

HIGER SECONDARY – FIRST YEAR

COMPUTER SCIENCE

VOLUME I

Chapter 1 : Introduction to computers and Number Systems

1.1 Introduction to Computers

1.1.1 History of Computers

1.1.2 Data , Information and program

1.1.3 Types of computers

1.2 Number systems

1.2.1 Digital numbering scheme –bits , bytes and words

1.2.2 Base number systems –decimal, binary, octal and hexadecimal

1.2.3 Number conversions –binary, decimal and hexadecimal

1.2.4 Arithmetic operations

Binary Addition

Binary Subtraction using 2's and 1's complement

1.2.5 Summary

1.2.6 Exercises

Chapter 2: Computer Organization

2.1 Basic Components of a Digital computer

2.2 Central Processing Unit

2.3 Arithmetic and logic unit (ALU)

2.4 Memory Unit

2.5 Input and output devices : latest devices like ipod, tablet, pen drive, LCD/LED devices

2.6 Summary

2.7 Exercises

Chapter 3: Operating System

3.1 Introduction to Operating System

Purpose and desired features

Types (in taxonomy)

3.2 OS architecture

3.3 OS commands

Dos commands and its equivalent in GUI

Linux commands [tabular form]

3.4 Windows Xp and latest versions

3.5 Trends in OS [mobile device os]

3.6 Summary

3.7 Exercises

Chapter 4: Computer Communication Networks

4.1 Introduction- Reasons for Networking

4.2 Applications of Network

4.3 Benefits of Network

4.4 Data transmission techniques(brief with diagrams)

4.4.1 Analog and digital signals

4.4.2 Simplex, Half/Full duplex modes

4.4.3 Synchronous/Asynchronous mode

4.4.4 Noises and interferences

4.5 Communication devices

- Repeater, hub, switch, bridge, router, gateway

4.6 Transmission rate

- bandwidth

4.7 Types of Network

- wired and wireless networks

- Baseband and broadband networks

4.8 Wired communication Networks

4.8.1 Cabling technology (twisted pair ,coaxial, optical fiber)

4.8.2 Network Topology

4.8.3 Communication Protocols

4.9 Wireless Communication Networks (Pictorial Based)

- Bluetooth, WLAN, Wi-Fi, Wi-Max, Cellular, Satellite

4.10 Summary

4.11 Exercises

Chapter 5: Internet

5.1 Introduction

5.2 Uses of Internet

e-commerce, e-Governance, e-learning

5.6 How to connect

- Modem
- Data card

5.7 Working with Internet

- Email - Email creation, Structure, File attachment, Sending and receiving a mails.
- Browsing

5.8 Internet Services

File Transfer-FTP,

Remote login-Telnet, SSH

5.9 Internet Service Providers

- Private & Public, Cloud Service

5.10 Intranet and Extranet

5.11 Mobile internet

m-banking, m-shopping, m-learning

5.12 Vulnerabilities in Internet

Types of attacks, Cyber Crime, Cracking & hacking

5.13 Summary

5.14 Exercises

VOLUME - II

Chapter 1 Problem Solving Techniques And C Programming

- 1.1 Problem Solving Techniques
- 1.2 Introduction to Structured Programming
- 1.3 Flowcharts
- 1.4 Algorithms
- 1.5 Sequencing
- 1.6 Data Types
- 1.7 Variables
- 1.8 Constants
- 1.9 Tokens
- 1.10 Operators
- 1.11 Expressions
- 1.12 Statements
- 1.13 Summary
- 1.14 Exercises

Chapter II : C Statements and Programming

- 2.1 I/O Statements
- 2.2 A Sample C Program
- 2.3. Compiling and Executing

Chapter III : Control Structures

- 3.1 Conditional statements
- 3.2 Loop structures
- 3.3 Arrays
- 3.4 Simple Programs
- 3.5 Summary
- 3.6 Exercises

Chapter IV : Functions and Structures

- 4.1 Functions
- 4.2 Structures
- 4.3 Simple Programs
- 4.4 Summary
- 4.5 Exercises

