

## **DATABASE AND ITS IMPORTANCE IN PROFESSIONAL LIFE - I**

In recent year there has been lots of changes around software and technologies used for business purpose and one among them is " DATABASE ". To be successful in majority of the jobs around now a days a simple / minimal understanding of database is required.

Many of the reputed companies has imparted or have provided knowledge transfer training to their employees to successfully make progress in their business lines as per their plans and vision. So far all professionals and employees are using some kind of database without any knowledge about the database being used by them in daily work.

Now the question arises what is the need for understanding database. To put this in simple words you should have a very good idea about where and how your information / data is stored and how safe it is and how quickly you can retrieve it. As this data is used for important interpretation and analysis of your department or business as a whole.

### **STRUCTURAL FLOW OF DATABASE**

DATABASE ---> TABLES ---> FIELDS ---> NAME / DATATYPE / DATA LENGTH

DATABASE :- It is a base on which data resides or is stored in systematic way. The database is very important and crucial to business so only specialized person will be authorised to login and administer the database.

## **DATABASE AND ITS IMPORTANCE IN PROFESSIONAL LIFE - II**

### I WHY DATABASE IS REQUIRED

With passing of time the importance of storing the information safely was very much felt by all the businesses. As the information / data grew bigger the question of storing those information safely and securely was needed to be addressed. Apart from that the retrieving and searching for the old information / data as and when required quickly and accurately was the top most concern for all the businesses globally.

**So we can sum up the database requirements in the below said points.**

- a. Easily storing huge data / information safely and securely
- b. Can be easily connected with any compactable front end software / reporting and visualization tools like (.Net, Java, Visual Basic, C, C++ / SAP Crystal reports, Tableau)
- b. Systematic / Quickly retrieving and searching of data within a huge database
- c. Accuracy and data cleanliness can be trusted and systematic backup can be made.
- d. Huge data can be stored for long periods without any fear of damage to the data.
- e. Data stored can be directly accessed by any GUI / Reporting tools to use existing data

Search data / information from a huge data can be retrieved in no time

I WHY DATABASE IS REQUIRED

II WHAT IS A DATABASE

III DIFFERENT DATABASE IN THE MARKET / TYPES OF DATABASE ( Small / Huge )

IV DATABASE BENEFITS AND FEATURES ( Direct Entry / Used as Back End )

V DATABASE STRUCTURES AND ITS COMPONENTS (Tables, Views, Queries, Aggregations )

VI CREATE TABLES

## II WHAT IS A DATABASE

### DATA BASE



<u>Data is the information / details</u>	<u>Is the place where the data is stored / saved</u>
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Data is the information / details that we need to be stored / saved on electronic device like HD, Ext HDD

Base is the place where the information / details can be stored.

DATABASE IS THE PLACE WHERE INFORMATION / DETAILS ARE STORED SYTEMATICALLY AS PER THE STRUCTURE DEFINED BY THE SOFTWARE.

Firstly we create the tables and define fields for the table as per our requirement. Then we can define conditions / functions / procedures for required fields to customized the data output.

**Define Relationship:** Relationship can be defined between two tables based on common fields present in both the tables. The common field should be of same data type ( Text, Number )

Database stores the entered information as per our field structure defined. The database understand the fields defined and stores the data in a set format based on the type of columns.

Database is divided intocolumns and rows. Columns are also called as Fields and Row are also called as Record

**Column / Field :-** It is a container in a table in which particular type of data is stored as per the length defined for the field.

Assume we have a table with below information which can classified as rows and columns

FIELD	DATA NAME	DATA TYPE	Data Length
Field1	Name	Text	40
Field2	Department	Text	30
Field3	Salary	Number	8,2
Field4	Join_Date	Date	10

**Row / Record :-** Data entered for fields in a table is called as Row / Record.

RECORD -1	Raja	Accounts Dept	3,000	01.09.2020
RECORD - 2	Yusuff	Production Dept	5,000	01.09.2020

Each individual set of information for each column is recorded as row and each column in the table is part of a row. Each row / record in a table is a group or combination of all columns of a table.

Below are the rows / records available in the above table

	Field1 / Column1	Field2 / Column2	Field3 / Column3	Field4 / Column4	Field5 / Column5
	Name	Department	Salary	Bonus	Join_Date
Row / Record - 1	David Miller	IT Department	2,000	200	01.01.2020
Row / Record - 2	Mohan Kumar	Accounts Department	3,000	300	10.01.2020
Row / Record - 3	Mohammed Azeem	HR Department	4,000	400	15.01.2020
Row / Record - 4	Anil Joseph	Production Dept	5,000	500	24.01.2020

We can say from the above table that the table has 4 rows / records ( In Green )

We can say from the above table that the table has 5 columns ( In Blue )

The columns are divided into data types based on which the data is entered / stored in database.

As the need for storing and retrieving information securely and safely in the market grew thick and fast. IT companies worked hard to provide the requirement like Oracle, Sysbase, Access, MS.Sql, SAP S4 HANA.

