



# Starting with MS Access 2010



## In this chapter, you will learn about :

- Introduction to Database
- Components of a Database
- Database Organization
- RDBMS – Relational Database Management System
- Microsoft Access
- Starting and creating a Blank database
- An Access Window
- Creating a database using templates

## INTRODUCTION TO DATABASE

A **database** is a collection of related information. In other words, database is a collection of data organized in a manner that allows easy access, retrieval and use of that data.

In a manual database, you might record data on paper and store it in a filing cabinet. Database software, like **Access**, is a software that allows you to create, access and manage a database.

Using a database software, you can add, change and delete data in the database; sort and retrieve data from the database; and create forms and reports using the data in the database.

**Phone book** is an example of database. The phone book contains several items of information like name, address, phone number, etc., of each phone subscriber in a particular area. In the database, each subscriber's information will be saved in the same format.

In the term of database, the phone book is a table which contains a record of each subscriber. Each subscriber records contains three fields : name, address, and phone number. The records are sorted alphabetically by the name field, which is called the **key field**.

## COMPONENTS OF A DATABASE

In a database, data is stored in a database file. Data may be arranged in tables related to one another.

Field : **Field** is a single column or a unit in a table with unique name.

Record : A **record** is a group of related fields. For example, a student record includes a set of fields about one student.

Table : **Tables** are the places where all the information in your database is stored in the form of rows (records) and columns (fields).

Table Structure : A **table structure** is created before creating any table that identifies the name, size and types of various fields.

Datasheet : By default, each table appears as a spreadsheet grid called a **datasheet**. You can type directly into a datasheet.



**Form** : **Forms** are like dialog boxes that prompt for field entries and used to make data entry more convenient. An attractively formatted form is easier and more pleasant to use to enter new records than a plain datasheet.

**Filters** : It is often useful to display a filtered view of a table. You can **filter** a table to show only certain records, only certain fields, or both.

**Queries** : You can create a query, which is like a saved filter. **Queries** also enable you to combine data from multiple related tables into a single datasheet of results.

**Reports** : **Reports** present data from tables and queries in an attractive, customizable format—complete with titles, headers and footers, and even logos and graphics.

## **DATABASE ORGANIZATION**

Before you begin creating a database, you should perform some preliminary tasks. Make a list of the data items you want to organize; each of these will become a field in the database.

### **Field**

A **field** is a combination of one or more related characters or bytes and is the smallest unit of data a user accesses. A field name uniquely identifies each field. When searching for data in a database, you often specify the field name. Field names for the data in the Student file are Student ID, First Name, Last Name, Class, Fees. A database uses a variety of characteristics, such as **field size** and **data type**, to define each field.


### **Field Size**

The **field size** defines the maximum number of characters a field can contain. For example, the Student ID field contains 6 characters and thus has a field size of 6.

### **Field Type**

Each field has a data type that defines what you can store in it. Data entry is restricted to valid entries for the type you choose, which helps to prevent data-entry errors. For example, you cannot enter letters in a field set to Number, and you must enter valid dates or times in a Date/Time field.

- **Text** : This is a general-purpose field containing any data. It has a limit of 255 characters and cannot be used for numeric calculation. Use this type for numeric entries that will not have calculations performed on them, such as telephone numbers and ZIP codes.
- **Memo** : This type has a limit of 63,999 characters; used for detailed, descriptive fields.
- **Number** : This type stores numeric data that you can use in calculations. It can also hold symbols, such as decimal points and commas.
- **Date/time** : This type only stores numbers representing valid dates and times.
- **Currency** : Stores currency data that you can use in calculations.
- **Auto Number** : Stores a sequential number for each record.

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- Yes/No : The value 1 represents Yes, and the value 0 represents No, but the field can be formatted to display values as True/False, On/Off, or Yes/No.
  - OLE Object : Stores objects created in another application—such as Word or Excel— that you can link to or fill in an Access table.
  - Hyperlink : You can link to Websites, e-mail addresses, files on your computer, files on a LAN, or virtually any other location.
  - Lookup Wizard : Depending on the usage, this type creates either a lookup list from data that you specify or a lookup list from the values in another table. It can also be used to set up multivalue lists.
  - Attachment : This type works only in Access 2007 and Access 2010 databases. You can attach data files from word-processing programs, spreadsheets, graphic editing programs, and so on.
  - Calculated : This field type is new in Access 2010. You can use it to create calculated fields directly in a table; in earlier versions, you could create calculated fields only in queries.