Chapter V : Pointers and String Manipulations

- 5.1 Pointer concepts,
- 5.2 Simple pointer manipulations,
- 5.3 String functions
- 5.4 Simple programs
- 5.5 Summary
- 5.6 Exercises

5.7 Summer projects in solving real life problems using C programming

LAB EXERCISES - XI

DOS & WINDOWS

Exercise – 1

Write steps to do the following Using windows

- Change the background picture(Wall paper).
- Create desktop shortcut to MS Paint.
- Convert a decimal integer (say, 23) to binary, octal, and hexadecimal using a specific Calculator in Scientific mode.

Exercise-2

Write the steps to do the following Using Ms-Dos

- i) DIR command with option /W ,/P ,/B and /L.
- ii) Copy, Delete, Rename commands
- (iii) Make a Directory and Change Directory
- (iv) Deleting files and Directories
- (v) To Set the System date & time

Exercise-3

write steps to do the following

- a. Open MS Paint and draw a simple house and color it.
- b. Open WordPad , copy the picture from the Paint.
- c. Type the following text below the picture.
“Starting multiple application is very simple. First start one application. The application appears on the screen in a window. At the same time a button with the name of the application appears on the taskbar. Now start the second application”
- d. Align the typed text to left, right and centre and justify using toolbar icons and keyboard shortcut.

Exercise-4

Write steps to do the following using Windows Explorer

- a. Create a text file with your school name and address using notepad with the file name “abc.txt”
- b. Create a new folder using Windows Explorer and name the folder as “folderabc”
- c. Copy the text file abc.txt into the new folderabc.
- d. Rename the copied file “xyz.txt” and folder as “folderxyz”.

Exercise – 5

Write steps to do the following

- a. Open Windows Explorer and create a new folder using Explorer Bar.
- b. Switch to any other folder using “Other places” option.
- c. Display the files in different views.
- d. Search a particular file using Windows Explorer.

C PROGRAMMING Exercises

6. Fibonacci Series.

Write a C program to generate the Fibonacci series up to n terms.

7. Max. Of N Numbers

Write a C program to find the maximum of given n numbers.

8. Prime Number

Write a C program to accept a number, say N and check if it is prime or not.

9. Factorial Of A Number

Write a C program to accept a number and find its factorial.

10. Sum Of N Numbers

Write a C program to find the sum of n natural numbers

11. Interest Calculation

Write a C program to calculate the Simple Interest and Compound Interest.

12. Sorting In Descending Order.

Write a C program to arrange the array of n numbers in descending order.

13. Sum Of Diagonal Numbers Of A Matrix.

Write a C program to find the sum of the diagonal elements of a matrix.

14. Transpose Of A Matrix

Write a C program to get the transpose of a matrix.

15. Printing Names In An Array.

Write a C program to store 'n' names in an array and print them each in one line.

HIGHER SECONDARY – SECOND YEAR

VOLUME – I (TOOLS)

Chapter 1: An Introduction To Staroffice Writer

- 1.1 An Introduction to StarOffice
- 1.2 Creating a New Document using StarOffice Writer
- 1.3 Entering Text in the Document
- 1.4 Saving, Closing and Opening Documents
- 1.5 Moving Around the Document
- 1.6 Scrolling the Document
- 1.7 Correcting Mistakes
- 1.8 Inserting Text
- 1.9 Selecting Text
- 1.10 Moving the Text
- 1.11 Copying the Text
- 1.12 Finding and Replacing the Text
- 1.13 Inserting Mathematical & Special Symbols
- 1.14 Summary
- 1.15 Exercises

