABLE Student (SRollNo integer, Sname char(20));
- **INSERTING DATA INTO TABLE**
  The rows are added to relations using INSERT command.
  INSERT INTO <tablename>[<columnname>] VALUES (<value>, <value>…);
  INSERT INTO student (Sid, Sname) VALUES (100,'ABC');
- **SELECT COMMAND:**
  It lets us make queries on the database.
  SELECT * FROM tablename WHERE condition; SELECT * FROM student WHERE Sid=100;
- **Eliminating Redundant Data**
  DISTINCT keyword eliminates redundant data
  SELECT DISTINCT Sid FROM Student;
- **Selecting from all the rows-ALL Keyword**
  SELECT ALL Sid FROM Student;
- **Viewing structure of table:**
  DESCRIBE/DESC <tablename>; DESCRIBE student;
  Using column aliases:

SELECT <column name> AS [columnalias][,...] FROM <tablename>;
SELECT rollno, name AS "studentname" FROM student;

- **Condition based on a range:**
  Keyword BETWEEN used for making range checks in queries.
  SELECT rollno, name FROM student WHERE rollno BETWEEN 10 AND 20;
- **Condition based on a list:**
  Keyword IN used for selecting values from a list of values.
  SELECT rollno, name FROM student WHERE rollno IN (10, 20, 60);
- **Condition based on a pattern matches:**
  Keyword LIKE used for making character comparison using strings
  percent(%) matches any substring underscore(_) matches any character
  SELECT rollno, name FROM student WHERE name LIKE '%ri';
- **ORDER BY clause:**
  It is used to sort the results of a query.
  SELECT <column name> [, <column name>, ...] FROM <table name>
  [WHERE <condition>]
  [ORDER BY <column name>]; SELECT *
  FROM student WHERE marks>50 ORDER BY name;
- **MySQL functions:**
  A function is a special type of predefined command set that performs some operation and returns a single value.
  String functions :(Lower/LCASE(),Upper/UCASE(), Concatenate(), Instr(), Length(), RTrim(), LTrim(), Substr())
  Numeric function :(Round( ), Truncate( ), Mod( ), Sign( ))
  Date functions:(Curdate( ), Date( ), Month( ), year( ), DayName( ), DayofMonth( ), DayofWeek( ), DayofYear( ), Now( ), SysDate( ))
- **Creating tables with SQL Constraint :**
  CREATE TABLE command is used to CREATE tables
  CREATE TABLE tablename (columnname datatype size, ...);
- **SQL Constraint:**
  A Constraint is a condition or check applicable on a field or set of fields.
- **NOT NULL /UNIQUE /DEFAULT /CHECK /PRIMARY KEY /FOREIGN KEY Constraints:**
  CREATE TABLE student (Srollno integer NOT NULL, ...);
  CREATE TABLE student (Srollno integer UNIQUE ...);
  CREATE TABLE student (Srollno integer NOT NULL, Sclass integer, Sname varchar(30), Sclass DEFAULT 12);
  CREATE TABLE student (Srollno integer CHECK (Srollno>0), Sclass integer, Sname varchar(30));
  CREATE TABLE student (Srollno integer NOT NULL PRIMARY KEY, Sclass integer, Sname varchar(30));
  CREATE TABLE teacher (Tid integer NOT NULL, FOREIGN KEY (Studentid) REFRENCES student (Sid));
- **Inserting data into table:**
  INSERT INTO command is used to insert data into table
  INSERT INTO tablename VALUES (value1,....); INSERT INTO student VALUES (1,'Ram', 12);
- **Modifying data in tables:**
  Existing data in tables can be changed with UPDATE command.
  UPDATE student SET Sclass=11 WHERE Sname='Ram';
- **Deleting data from tables:**
  Tuples in a table can be deleted using DELETE command.
  DELETE FROM student WHERE Srollno>10;

SOLVED QUESTIONS

1. **What do you mean by a Database Management System?**
   Ans- Database Management is a collection of programs and files that allow a user to define structure of a database, store data into it, modify the structure and manipulate the data.
2. **What do you mean by Relational database?**

Ans-Relational Database is a type of database in which relation is used as its basic element.Row and columns are used to store data.

3. **What is a foreign key?**

   Ans If a key is available in a table as a primary key then this key is called foreign key in another table.

4. **What is primary key?**

   Ans-Primary key is a unique key in a relation which can uniquely identifies a tuple (row) in a given relation.

5. **What is SQL?**

   Ans-SQL is stands for structured query language. This language is used to manipulate data stored in a table.

6. **What is referential integrity?**

   Ans-This is a rule which ensures that in DBMS relationships between records in related tables are valid. And that user don't accidently delete or change related data.

7. **What is MySql?**

   Ans-Mysql is an open source RDBMS which uses SQL.

8. **What is DDL?**

   Ans- DDL provides commands to define or redefine the schema of a table. Table is created, altered and dropped using DDL.

9. **What are DML commands?**

   Ans- DML commands are used to manipulate data stored in a table.Insertion, deletion and modifications are possible using DML commands.

10. **Maximum how many characters can be stored in a (i) text literals (ii) numeric literal**

    Ans-(i) Text literals can have 4000 bytes (ii) A numeric literals can store 53 digits.

11. **What is null value in MySql?**

    Ans-If a column in a row has no value, then column is said to be null.

12. **Which keyword eliminates redundant data in from a query result?**

    Ans- DISTINCT

13. **How would you display system date as the result of a query?**

    Ans- CURDATE()

14. **What is NOW() function in MySql?**

    Ans- It returns the current date and time.

15. **What is NOT NULL constraint?**

    Ans- NOT NULL constraints impose a condition that value of a row cannot be left blank.

16. **What is error in following statement?**

    UPDATE EMPL;

    Ans- WHERE clause is missing in given query.

17. **Identify the error?**

    DELETE ALL FROM TABLE EMP;

    Ans-There is no need to write ALL and TABLE word in above query.

    Correct form is-DELETE FROM EMP;

18. **Differentiate WHERE and HAVING clause?**

    Ans-:- Where clause is used to select particular rows that satisfy condition whereas having clause is used in connection with aggregate function, group by clause.

19. **How SQL commands are classified?**

    Ans-SQL Commands are classified into three categories

(i) **Data Definition Language (DDL)**-Commands that allow us to perform tasks related to data definition. E.g. creating, altering and dropping

(ii) **Data Manipulation Language (DML)** - Commands that allows us to perform data manipulation e.g retrieval, insertion, and modification of data stored in a database.

(iii) **Transaction Control Language (TCL)** - Commands that allow us to manage and control the transactions.

20. **What is difference between char and varchar?**

Ans-The difference between char and varchar is that of fixed length and variable length.The CHAR datatypes specifies a fixed length character string.When a column is given datatype as CHAR(n) then MySQL ensures that all values stored in that column have this length.But on other hand when a column is given datatype as VARCHAR(n) ,then the maximum size of a value in this column stores exactly what we specify.

21. **What do you understand by the terms primary key and degree of a relation in relational data base?**

Ans: Primary Key: A primary key is a set of one or more attributes that can uniquely identify tuples within the relations. The number of attributes in a relation is called Degree of arelation in relational data base.

22. **What do you understand by the candidate key and cardinality of a relation in relational data base?**

Candidate Key: All attribute combinations inside a relation that can serve as primary key(uniquely identifies a row in a relation) are Candidate Keys as they are candidates for the primary key position. The number of rows in a relation is known as cardinality of a relation.

23. **Consider the following tables Item and Customer. Write SQL commands for the statement to (iv) and give outputs for SQL queries (v) to (viii) Table**: **ITEM**

S.no	I_ID	Item Name	Manufacturer Price
01	PC01	Personal Computer	ABC 35000
02	LC05	Laptop	ABC 55000
03	PC03	Personal Computer	XYZ 32000
04	PC06	Personal Computer	COMP 37000
05	LC03	Laptop	PQR 57000

Table: CUSTOMER C_ID Customer Name City I_ID

S.no	CUSTOMER C_ID	Customer Name	City	I_ID
01	**01**	**N.Roy**	Delhi	LC03
02	**06**	**H.Singh**	Mumbai	PC03
03	**12**	**R.Pandey**	Delhi	PC06
04	**15**	**C.Sharma**	Delhi	LC03
05	**16**	**K.Agrawal**	Bangalore	PC01

(i) To display the details of those Customers whose city is Delhi

.**Ans:** Select all from Customer Where City="Delhi"

(ii) To display the details of Item whose Price is in the range of 35000 to 55000

(Both values included).

Ans: Select all from Item Where Price>=35000 and Price <=55000

(iii) To display the Customer Name, City from table Customer, and Item Name and Price from table Item, with their correspondingmatching I_ID.

Ans: Select Customer Name, City, ItemName, Price from Item, Customer where Item.I_ID=Customer.I_ID.

(iv) To increase the Price of all Items by 1000 in the table Item.

Ans: Update Item set Price=Price+1000

(v)SELECT DISTINCT City FROM Customer.

Ans: City Delhi, Mumbai, Bangalore

(vi)SELECT Item Name, MAX(Price), Count(*) FROM Item GROUP BY Item Name;

Ans: **Item Name Max(Price) Count(*)** Personal Computer 37000 3 Laptop 57000 2

(vii) SELECT Customer Name, Manufacturer FROM Item, Customer WHERE Item.Item_Id=Customer.Item_Id;

Ans:

Customer Name	Manufacturer Name
N.Roy	PQR
H.Singh	XYZ
R.Pandey	COMP
C.Sharma	PQR
K.Agarwal	ABC

(viii) SELECT Item Name, Price * 100 FROM Item WHERE Manufacturer = 'ABC';

Ans: Item Name Price*100 Personal Computer 3500000 Laptop 5500000

UNSOLVED QUESTIONS

1. Write MySql command to show all the databases which is already created in MySql.
2. The Department column and date of joining of a table Employee is given below:

Department	Date_of_Joining
Biology	2009-07-19
Zoology	2007-02-13
Bio_Tech	2010-05-15
Psycology	2011-09-06

(i) Based on the above table write SQL Query to display the name of those departments whose name ends with logy?

(ii) Based on the above table write SQL Query to display the name of those departments whose name starts with 'Bi'.

3. What is the degree and cardinality of the above given Employee table?
4. Differentiate between Primary key and Unique Key?
5. Consider the following tables WORKERS and DESIG. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii).

WORKERS

W_ID	FIRSTNAME	LASTNAME	ADDRESS CITY
102	**Sam**	**Tones**	33 Elm St. Paris
105	Sarah	Ackerman	44 U.S.110 New York
144	Manila	Sengupta	24 Friends Street New Delhi
210	George	Smith	83 First Street Howard

255	Mary	Jones	842 Vine Ave. Losantiville
300	Robert	Samuel	9 Fifth Cross Washington
335	Henry	Williams	12 Moore Street Boston
403	Ronny	Lee	121 Harrison St. Newyork
451	Pat	Thompson	11 Red Road Pari

DESIG

W_ID	SALARY	BENEFITS	DESIGINATION
102	**75000**	**15000**	Manager
105	**85000**	**25000**	Director
144	**70000**	**15000**	Manager
210	**75000**	**12500**	Manager
255	**50000**	**12000**	Clerk
300	**45000**	**10000**	Clerk
335	**40000**	**10000**	Clerk
400	**32000**	**7500**	Salesman
451	**28000**	**7500**	Salesman

(i) To display W_ID First name, address and City of all employees living in New York from the Table Workers

(ii) To display the content of workers table in ascending order of LASTNAME.

(iii) To display the FIRSTNAME, LASTNAME and Total Salary of all Clerks from the tables WORKERS And DESIG, where Total alary is calculated as Salary + benefits.

(iv) To display the minimum salary among managers and Clerks From the tables DESIG.

(v) SELECT FIRSTNAME, SALARY ROM WORKERS, DESIG WHERE DESIGINATION = "MANAGER" AND ORKERS.W_ID = DESIGN.W_ID

(vi) SELECT COUNT(DISTINCT DESIGNATION) FROM DESIGN ;

(vii) SELECT DESIGNATION, SUM(SALARY) ROM DESIG GROUP BY DESIGNATION HAVING COUNT (*) < 3;

(viii) SELECT SUM(BENIFTS) FROM DESIG HERE DESIGINATION ="salesman";

More on Databases and SQL

Aggregate or Group functions: MySQL provides Aggregate or Group functions which work on a number of values of a column/expression and return a single value as the result. Some of the most frequently used aggregate functions in MySQL are : MIN(), MAX(), AVG(), SUM(), COUNT().

Data Types in aggregate functions: MIN(), MAX(), and COUNT() work on any type of values - Numeric, Date, or String. AVG(), and SUM() work on only Numeric values (INT and DECIMAL).

NULLs in aggregate functions: Aggregate functions totally ignore NULL values present in a column.

GROUP BY: GROUP BY clause is used in a SELECT statement in conjunction with aggregate functions to group the result based on distinct values in a column.

HAVING: HAVING clause is used in conjunction with GROUP BY clause in a SELECT statement to put condition on groups.

WHERE Vs HAVING: WHERE is used to put a condition on individual row of a table whereas HAVING is used to put condition on individual group formed by GROUP BY

clause in a SELECT statement.

- Cartesian Product (or Cross Join): Cartesian product of two tables is a table obtained by pairing each row of one table with each row of the other. A Cartesian product of two tables contains all the columns of both the tables.
- Equi-Join: An equi join of two tables is obtained by putting an equality condition on the Cartesian product of two tables. This equality condition is put on the common column of the tables. This common column is, generally, primary key of one table and foreign key of the other.
- Foreign Key: It is a column of a table which is the primary key of another table in the same database. It is used to enforce referential integrity of the data.
- Referential Integrity: The property of a relational database which ensures that no entry in a foreign key column of a table can be made unless it matches a primary key value in the corresponding column of the related table.
- Union: Union is an operation of combining the output of two SELECT statements.
- Constraints: These are the rules which are applied on the columns of tables to ensure data integrity and consistency.
- ALTER TABLE: ALTER TABLE command can be used to Add, Remove, and Modify columns of a table. It can also be used to add and Remove constraints.

Solved Questions

1. Which of the following will give the same answer irrespective of the NULL values in the specified column:

   a. MIN()
   b. MAX()
   c. SUM()
   d. None of the above

2. An aggregate function:

   a. Takes a column name as its arguments
   b. May take an expression as its argument
   c. Both (a) and (b)
   d. None of (a) and (b)

3. HAVING is used in conjunction with

   a. WHERE
   b. GROUP BY clause
   c. Aggregate functions
   d. None of the above

4. In the FROM clause of a SELECT statement

   a. Multiple Column Names are specified.
   b. Multiple table names are specified.
   c. Multiple Column Names may be specified.
   d. Multiple table names may be specified.

5. JOIN in RDBMS refers to

   a. Combination of multiple columns
   b. Combination of multiple rows
   c. Combination of multiple tables
   d. Combination of multiple databases

6. Equi-join is formed by equating

a. Foreign key with Primary key
b. Each row with all other rows
c. Primary key with Primary key
d. Two tables

7. Referential integrity
   a. Must be maintained
   b. Cannot be maintained
   c. Is automatically maintained by databases
   d. Should not be maintained

8. A Primary key column
   a. Can have NULL values
   b. Can have duplicate values
   c. Both (a) and (b)
   d. Neither (a) nor (b)

9. Primary Key of a table can be
   a. Defined at the time of table creation only.
   b. Defined after table creation only.
   c. Can be changed after table creation
   d. Cannot be changed after table creation

10. Two SELECT commands in a UNION
    a. Should select same number of columns.
    b. Should have different number of columns
    c. Both (a) and (b)
    d. Neither (a) nor (b)

Answers 1-c,2-c,3-b,4-a,5-c,6-a,7-a,8-d,9-a,10-c

11. Why is it not allowed to give String and Date type arguments for SUM() and AVG() functions? Can we give these type of arguments for other functions?

Answer: String and dates are not real numbers that we calculate so sum or avg functions are not valid for them.

12. What is default, Autocommit mode in MySQL ? Answer : By default, Autocommit mode is on in MySQL.
13. Can where be added a savepoint in a transaction ? Answer : We can add a savepoint anywhere in a transaction.
14. How are NULL values treated by aggregate functions?

Answer: : None of the aggregate functions takes NULL into consideration. NULL is simply ignored by all the aggregate functions.

15. There is a column C1 in a table T1. The following two statements: SELECT COUNT(*) FROM T1; and SELECT COUNT(C1) from T1; are giving different outputs. What may be the possible reason?

Answer: There may be a null value.

16. What is the purpose of GROUP BY clause?

Answer: GROUP BY: GROUP BY clause is used in a SELECT statement in conjunction with aggregate functions to group the result based on distinct values in a column.

17. What is the difference between HAVING and WHERE clauses? Explain with the help of an example.

Answer: WHERE Vs HAVING: WHERE is used to put a condition on individual row of a table whereas HAVING is used to put condition on individual group formed by GROUP BY clause in a SELECT statement.

18. What is a Foreign key? What is its importance?

Answer: Foreign Key: It is a column of a table which is the primary key of another table in the same database. It is used to enforce referential integrity of the data.

19. What are constraints? Are constraints useful or are they hindrances to effective management of databases?

Answer: These are the rules which are applied on the columns of tables to ensure data integrity and consistency. These play very important role for tables so are not hindrances.

20. In a database there is a table Cabinet. The data entry operator is not able to put NULL in a column of Cabinet? What may be the possible reason(s)?

Answer: Not NULL or Primary key constraints used.

21. In a database there is a table Cabinet. The data entry operator is not able to put duplicate values in a column of Cabinet? What may be the possible reason(s)?

Answer : Primary key constraint used.

22. Do Primary Key column(s) of a table accept NULL values?

Answer: No.