DATABASE	USAGE BY OTHER FRONT END SOFTWARE	USAGE BY REPORTING / VISUALIZATION TOOLS
Oracle	Yes	Yes
SAP S4 HANA	No	Yes
MS. SQL	Yes	Yes
SYSBASE	Yes	Yes

### **III DIFFERENT DATABASE IN THE MARKET / TYPES OF DATABASE ( Small / Huge )**

With demand for storage of information / data thick and fast many IT Companies started working on providing the system to store data in a simple and easy way.

After a while Databases like Oracle, Sysbase, MS.Sql, MS.Access were introduced in the market to meet consumer demand.

- HUGE DATABASE :-
- A . ORACLE
  - B. MS.SQL
  - C. SYSBASE
  - D. SAP S/4 HANA DATABASE

as this plays a crucial role in successfully running the ERP systems. Big database software comes with a huge cost and lot of functions and features which big companies with a global presence or local big MNC can afford. Need good technical persons to administer and handle this database software

**NOTE :-** Presently with ERP systems in demand the demand for the huge database has increased as this is the mandatory back end database which is used in any ERP's

- SMALL DATABASE :-**
- A. MS.Access
  - B. MS.Excel
  - C. Foxpro

This software comes packaged with MS. Office or can be purchased as a single product. The usage is very limited and can be used by small companies or individuals.

This can be handled by persons with minimal IT knowledge and experience and can be used in a controlled environment.

After a gap of years of using existing Database SAP introduced its own database called SAP S/4 HANA which has its own powerful function and features for the existing and future markets.

SAP S/4 HANA database is columnar database and it is way ahead of all the existing database in terms of speed, security and flexibility.

## IV DATABASE BENEFITS AND FEATURES ( Direct Entry / Used as Back End )

### Benefits or use of the database( Direct Entry )

- A. Data is stored in a systematic way in a pre formatted way.
- B. Data can be directly entered in the database or through third party software's( C, C++, Visual Basic, Cobol, Dot Net ).
- C. Access to the database can be restricted to the users based on their speciality or role in a team.
- D. Each users can be tracked on what they are working .
- E. Data safety and security can be trusted and guaranteed.
- F. Easily and quickly data can be accessed and retrieved.
- G. Filtering and search functions are easily done
- H. Summing and aggregation function on data can be done
- I. Queries and procedures functions can be applied.
- J. Parent / Child relationship can be defined between tables

### Benefits or use of the database ( Used as Back End For Creating / Designing Forms)

**Back end use is nothing but creating a new program / package using front end tools like ( C, C++, .Net, Java ) with a link to a specified table / tables fields. In simple words we design a screen for users to enter data in fields and the entered data is stored in the specified tables.**

#### DATABASE TABLES FOR FORMS

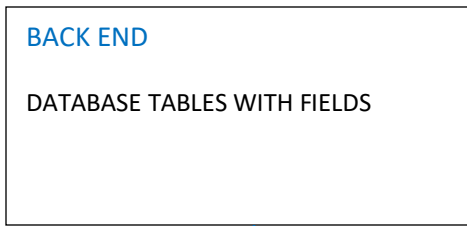
Field Name	Database Type	Database Length	<b>BACK END PROCESS</b>  Structure or tables fields are not visible to the end users
Name	Character	30	
Department	Character	24	
Salary	Number	9,2[ seven Digits – 2 Decimal ]	
DateOfJoin	Date	10[ 01.01.2020 ]	

sing the required data from the above table we design a program by specifying which fields to be used to capture end users entered data. Below is the end users data entry screen using above table

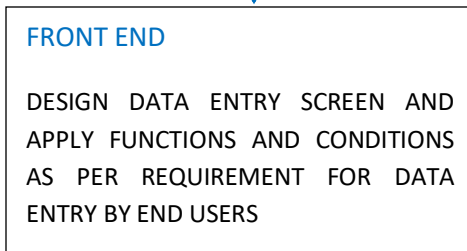
<b>EMPLOYEE MASTER FORM</b>		<b>FRONT END PROCESS</b>  Developers can design and select the fields for data entry by end users
Employee Name	<input style="width: 100%;" type="text" value="Kabeer"/>	
Department	<input style="width: 100%;" type="text" value="IT Department"/>	
Salary	<input style="width: 100%;" type="text" value="50,000"/>	
DateOf Join	<input style="width: 100%;" type="text" value="01.11.2020"/>	

## FIRST STEP

### DATABASE

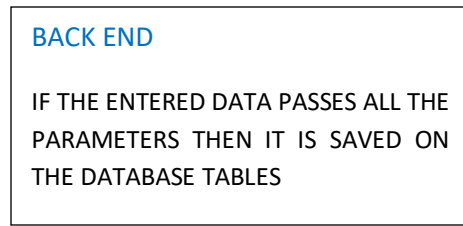


### END USER SCREEN

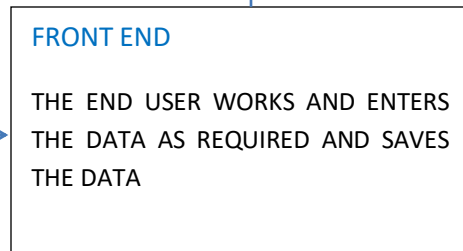


## SECOND STEP

### DATABASE



### END USER SCREEN



- A. For implementing popular ERP's like SAP, Oracle, Great Plains, JD Edwards, PeopleSoft software the mandatory requirement is a huge database.
- B. Used by third party reporting tools like Tableau, Qlikview, QlikSense in readily preparing graphical management reports.
- C. Used by Front end software like C, C++, Visual Basic, Cobol, Dot Net, Oracle Forms which gives powerful and accurate data information.
- D. Tables, Procedures and other functions can be written as per our requirement.
- E. Primary / Foreign key relationship can be used in the front end software
- F. Can be accessed by third party reporting tools as well as Front end software.