Chapter 2: Word Processors

- 2.1 Text Formatting
 - 2.1.1 Formatting Options
 - 2.1.2 Paragraph Alignment
 - 2.1.3 Indenting Text
 - 2.1.4 Modifying Line Spacing
 - 2.1.5 Creating Bullets and Numbered List
 - 2.1.6 Formatting Using Styles
 - 2.1.7 StarOffice Help
- 2.2 Correcting Spelling Mistakes
 - 2.2.1 Checking Spelling while Typing
 - 2.2.2 Checking the Spelling after the Document is Typed
 - 2.2.3 AutoCorrect Option
 - 2.2.4 Creating Autocorrect Entry
- 2.3 Working With Tables
 - 2.3.1 Creating a Simple Table
 - 2.3.2 Entering Data in the Table
 - 2.3.3 Adding or Deleting Rows and Columns
 - 2.3.4 Changing the Row/Column Width
 - 2.3.5 Table Formatting Toolbar
- 2.4 Page Formatting
 - 2.4.1 Changing the Margin

- 2.4.2 Changing Page Orientation
- 2.4.3 Creating a Header and Footer

- 2.5 Summary
- 2.6 Exercises

Chapter 3 : Spreadsheet

- 3.1 Introduction
- 3.2 Working with StarOffice Calc
- 3.3 Editing the Data in the Worksheet
- 3.4 Creating Formulae
- 3.5 Fill Command
- 3.6 Cell Referencing
- 3.7 Using Functions
- 3.8 Date Arithmetic
- 3.9 Formatting the Worksheet
- 3.10 Changing Column Width and Row Height
- 3.11 Inserting Cells, Rows and Columns
- 3.12 Deleting Cells, Rows and Columns
- 3.13 Inserting Pictures and Special Characters
- 3.14 Drawing in a Spreadsheet
- 3.15 Inserting Objects
- 3.16 Working with Charts
- 3.17 Working with Multiple Sheets
- 3.18 Printing Worksheets
- 3.19 Database Function in StarOffice Calc
- 3.20 Summary
- 3.21 Exercises

Chapter 4: Database

- 4.1 Introduction
- 4.2 Data and Information
- 4.3 Data Processing
- 4.4 Database
- 4.5 Basic Concepts of Database Management Systems (DBMS)
- 4.6 Working with StarOffice Base
- 4.7 Integrating with Office Automation Applications
- 4.8 Summary
- 4.9 Exercises

Chapter 5: Text And Multimedia Presentation

- 5.1 Textual Presentation
 - 5.1.1 Introduction
 - 5.1.2 A Basic Presentation
 - 5.1.3 Managing a Presentation
 - 5.1.4 Customizing a Presentation

- 5.1.5 Printing Presentations
- 5.2 Multimedia Presentation
 - 5.2.1 Need for Multimedia
 - 5.2.2 Multimedia Applications
 - 5.2.3 Multimedia Elements - Sound, Animation, and Video
 - 5.2.4 Using Multimedia Elements in Content
- 5.3 Summary
- 5.4 Exercises

VOLUME – II (Application Programming)

Chapter 1 : Structured Programming With C++

- 1.1 Overview Of C++
 - 1.1.1 Introduction
 - 1.1.2 Basic Data Types
 - 1.1.3 Data Types
 - 1.1.4 Variables
- 1.2 Basic Statement
 - 1.2.1 Input /Output Statements
 - 1.2.2 Structure of C++ Program
 - 1.2.3 Declaration Statement
 - 1.2.4 Assignment Statements
 - 1.2.5 Control Structures
 - 1.2.6 Program Development
- 1.3 Functions In C++
 - 1.3.1 Introduction
 - 1.3.2 Function Prototyping
 - 1.3.3 Calling a Function
 - 1.3.4 Parameters passing in functions
 - 1.3.5 Returning Values
 - 1.3.6 Inline Functions
 - 1.3.7 Scope rules of variables
- 1.4 Structured Data Type-Arrays
 - 1.4.1 Introduction
 - 1.4.2 Single Dimension Array
 - 1.4.3 Strings
 - 1.4.4 Two dimensional arrays
- 1.5 Summary
- 1.6 Exercises