23. There is a table T1 with combination of columns C1, C2, and C3 as its primary key? Is it possible to enter:

a. NULL values in any of these columns?
b. Duplicate values in any of these columns?

Answer: No.

24. What are the differences between DELETE and DROP commands of SQL?

Answer: Delete is used for row removing while drop is used for removing complete table.

25. What are Aggregate Functions?

Answer: A multiple row function works on multiple values. These functions are called aggregate functions or group functions.

26. For what Data Types aggregate functions : MIN(), MAX(), and COUNT() work?

Answer : on any type of values - Numeric, Date, or String. AVG(), and SUM() work on only Numeric values (INT and DECIMAL).

27. What is HAVING clause ?

Answer : HAVING clause is used in conjunction with GROUP BY clause in a SELECT statement to put condition on groups.

28. What is Referential Integrity ?

Answer : The property of a relational database which ensures that no entry in a foreign key column of a table can be made unless it matches a primary key value in the corresponding column of the related table.

29. What is Union used for ?

Answer : Union is an operation of combining the output of two SELECT statements.

30. What is ALTER TABLE ?

Answer : ALTER TABLE command can be used to Add, Remove, and Modify columns of a table. It can also be used to Add and Remove constraints.

31. What is DROP TABLE ?

Answer : DROP TABLE command is used to delete tables.

32. What function is used whenever a condition involves an aggregate function ?

Answer : whenever a condition involves an aggregate function, then we use HAVING clause in conjunction with GROUP BY clause.

33. What is Difference between GROUP BY' and Having functions ?

Answer : WHERE function is used for individual records and HAVING for groups . GROUP BY function is used for getting results based on some groups of data while a condition on groups is applied by HAVING clause.

34. Why are aggregate functions called so? Name some aggregate functions.

Answer : A multiple row function works on multiple values. These functions are called aggregate functions or group functions. Some of the most frequently used. Aggregate functions in MySQL are : MIN(), MAX(), AVG(), SUM(), COUNT().

35. What is ALTER TABLE command? Write all the commands that can be applied using alter table.

Answer: a new column can be added to a table using ALTER TABLE command. ALTER TABLE can be used:

- to add a constraint
- to remove a constraint
- to remove a column from a table
- to modify a table column

36. What is the Cartesian product of two table? Is it same as an Equi-join?

Answer : Cartesian Product (or Cross Join): Cartesian product of two tables is a table obtained by pairing each row of one table with each row of the other. A cartesian product of two tables contains all the columns of both the tables.

Equi-Join: An equi join of two tables is obtained by putting an equality condition on the Cartesian product of two tables. This equality condition is put on the common column of the tables. This common column is, generally, primary key of one table and foreign key of the other.

37. Does Union display any duplicate rows ?

Answer :Union does not display any duplicate rows unless ALL is specified with it.

R. Name the Aggregate

Functions. Answer : These functions are:

S. No.	Name of the	Purpose
1	MAX()	Returns the MAXIMUM of the values under the specified column/expression.
2	MIN()	Returns the MINIMUM of the values under the specified column/expression.
3	AVG()	Returns the AVERAGE of the values under the specified column/expression.
4	SUM()	Returns the SUM of the values under the specified column/expression.
5	COUNT()	Returns the COUNT of the number of values under the specified column/expression.

S. What is Max Function ? Give few Examples.

MAX() function is used to find the highest value of any column or any expression based on a column. MAX() takes one argument which can be any column name or a valid expression involving a column name. e.g.,

To find the highest cost of any type of shoe in the factory.

```
SELECT MAX(cost) FROM shoes;
| MAX(cost) |
+-----------+
|  843.00 |
+-----------+
```

To find the highest cost of any shoe of type 'School'.

```
SELECT MAX(cost) FROM shoes WHERE type ='School';

+---------------+
| MAX(cost) |
+---------------+
|   320.75    |
+---------------+
```

To find the highest selling price of any type of shoe.

```
SELECT MAX(cost+cost*margin/ 100) FROM shoes;
+----------------------------------------+
| MAX(cost+cost*margin/100) |
+----------------------------------------+
|          828.517500000        |
```

+---+

To find the highest selling price of any type of shoe rounded to 2 decimal places.

SELECT ROUND(MAX(cost+cost*mar gin/100),2) AS "Max. SP" FROM shoes;

+------------+
| Max. SP |
+------------+
| 733.36 |
+------------+

To find the highest selling price of any type of shoe rounded to 2 decimal places.

SELECT ROUND(MAX(cost+cost*mar gin/100),2) AS "Max. SP" FROM shoes;

+------------+
| Max. SP |
+------------+
| 733.36 |
+------------+

38. Q. What is min () Function? Give Some Examples.

MIN() :

MIN() function is used to find the lowest value of any column or an expression based on a column. MIN() takes one argument which can be any column name or a valid expression involving a column name. e.g.,

To find the lowest cost of any type of shoe in the factory.

SELECT MIN(cost) FROM shoes;

+--------------+
| MIN(cost) |
+--------------+
| 843.00 |
+--------------+

To find the lowest cost of any shoe of type 'School'. SELECT

MIN(cost) FROM shoes WHERE type ='School';

+--------------+
| MIN(cost) |
+--------------+
| 320.75 |
+---------------+

To find the lowest selling price of any type of shoe rounded to 2 decimal places.

SELECT ROUND(MIN(cost+cost*mar gin/100),2)

AS "Min. SP" FROM shoes;

+------------+
| Min. SP |
+------------+

```
| 135.15 |
+------------+
```

39. Q . What is AVG() Function ? Give Some Examples.

Answer : AVG() function is used to find the average value of any column or an expression based on a column. AVG() takes one argument which can be any column name or a valid expression involving a column name. Here we have a limitation: the argument of AVG() function can be of numeric (int/decimal) type only. Averages of String and Date type data are not defined. E.g.,

To find the average margin from shoes table.

```
SELECT AVG(margin) FROM shoes;
+------------------+
| AVG(margin) |
+------------------+
|2.600000       |
+------------------+
```

To find the average cost from the shoes table. SELECT AVG(cost) FROM shoes;

```
+-----------------+
| AVG(cost)    |
+-----------------+
| 491.750000 |
+-----------------+
```

To find the average quantity in stock for the shoes of type Sports.

```
SELECT AVG(qty) FROM shoes WHERE type ='Sports';
+-------------+
| AVG(qty) |
+-------------+
| 580.0000 |
+-------------+
```

40. What is Sum() Function ? Give Some Examples.

SUM() function is used to find the total value of any column or an expression based on a column. SUM() also takes one argument which can be any column name or a valid expression involving a column name. Like AVG(), the argument of SUM() function can be of numeric (int/decimal) type only. Sums of String and Date type data are not defined. e.g.,

To find the total quantity present in the stock : SELECT SUM(Qty) FROM Shoes;

```
+--------------+
| SUM(Qty) |
+--------------+
|   10020   |
+----------------+
```

To find the total order quantity : SELECT SUM(order_qty) FROM orders;

```
+------------------------+
```

```
| SUM(order_qty) |
+------------------------+
|        2475          |
+-------------------------+
```

To find the the total value (Quantity x Cost) of Shoes of type 'Office' present in the inventory

```
SELECT SUM(cost*qty) FROM shoes WHERE type = 'Office';

+----------------------+
| SUM(cost*qty) |
+------------------------+
|    772000.00    |
+----------------------+
```

41. Q. What is COUNT() Function ? Give Some Examples.

COUNT() function is used to count the number of values in a column. COUNT() takes one argument which can be any column name, an expression based on a column, or an asterisk (*). When the argument is a column name or an expression based on a column, COUNT() returns the number of non-NULL values in that column. If the argument is a *, then COUNT() counts the total number of rows satisfying the condition, if any, in the table. e.g., To count the total number of records in the table Shoes. SELECT COUNT(*) FROM shoes;

```
+--------------+
| COUNT(*) |
+--------------+
|    13        |
+--------------+
```

To count the different types of shoes that the factory produces :

```
SELECT COUNT(distinct type) FROM shoes;

+----------------------------+
| COUNT(distinct type)
+----------------------------+
|           3                |
+----------------------------+
```

To count the records for which the margin is greater than 2.00 :

```
SELECT COUNT(margin) FROM shoes WHERE margin > 2;

+----------------------+
| COUNT(margin) |
+----------------------+
|         5             |
+----------------------+
```

To count the number of customers in 'A' category :

```
SELECT COUNT(*) FROM customers WHERE category ='A';

+--------------+
| COUNT(*) |
+--------------+
|      2        |
+--------------+
```

To count the number of orders of quantity more than 300 :

```
SELECT COUNT(*) FROM orders WHERE order_qty >300;
```

```
+--------------+
| COUNT(*) |
+--------------+
|       2      |
+--------------+
```

42. Does aggregate Functions consider Null values. Does NULLs play any role in actual calculations?

Answer : None of the aggregate functions takes NULL into consideration. NULL is simply ignored by all the aggregate functions. For example, the statement:

```
SELECT COUNT(*) FROM shoes;
```

Produces the following output:

```
+--------------+
| COUNT(*) |
+--------------+
|      13      |
+--------------+
```

Indicating that there are 13 records in the Shoes table. Whereas the query:

```
SELECT COUNT(margin) FROM shoes;
```

produces the output:

```
+----------------------+
| COUNT(margin) |
+----------------------+
|         10           |
+----------------------+
```

This output indicates that there are 10 values in the margin column of Shoes table. This means there are 3 (13-10) NULLs in the margin column.

This feature of aggregate functions ensures that NULLs don't play any role in actual calculations.

the following statement:

```
SELECT AVG(margin) FROM shoes;
```

Q. What is AVG() Function ? Give Some Examples. Does NULLs play any role in Average calculations?

This Function is used to get the Average Value. Produces the output:

```
+------------------+
| AVG(margin) |
+------------------+
|    2.600000  |
+------------------+
```

The average margin has been calculated by adding all the 10 non NULL values from the margin column and dividing the sum by 10 and not by 13.

43. What is 'GROUP BY'? Give Examples.

Answer : GROUP BY function is used for getting results based on some groups of data.

For example,

a. The management of the shoe factory may want to know what the total quantity of shoes of various types is. i.e., what is the total quantity of shoes of type School, Office, and Sports each.

b. The management may also want to know what is the maximum, minimum, and average

margin of each type of shoes.

c. It may also be required to find the total number of customers in each category.

There are many such requirements. SQL provides GROUP BY clause to handle all such requirements. For the above three situations, the statements with GROUP BY clause are given below:

In the first situation we want MySQL to divide all the records of shoes table into different groups based on their type (GROUP BY type) and for each group it should display the type and the corresponding total quantity (SELECT type, SUM(qty)). So the complete statement to do this is:

SELECT type, SUM(qty) FROM shoes GROUP BY type; G1 and the corresponding output is:

```
+--------+-----------------------+
| type   |    SUM(qty)          |
+--------+-----------------------+
| Office |                 1100 |
| School |                 7180 |
| Sports |                 1740 |
+--------+-----------------------+
```

Similarly, for the second situation the statement is: SELECT type, MIN(margin), MAX(margin), AVG(margin) FROM shoes GROUP BY type; G2 and the corresponding output is:

```
+--------+---------------+------------------+-----------------------+
| type   | MIN(margin) | MAX(margin) |  AVG(margin)  |
+--------+---------------+------------------+-----------------------+
| Office |      3.00  |       3.00      |    3.000000
| School |      2.00 |        2.00     |    2.000000
| Sports |      3.50 |       3.50      |    3.500000
+--------+---------------+------------------+-----------------------+
```

In the third situation we want MySQL to divide all the records of Customers table into different groups based on the their Category (GROUP BY Category) and for each group it should display the Category and the corresponding number of records (SELECT Category, COUNT(*)). So the complete statement to do this is:

SELECT category, COUNT(*) FROM customers GROUP BY category; G3

```
+--------------+--------------+
| Category | COUNT(*) |
+--------------+--------------+
| A            |            2 |
| B            |            2 |
| C            |            1 |
+--------------+--------------+
```

Let us have some more examples. Consider the following statement:
SELECT cust_code, SUM(order_qty) FROM orders GROUP BY cust_code;
This statement produces the following output. Try to explain this this output.

```
+-----------+-------------------------+
| cust_code | SUM(order_qty) |
+-----------+-------------------------+
| C001              |          1025 |
| C002              |          750 |
| C003              |          150 |
| C004              |          200 |
| C005              |          350 |
```

```
+-----------+-------------------------+
```

Do the same for the following statement also:

```
SELECT shoe_code, SUM(order_qty) FROM orders GROUP BY shoe_code;
```

```
+-----------+-------------------------+

| shoe_code | SUM(order_qty) |
+-----------+-------------------------+
| 1001      |            200
| 1002      |            200
| 1011      |            550
| 1012      |            250
| 1101      |            300
| 1102      |            350
| 1103      |            225
| 1201      |            200
| 1203      |            200
+-----------+-------------------------+
```

If you carefully observe these examples, you will find that GROUP BY is always used in conjunction with some aggregate function(s). A SELECT command with GROUP BY clause has a column name and one or more aggregate functions which are applied on that column and grouping is also done on this column only.

44. What is Role of HAVING in SQL? Give Examples? How it is related with Group by?

Sometimes we do not want to see the whole output produced by a statement with GROUP BY clause. We want to see the output only for those groups which satisfy some condition. It means we want to put some condition on individual groups (and not on individual records). A condition on groups is applied by HAVING clause. As an example reconsider the

statement G1 discussed above. The statement produced three records in the output - one for each group. Suppose, we are interested in viewing only those groups' output for which the total quantity is more than 1500 (SUM(Qty) > 1500). As this condition is applicable to groups and not to individual rows, we use HAVING clause as shown below:

```
SELECT type, SUM(qty)  FROM shoes GROUP BY type  HAVING SUM(qty) > 1500;
```

```
+----------+-----------------+
| type     | SUM(qty)      |
+----------+-----------------+
| School |          7180 |
| Sports  |          1740 |
+----------+-----------------+
```

Now suppose for G2 we want the report only for those types for which the average margin is more than 2. For this, following is the statement and the corresponding output:

```
SELECT type, SUM(qty) FROM shoes GROUP BY type HAVING AVG(margin) >2;
```

```
+----------+-----------------+
| type          | SUM(qty) |
+----------+-----------------+
| Office  |          1100 |
```

```
| Sports |          1740 |
+---------+----------------+
```

In these statements if we try to put the condition using WHERE instead of HAVING, we shall get an error. Another way of remembering this is that whenever a condition involves an aggregate function, then we use HAVING clause in conjunction with GROUP BY clause.

45. What Functions are used for conditions on individual records as well as on groups. Give Examples.

Answer : Situations may also arise when we want to put the conditions on individual records as well as on groups. In such situations we use both WHERE (for individual records) and HAVING (for groups) clauses. This can be explained with the help of the following examples:

- The management of the shoe factory may want to know what is the total quantity of shoes, of sizes other than 6, of various types. i.e., what is the total quantity of shoes (of sizes other than 6) of type School, Office, and Sports each.

  Moreover, the report is required only for those groups for which the total quantity is more than 1500.

- The management may also want to know what is the maximum, minimum, and average margin of each type of shoes. But in this reports shoes of sizes 6 and 7 only should be included. Report is required only for those groups for which the minimum margin is more than 2.

The statements and their outputs corresponding to above requirements are given below: l

```
SELECT type, SUM(qty) FROM shoes WHERE size <> 6        Checks individual row

GROUP BY type HAVING sum (qty) > 1500;        Checks individual group
```

```
+---------+----------------+
| type   |   SUM(qty)    |
+---------+----------------+
| School |    3780       |
+---------+----------------+
```

```
SELECT type, MIN(margin), MAX(margin), AVG(margin) FROM shoes WHERE size in

(6,7)

GROUP BY type having MIN(margin) > 2;
```

```
+--------+--------------------+------------------+------------------+
| type   | MIN(margin)   | MAX(margin) | AVG(margin) |
+--------+--------------------+------------------+------------------+
| Office |            3.0    |           3.00 |       3.00000
| Sports |            3.5    |           3.50 |       3.50000
+--------+--------------------+-----------------+------------------+
```

46. How Will you Display Data from Multiple Tables ?

Answer : To understand this consider the following situations:

- The management of the shoe factory wants a report of orders which lists three columns: Order_No, corresponding customer name, and phone number. - (MT-1)

  In this case order number will be taken from Orders table and corresponding customer name from Customers table.

- The management wants a four-column report containing order_no, order_qty, name of the corresponding shoe and its cost. - (MT-2)

  In this case order number and order quantity will be taken from Orders table and corresponding shoe name and cost from Shoes table.

- The management wants the names of customers who have placed any order of quantity more than 300. - (MT-3)

  In this case Order quantity will be checked in Orders table and for each record with quantity more than 300, corresponding Customer name will be taken from Customers table.

- The management wants a report in which with each Order_No management needs name of the corresponding customer and also the total cost (Order quantity x Cost of the shoe) of the order are shown. - (MT-4)

  In this case order number will be taken from Orders table and corresponding customer name from Customers table. For the cost of each order the quantity will be taken from Orders table and the Cost from Shoes table.

In all these cases, the data is to be retrieved from multiple tables. SQL allows us to write statements which retrieve data from multiple tables.

To understand how this is done, consider the following tables of a database.