## DATABASE TABLES FOR REPORTS ( MS.ACCESS, SAP CRYSTAL REPORTS, TABLEAU )

### TABLE STRUCTURE

Field Name	Database Type	Database Length	<b>BACK END PROCESS</b>  Structure or tables fields are not visible to the end users
Name	Character	30	
Department	Character	24	
Salary	Number	9,2 [ seven Digits – 2 Decimal ]	
DateOfJoin	Date	10 [ 01.01.2020 ]	



### SAMPLE RECORDS IN A TABLE

Name	Department	Salary	DateOfJoin
David Miller	IT Department	2,000	01.01.2020
Mohan Kumar	Accounts Department	3,000	10.01.2020
Mohammed Azeem	HR Department	4,000	15.01.2020
Anil Joseph	Production Department	5,000	24.01.2020
Craig Keeling	IT Department	6,000	26.01.2020

Reporting tools are used to retrieve records from the database - tables based on query / parameter / requirement

Below is sample query to retrieve all records from the table.

Note :- query syntax may differ based on software / reporting tools used

*Select \* from Employee\_Master;*

Sample query to retrieve records based on conditions where department is equal to " IT Department "

*Select \* from Employee\_Master where Department = 'IT Department';*

The above explanation is just to make you understand in a simple way and we will provide you more detailed explanation while posting interesting topics like " working on small Database " or " Reporting tools / Visualization importance "

## **V DATABASE STRUCTURES AND ITS COMPONENTS (Tables,Views,Queries,Aggregation)**

Different database uses different naming conventions and structure also differs. In some huge databases software we have more functions and features compared to small databases. As informed earlier huge database software requires highly skilled technical persons to successfully run the software and technical persons like ( Database Administrator, Database Developer ) are required to be hired to derive maximum benefits of the software functions and features.

The key component of huge database software are security and safety of huge data for years and can be used by companies to prepare inhouse customized software by using front end tools like Java, .Net, Python and other reputed software.

Also we can use the database for creating and development of in-house customized reports by using reporting and visualizing tools like SAP Crystal Reports, MS. Power BI, Tableau, Qlik View, Qlik Sense.

To derive maximum mileage from database usage we have to hire minimal manpower resources as given below

Database administration

Database developer

Database Developer ( Procedures and fuctions ).

Database provides flexible options for creating Tables, Views, Queries, Aggregations and other functions and its depends of the database software along with which the options are available.

File Home Create External Data Database Tools Design

View Primary Builder Test Validation Delete Rows Insert Rows Property Indexes Create Data Rename/Delete Relationships Object  
Key Key Rules Lookups Sheet Sheet Macros Macro Macro Dependencies  
Views Tools Show/Hide Field, Record & Table Events Relationships

All Access Objects

Search...

Tables

Table1

Field Name	Data Type	Description
Name	Text	
Department	Text	
Salary	Number	
DateofJoin	Date/Time	

Field Properties

General Lookup

Format	
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	No
Indexed	No
IME Mode	No Control
IME Sentence Mode	None
Smart Tags	
Text Align	General
Show Date Picker	For dates

A field name can be up to 64 characters long, including spaces. Press F1 for help on field names.

## VI. DATABASE AND ITS IMPORTANCE IN PROFESSIONAL LIFE

1. WHAT ARE COLUMNS / FIELDS IN THE DATABASE
2. DIFFERENT TYPE OF DATA FIELDS ( Strings, Text, Number, Date, Currency, Varchar2 )
3. HOW TO CREATE TABLES
4. DEFINE PRIMARY / FOREIGN KEY RELATIONS BETWEEN TABLES
5. DEFINE QUERIES

### 1. WHAT ARE COLUMNS / FIELDS IN THE DATABASE

From this post I hope you will be in love with the database. We will refresh the structural flow of TABLE which is a small but very important part of database.

**DATABASE** ----> **TABLES** ---> **FIELDS**

In any big database you have the option to create your own tables .A table consist of a bundle / group of fields created as per our requirement. For example we need to capture the employee in and out time during work day. For this we need the following fields

FIELD_NAME	FIELD_TYPE	FIELD_LENGTH
Employee_No	Number / Character	10
Employee_Name	Character	40
Employee_Department	Character	40
Employee_Designation	Character	40
Employee_Grade	Number / Character	6
Current_Date	Date	10
In_Time	Time	4,2
Out_Time	Time	4,2