### **Entering Data**

After a table structure is created, you can enter individual records into a table. Records usually are entered one at a time using the keyboard, often through a data entry form. As you are **entering** the data, the database software checks, or validates, the data. **Validation** is the process of comparing the data to a set of defined rules or values to determine if the data is acceptable. For example, designating a field as a numeric data type allows a user to enter only numbers into the field. Validation is important because it helps to ensure that data entered into the database is error-free. Another way to enter data into a database is to import data from an existing file. For example, you can import data saved in a spreadsheet file into a database.

### **Manipulating Data**

Once the records are entered, you can use the database software to **manipulate** the data to generate information. For example, you can sort or organize, a set of records in a particular order, such as alphabetical or by entry date. You can also retrieve information from the database by running a query. A **query** is a specific set of instructions for retrieving data from the database.

## **RDBMS- RELATIONAL DATABASE MANAGEMENT SYSTEM**

A DBMS (*Database Management System*) that is based on relational model is known as **RDBMS** (*Relational Database Management System*). RDBMS provides a comprehensive and integrated approach to information management. A relational model provides a basis for a relational database. A relational model has three aspects :

- Structure : It consists of a collection of objects or relations that stores data. An example of relation is a table. You can store information in a table and use the table to retrieve and modify data.
- Operations : These are used to manipulate data and structures in a database. When using operations, you must adhere to a predefined set of integrity rules.

- Integrity Rules : These are laws that govern the operations allowed on data in a database. This ensures data accuracy and consistency.

## MICROSOFT ACCESS

**Microsoft Access** is a program for creating databases to store business or personal data. Microsoft Access creates relational databases— that is, databases that can contain multiple tables with links between them. In Microsoft Access, the data is arranged in the form of **tables**. Every specific piece of information is known as **value**. A value is located at the intersection of a column and a row.

## STARTING ACCESS

The MS-Access can be started by following these steps :

**Step 1 :** Click on **Start** button.

**Step 2 :** Click on **All Programs**.

**Step 3 :** Click on **Microsoft Office**.

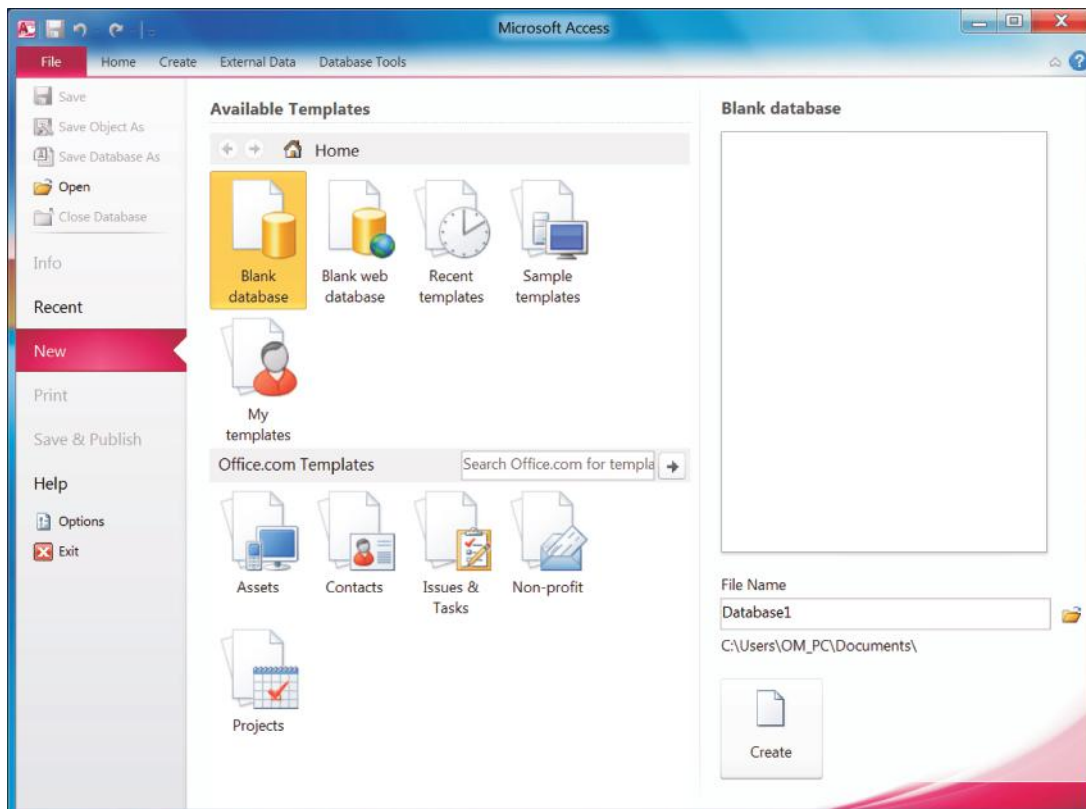
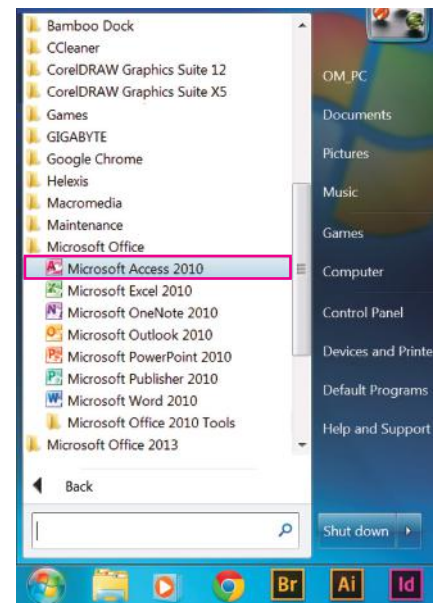
**Step 4 :** Click on **Microsoft Access 2010**.