Product

Code	Name
P001	Toothpaste
P002	Shampoo
P003	Conditioner

Supplier

Sup_Code	Name	Address
S001	DC & Company	Uttam Nagar
S002	SURY Traders	Model Town

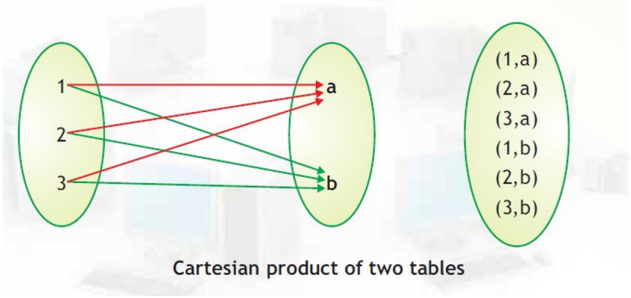
Order_table

Order_No	P_Code	Sup_Code
1	P001	S002
2	P002	S002

These tables are taken just to explain the current concept.

47. What do you understand by Cartesian product or Cross Join of tables .Give Example.

Cartesian product (also called Cross Join) of two tables is a table obtained by pairing up each row of one table with each row of the other table. This way if two tables contain 3 rows and 2 rows respectively, then their Cartesian product will contain 6 (=3x2) rows. This can be illustrated as follows:

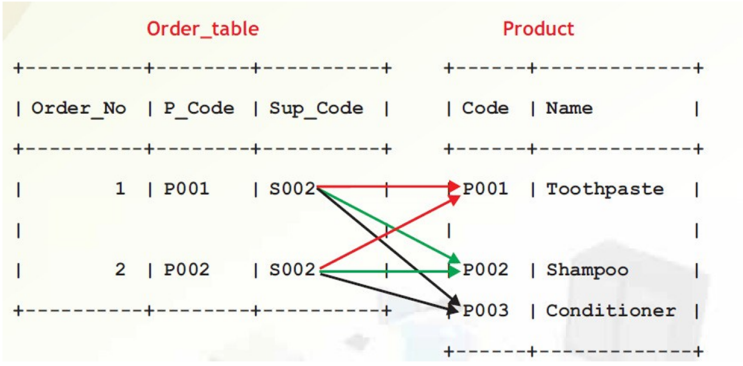


Cartesian product of two tables

Notice that the arrows indicate the 'ordered pairing'. The number of columns in the Cartesian product is the sum of the number of columns in both the tables. In SQL, Cartesian product of two rows is obtained by giving the names of both tables in FROM clause. An example of Cartesian product is shown below:

SELECT * FROM order_table, product;

To give the output of this query, MySQL will pair the rows of the mentioned tables as follows:



And the following output will be produced:

Order_No	P_Code	Sup_Code	Code	Name

```
+-------------+-------------+-------------+-----------+----------------------+
|         1   | P001        | S002        | P001      | Toothpaste           |
|         2   | P002        | S002        | P001      | Toothpaste           |
|         1   | P001        | S002        | P002      | Shampoo              |
|         2   | P002        | S002        | P002      | Shampoo              |
|         1   | P001        | S002        | P003      | Conditioner          |
|         2   | P002        | S002        | P003      | Conditioner          |
+-------------+-------------+-------------+-----------+----------------------+
```

-(CP-1)

Here we observe that the Cartesian product contains all the columns from both tables. Each row of the first table (Order_table) is paired with each row of the second table (Product).B

If we change the sequence of table names in the FROM clause, the result will remain the same but the sequence of rows and columns will change. This can be observed in the following statement and the corresponding output.

```
SELECT * FROM product, order_table;
+-------------+---------+-------------+-----------+----------------------+
| Code | Name       | Order_No | P_Code |  Sup_Code      |
+-------------+---------+-------------+-----------+----------------------+
| P001 | Toothpaste          1 | P001       | S002            |
| P001 | Toothpaste          2 | P002       | S002            |
| P002 | Shampoo             1 | P001       | S002            |
| P002 | Shampoo             2 | P002       | S002            |
| P003 | Conditioner         1 | P001       | S002            |
| P003 | Conditioner         2 | P002       | S002            |
+-------------+---------+-------------+-----------+----------------------+
```

48. Show the Cartesian product of three tables(more than two tables.-(CP-2)

49. Ans : We can have Cartesian product of more than two tables also. Following is the Cartesian Product of three tables:

SELECT * FROM order_table, supplier, product; -(CP-3)

```
+----------+--------+----------+----------+--------------+-------------+------+-------------+
| Order_No | P_Code | Sup_Code | Sup_Code | Name         | Address     | Code |Name
|
+----------+--------+----------+----------+--------------+-------------+------+-------------+
|     1  | P001  | S002    | S001    | DC & Company | Uttam Nagar | P001 |Toothpaste
|
|     2  | P002  | S002    | S001    | DC & Company | Uttam Nagar | P001 |Toothpaste
|
|     1  | P001  | S002    | S002    | SURY Traders | Model Town | P001 |Toothpaste
|
|     2  | P002  | S002    | S002    | SURY Traders | Model Town | P001 |Toothpaste
|
|     1  | P001  | S002    | S001    | DC & Company | Uttam Nagar | P002 |Shampoo
|
|     2  | P002  | S002    | S001    | DC & Company | Uttam Nagar | P002 |Shampoo
|
|     1  | P001  | S002    | S002    | SURY Traders | Model Town | P002 |Shampoo
|
|     2  | P002  | S002    | S002    | SURY Traders | Model Town | P002 |Shampoo
|
```

```
|     1  | P001  | S002    | S001    | DC & Company | Uttam Nagar | P003 |Conditioner
|
|     2  | P002  | S002    | S001    | DC & Company | Uttam Nagar | P003 |Conditioner
|
|     1  | P001  | S002    | S002    | SURY Traders | Model Town | P003 |Conditioner
|
|     2  | P002  | S002    | S002    | SURY Traders | Model Town | P003 |Conditioner
|
+----------+--------+----------+----------+--------------+-------------+------+-------------+
```

The complete Cartesian product of two or more tables is, generally, not used directly. But, sometimes it is required. Suppose the company with the above database wants to send information of each of its products to each of its suppliers. For follow-up, the management wants a complete list in which each Supplier's detail is paired with each Product's detail. For this, the computer department can produce a list which is the Cartesian product of Product and Supplier tables, as follows:

SELECT *, '' AS Remarks FROM Product, Supplier; to
get the following report:

```
+------+-------------+----------+--------------+-------------+----------+
| Code | Name               | Sup_Code | Name                | Address           | Remarks      |
+------+-------------+----------+--------------+-------------+----------+
| P001 | Toothpaste          | S001          | DC & Company   | Uttam Nagar |                  |
| P001 | Toothpaste          | S002          | SURY Traders | Model Town         |                |
| P002 | Shampoo            | S001          | DC & Company   | Uttam Nagar |                  |
| P002 | Shampoo            | S002          | SURY Traders | Model Town         |                |
| P003 | Conditioner | S001                | DC & Company   | Uttam Nagar |                  |
| P003 | Conditioner | S002                | SURY Traders | Model Town         |                |
+------+-------------+----------+--------------+-------------+----------+
```

50. Q. What is Equi- Join of tables .Show by examples.

The complete Cartesian product of two or more tables is, generally, not used directly. Sometimes the complete Cartesian product of two tables may give some confusing information also. For example, the first Cartesian product (CP-1) indicates that each order (Order Numbers 1 and 2) is placed for each Product (Code 'P001', 'P002', 'P003'). But this is incorrect!

Similar is the case with CP-2 and CP-3 also.

But we can extract meaningful information from the Cartesian product by placing some conditions in the statement. For example, to find out the product details corresponding to each Order details, we can enter the following statement:

SELECT * FROM order_table, product WHERE p_code = code;

```
+------------------+------------+--------------+--------+----------------+
| Order_No       | P_Code | Sup_Code | Code|    Name      |
+------------------+------------+--------------+--------+----------------+
|              1    | P001     | S002       | P001  | Toothpaste|
|              2    | P002     | S002       | P002  | Shampoo   |
+------------------+------------+--------------+--------+----------------+
```

Two table names are specified in the FROM clause of this statement, therefore MySQL creates a Cartesian product of the tables. From this Cartesian product MySQL selects only those records for which P_Code (Product code specified in the Order_table table) matches Code (Product code in the Product table). These selected records are then displayed.

It always happens that whenever we have to get the data from more than one tables, there is some common column based on which the meaningful data is extracted from the tables. We specify table names in the FROM clause of SELECT command. We also give the condition specifying the matching of common column. (When we say common column, it does not mean that the column names have to be the same. It means that the columns should represent the same data with the same data types.) Corresponding to this statement, internally the Cartesian product of the tables is made. Then based on the specified condition the meaningful data is extracted from this Cartesian product and displayed.

Following is another example of equi-join. This time with three tables.

```
Select Order_no, Product.name as Product, Supplier.Name as Supplier From order_table, Product,
        Supplier WHERE order_table.Sup_Code = Supplier.Sup_Code and P_Code = Code;
```

The output produced by this statement is:

```
+----------+----------+----------+
| Order_no | Product  |  Supplier  |
+----------+----------+----------+
|    1     | Toothpaste | SURY Traders |
|    2     | Shampoo  | SURY Traders |
+----------+----------+----------+
```

Let us now get back to our original Shoe database and see how Ms. Akhtar uses the concept of joins to extract data from multiple tables.

For the situation MT-1, she writes the query:

```
SELECT order_no , name, phone FROM orders, customers WHERE orders.cust_code =
    customers.cust_code;
```

and get the following required output:

```
+----------+----------------+----------------------------------+
| order_no | name           | phone                            |
+----------+----------------+----------------------------------+
|        1 | Novelty Shoes  | 4543556, 97878989                |
|        2 | Novelty Shoes  | 4543556, 97878989                |
|        5 | Novelty Shoes  | 4543556, 97878989                |
|        9 | Novelty Shoes  | 4543556, 97878989                |
|        4 | Aaram Footwear | NULL                             |
|        6 | Aaram Footwear | NULL                             |
|       10 | Aaram Footwear | NULL                             |
|        3 | Foot Comfort   | 51917142, 76877888               |
|        7 | Pooja Shoes    | 61345432, 98178989               |
|        8 | Dev Shoes      | NULL                             |
```

+--------------------+------------------------------+-----------------------------------+

Following are the queries and corresponding outputs for the situations MT-2, MT-3, and MT-4 respectively:

```
SELECT order_no , Order_Qty, name, cost
    FROM orders, shoes WHERE Shoe_Code = code;
```

order_no	Order_Qty	name	cost
1	200	School Canvas	132.50
2	200	School Canvas	135.50
3	150	School Leather	232.50
4	250	School Leather	270.00
5	400	School Leather	232.50
6	300	Galaxy	640.00
7	200	Tracker	700.00
8	350	Galaxy	712.00
9	225	Galaxy	720.00
	200	Tracker	800.50

```
SELECT name, address FROM orders, customers WHERE
orders.cust_code = customers.cust_code and order_qty > 300;
```

name	address
Novelty Shoes	Raja Nagar, Bhopal
Dev Shoes	Mohan Nagar,

SELECT order_no, Order_Qty, customers.name,cost*order_qty as 'Order Cost' FROM orders, shoes, Customers WHERE Shoe_Code = code and Orders.Cust_Code = Customers.Cust_Code order by order_no;

order_no	Order_Qty	name	Order Cost
1	200	Novelty Shoes	26500.00
2	200	Novelty Shoes	27100.00
3	150	Foot Comfort	34875.00
4	250	Aaram Footwear	67500.00
5	400	Novelty Shoes	93000.00
6	300	Aaram Footwear	192000.00
7	200	Pooja Shoes	140000.00
8	350	Dev Shoes	249200.00
9	225	Novelty Shoes	162000.00
1	200	Aaram Footwear	160100.00

Here is another statement extracting data from multiple tables. Try to find out what will be its output and then try this statement on computer and check whether you thought of the correct output.

```
SELECT order_no , Order_Qty, name, cost FROM orders, shoes WHERE Shoe_Code = code and
    order_qty > 200;
```

51. Q. Explain the Foreign Key .

As we have just seen, in a join the data is retrieved from the Cartesian product of two tables by giving a condition of equality of two corresponding columns - one from each table. Generally, this column is the Primary Key of one table. In the other table this column is the Foreign key. Such a join which is obtained by putting a condition of equality on cross join is called an 'equi-join'. As an example, once again consider the Product, Supplier, and Order tables referenced earlier. For quick reference these tables are shown once again:

Product

Code	Name
P001	Toothpaste
P002	Shampoo
P003	Conditioner

Supplier

Sup_Code	Name	Address
S001	DC & Company	Uttam Nagar
S002	SURY Traders	Model Town

Order_table

Order_No	P_Code	Sup_Code
1	P001	S002
2	P002	S002

In these tables there is a common column between Product and Order_table tables (Code and P_Code respectively) which is used to get the Equi-Join of these two tables. Code is the Primary Key of Product table and in Order_table table it is not so (we can place more than one orders for the same product). In the order_table, P_Code is a Foreign Key. Similarly, Sup_Code is the primary key in Supplier table whereas it is a Foreign Key is Order_table table. A foreign key in a table is used to ensure referential integrity and to get Equi-Join of two tables.

52. What do you understand by Referential Integrity ?

Answer : Suppose while entering data in Order_table we enter a P_Code that does not exist in the Product table. It means we have placed an order for an item that does not exist! We should and can always avoid such human errors. Such errors are avoided by explicitly making P_Code a foreign key of Order_table table which always references the Product table to make sure that a non-existing product code is not entered in the Order_table table. Similarly, we can also make Sup_Code a Foreign key in Order_table table which always references Customer table to check validity of Cust_code. This property of a relational database which ensures that no entry in a foreign key column of a table can be made unless it matches a primary key value in the corresponding related table is called Referential Integrity.

53. Describe Union operation by giving examples.

Union is an operation of combining the output of two SELECT statements. Union of two SELECT statements can be performed only if their outputs contain same number of columns and data types of corresponding columns are also the same. The syntax of UNION in its simplest form is:

```
SELECT <select_list> FROM
    <tablename> [WHERE
    <condition> ]
 UNION [ALL]
SELECT <select_list> FROM
    <tablename> [WHERE
    <condition> ];
```

Union does not display any duplicate rows unless ALL is specified with it.

Example:

Suppose a company deals in two different categories of items. Each category contains a number of items and for each category there are different customers. In the database there are two customer tables: Customer_Cat_1 and Customer_Cat_2. If it is required to produce a combined list of all the customers, then it can be done as follows:

```
SELECT Cust_Code from Customer_Cat_1 UNION
SELECT Cust_Code from Customer_Cat_2;
```

If a customer exists with same customer code in both the tables, its code will be displayed only once - because Union does display duplicate rows. If we explicitly want the duplicate rows, then we can enter the statement:

```
SELECT Cust_Code from Customer_Cat_1 UNION
ALL
SELECT Cust_Code from Customer_Cat_2;
```

54. Q. What are Constraints for a table ? List all the constraints with their purpose. How these are applied?

Many times it is not possible to keep a manual check on the data that is going into the tables using INSERT or UPDATE commands. The data entered may be invalid. MySQL provides some rules, called Constraints, which help us, to some extent, ensure validity of the data. These constraints are:

S.No.	Constraint	Purpose
2.	PRIMARY KEY	Sets a column or a group of columns as the Primary Key of a table. Therefore, NULLs and Duplicate values in this column are not accepted.
3.	NOT NULL	Makes sure that NULLs are not accepted in the specified column.
4.	FOREIGN KEY	Data will be accepted in this column, if same data value exists in a column in another related table. This other related table name and column name are specified while creating the foreign key constraint.
5.	UNIQUE	Makes sure that duplicate values in the specified column are not accepted.
6.	ENUM	Defines a set of values as the column domain. So any value in this column will be from the specified values only.
7.	SET	Defines a set of values as the column domain. Any value in this column will be a seubset of the specied set only.

We shall discuss only the PRIMARY KEY and NOT NULL constraints in this book. Other constraints are beyond the scope of this book.

55. Q . What is PRIMARY KEY ? Give Examples.

Answer : Primary key of a table is a column or a group of columns that uniquely identifies a row of the table. Therefore no two rows of a table can have the same primary key value. Now suppose that the table Shoes is created with the following statement:

```
CREATE TABLE Shoes
    (Code CHAR(4), Name VARCHAR(20), type VARCHAR(10), size INT(2), cost

    DECIMAL(6,2), margin DECIMAL(4,2), Qty INT(4));
```

We know that in this table Code is the Primary key. But, MySQL does not know that. Therefore it is possible to enter duplicate values in this column or to enter NULLs in this column. Both these situations are unacceptable.

To make sure that such data is not accepted by MySQL, we can set Code as the primary key of Shoes table. It can be done by using the PRIMARY KEY clause at the time of table creation as follows:

```
CREATE TABLE Shoes
```

(Code CHAR(4) PRIMARY KEY, Name VARCHAR(20),type VARCHAR(10), size INT(2), cost DECIMAL(6,2), margin DECIMAL(4,2), Qty INT(4));

or as follows:

```
CREATE TABLE Shoes
    (Code CHAR(4), Name VARCHAR(20), type VARCHAR(10), size INT(2), cost
    DECIMAL(6,2), margin DECIMAL(4,2), Qty INT(4), PRIMARY KEY (Code));
```

To create a table Bills with the combination of columns Order_No and Cust_Code as the primary key, we enter the statement:

```
CREATE TABLE bills
    (Order_Num INT(4) PRIMARY KEY, cust_code VARCHAR(4)
    PRIMARY KEY, bill_Date DATE, Bill_Amt DECIMAL(8,2));
```

Contrary to our expectation, we get an error (Multiple primary key defined) with this statement. The reason is that MySQL interprets this statement as if we are trying to create two primary keys of the table - Order_Num, and Cust_code. But a table can have at most one primary key. To set this combination of columns a primary key we have to enter the statement as follows:

```
CREATE TABLE bills
    (Order_Num INT(4), cust_code VARCHAR(4), bill_Date date,
    Bill_Amt DECIMAL(8,2), PRIMARY KEY(Order_Num,
    cust_code));
```

56. How will you a create table in which NULL values should not be accepted ?

Answer : Many times there are some columns of a table in which NULL values should not be accepted. We always want some known valid data values in these columns. For example, we cannot have an order for which the customer code is not known. It means whenever we enter a row in the orders table, corresponding customer code cannot be NULL. Similarly while entering records in the Shoes table, we have to mention the Shoe size, it cannot be set NULL. There may be any number of such situations. While creating a table we can specify in which columns NULLs should not be accepted as follows:

```
CREATE TABLE Shoes
    (Code CHAR(4) PRIMARY KEY, Name VARCHAR(20), type
    VARCHAR(10), size INT(2) NOT NULL,
    cost DECIMAL(6,2), margin DECIMAL(4,2), Qty INT(4)); CREATE TABLE bills
    (Order_Num INT(4), cust_code VARCHAR(4), bill_Date DATE,
    Bill_Amt DECIMAL(8,2) NOT NULL, PRIMARY KEY
    (Order_Num, cust_code));
```

Now if we try to enter a NULL in the specified column, MySQL will reject the entry and give an error.