Chapter 2 : Object Oriented Programming With C++

- 2.1 Object Oriented Paradigm
- 2.2 Characteristics of OOPS
- 2.3 Classes and Objects
 - 2.3.1 Introduction to Classes
 - 2.3.2 Data abstraction
 - 2.3.3 Data Members and Member Functions
 - 2.3.3.1 Specifying the members of a class
 - 2.3.3.2 Defining methods of a class
 - 2.3.3.3 Access visibility specifiers
 - 2.3.4 Creating Objects of a class
 - 2.3.5 Accessing class members using dot operator
 - 2.3.6 Memory allocation of objects
- 2.4 Constructors And Destructors
 - 2.4.1 Introduction
 - 2.4.2 Constructors
 - 2.4.3 Functions of Constructors
 - 2.4.4 Rules for constructor definition and usage
 - 2.4.5 Destructors
 - 2.4.6 Rules for destructor definition and usage
- 2.5 Summary
- 2.6 Exercises

Chapter 3 : Polymorphism & Inheritance

- 3.1 Introduction to polymorphism
 - 3.1.1 Types of representations –operator symbols and verbal
 - 3.1.2 Illustrations from real life applications
- 3.2 Function overloading
- 3.3 Operator overloading (Unary)
- 3.4 Introduction to inheritance
 - 3.4.1 Types of Inheritance
 - 3.4.2 Illustrations
- 3.5 Advantages of inheritance
- 3.6 How to inherit a class
 - 3.6.1 Base and Derived Classes
- 3.7 Visibility Mode
- 3.8 Summary
- 3.9 Exercises

Chapter 4 : Introduction to Web Design – HTML

- 4.1 Elements of HTML
- 4.2 Basic HTML Tags
- 4.3 Advanced Tags
- 4.4 Creating Web Page using MS FrontPage or Dreamweaver
- 4.5 Summary
- 4.6 Exercises

Chapter 5 : Server side Programming- PHP & MySQL

5.1 Incorporating PHP within HTML

5.2 Structure of PHP

5.2.1 Using comments

5.2.2 Basic syntax

5.2.3 Data types

5.2.4 Variables - Numeric, string, arrays

5.2.5 Operators - arithmetic, assignment, comparison and logical

5.2.6 Constants

5.2.7 Echo and print commands

5.3 How PHP Code works

5.4 Expressions and control flow in PHP

5.5 Writing simple programs

5.6 Data Query with MySql

Create, Modify , Retrieval and deletion

5.7 Summary

5.8 Exercises

LAB EXERCISES - XII

Star Office

1. Cut, Copy ,Paste, Find & Replace The Text ,Indenting The Text, Changing Page Orientation And Insertheader & Footer
2. Worksheet To Create Marksheet of A Student & To Show The Details With Chart
3. Worksheet For An Employee Income Tax Calculation
4. Database Query - Details Of Employees From Tables
5. Database - Create Report To View Employee Details
6. Presentation Using Templates With Sound & Animation Effects

C++ Programming

7. Generation Of Series: Fibonacci Numbers Upto N Terms
8. Palindrome Checking
9. Count The Number Of Even , Odd , Positive & Non-Positive Numbers In A Given Set Of 'N' Numbers
10. Factorial Of a Number using Function.
11. Array: Find Smallest, Largest Numbers And Their Locations
12. Class Creation With Constructors And Destructors - Student Marksheet.

Programming Using HTML, PHP & MySQL

13. Write a Html Code To Display The Class Time Table With Cell Attributes.
14. Write a Html Code To Create Ordered And Unordered List
15. Write a Program using Php To Find The Eligibility For Voting Using If Statement .
16. Write a Program using Php To Generate A Multiplication Table Using For Loop.
17. Write a Program using Php To Find The Sum Of Ten Numbers Using While Loop .
18. Write a Program using Php Variables to Perform Arithmetic Expressions(+, - ,*, /)
19. Write a Program To Connect Mysql With Php.
20. Write a Program using Php To Insert Data Form To Database
21. Write a Program using Php To Select Data From Database using Mysql.
22. Write a Program using Php To Update Data From Database using Mysql.
23. Write a Program using Php To Delete Data From Database using Mysql.
24. Write a Program using Php To Perfrom Form Handling.