57. What is DROPPING a TABLE ?

Sometimes there is a requirement to remove a table from the database. In such cases we don't want merely to delete the data from the table, but we want to delete the table itself. DROP TABLE command is used for this purpose. The syntax of DROP TABLE command is as follows:

DROP TABLE <tablename>;

to remove the table Orders from the database we enter the statement:

DROP TABLE Orders;

And after this statement orders table is no longer available in the database. It has been removed. Aggregate or Group functions: MySQL provides Aggregate or Group functions which work on a number of values of a column/expression and return a single value as the result.

Advanced Database Concepts

- **Transaction**-A set of successive statements that succeed or fail as a group so that all effected statements of the group are retained or all are discarded are called transactions. When a transaction is done on the database is called **database transaction**.
- **Commit**-This statement is used to end a transaction and make all changes permanent. Until a transaction is committed, other users cannot see the changes made to the database.
- **Rollback**-The ROLLBACK statement is used to end a transaction and undo the work done by that transaction. After ROLLBACK, it looks like that transaction had never begun.
- **Savepoint**-It is point in a transaction, up till which all changes have been saved permanently.
- **ACID**- It is an acronym of ATOMOCITY, CONSISTENCY, ISOLATION, DURABILITY

SOLVED QUESTIONS

1. **Define a transaction.**

   Ans. -A transaction is a logical unit of a work that must succeed or fail in its entirely. It is an atomic operation which can be divided unto smaller operations.

2. **What are the two ways in which multiple transactions can be executed?**

   Ans. - Multiple transactions can be executed in one of the following two ways:

   (i) Serially (ii) Concurrently

3. **What is a savepoint?**

   Ans. - Savepoints are special operations that allow you to divide the work of a transaction into different segments. In case of a failure, you can execute rollbacks to the savepoint only, leaving prior changes intact.

4. **What to you understand by a database transaction?**

   Ans. - A database transaction is a logical unit of work that must succeed or fail in its entirely.

5. **Why do understand by transaction COMMIT and ROLLBACK?**

   Ans- COMMITing a transaction means all the steps of a transaction are carried out successfully and all data changes are made permanent in the database. Transaction ROLLBACK means transaction has not been finished completely and hence all data changes made by the transaction in the database if any, are undone and the database returns to the state as it was before this transaction execution started.

6. **What do you understand by ACID properties of database transaction?**

   Ans. -To ensure the data-integrity, the database system maintains the following properties

of transaction. The properties given below are termed as ACID properties-an acronym derived from the first letter of each of the properties.

(i) **Atomicity** - This property ensures that either all operations of the transactions are reflected properly in the database, none are. Atomicity ensures either all-or-none operations of a transaction are carried out.

(ii) **Consistency** - This property ensures that database remains in a consistent state before the start of transaction and after the transaction is over.

(iii) **Isolation** - Isolation ensures that executing transaction execution in isolation i.e. is unaware of other transactions executing concurrently in the system.

(iv) **Durability** - This property ensures that after the successful completion of a transaction i. e., when a transaction COMMITs, the changes made by it to the database persist i. e., remain in the database irrespective of other failures.

7. **What the function is of redo and undo logs?**

Ans. -Every database has a set of redo log files. It records all change in data including both committed and uncommitted changes. Undo logs stored roll backed data.

8. **What TCL commands are supported by SQL?**

Ans. -SQL supports following TCL commands

- **BEGIN |START TRANSACTION**-Marks the beginning of a transaction
- **COMMIT**-Ends the current transaction by saving database changes and starts a new transaction.
- **ROLLBACK**-Ends the current transaction by discarding changes and starts a new transaction.
- **SAVEPOINT**-Defines breakpoints for the transactions to allow partial rollbacks.
- **SET AUTOCOMMIT**-Enables or disable the default autocommit mode.

9. **Which two statements complete a transaction?**

A. DELETE employees;
B. DESCRIBE employees;
C. ROLLBACK TO SAVEPOINT C;
D. GRANT SELECT ON employees TO SCOTT;
E. ALTER TABLE employees
MODIFY COLUMN sal;
F. Select MAX(sal)
FROM employees
WHERE department_id=20;

Ans. - C, E

UNSOLVED QUESTIONS

1. What is the benefit of transaction?
2. What are the five states of the transactions?
3. What will happen when COMMIT statement is issued?
4. What will happen when ROLLBACK statement is issued?
5. How can you start a new transaction?

UNIT 4: IT- Applications

- **E-GOVERNANCE:** It refers to application of electronic means in governance with an aim of fulfilling the requirements of common man at affordable costs and in fastest possible time.

  - **Social impacts of E- Governance:**
  - Improved the efficiency of administration and service delivery
  - Reduced waiting time
  - Reduced Cost
  - Increased public participation
  - Increased transparency

  - **Some E-Governance websites are:**

Name of Website	Purpose
www.incometaxindia.gov.in	It Provides all the services of Income Tax department.
www.indiancourts.nic.in	It provides information related to Supreme Court and High Courts of India.
www.rti.gov.in	Right to information Act 2005 mandates timely response to citizen requests for government information.
india.gov.in	This portal not only gives the information about Government of India, but also allows the users to apply online for various services provided by the government.
www.drdo.nic.in	Defense Research and Development organization.

- **E-BUSINESS:** It refers to any form of transaction (exchange) that uses an electronic medium to facilitate the transaction.

  - **Social impacts of E- Business:**
  - Reductions in transactions and other costs
  - Un- shortened supply chain
  - Improved customer service
  - Increased productivity/efficiency
  - Access to international markets

  - **Some E-Business websites are:**

Name of Website	Purpose
www.irctc.co.in	It provides online railway ticket reservation in India.
wwwlicindia.com	Insurance company of India
www.ebay.in	India's most popular online shopping mall providing free Online auctions.
www.amazon.com	Online store for Books , CD's, DVD's, MP3's etc.
www.yatra.com	Online flight ticket booking service

- **E-LEARNING:** It is a flexible term used to describe a means of teaching through technology such as a network, browser, CDROM or DVD multimedia platform. .

  - **Social impacts of E- Learning:**
  - Availability of same course to millions
  - Boon for working class
  - Apprehensive Employers

- Cultural differences obstruct the true aim of e- learning
- High Dropout rate.

- **Some E-learning websites are:**

Name of Website	Purpose
www.moodle.org	It is Open source Course Management System(CMS) , also called as Learning Management System(LMS)
www.w3schools.com	Online web tutorial
www.exelearning.org	Freely available open source application useful in Publishing of web content.
www.ncert.nic.in	Interactive module for students to learn various topics
www.gcflearnfree.org	It is an educational part of the GCF mission. GCF creates and provides quality, innovative online learning opportunities to anyone who wants to improve the technology, literacy, and math skills

- **GUI AND ITS IMPORTANCE:** GUI (Graphical User Interface) that uses a graphical interface to interact with the user also it is a collection of elements called objects.

  Front End: It is the end that interacts with the user and collects inputs from the user.
  Back End: It is the end that is not visible but that processes the user requests as received by the front –end.

- **FRONT-END INTERFACE:** Front end and back end are generalized terms that refer to the initial and the end stages of a process. The front end is responsible for collecting input in various forms from the user and processing it to conform to a specification the back end can use. The front end is an interface between the user and the back end.

- **Design of a GUI Front-end**

1) Visibility of system status
2) Match between system and the real world
3) User control and freedom
4) Consistency and standards
5) Error prevention
6) Recognition rather than recall
7) Flexibility and efficiency of use
8) Aesthetic and minimalist design
9) Help users recognize, diagnose and recover from errors
10) Help and documentation

- **Contents and Features of Front-end :** The graphical objects that facilitate with users are also known as User-Interface Objects

Features of Front-end:

* Display features
* Functionality features

Display Features of Fronts End

1) Conventional use of Icon

2) Use of Conventionally Reserved Words
3) Provides Visual Feedback(Also Responsiveness features)
4) Rare Use of Audible Feedback
5) Use Controls Correctly in Conventional way

Functionality features of Front End

1) Provided Keyboard Support(Performance features)
2) Effective Usage of Modal and Modeless Windows(Performance features)
3) Takes Validates and its types
4) Required fields 5)
Formatting
6) Logical
7) Security features.

Question & Answers

Q1 What is front end application?

Ans: A "front-end" application interacts with the user and collects inputs from the user.

Q2 What is back end application?

Ans:. A "back-end" application or program is not directly visible to the user but that processes the user requests as received by the front –end. For example databases like MySQL, Oracle, OOo Base, MS-Access etc.

Q.3 What is e-Governance?

Ans: E-Governance is the use of a range of modern information and communication technologies such as internet , local area network, mobiles etc. by government to improve effectiveness of their services.

Q4 What is e-Learning?

Ans: . E-Learning is a delivery of learning, training or education program by electronic means.

Q5 What do you mean by E-Business?

Ans: E-business is a term used to described business run on the computer.

Q6 What are objectives of E- Governance?

Ans: Objectives of E- Governance are:

a. Improves Government processes
b. Increases the efficiency and speed in a transparent manner.
c. Simplify administrative transactions.

d. Citizen can participate in decision making process

Q7 List the advantages of E Governance. Ans:

Advantages are :-

a. Improved quality of information and information supply.

b. Reduction of process time.

c. Cost reduction

d. Improved service level

e. Increased efficiency.

Q8. How E-learning is useful to learner.
Ans: a. It enables students to complete training conveniently at off-hours or from home.

b. Self pacing for slow and quick learners reduces stress and increased satisfaction.

c. Interactivity engage users, pushing them rather than pulling them through training etc

Q9. Why E-learning is preferred?

Ans: E-learning is preferred because it provides faster learning at reduced cost, increased accessed to learning and clear accountability for all participants in the learning process.

Q10. What is the importance of E-business?
Ans: 1) Reductions in transactions and other cost

2) shortened supply chain

3)Improved customer service

4)Increased productivity/efficiency

5)Access to international markets

XII INFORMATICS PRACTICES

CBSE Board – 2011-Outside Delhi

[Time allowed: 3hours] *[Maximum Marks: 70]*

Instructions *(i) **All** questions are compulsory*
(ii) Programming Language: Java

<table>
<tr><td>1(a)</td><td>Ms. Kant Sengupta wants to prevent unauthorized access to/from his company's local area network. Write the name of a system (software/hardware), which he should install to do the same.</td><td>1</td></tr>
<tr><td>Ans.</td><td>Firewall or Intrusion Detection System</td><td></td></tr>
<tr><td>(b)</td><td>Seven Brother Fashion Inc. is a fashion company with design unit and market unit 130 meters away from each other. The company recently connected their LANs using Ethernet cable to share the stock related information. But, after joining their LANs, they are not able to share the information due to loss of signal in between. Which device out of the following should you suggest to be installed for a smooth communication?
(i) Modem
(ii) Repeater
(iii) UPS</td><td>1</td></tr>
<tr><td>Ans.</td><td>Repeater</td><td></td></tr>
<tr><td>(c)</td><td>Which of the following is not a feature of Networking?
(i) Resource sharing
(ii) Reliability
(iii) Uninterrupted power supply
(iv) Reduced cost</td><td>1</td></tr>
<tr><td>Ans.</td><td>Uninterrupted power supply</td><td></td></tr>
<tr><td>(d)</td><td>Name any two Indian scripts included in Unicode.</td><td>1</td></tr>
<tr><td>Ans.</td><td>Devnagari, Bengali, Gurmukhi, Gujarati, Kannada, Malayalam, Oriya, Tamil,
Arabic, Telugu</td><td></td></tr>
<tr><td>(e)</td><td>Mr. Vidya Chauhan is confused between Proprietary and Open source software. Mention at least two points of differences to help her understand the same.</td><td>2</td></tr>
<tr><td>Ans.</td><td><table><tr><th>Proprietary software</th><th>Open Source software</th></tr><tr><td>✓ Has to be paid for</td><td>✓ Free and therefore need not be paid for</td></tr><tr><td>✓ Source code not available</td><td>✓ Source code available for change</td></tr><tr><td>✓ Cannot be copied / distributed</td><td>✓ Can be copied and distributed</td></tr></table></td><td></td></tr>
<tr><td>(f)
(i)
Ans.

(ii)

Ans:</td><td>Identify the type of topology from the following:
In it, each node is connected with the help of a single co-axial cable.
Bus Topology

In it, each node is connected with the help of independent cable with the help of a central switching (communication controller).
Star Topology</td><td>2</td></tr>
<tr><td>(g)</td><td>Define the following with reference to Threats to network security.</td><td>2</td></tr>
</table>

<table>
<tr><td></td><td>(i) Worm
(ii) Trojan Horse</td><td></td></tr>
<tr><td>Ans.</td><td>(i) Worm :
✓ Self-replicating malware without user intervention
✓ Consumes high volume of bandwidth leading to Denial of service (DoS)

(ii) Trojan Horse
✓ Appears to perform a desirable function for the user
✓ Steals information through a 'backdoor' /Records browsing activities without the knowledge of the user
✓ Causes system crash or freeze</td><td></td></tr>
<tr><td>2(a)</td><td>While working in Netbeans, Ms. Khorana wants to display ‘Pass’ or ‘Needs to Reappear’ message depending the marks entered in jTextField. Help her to choose more appropriate statement out of ‘If statement’ and ‘Switch statement’.</td><td>1</td></tr>
<tr><td>Ans.</td><td>IF statement</td><td></td></tr>
<tr><td>(b)</td><td>How one can make a Text Field un-editable on a Frame?</td><td>1</td></tr>
<tr><td>Ans.</td><td><JTextField>.setEditable (false)</td><td></td></tr>
<tr><td>(c)</td><td>Which HTML tags are used for making a table and adding rows in a HTML document?</td><td>1</td></tr>
<tr><td>Ans.</td><td>✓ <TABLE> </TABLE> tags are used for making a table.
✓ <TR> </TR> are used for adding rows in a HTML document.</td><td></td></tr>
<tr><td>(d)</td><td>How is <OL> tag different from <UL> tag of HTML?</td><td>1</td></tr>
<tr><td>Ans.</td><td>✓ <OL> stands for ordered list. This tag is used to display an ordered/ numbered list.
✓ <UL> stands for unordered list. This tag is used to display a bulleted list.</td><td></td></tr>
<tr><td>(e)</td><td>What will be the value of P and Q after execution of the following code:
int P,Q=100;
for(P=10;P<=12;P++)
{
Q+=P;
}
JOptionPane.showMessageDialog(this, ”P:” + P + ”Q:” + Q + ””);</td><td>2</td></tr>
<tr><td>Ans.</td><td>P:13 Q:133</td><td></td></tr>
<tr><td>(f)</td><td>Differentiate between XML and HTML.</td><td>2</td></tr>
<tr><td>Ans.</td><td><table><tr><th>XML</th><th>HTML</th></tr><tr><td>✓ Defines, stores and retrieves the data</td><td>✓ Defines how webpage is displayed</td></tr><tr><td>✓ XML tags are not predefined</td><td>✓ HTML tags are predefined</td></tr><tr><td>✓ New tags can be created as per need</td><td>✓ New tags cannot be defined</td></tr><tr><td>✓ XML tags must have a closing tag.</td><td>✓ HTML tags may not have closing tag</td></tr><tr><td>✓ XML tags are case-sensitive.</td><td>✓ HTML tags are not case-sensitive.</td></tr></table></td><td></td></tr>
<tr><td>(g)</td><td>Write java code that takes the cost of a pencil from jTextField1 and number of pencil from jTextField2 and calculate total amount as cost*number to be displayed in jTextField3 and 20% service tax out of total amount in jTextField4.</td><td>2</td></tr>
</table>

Ans.

```
double cost=Double.parseDouble(jTextField1.getText());
int n = Integer.parseInt(jTextField2.getText());
double amount=cost * n;
jTextField4.setText(Double.toString(amount));
jTextField5.setText (Double.toString(amount * 0.20));
```

3(a) Write MySql command that will be used to open an already existing database "CONTACTS". **1**

Ans. USE CONTACTS;

(b) The Doc_name Column of a table Hospital is given below: **2**

Doc_name
Avinash
Hariharan
Vinayak
Deepak
Sanjeev

Based on the information, find the output of the following queries:

(i) `Select doc_name from Hospital where doc_name like "%v";`

(ii) `Select doc_name from Hospital where doc_name like ":%e%";`

Ans.

(i) Sanjeev

(ii) Deepak
Sanjeev

(c) A table "Transport" in a database has degree 3 and cardinality 8. What is the number of rows and columns in it? **2**

Ans. 8
3

(d) Differentiate between Alternate key and Candidate key. **1**

Ans.

Alternate Key	Candidate Key
✓ A key that can act as a primary key but is not selected as primary key	✓ A key that can be set as Primary key is called a candidate key.

(e) Define a class with reference to Object Oriented Programming. **1**

Ans. A class is a logical unit – a user defined data type. It encapsulates and binds
The data members and the methods.

(f) A employee_Id consisting of 5 digits is stored in a string variable strEmpId. Now Mr. Deb wants to store this Id in integer type of variable IntEmpId. Write a java statement to do this. **1**

Ans. int IntEmpId = Integer.parseInt (strEmpId) ;

(g) Sarthak, a student of class XII, created a table "Class". Grade is one of the columns of this table. To find the details of students whose Grades have not been entered, he wrote the following MySql query, which did not give the desired result. **2**

SELECT * FROM Class WHERE Grade="Null";

Help Sarthak to run the query by removing the errors from the query and write the correct Query.

Ans.	SELECT * FROM Class WHERE Grade IS NULL;	

4(a)	What will be displaced in of jTextField1 after executing the following code?
	int m=16;
	m=m+1;
	if(m<15)
	  jTextField1.setText(Integer.toString(m));
	else
	  jTextField1.setText(Integer.toString(m+15));
		2

Ans.	32	
(b)	Rewrite the following program code using a Switch statement. if(code==1) Month=”January”; else if(code==2) Month=”February”; else if(code==3) Month=”March”; else if(code==4) Month=”April”; else Month=”No Match”;	**2**

Ans.	switch(code)
	{
	  case 1: Month=”January”;
	  break;
	  case 2: Month=”February”;
	  break;
	  case 3: Month=”March”;
	  break;
	  case 4: Month=”April”;
	  break;
	  default: Month=”No Match”;
	}	

(c)	What will be displayed in jTextArea1 after executing the following statement: **jTextArea1.setText(“cbse\n Final_Exam\t IP”);**	**1**
Ans.	Cbse Final_Exam IP	

(d)	The following code has some error(s). Rewrite the correct code underlining all the correction made:
	Int K=2;sum=0;//Declaring K and sum as Integer
	{
	  sum=K;
	  K+=2;
	}
		2

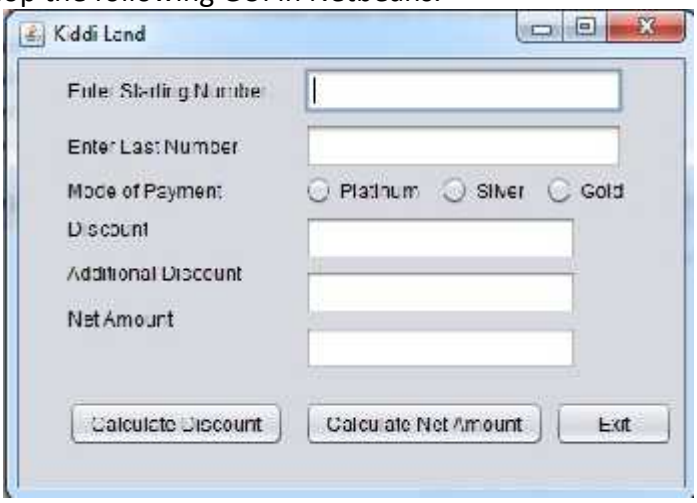
	while(K=<20) jTextField1(Integer.tostring(sum));	

Ans.	`int k=2,sum=0;  //could also be written as int k = 2; int sum = 0;`
	`do {`
	`sum=k; // could also be written as sum=sum + k;`
	`k + = 2 ;`
	`}while(k<=20);`
	`jTextFieldl.setText(Integer.toString(sum)) ;`	

(e)	Given a string object namely 'subject', having value as "123" stored in it. What will be result of the following: JOptionpane.showMessageDialoge(null,""+(subject.length() + Integer.parseInt(subject))); **Ans.** 126	**1**

(f)	The following code has some error(s). Rewrite the correct code underlining all the correction made:
	int Sum=0,Step=5;
	int I;
	for(i=0,i=<5;i++)
	{
	Step+=5;
	Sum+=Step;
	}
	jTextArea1.showText(""+Sum);
		2

Ans:	`int Sum = 0, Step = 5;`
	`int i ;`
	`for (i=0 ; i <= 5 ; i++)`
	`{`
	`Step + = 5;`
	`Sum + = Step;`
	`}`
	`jTextArea1.setText ("" + Sum);`	

(g)	Mr. Radhey Shyam Bansal the owner of the Kiddi Land Enterprise has asked his programmer Ekta to devlop the following GUI in Netbeans.  	**5**

Mr. Bansal accepts payment through three types of credit cards. The discount is given according to the following scheme:

Type of Card	Discount
Platinum	20% of amount
Gold	15% of amount
Silver	10% of amount

If the bill amount is more than Rs. 25,000/- then the customer gets an additional offer of 5%.
Write java code for the following:

i) To assign Additional Discount as 0 (jTextField4) and Net amount as 0 (jTextField5). Also set them as un-editable. **(1)** — **1**

ii) [when "Calculate Discount" (jButton1) is clicked] — **2**
- To calculate discount as per the given criteria and display the same in jTextField3
- To assign Additional Discount (jTextField4) as 5% of amount (jTextField2) as per the above condition.
- To enable "Calculate Net Amount" (jButton2) button

iii) [when "Calculate Net Amount" (jButton2) button is clicked] — **2**
- To calculate net amount as [TotalCost(jTextField2)- Discount (jTextField3) -Additional Discount (jTextField4)]
- To display the net amount in jTextField5.

Ans:

```
(i)  jTextField4.setText("0");
     jTextField5.setText("0"); jTextField4.setEditable(false);
     jTextField5. setEditable(false);

(ii) double discount = 0.0 ;
     double billAmount=
     Double.parseDouble(jTextField2.getText());
     if(jRadioButton1.isSelected()) discount = 0.20;
     if(jRadioButton2.isSelected()) discount = 0.15;
     (jRadioButton3.isSelected()) discount = 0 .10;
     jTextField3.setText(billAmount * discount + "") ;
     if (billAmount > 25000)
     jTextField4.setText (billAmount*0.05+" ");
     jButton2.setEnabled(true) ;

(iii)  doube netAmount =
     Double.parseDouble(jTextField2.getText()) -
     Double.parseDouble(jTextField3.getText())
     Double.parseDouble(jTextField4.getText());
     jTextField5.setText(netAmount + " ");
```

5(a) What is the purpose of ALTR TABLE command in MySql? How is it different from UPDATE command? **2**

Ans: ALTER TABLE command is used to modify the structure of a table.

	ALTER TABLE	**UPDATE**
	✓ It is a DDL command.	✓ It is a DML command
	✓ Changes the underlying table structure	✓ Changes values of tuples in a table
	✓ Cannot be rolled back	✓ Can be rolled back

(b) Table employee has 4 records and Table Dept has 3 records in it. Mr. Jain wants to display all information stored in both of these related tables. He forgot to specify equi-join condition in the query. How many rows will get displayed on execution of this query? **1**

Ans: 12

(c) Consider the table EXAM given below. Write commands in MySql for(i) to (iv) and output for (v) to (vii) **7**

Table : EXAM

No.	Name	Stipend	Subject	Average	Division
1	Karan	400	English	68	FIRST
2	Aman	680	Mathematics	72	FIRST
3	Javed	500	Accounts	67	FIRST
4	Bishakh	200	Informatics	55	SECOND
5	Sugandha	400	History	35	THIRD
6	Suparna	550	Geography	45	THIRD

i To list the names of those students, who have obtained Division as FIRST in the ascending order of NAME. **1**

ii To display a report listing NAME, SUBJECT and Annual stipend received assuming that the stipend column has monthly stipend. **1**

iii To count the number of students, who have either accounts or informatics as subject. **1**

iv To insert a new row in the table EXAM: **1**

6,"Mohan",500,"English",73,"Second" **1**

v SELECT AVG(Stipend) FROM EXAM WHERE DIVISION="THIRD" **1**

vi SELECT COUNT(DISTINCT Subject) FROM EXAM; **1**

vii SELECT MIN(Average) FROM EXAM WHERE Subject="English";

Ans:

(i) SELECT Name FROM Exam WHERE Division = 'FIRST' ORDER BY Name;

(ii) SELECT NAME, SUBJECT, STIPEND * 12 FROM EXAM;

(iii) SELECT COUNT(*) FROM EXAM WHERE SUBJECT IN ('Accounts', 'Informatics') ;

(iv) INSERT INTO EXAM VALUES (6, "Mohan", 500, "English", 73, "SECOND");

(v) 475

(vi) 6

(vii) 68

6(a)	Write a MySql command for creating a table "BANK" whose structure is given below: **Table : BANK** **Field Name** | **Datatype** | **Size** | **Constraint** Acct_number | Integer | 4 | Primary Key Name | Varchar | 3 | BirthDate | Date | | Balance | Integer | 8 | Not Null	**2**
Ans:	CREATE TABLE BANK (Acct_number INTEGER (4) PRIMARY KEY, Name VARCHAR(3) , BirthDate DATE, Balance INTEGER (8) NOT NULL);	
(b)	In a database there are two tables "ITEM" and "CUSTOMER" as shown below: **Table : ITEM** **ID** | **ItemName** | **Company** | **Price** 1001 | Moisturiser | XYZ | 40 1002 | Sanitizer | LAC | 35 1003 | Bath Soap | COP | 25 1004 | Shampoo | TAP | 95 1005 | Lens Solution | COP | 350 **Table : CUSTOMER** **C_ID** | **CustomerName** | **City** | **ID** 01 | Samridhh Ltd | New Delhi | 1002 05 | Big Line Inc | Mumbai | 1005 12 | 97.8 | New Delhi | 1001 15 | Tom N Jerry | Bangalore | 1003 Write the command in SQL queries for the following: **(i)** To display the details of Items whose Price is in the range of 40 and 95(Both values included) **(ii)** To display the CustomerName, City from table Customer and ItemName and Price from table Item, with their corresponding matching ID. **(iii)** To increase the price of all the products by 50.	**5** **1** **2** **2**
Ans:	(i) SELECT * FROM ITEM WHERE PRICE >= 40 AND PRICE <= 95; (ii) SELECT CUSTOMERNAME, CITY, ITEMNAME, PRICE FROM CUSTOMER CUST, ITEM WHERE CUST.ID = ITEM.ID; (iii) UPDATE ITEM SET PRICE = PRICE + 50 ;	
(c)	In a database School there are two tables Employee and Dept as show below.	**2**

Table : Employee

EmpId	Name	Sal	Deptno
T001	Vishakha	34000	10
T001	Mridul	32000	50
T001	Manish	45000	20

Table : Dept

Deptno	DName	LocationId
10	Lights	HH02
20	Dance	FF02
30	Production	AB01

(i) Identify the foreign key in the table Employee.

(ii) What output, will you get, when an equi-join query is executed to get the NAME from Employee Table and corresponding DNAME from Dept table?

Ans:

(i) Deptno

(ii) Vishakha Lights

7(a) Give one social impact of e-Business. **1**

Ans: Brings rapid change in

- ✓ the social fabric characterized by globalization of markets
- ✓ business and government policies

(b) Write two advantages of e-Learning sites. **1**

Ans:

- ✓ Self paced learning
- ✓ Unlimited revisions
- ✓ Facilitates electronic delivery of customized learning objects
- ✓ Facilitates teacher-student interaction
- ✓ Facilitates peer-peer interaction

(c) Write three important features of e-Governance? Give URL of one of the commonly used e-Governance portal. **2**

Ans:

- ✓ Provides citizens access to information about the processes and services.
- ✓ Facilitates a speedy, transparent, accountable and efficient process for performing government administrative activities.
- ✓ Uses modern information and telecommunication technologies such as internet, Local area networks to enhance efficiency
- ✓ A lot of productive time of government servants and general public is saved.

e.Governance portal:

- ✓ www.incometaxindia.gov.in
- ✓ supremecourtofindia. nic.in

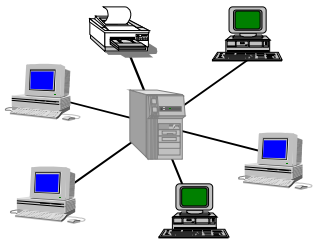
	✓ passport.gov. in ✓ https://www.irctc.co.in	
(d)	Anuja is creating a form for her practical file. Help her to choose most appropriate controls from List Box, Combo Box, TextField, TextArea, RadioButton, Checkbox, Label and Command button for the following entries from user. **(i)** A message "Enter Marks" in front of a TextField. **(ii)** An input to choose more than one subjects from a set of choices. **(iii)** An input for entering remarks. **(iv)** An input for accepting Gender.	**2**
Ans:	(i) Label (ii) ListBox/Check Box (iii) TextArea [Most Appropriate answer] TextField [Also acceptable] (iv) RadioButton/ComboBox [Most Appropriate answer] TextField [Also acceptable]	

XII INFORMATICS PRACTICES

CBSE Board – 2012

[Time allowed: 3hours] *[Maximum Marks: 70]*

Instructions (*i*) ***All*** *questions are compulsory*
(*ii*) *Programming Language: Java*

1(a)	Raj kamal International school is planning to connect all computers, each spread over distance within 45 meters. Suggest an economical cable type having high-speed data transfer, which can be used to connect these computers.	1
Ans.	Coaxial Cable	
(b)	Name two Indian Script included in UNICODE.	1
Ans.	Devnagari, Bengali, Gurmukhi, Gujarati, Kannada, Malayalam, Oriya, Tamil, Arabic, Telugu	
(c)	Write examples of one Proprietary and one Open Source Software.	1
Ans	Open source software: ✓ Linux ✓ My Sql Proprietary Software ✓ Microsoft Office ✓ Oracle	
(d)	Name any two most popularly used internet browsers.	1
Ans.	✓ Firefox ✓ Internet Explorer	
(e)	Ms. Rani Sen, General Manager of Global Nations Corporate recently discovered that the communication between her company's accounts office and HR office is extremely slow and signals drop quite frequently. These offices are 125 meters away from each other and connected by an Ethernet cable. (i) Suggest her a device, which can be installed in between the offices for smooth communication. (ii) What type of network is formed by having this kind of connectivity out of LAN,MAN and WAN?	2
Ans.	(i) Switch (ii) LAN	
(f)	Give an advantage of using Star topology over Bus topology. Show a network layout of star topology to connect 5 computers.	2
Ans:	In star topology, Failure of one node or link doesn't affect the rest of network whereas in the bus topology, if the network cable breaks, the entire network will be down. 	
(g)	Give suitable example of URL and Domain name.	2
Ans:	URL - http://www.microsoft.com/en-in/default.aspx Domain – Microsoft	

2(a)	While making a Form in Netbeans, Mr. Harihar Jha wants to display a list of countries to allow the users to select their own country. Suggest him to choose most appropriate control out of ListBox and ComboBox.	1
Ans.	ComboBox.	
(b)	What is the purpose of break keyword while using Switch Case Statement? Illustrate with the help of an example.	1

Ans.	✓ The purpose of Break statement is used to terminate the switch block statement.
	`switch(grade)`
	`{`
	`case 'A' :`
	`System.out.println("Excellent!");`
	`break;`
	`case 'B' :`
	`System.out.println("Well done");`
	`break;`
	`case 'D' :`
	`System.out.println("You passed");`
	`break;`
	`default :`
	`System.out.println("Invalid grade");`
	`}`	

(c)	Write the name of HTML tag used to include numbered list in a HTML Web Page.	1
Ans.	<OL>	
(d)	Write HTML code for the following: To provide hyperlink to a website :http://www.cbse.nic.in"	1
Ans.	www.cbse.nic.in	

(e)	What will be the content of the jTextArea1 after executing the following code (Assuming that the jTextArea1 had no content before executing this code)?
	`for(int c=1;c=4;c++)`
	`{`
	`jTextArea1.setText(`
	`jTextArea1.getText()+""+Integer.toString(c*c));`
	`}`
		2

Ans.	This code will give error because in for loop in place of relation operator (==), assignment operator (=) is used. If you replace the assignment operator (=) with relational operator(==) then output will be blank text area because condition will be c==4 which is false and loop will not execute. For execution of a loop condition must be true.	
(f)	Which of the following units measures the speed with which data can be transmitted from one node to another node of a network? Also give the expansion of the suggested unit. (i) KMph (ii) KMpl (iii) Mbps	2
Ans.	Mbps	
(g)	Write java code that takes value for a number (n) in jTextField1 and cube (n*n*n) of it to be displayed in jTextField2.	2

Ans.	`int n=Integer.parseInt(jTextField1.getText());`
	`int cube=n*n*n;`
	`jTextField2.setText(""+cube);`	

3(a)	Write MySql command to open an existing database.	1

Ans.	USE<database name>;	
(b)	Ms. Mirana wants to remove the entire content of a table "BACKUP" alongwith its structure to release the storage space. What MySql statement should she use?	1
Ans.	DROP TABLE BACKUP;	
(c)	Give one difference between ROLLBACK and COMMIT commands used in MySql.	1
Ans.		

ROLLBACK	COMMIT
✓ ROLLBACK command is used to end the current transaction and undo all the changes we made since the current transaction began.	✓ COMMIT command is used to make all the changes permanent to the underlying database which we made during the current transaction.
✓ Rollback is used to revert the last transaction in the Sql.	✓ Commit is used to save all the recent transactions.

(d)	A table STUDENT has 4 rows and 2 columns and another table TEACHER has 3 row and 4 columns. How many rows and columns will be there if we obtain the Cartesian product of these two tables?	1
Ans.	12 rows and 6 columns	
(e)	Mr. Sanghi created two tables with CITY as Primary key in Table1 and Foreign Key in Table2. While inserting a row in Table2, Mr. Sanghi is not able to enter a value in the column CITY. What could be the possible reason for it?	2
Ans.	Mr. Sanghi was trying to enter the name of CITY in Table2 which is not present in Table1.	
(f)	Item code consisting of 5 digits is stored in an integer type variable intItemCode. Mr. Srikant wants to store this Item code in a String type variable called strItemCode. Write appropriate java statement(s) to help her in performing the same.	2
Ans.	`String strItemCode=Integer.toString(intItemCode);`	
(g)	Mr. Janak is using a table with following columns: Name, Class, Course_Id, Course_name He needs to display names of students, who have not been assigned any stream or have been assigned Course_name that ends with "economics". He wrote the following command, which did not give the desired result. SELECT Name, Class FROM Students WHREE Course_name=Null OR Course_name="%economics"; Help Mr.Janak to run the query by removing the error and write the correct query.	2
Ans.	`SELECT Name FROM Students WHERE Course_name IS NULL OR Course_name LIKE '%economics';`	

4(a)	What message will be displayed after the execution of the following code?
	int Age=64,Relaxation=4;
	int ModiAge=Age – Relaxation;
	if (ModiAge<60)
	jOptionPane.showMessageDialog(Null,"NOT eligible");
	else
	jOptionPane.showMessageDialog(Null,"eligible");
		2

Ans.	eligible	
(b)	Rewrite the following program code using a If statement. int c=jComboBox1.getSelectedIndex();	2

	switch(c)
	{
	case 0 : Amount=Bill; break;
	case 1 : Amount=0.9*Bill; break;
	case 2 : Amount=0.8*Bill; break;
	default : Amount=Bill;
	}	

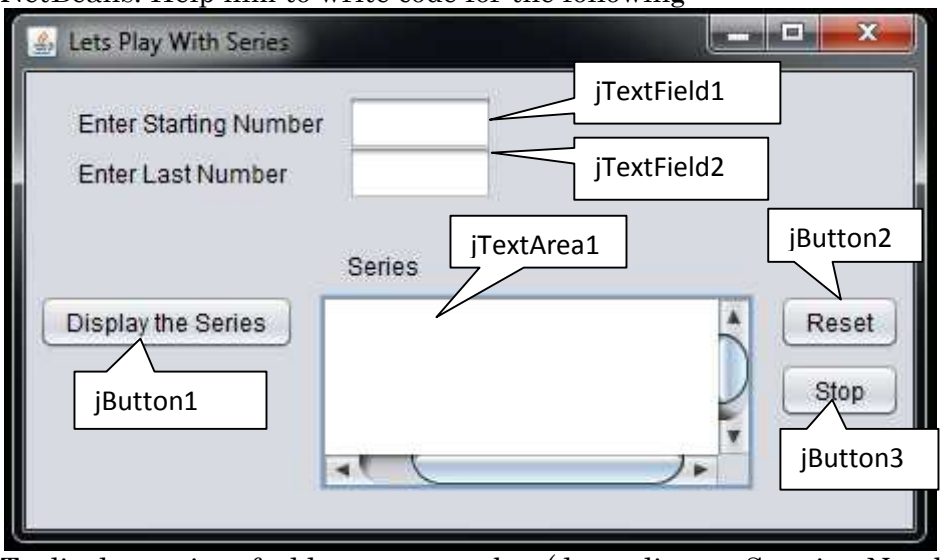
Ans.	`int c=jComboBox1.getSelectedIndex();`
	`if(c==0)`
	`Amount=Bill;`
	`else if(c==1)`
	`Amount=0.9*Bill;`
	`else if(c==2)`
	`Amount=0.8*Bill;`
	`else`
	`Amount=Bill;`	

(c)	How many times does the following while loop get executed?
	int K=5;
	int L=36;
	while(K<=L)
	{
	K+=6;
	}
		1

Ans.	6 // explanation: value of K 5,10,15,20,25,30,35 than it increased than L	
(d)	What will be displayed in jTextArea1 after executing the following statement? jTextArea1,setText("GREAT\n COUNTRY\tINDIA");	**1**
Ans.	GREAT COUNTRY…….INDIA Note:(……. denotes the blank tab space given by \t dots will not display in output)	

(e)	What will be the values of variables 'm' and 'n' after the execution of the following code?
	int P,Q=0;
	for(P=1;P<=4;P++)
	{
	Q+=P;
	Q--;
	}
		2

Ans.	This question is doubtfull, if we consider the question same as it is in question paper than this is an error because 'm' and 'n' variable is not used in code istead of 'm' and 'n', 'P' and 'Q' is used whch will give error of variable not found. And if we consider as it is printing mistake in place of 'm' and 'n', we take 'P' and 'Q' then output will be P is 4 Q is 6	
(f)	Given a string object named Pay having value as "68000" stored in it. Obtain the output of the following: JOptionPane.showMessageDialog(null, " "+Salary.length()+Integer.parseInt(Salary));	**2**
Ans.	568000 // explanation length and Salary is concatenated with " "which represent blank string, so they are not calculated as number.	

(g)	Janav Raj is a programmer at Path Educo Enterprises. He created the following GUI in NetBeans. Help him to write code for the following:  	5
i.	To display series of odd or even number (depending on Starting Number-jTextField1 is even or odd) in the jTextArea on the click of command button [Display The Series]. For example: If the Start Number is 5 and Last Number is 11 Text Area Content will be 5 7 9 11 If the Start Number is 2 and Last Number is 10 Text Area Content will be 2 4 6 8 10	2
ii.	To clear both the text fields and text area, on clicking [Reset] button.	2
iii.	To terminate the application on the click of [stop] button. (Assume suitable names for the various controls on the Form)	1

Ans.	**i.**
	`int num1=Integer.parseInt(startTextField.getText());`
	`int num2=Integer.parseInt(stopTextField.getText());`
	`seriesTextArea.setText(null);`
	`if((num1 % 2)==0)`
	`{`
	`  for(int i=num1;i<=num2;i=i+2)`
	`  {`
	`  seriesTextArea.append(i+" ");`
	`  }`
	`}`
	`else`
	`{`
	`  for(int i=num1;i<=num2;i=i+2)`
	`  {`
	`  seriesTextArea.append(i+" ");`
	`  }`
	`}`	

ii.
```
seriesTextArea.setText(null);
startTextField.setText(null);
stopTextField.setText(null);
```

iii.
```
System.exit(0);
```

5(a) What is the purpose of ORDER BY clause in MySql? How is it different from GROUP BY clause? **2**

Ans.
- ✓ Order by clause is used to sort a particular field in either ascending order or descending order.

Difference:
- ✓ ORDER BY is used in MySQL query to sort the result in specified columns name whereas GROUP BY is used to group your result in specified columns.
- ✓ The GROUP BY clause must come after any WHERE clause and before any ORDER BY clause while ORDER BY takes the name of one or more columns by which to sort the output.

(b) Table SCHOOL has 4 rows and 5 columns. What is the Cardinality and Degree of this table? **1**

Ans. Cardinality = 4 and Degree = 5

(c) Consider the Table SHOPPE given below. Write command in MySql for (i) to (iv) and output for (v) to (vii) **7**

Table SHOPPE:

Code	Item	Company	Qty	City	Price
102	Biscuit	Hide & Seek	100	Delhi	10.00
103	Jam	Kissan	110	Kolkata	25.00
101	Coffee	Nestle	200	Kolkata	55.00
106	Sauce	Maggi	56	Mumbai	55.00
107	Cake	Britannia	72	Delhi	10.00
104	Maggi	Nestle	150	Mumbai	10.00
105	Chocolate	Cadbury	170	Delhi	25..

i. To display names of the items whose name starts with 'C' in ascending order of Price. **1**

ii. To display code, Item name and City of the products whose quantity is less than 100. **1**

iii. To count distinct Company from the table. **1**

iv. To insert a new row in the table Shoppe '110','Pizza','Papa Jones',120,"Kolkata",50.0 **1**

v. Select Item from Shoppe where Item IN("Jan","Coffee"); **1**

vi. Select Count(distinct(City)) from Shoppe; **1**

vii. Select MIN(Qty) from Shoppe where City="Mumbai"; **1**

Ans.

i.
```
SELECT Item FROM SHOPPE WHERE Item LIKE 'c%' ORDER BY Price;
```

ii.
```
SELECT Code,Item,City FROM SHOPPE WHERE Qty<100;
```

iii.
```
SELECT COUNT(DISTINCT(Company)) FROM SHOPPE;
```

iv.
```
INSERT INTO SHOPPE VALUES (110,'Pizza' ,'Papa Jones',120,'kolkata' ,50.0);
```

v.

Item
Jam
Coffee

vi. 3

vii.

MIN (QTY
56

6(a) Write a MySql command to creat the Table STOCK including its Constraints. **2**

Table STOCK:

Name of Column	Type	Size	Contraint
Id	Decimal	4	Primary Key
Name	Varchar	20	
Company	Varchar	20	
Price	Decimal	8	Not Null

Ans.

```
CREATE TABLE STOCK (Id Decimal(4) PRIMARY KEY , Name VARCHAR(20) , Company
VARCHAR(20) , Price Decimal(8) NOT NULL) ;
```

(b) In a database there are two tables: **6**

Table ITEM:

ICode	Iname	Price
101	Television	75000
202	Computer	42000
303	Refrigerator	90000
404	Washing Machine	27000

Table BRAND:

ICode	Brand
101	Sony
202	HP
303	LG
404	IFB

Write MySql queries for the following:

(i) To display ICode,IName and corresponding Brand of those Items, whose price is between 20000 and 45000 (both values inclusive). **2**

(ii) To display ICode, Price and BName of the item which has IName as "Television"? **2**

(iii) To increase the price of all the Items by 15%. **2**

Ans.

(i) Select Item.ICode,IName,Brand.Brand from Item,Brand where item.icode=brand.icode and Item.Price Between 20000 AND 45000;

(ii) Select Item.ICode,Price,Brand.Brand from Item,Brand where item.icode=brand.icode and Item.Iname Like 'Television';

(iii) UPDATE ITEM SET Price=Price+(Price*15/100);

(c) Given below is a Table Patient. **2**

Name	P_No	Date_Adm	Doc_No
Vimal Jain	P0001	2011-10-11	D201
Ishita Kohli	P0012	2011-10-11	D506
Vijay Verma	P1002	2011-10-17	D201
Vijay Verma	P1567	2011-10-22	D233

i. Identify Primary Key in the table given above. **1**

ii. Write MySql query to add a column Department with data type varchar and size 30 in the table Patient. **1**

Ans.

```
(i)  P_No
(ii) ALTER TABLE Patient ADD(Department varchar(30));
```

7(a)	What social impact does e-Governance have on society?	1
Ans.	✓ 'E-governance' programs have improved the efficiency of administration and service delivery. ✓ People have also benefitted from e-governance in the form of reduced cost of availing the services. ✓ E-governance has proved successful in keeping a tab on corruption to some extent.	
(b)	Write two important feature of e-Business. Give two most commonly used e-Business sites.	2
Ans.	Feature of e-Business: i. Offers opportunity to increase sales ii. Offer opportunity to access new market across the globe iii. Allows 24 x 7 access to the firm's products and services iv. Reduce inventory v. Improves speed of response Few most commonly used e-Business sites are – i. www.licindia.com ii. www.statebankofindia.com iii. www.amazon.com iv. www.ebay.com v. www.sharekhan.com vi. www.westernunion.com	
(c)	Mr. Anurag Das working as Manager in Vivian Enterprises wants to create a form in NetBeans to take various inputs from user. Choose appropriate controls from Label, TextBox, Radio Button, CheckBox, ListBox, ComboBox & Command Button and write them in the third column:	2

SNO	Control used to	Control
1.	Enter Name, Address and Salary	
2.	Select Gender (Male / Female)	
3.	Select Department from available List	
	Choose Hobby of Employee (Singing/Dancing/Skating/Swimming)	

Ans.	1. TextBox 2. Radio Button 3. ComboBox 4. CheckBox

XII INFORMATICS PRACTICES

CBSE Board – 2013

[Time allowed: 3hours] *[Maximum Marks: 70]*

Instructions *(i) **All** questions are compulsory*
(ii) Programming Language: C++

1(a)	Write the name of the most suitable wireless communication channels for each of the following situations. (i) Communication between two offices in different countries. (ii) To transfer the data from one mobile phone to another.	**1**
Ans:	(i) Satellite (ii) Bluetooth	
(b)	What is UNICODE? Name one Indian language, which is supported by UNICODE.	**1**
Ans:	Unicode provides a unique number for every character, no matter what the platforms, no matter what the program, no matter what the language. **Following are some Indian language, which is supported by UNICODE.** Devnagari, Bengali, Gurmukhi, Gujarati, Kannada, Malayalam, Oriya, Tamil, Arabic, Telugu	
(c)	Expand the following terms: (i) FLOSS (ii) HTTP	**1**
Ans:	(i) FLOSS : **F**ree **L**ibre and **O**pen **S**ource **S**oftware (ii) HTTP : **H**yper **T**ext **T**ransfer **P**rotocol	
(d)	Mr. Chandervardhan is not able to identify the Domain Name in the given URL. Identify and write it for him. http://www.cbsenic.in/aboutus.htm	**1**
Ans:	**Domain Name** : cbsenic.in	
(e)	What do you understand by Network Security? Name two common threats to it.	**2**
Ans:	Network security is needed to protect data during their transmission and to guarantee that data transmissions are authentic. 1. Trojan horse programs 2. Worms	
(f)	Write one advantage of Star Topology over Bus Topology and one advantage of Bus Topology Over Star Topology.	**2**
Ans:	**<u>Advantage of Star Topology over Bus Topology</u>** In Star Topology, failure of one node or link doesn't affect the rest of network whereas, In Bus Topology, the main cable (i.e. bus) encounters some problem, whole network breaks down. **<u>Advantages of Bus Topology Over Star Topology</u>** Bus Topology requires less cable length than a star topology.	
(g)	What is MAC address? What is the difference between MAC address and an IP address?	**2**
Ans:	A **Media Access Control** address (MAC address) is a unique identifier assigned to most network adapters or network interface cards (NICs) by the manufacturer for identification, and used in the Media Access Control protocol sub-layer. **<u>Difference between MAC address and an IP address</u>** 1. MAC address is supposedly unique to each network interface card while an IP address is usually replaced 2. An IP address reveal which element on which network it is while the same cannot be extracted from a MAC address	
2(a)	Which property of palette ListBox is used to enter the list of items while working in NetBeans?	**1**
Ans:	model property	

(b) What is the difference between the use of **JTeaxtField** and **JPasswordField** in a form? **1**

Ans: When we type text into a JTextField control, it shows the characters in the control, but in JPasswordField control the typed characters are shown as ( ) for security. ●

(c) "The variable/expression in the switch statement should either evaluate to an integer value or String value." State True or False. **1**

Ans: True

(d) Name two attributes of FONT tag of HTML. **1**

Ans:
1. Size
2. Face
3. Color

(e) How many times will the following loops execute? Which one of them is Entry Control and which one is Exit Control? **2**

Loop 1
```
int  i=10,  sum=0;
while (i>1)
{
   sum+=i;
   i-=3;
}
```

Loop 2
```
int  i=10,  sum=0;
do
{
   sum+=i;
   i-=3;
} while (i>1);
```

Ans: Following loops will execute 3 times.
Loop 1 is Entry control loop and Loop 2 is Exit control loop.

(f) What will be displayed in jTextField1 and jTextField2 after the execution of the following loop? **2**
```
int Sum=0,Last=10;
for (int C=1;C<=Last;C+=2)
  Sum++;
  jTextField1.setText(Integer.toString(Sum));
  jTextField2.setText(Integer.toString(C));
```

Ans: Since C is local variable to the for loop only due which it can't be accessible at line no 4 and 5.

Correct code
```
int Sum=0,Last=10;
for (int C=1;C<=Last;C+=2)
{
  Sum++;
  jTextField1.setText(Integer.toString(Sum));
  jTextField2.setText(Integer.toString(C));
}
```
Output:
jTextField1 – 5
jTextField2 – 9

(g) Differentiate between the <TR> and <TD> tags of HTML with the help of an appropriate example. **2**

Ans: <TR> defines table row Whereas, <TD> defines table data (cell).
Example:
```
<HTML>
<BODY>
<TABLE BORDER>
<TR>
     <TD>1</TD>
      <TD>2</TD>
</TR>
```

	<TR> <TD>3</TD> <TD>4</TD> </TR> </TABLE> </BODY> </HTML>	
3(a)	Write a SQL command to view the constraints of EMP table.	**1**
Ans:	SHOW TABLE EMP; OR Select * from information_schema.key_column_usage where constraint_schema = 'EMP';	
(b)	Mr. Krishnaswami is working on a database and has doubt about the concept of SAVEPOINT in a transaction. Write down the meaning of SAVEPOINT and provide a simple example considering yourself as an online web support executive.	**1**
Ans:	SAVEPOINT is a point in a transaction, up till which all changes have been saved permanently. **EXAMPLE:** mysql> mysql> CREATE TABLE Books -> (-> BookID SMALLINT NOT NULL PRIMARY KEY, -> BookTitle VARCHAR(60) NOT NULL, -> Copyright YEAR NOT NULL ->) -> ENGINE=INNODB; Query OK, 0 rows affected (0.00 sec) mysql> mysql> START TRANSACTION; Query OK, 0 rows affected (0.00 sec) mysql> INSERT INTO Books VALUES (103, 'Opera', 1966); Query OK, 1 row affected (0.00 sec) mysql> INSERT INTO Books VALUES (104, 'Sql Server', 1932); Query OK, 1 row affected (0.00 sec) mysql> SAVEPOINT sp1; Query OK, 0 rows affected (0.00 sec) mysql> mysql> mysql> drop table Books; Query OK, 0 rows affected (0.00 sec)	
(c)	What is the difference between CURDATE () and DATE () functions?	**1**
Ans:	CURDATE () returns the current date whereas, DATE () extracts the date part of a date or datetime expression.	
(d)	Table STUDENT has 4 rows and 2 columns. Table MARKS has 2 rows and 3 columns. How will be the cardinality and degree of the Cartesian product of STUDENT and MARKS?	**1**
Ans:	The cardinality is 8 and degree is 5 of the Cartesian product of STUDENT and MARKS.	
(e)	There is a column Salary in a Table EMPLOYEE. The following two statements are giving different outputs.	**2**

	What may be the possible reason? SELECT COUNT(*) FROM EMPLOYEE; SELECT COUNT(SALARY) FROM EMPLOYEE;	
Ans:	If SALARY column is defined as NULL and then if any employee's salary is missing then count function will not count those null valued salary. For example if EMPLOYEE table contains 10 record of employees and out of 10 employees say 7th employee's salary is not entered then output will be 10 and 9 for respective queries.	
(f)	Mr. Kapoor is a programmer at Ekansh Enterprises. He created 5 digit password and stored in a string variable called strPassword. He wants to store the same password in an Integer type variable called intPassword. Write an appropriate Java statement to transfer the content from strPassword to intPassword.	**2**
Ans:	int intPassword=Integer.parseInt(strPassword);	
(g)	Mrs. Kumar is using table STUDENTS with the following columns: RNO, ADMNO, NAME, AGGREGATE She wants to display all information of students in descending order of name and within ascending order of aggregate. She wrote the following SQL query and she did not get the desired output: SELECT * FROM STUDENTS ORDER BY NAME, AGGREGATE DESC;	**2**
Ans:	SELECT * FROM STUDENTS ORDER BY AGGREGATE, NAME DESC;	
4(a)	What will be the context of jTextArea1 and jTextField1 after the execution of the following statements? (i) jTextArea1.setText("Just\tAnother\nDay"); (ii) string Subject="Informatics Practices"; jTextField1.setText((Subject.length()+10)+" ");	**2**
Ans:	(i) Just Another Day (ii) 31	

(b)	Rewrite the following program code using a if statement.
	String Remarks;
	int Code=Integer.parseInt(jTextField1.getText());
	switch(Code)
	{
	case 0 :Remarks="100% Tax Exemption";
	break;
	case 1 : Remarks="50% Tax Exemption";
	break;
	case 2 : Remarks="3% Tax Exemption";
	break;
	default: Remarks="! Invalid Entry";
	}
		2

Ans:	String Remarks; int Code=Integer.parseInt(jTextField1.getText()); if(Code ==0) Remarks="100% Tax Exemption"; else if(Code ==1) Remarks="50% Tax Exemption"; else if(Code ==2) Remarks="30% Tax Exemption"; else Remarks="! Invalid Entry";	

(c)	Observe the following code carefully and find which statement will never get executed in the code?
	int t=1; //Statement 1
	do //Statement 2
		1

```
{                                          //Statement 3
        if (t>13)                          //Statement 4
          jTextField1.setText("Something"); //Statement 5
        else                               //Statement 6
          jTextField1.setText("Pass");     //Statement 7
        t+=3;                              //Statement 8
}                                          //Statement 9
while (t<=15);                             //Statement 10
```

Ans: Statement 5

(d) Write a java statement to make the **jTextField1** non-editable. **1**

Ans: jTextField1.setEditable(false);

(e) What will be the displayed in jTextField1 and jTextField2 after the execution of the following code? **2**

```
int Last,First=3,Second=5;
Last=First+Second++;
jTextField1.setText(Integer.toString(Last));
jTextField2.setText(Integer.toString(Second));
```

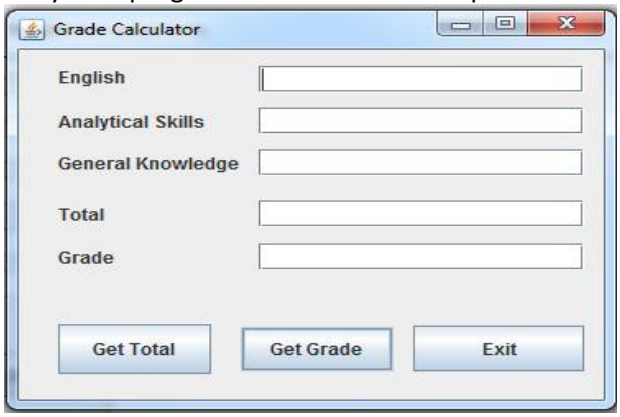
Ans: jTextField1 – 8
jTextField2 – 6

(f) What will be the contents of Str1 and Str2 after the following code is executed? **2**

```
String Str2,Str1;
Str1="Dear Friend";
Str2="Hello";
Str1=Str2.concat(Str1);
```

Ans: Str1 - HelloDear Friend
Str2 - Hello

(g) Aditya is a programmer at Edudel enterprises. He created the following GUI in NetBeans. **5**



Help him to write code in java for the following:

(i) To calculate Total marks obtained and display in jTextField4 on the click of command button "Get Total". **2**

(ii) To calculate Grade obtained and display in jTextField5 on the click of command button "Get Grade". Criteria for Grade calculation is given below: **2**

Marks	Grade
Above 80	A
Above 65 and <=55	B
Above 50 and <=65	C
<=50	D

(iii) To stop execution and exit from the application on the click of command button "Exit". **1**

Ans:

```
(i)  private void jButton1ActionPerformed(java.awt.event.ActionEvent evt)
     {
             int a=Integer.parseInt(jTextField1.getText());
             int b=Integer.parseInt(jTextField2.getText());
             int c=Integer.parseInt(jTextField3.getText());
            int total=a+b+c;
            jTextField4.setText(Integer.toString(total));
      }
(ii) private void jButton2ActionPerformed(java.awt.event.ActionEvent evt)
     {
             int t=Integer.parseInt(jTextField4.getText());
             int a=t/3;
             if(a>=80)
             {
                 jTextField5.setText("A");
             }
             else if(a>65 && a<=55)
             {
                 jTextField5.setText("B");
             }
             else if(a>50 && a<=65)
             {
                 jTextField5.setText("C");
             }
             else if(a<=50)
             {
            jTextField5.setText("D");
        }
      }
(iii)private void jButton3ActionPerformed(java.awt.event.ActionEvent evt)
     {
                System.exit(0);
          }
```

5(a) What is the use of COMMIT statement in SQL? How is it different from ROLLBACK statement? **2**

Ans: The COMMIT statement is used to end a transaction and make all changes permanent.

COMMIT	ROLLBACK
COMMIT command permanently saves the changes made during the transaction execution.	ROLLBACK command undoes the changes made during the transaction execution.
Syntax: COMMIT[WORK];	Syntax: ROLLBACK[WORK];

(b) Mr. James created a table **CLIENT** with 2 rows and 4 columns. He added 2 more rows to it and deleted one column. What is the Cardinality and Degree of the Table **CLIENT**? **1**

Ans: **Cardinality** – 4
Degree – 3

(c) Consider the following table **FITNESS** with details about fitness products being sold in the store. Write command of SQL for (i) to (iv) and output for (v) to (vii). **7**

Table: **FITNESS**

PCODE	PNAME	PRICE	MANUFACTURER
P1	Treadmill	21000	Coscore
P2	Bike	20000	Aone

	P3	Cross Trainer	14000	Reliable
	P4	Multi Gym	34000	Coscore
	P5	Massage chair	5500	Regrosene
	P6	Belly Vibrator Belt	6500	Ambaway

(i) To display the names of all the products with price more than 20000.
(ii) To display the names of all products by the manufacturer "Aone".
(iii) To change the price data of all the products by applying 25% discount reduction.
(iv) To add a new row for product with the details: "P7", "Vibro Exerciser", 28000, "Aone".
(v) SELECT * FROM FITNESS WHERE MANUFACTURER NAME LIKE "%e";
(vi) SELECT COUNT (DISTINCT (MANUFACTURER)) FROM FITNESS;
(vii) SELECT MAX (PRICE) FROM FITNESS;

Ans:

(i) SELECT PNAME,PRICE FROM FITNESS WHERE PRICE>20000;
(ii) SELECT PNAME FROM FITNESS WHERE MANUFACTURER="Aone";
(iii) UPDATE FITNESS SET PRICE=PRICE-(PRICE*25/100);
(iv) INSERT INTO FITNESS VALUES("P7","Vibro Exerciser","28000","Aone");
(v) In this query, the column name is MANUFACTURER NAME instead of MANUFACTURE so it will generate an error.
The correct Query is SELECT * FROM FITNESS WHERE MANUFACTURER LIKE "%e";

Output:

PCODE	PNAME	PRICE	MANUFACTURER
P1	Treadmill	21000	Coscore
P2	Bike	20000	Aone
P3	Cross Trainer	14000	Reliable
P4	Multi Gym	34000	Coscore
P5	Massage chair	5500	Regrosene

(vi) **COUNT(DISTINCT(MANUFACTURER))**
5

(vii) **MAX(PRICE)**
6500

6(a) Write SQL command to create the table VEHICLE with given constraint: **2**

Table : **VEHICLE**

COLUMN_NAME	DATATYPE(SIZE)	CONSTRAINT
RegNo	CHAR(10)	Primary Key
Regdate	DATE	
Owner	VARCHAR(30)	
Address	VARCHAR(40)	

Ans: CREATE TABLE VEHICLE(RegNo CHAR(10) PRIMARY KEY, Regdate DATE, Owner VARCHAR(30), Address VARCHAR(40));

(b) In a database BANK, there are two tables with a sample data given below: **6**

Table : **EMPLOYEE**

ENO	ENAME	SALARY	ZONE	AGE	GRADE	DEPT
1	Mona	70000	East	40	A	10
2	Muktar	71000	West	45	B	20
3	Nalini	60000	East	26	A	10
4	Sanaj	65000	South	36	A	20

	5	Surya	58000	North	30	B	30

Table : **DEPARTMENT**

DEPT	DNAME	HOD
10	Computers	1
20	Economics	2
30	English	5

Note:

- ENAME refers to Employee Name
- DNAME refers to Department Name
- DEPT refers to Department Code
- HOD refers to Employee number (ENO) of the Head of the Department

Write SQL queries for the following:

(i) To display ENO, ENAME, SALARY and corresponding DNAME of all the employees whose age is between 25 and 35 (both values inclusive). **2**

(ii) To display DNAME and corresponding ENAME from the tables DEPARTMENT and EMPLOYEE. **Hint**: HOD of the DEPARTMENT table should be matched with ENO of the EMPLOYEE table for getting the desired result. **2**

(iii) To display ENAME, SALARY, ZONE and INCOME TAX (Note: Income Tax to be calculated as 30% of salary) of all the employees with appropriate column headings. **2**

Ans:

(i) SELECT C.ENO,C.ENAME,C.SALARY,D.DNAME FROM EMPLOYEE C,DEPARTMENT D WHERE C.DEPT=D.DEPT AND C.AGE>=25 && C.AGE<=35;

(ii) SELECT D.DNAME,C.ENAME FROM EMPLOYEE C,DEPARTMENT D WHERE C.DEPT=D.DEPT AND C.ENO=D.HOD;

(iii) SELECT ENAME,SALARY,ZONE, (SALARY*30)/100 AS "INCOME TAX" FROM EMPLOYEE ;

(c) In a database STUDENT, there is a Table RESULT with the following contents: **2**

Table :**RESULT**

REGNO	NAME	MARKS	SECTION	CLASSTEACHER	ADMNO
10004	Mohit	90	A	Ms Nathani	Z101
10211	Mukta	85	B	Mr. Gokhle	Z109
10923	Mohit	92	B	Mr. Gokhle	Z120
10313	Sana	80	A	Ms Nathani	Z234

(i) Identify the attributes, which can be chosen as Candidate Keys in the table RESULT. **1**

(ii) Write SQL Query to change the Marks of Mukta to 95 in the table RESULT. **1**

Ans:

(i) **REGNO** and **ADMNO** can be chosen as Candidate Keys in the table RESULT.

(ii) UPDATE RESULT SET MARKS=95 WHERE NAME=”Mukta”;

7(a) How has popularity of e-Business benefited a common man? Write domain name of one popular e-Business site as an example. **2**

Ans: **Benefit** :

- ✓ Improved speed of response
- ✓ Cost savings
- ✓ Improved communications, information and knowledge sharing
- ✓ Reductions in inventory
- ✓ Improved efficiency and productivity
- ✓ Better transfer of best practices
- ✓ Improved customer service

Domain name:

- ✓ yatra.com

(b) Give domain names of two most commonly used e-Commerce site. **1**

Ans:

1. ebay.in
2. amazon.com

(c) Shobhit is creating a form for his company. Help her to choose most appropriate controls from ListBox, ComboBox, TextField, TextArea, RadioButton, CheckBox, Label and Command Button for the following entries: **2**

SNo	Function
1	To enter NATIONALITY from all the nationalities given as options
2	To enter AGE between a range 20 to 25
3	To allow to select one or more FAVORITE SPORTS out of the given 6 options
4	To enter SUGGESTION in the form of a paragraph

Ans:

SNo	Function	Control
1	To enter NATIONALITY from all the nationalities given as options	ComboBox
2	To enter AGE between a range 20 to 25	ComboBox
3	To allow to select one or more FAVORITE SPORTS out of the given 6 options	CheckBox
4	To enter SUGGESTION in the form of a paragraph	TextArea

INFORMATICS PRACTICES Sample Paper

Class – XII

Q1. Answer the following questions:

a) Mr. Abhinav wants to implements a network using less cable length and data should be transmitted in one direction only. Name the topology and direction of data transmission. 1

b) What are Denial of Services Attacks? 1

c) Given the following MAC address, can you identify its parts? Also specify who defines/specifies these parts number? 1

00:A3:O3:51:OE:AC

d) What is a domain name? How is it alternatively known? 1

e) Which of the following is not a characteristic of open source software? 1

i) Its source code is available for modification

ii) It is owned by a company or an individual

iii) It can be downloaded by Internet

f) What is open source based software? 1

g) Which of the following softwares are open source: 2

Mozilla ,PostgreSQL, PHP, MySql

h) Expand the following terms: 2

i) FSF ii) FLOSS

Q2. Answer the following questions:

a) Sugandha has developed a login form in java. Which method will she use to obtain the password from a password field. 1

b) Name any two types of inheritance supported by Java ? 1

a) Which is the largest heading tag in HTML? 1

b) What is wrong with the following code: 1

<OL type="a" start="d">

c) Differentiate between IF and Switch statement. 1

d) What is the client server computing? Give example of a real life situation that uses client server computing? 1

e) Write a function in java that accepts two numbers as parameters and returns their product. 2

f) Write two differences between HTML tags and XML tags. 2

3. Answer the following questions:

a) If a database "Library" exists, which MySql command helps you to start working in that database.? 1

b) A table 'EMP' has one of its column named Salary. Give the command in MySql to increase the salary of all the employees by 5%. 1

c) Rajiv wants to remove all the rows from the table "Flight" but does not want to remove the structure of the table. Which command he should use? 1

d) Which function in MYSQL returns the total number of characters from a character expression? 1

e) A table Lab in a database has 7 columns and no rows in it. What is its cardinality? What will be its cardinality if 12 rows are added in the student table? 2

f) The student names and marks column of a table "Student" are given below:

Name	Marks
Robin	86
Prachi	65
Nisha	92
Geetansh	NULL

Based on the above information, find the output of the following queries: 2

i) Select AVG(marks) from Student;
ii) Select marks+5 from student where marks>90;

g) Can a table have multiple primary keys? Can it have multiple foreign keys? Also define foreign key constraint. 2

4. Answer the following questions:

a. What will be the contents of jTextField1 after executing the following statement : 1

```
int n=20;
n=n-6;
if(n<10)
        jTextField1.setText(Integer.toString(n));
else
        jTextField1.setText(Integer.toString(n-2));
```

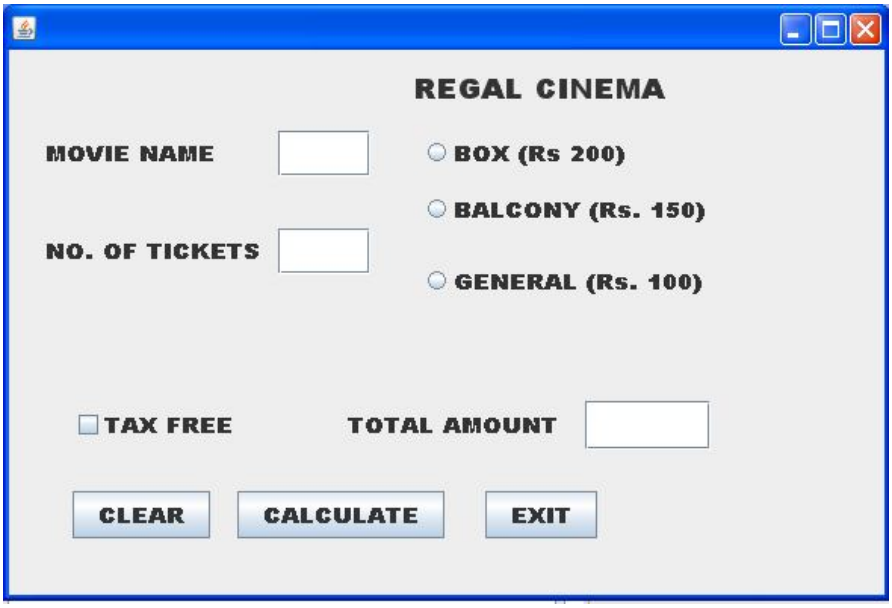
b. The following code has some error(s). Rewrite the correct code underlining all the corrections made: 2

```
Int n1,n2=10;
n1=n2-5;
if(n1=n2)
        jTextField1.setText("n1 and n2 are equal");
else
        jTextField1.setText("n1 and n2 are not equal");
```

c. The Admission No. of a student is stored in a variable strAdmno. Sugandha wants to store this admission no. in an Integer type variable intAdmno. What java statement should she write to do this? 1

d. Regal Theater has computerized its ticketing system. The programmer has developed a GUI application in Netbeans as shown below:

At ticket counter, three types of tickets(Box, balcony and General) at the rate of 200, 150 and 100 respectively are available. If the movie is tax free , then the total amount should be deducted by Rs. 25 per ticket.



a) What should be done so that only one of the radio button (Box, Balcony and general) can be selected at a time. 1

b) Write code to do the followings :

1. Calculate and display the Total amount in the corresponding text field when calculate button is pressed. 3
2. Clear all the text fields. 1

3. Close the application when Exit button is clicked. 1
   Note : (You can assume any suitable names for various controls on the form)

e. Rewrite the following program using a if statement. 2

```
int c=jComboBox1.getSelectedIndex();
switch(c)
{       Case 0: FinalAmt= billAmt; break;
        Case 1: FinalAmt= 0.9*billAmt; break;
        Case2: FinalAmt=0.8* billAmt; break;
        default: FinalAmt= billAmt; break;
}
```

f. How many times the following while loop get executed? 2

```
int p=5;
int q=36;
while(p<=q)
{       P+=6;
}
```

g. Given a string object named Salary having value as "55000" stored in it. Obtain the output of the following. 1

```
JOptionPane.showMessageDialog(null,""+Salary.length()+Integer.parseInt(Salary)));
```

5. Answer the following questions:

a) What is the purpose of GROUP BY clause in MYSQL How is it different from ORDER BY clause? 1

b) Give difference between COMMIT and ROLLBACK commands used in MYSQL 1

c) Write SQL Commands for (a) to (d) and write the outputs for (e) on the basis of the following table : [1x8=8]

Table : FURNITURE

NO	ITEM NAME	TYPE	DATEOFSTOCK	PRICE	DISCOUNT
1	White Lotus	Double Bed	2002-02-23	3000	25
2	Pink feathers	Baby Cot	2002-01-29	7000	20
3	Dolphin	Baby Cot	2002-02-19	9500	20
4	Decent	Office Table	2002-02-01	25000	30
5	Comfort zone	Double Bed	2002-02-12	25000	30
6	Donald	Baby cot	2002-02-24	6500	15
7	Royal Finish	Office Table	2002-02-20	18000	30
8	Royal tiger	Sofa	2002-02-22	31000	30
9	Econo sitting	Sofa	2001-12-13	9500	25
10	Eating Paradise	Dinning Table	2002-12-19	11500	25

(a)To list the itemname which are priced at more than 15000 from the furniture table.

(b) To list itemname and type of those items, in which dateofstock is before 2002-02-01 from the furniture table in descending order of itemname.

(c)To display itemname and dateofstock of those items, in which the discount percentage is more than 25 from the furniture table.

(d) To count the number of items, whose TYPE is "Sofa" from the furniture table.

(e) Give the output of following SQL statement :

(i). select count (distinct type) from furniture;

(ii). Select max(discount) from furniture;

(iii). Select avg(discount) from furniture where type="Baby Cot";

(iv). Select sum(price) from furniture where dateofstock < '2002-02-12';

Q6. a) Write a SQL command to create a table **LIBRARY** with following structure: 2

Field	Type	Constraint
Book_no	Integer(4)	Primary key
Title	Varchar(40)	Not Null
Author	Varchar(30)	
Publisher	Varchar(30)	
Pages	Integer(4)	
Date_of_pub	Date	

b) In a database there are two tables 'Employee' and 'Dept' as shown below:

BRAND

ICODE	BRAND
101	SONY
202	HP
303	LG
404	IFB

ITEM

CODE	INAME	PRICE
101	TELEVISION	75000
202	COMPUTER	42000
303	REFRIGERATOR	90000
404	WASHING MACHINE	27000

Write MYSQL queries for the following:

- To display ICode, IName and corresponding Brand of those items, whose price is between 20000 and 45000(both values inclusive) 2
- To display ICode, Price and BName of the item which has IName as "Television" 2
- To increase the Price of all items by Rs. 15%. 2

c) Given below is a **Table: Customer**

C_ID	Cust_Name	City	Item_No
01	Dreams Disney	New Delhi	P002
05	Life time inc.	Mumbai	P005
12	Happy Travels	New Delhi	P001
15	Apeksha Pvt. Ltd.	Madras	P003

1. **Identify Primary key in the table given above. 1**
2. Write MySql query to add a column Price with data type Integer and size 6 in the table customer. 1

Q 7(a) What social impact does e-Governance has on society? 1

(b) Define e-business? Give URL of one of the commonly used e–Business portals. 2

(d) Mr. Anurag Das is creating a form for his practical file. Help him to choose most appropriate controls from List Box, Combo Box, Text Field, Text Area, Radio Button, Check Box, Label and Command Button for the following entries from user: - 2

- A message "Enter your Name" in front of a Text Field.
- An input to choose more than one subjects from a set of given choices.
- An input for entering comments of user.
- An input for accepting Gender out of Male & Female.

Sample Paper Informatics Practices

Class – XII

Time : 3 hrs. **MM:70**

General Instructions:

(i) **All questions are compulsory**

(ii) **Answer the questions after carefully reading the text.**

(iii) **This question paper is divided into three sections.**

(iv) **Section – A consists 10 marks.**

(v) **Section – B consists 25 marks,**

(vi) **Section – C consists 35 marks**

(vii) **This question paper consists of 7 pages**

SECTION – A (10 Marks)

QA **Answer the following questions:**

A.1 Difference between Gateway and Bridge. (1)

A.2 Mrs. Daya is a computer teacher in a school. She is delivering the lecture about the concept software in the class. She is explaining that a software which is absolutely free of cost and whose source code is available. Name the software. Name the software about which she is explaining. (1)

A.3 Muskan is a student of XII class. She wants to send a message to her friend which is living in another country. But she is confused which communication media she will use. Help her for the same. (1)

A.4 What is the difference between MAC address and IP address? (1)

A.5 Write any two advantages of Star Topology on Bus Topology. (2)

A.6 Explain the Following: (i) Python (ii) PHP (2)

A.7 Expand the following terms: (i) OSI (ii) W3C (2)

SECTIOB – B (25 Marks)

QB **Answer the following questions:**

B.1 Name the conditional statement out of IF and Switch which supports relational and logical operators. (1)

B.2 How many times does the following do….while loop get executed? (2)

```
int y = 5;
do {
        y += 2;
        System.out.println(" " + y );
} while( y < 20 );
```

B.2 What will be the contents of jTextarea1 after executing the following code: (1)

jTextArea1.setText("INDIA\n IS \t IN ASIA"); (1)

B.3 Rewrite the following code fragment using switch : (2)

```
if(ch = = 'e')        System.out.println(  "Esha" );
if(ch = = 'w')        System.out.println(  "Wilson" );
if(ch = = 'n')        System.out.println(  "Nitin" );
if(ch = = 's')        System.out.println(  "Sachin" );
else                  JOptionPane.showMessageDialog(null, "unknown");
```

B.4 What will be the output of the following code: (1)

```
StringBuffer city = new StringBuffer("Panipat");
StringBuffer string = new StringBuffer();
string.append(new String(city));
string.insert(0,"in Haryana");
string.out.println(string);
```

B.5 Given a package named EDU. Student, how would you import a class named Test contained in this package? Write one line statement. (1)

B.6 We would like to make a member of a class visible in all subclasses regardless of what package they are in. Which one of the following keywords would achieve this? (1)

(a)private (b)protected (c) final (d) public (e) None of these

B.7 What will be the output of following : (2)

```
class STUDENT () {
        int RL; String NAME; double marks;
        public STUDENT (int R, String N, double m) {
                System.out.prinln("I am in Consructor " );
                RL=R;
                NAME=N;
                Marks=m;
                System.out.prinln("I am going out from Consructor " );
        }
        void show () {
                System.out.prinln("I am displaying " );
                System.out.prinln(RL + " " + NAME+ " " + marks );
        }
        public static void main ( Strirng args [] ){
        STUDENT obj = new STUDENT ( );
        }
}
```

B.8 Write any two differences between method overloading and method overriding. (2)

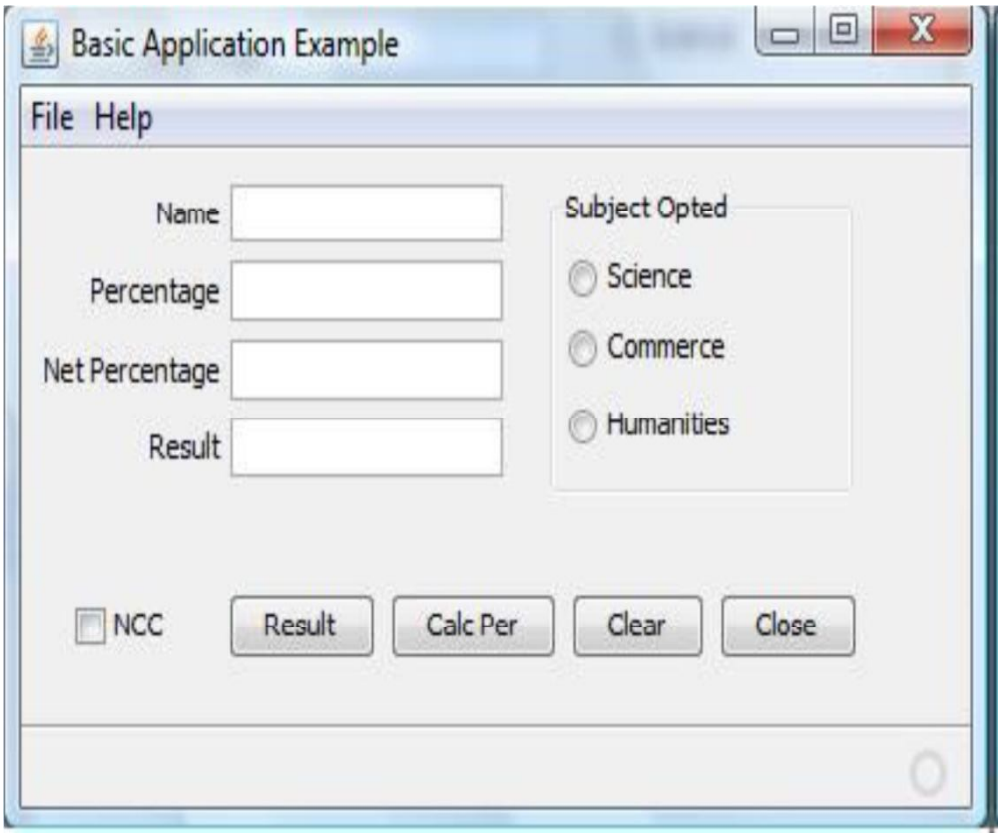
B.9 What classes are used for database connectivity? (1)

B.10 Which method is used to count all the row from a table named "TABLE1"? (1)

B.11 Differentiate between HTML and XML. (2)

B.12 Write a function in java that takes two numbers as parameters and swap their values. (2)

B.13 ABC School uses the following interface built in java to check the eligibility of a student for a particular stream from science, commerce and humanities. The user first enters the total percentage and selects the desired stream by selecting the appropriate option button. An additional 5% is marks is given to students of NCC. Write Java Code for the following



B.13.1 On Action event of the button 'Calc Per' Net percentage of the student is calculated and displayed in the appropriate text filed. Net percentage is same as that of the actual percentage if the student doesn't opts for NCC otherwise 5% is added to actual percentage. (2)

B.13.2 On Action event of the button 'Result', the application checks the eligibility of the students. And display result in the appropriate text field. Minimum percentage for science is 70, 60 for commerce and 40 for humanities. (2)

B.13.3 On the click event of the close button the application gets closed. (1)

SECTIOB – C (35 Marks)

QC Answer the following questions:

C.1 Write SQL statement to create the table "EMPLOYEE" given below as per specification. (2)

Column Name	ID	Name	Sal	City

Data type	Integer	Varchar	Double	Varchar
Size	6	30		30
Constraint	Primary key			Default Delhi

C.2 In a database there are two tables:

Table **ITEM:**

ICode	**IName**	**Price**
101	Chair	500
202	Computer	20000
303	Cooler	450
404	RO	7000

Table **BRAND:**

ICode	**Brand**
101	Neelkamal
202	HP
303	Kanstar
404	Kent

C.2.1 To Display ICode, IName and Corresponding Brand of those Items, whose price is between 450 and 500 (both values inclusive) (1)

C.2.2 To Display ICode, Price and BName of the item which has IName as “RO”. (1)

C.2.3 To increase the price of all items by 25%. (1)

C.3 Rama is not able to change a value in a column to NULL. What constraint did she specify when she created the table. (1)

C.4 The Doc_Name Column of a table Hospital is given below:

Doc_Name
Ragav
Wilson
Vicky
Deepak
Paras

Based on the information, find the output of the following queries:

C.4.1 SELECT Doc_Name FROM HOSPITAL WHERE Doc_Name like “%y” ; (1)

C.4.2 SELECT Doc_Name FROM HOSPITAL WHERE Doc_Name like “%e%” ; (1)

C.5 Pooja, a student of class XII, created a table “ITEM”. Price is a column of this table. To find the details of items whose prices have not been entered she wrote the following query: (1)

SELECT * FROM ITEM WHERE PRICE = NULL;

Help Pooja to run the query by removing the errors from the query and overwriting it.

C.6 Wilson is not clear about the difference between the following two statements:

C.6.1 SELECT (12 – 4) * 10; (1)

C.6.2 SELECT (12 – 4) * 10 FROM empl ; (1)

Help him understand the difference between these two statements.

C.7 Write the resulting output of the following:

C.7.1 SELECT INSTR(' GOD IS GREAT ' ,'OD'); (1)

C.7.2 SELECT ROUND(76.978,2); (1)

C.7.3 SELECT TRUNCATE(1887.996,1); (1)

C.7.4 SELECT SQRT(400) + 1000; (1)

C.8 Consider the following tables ACTIVITY and COACH. Write SQL commands for the following statements.

TABLE : ACTIVITY

Acode	ActivityName	Stadium	ParticipantsNum	PriceMoney	ScheduleDate
1001	Relay 100 x 4	Star Annex	16	10000	23-Jan-04
1002	High Jump	Star Annex	10	12000	12-Dec-03
1003	Shot Put	Super Power	12	8000	14-Feb-04
1005	Long jump	Star Annex	12	9000	01-Jan-04
1008	Discuss Throw	Super Power	10	15000	19-Mar-04

TABLE : COACH

Pcode	Name	Acode
1	Ahmad Hussain	1001
2	Ravinder	1008
3	Janila	1001
4	Naaz	1003

Give the output of the following SQL queries:

C.8.1 To display the names of all activities with their Acodes in descending order. (1)

C.8.2 To display sum of PriceMoney for the Activities played in each of the Stadium separately.(1)

C.8.3 To display the coach's names and Acodes in ascending order of Acode from the table COACH. (1)

C.8.4 To display the content of all activities for which ScheduleDate is earlier than 01-01-2004 in ascending order of ParticipantsNum. (1)

C.8.5 SELECT COUNT(DISTINCT ParticipantNum) FROM ACTIVITY; (½)

C.8.6 SELECT MAX(ScheduleDate), MIN(ScheduleDate) FROM ACTIVITY; (½)

C.8.7 SELECT Name, ActivityName FROM ACTIVITY A, COACH C WHERE A.Acode = C.Acode AND A.ParticipantNum = 10; (½)

C.8.8 SELECT DISTINCT ParticipantNum FROM ACTIVITY; (½)

C.9 What is the difference between Drop Table command and Delete command? (1)

C.10 How Primary Key is differ from Unique? (2)

C.11 Difference between WHERE and GROUP BY clause. (1)

C.12 What are the different categories of SQL commands? (2)

C.13 In a database there are two tables 'CARDEN' and 'CUSTOMER' shown below-

TABLE : CARDEN

Vcode	VehicleName	Make	Color	Capacity	Charges
501	A-Star	Suzuki	RED	3	14
503	Indigo	Tata	SILVER	3	12
502	Innova	Toyota	WHITE	7	15
509	SX4	Suzuki	SILVER	4	14
510	C Class	Mercedes	RED	4	35

TABLE : CUSTOMER

Ccode	CName	Vcode
1001	Hemant Sahu	501
1002	Raj Lal	509
1003	Feroza Shah	503
1004	Ketan Dhal	502

C.13.1 Name the columns which can be made 'Foreign Key' in both the tables. (1)

C.13.2 To display all details of vehicle "Innova". (1)

C.14 Mrs. Renu has created a Database "Teachers" in MySQL. She has created many tables in this database. Now she wants to show the name of the existing table from the database. Which command she will use for the same. (1)

C.15 What Social impact does e-Governance have on society? (1)

C.16 Write two important features of e-Business. Give two most commonly used e-Business sites. (2)

C.17 Mr. John is creating a Data Entry Form for new admission in RED School. Help him to choose most appropriate controls from the List Box, Combo Box, TextField, TextArea, Radio Button, Check Box, Label and Command Button for the following entries from candidate. (2)

C.17.1	To enter the name of the student	
C.17.2	Choose more than one subjects which a candidate studied in last class	
C.17.3	An input for entering remarks.	
C.17.4	An input for accepting Gender.	