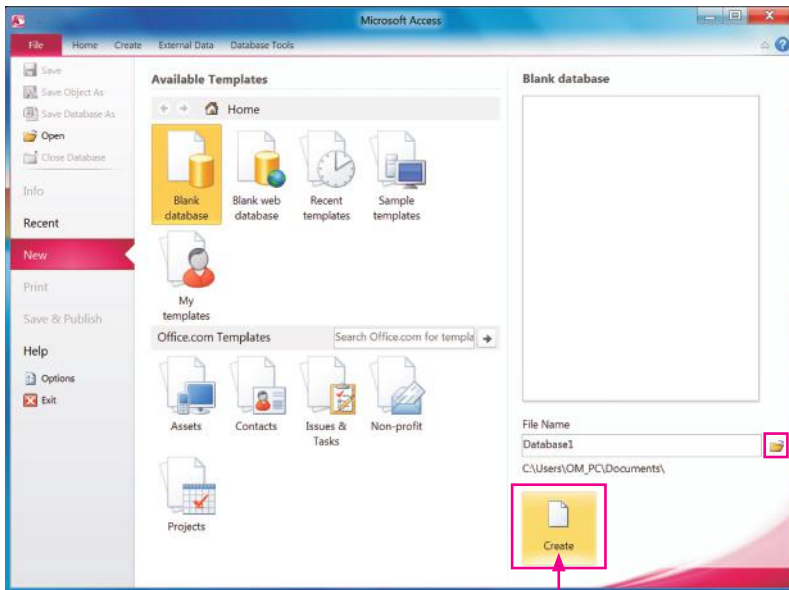
**Backstage view** of File tab appears.

Now you can create a new database or open an existing file.

## CREATING A BLANK DATABASE

You can start a new database and fill the data in it. Access prompts you to assign a name to the file when you create a new database file.





**Step 1 :** Click on the **Blank Database** option.

**Step 2 :** Type a name for the database. Access automatically assigns the **.accdb** (Access Database) extension to all database files.

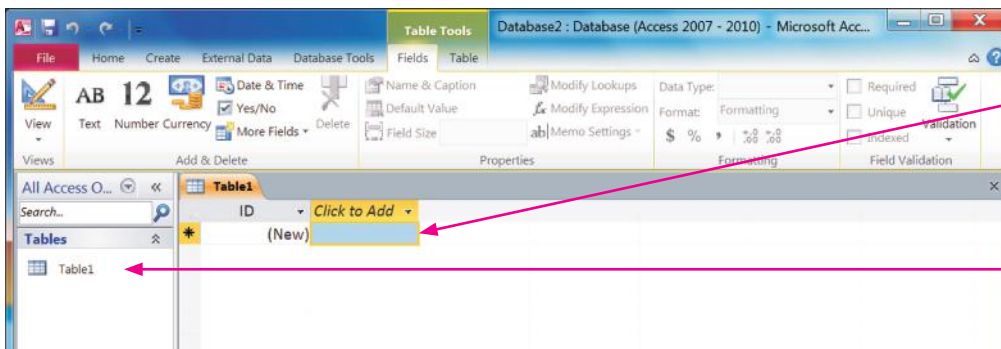
- Click on **Create**.

You can click on the browse button to find the folder or drive where you want to store the new file.

This area will show the location where you will save the database file.

## AN ACCESS WINDOW

For working in **Access**, you must understand the interface of Access Window before working in it.



Access creates a new, blank database and opens a new table.

Now you can create your own tables by entering records in it.

The Navigation pane displays database objects that you create, such as tables and forms.

**Title bar :** Displays the database name. Drag the title bar to move the window.

**File tab :** It displays the backstage view of file commands, such as New and Open.

**Quick Access Toolbar :** It displays quick access buttons to the Save, Undo, and Redo commands.

**Ribbon :** It displays groups of related commands in tabs. Each tab offers shortcut buttons to common tasks.

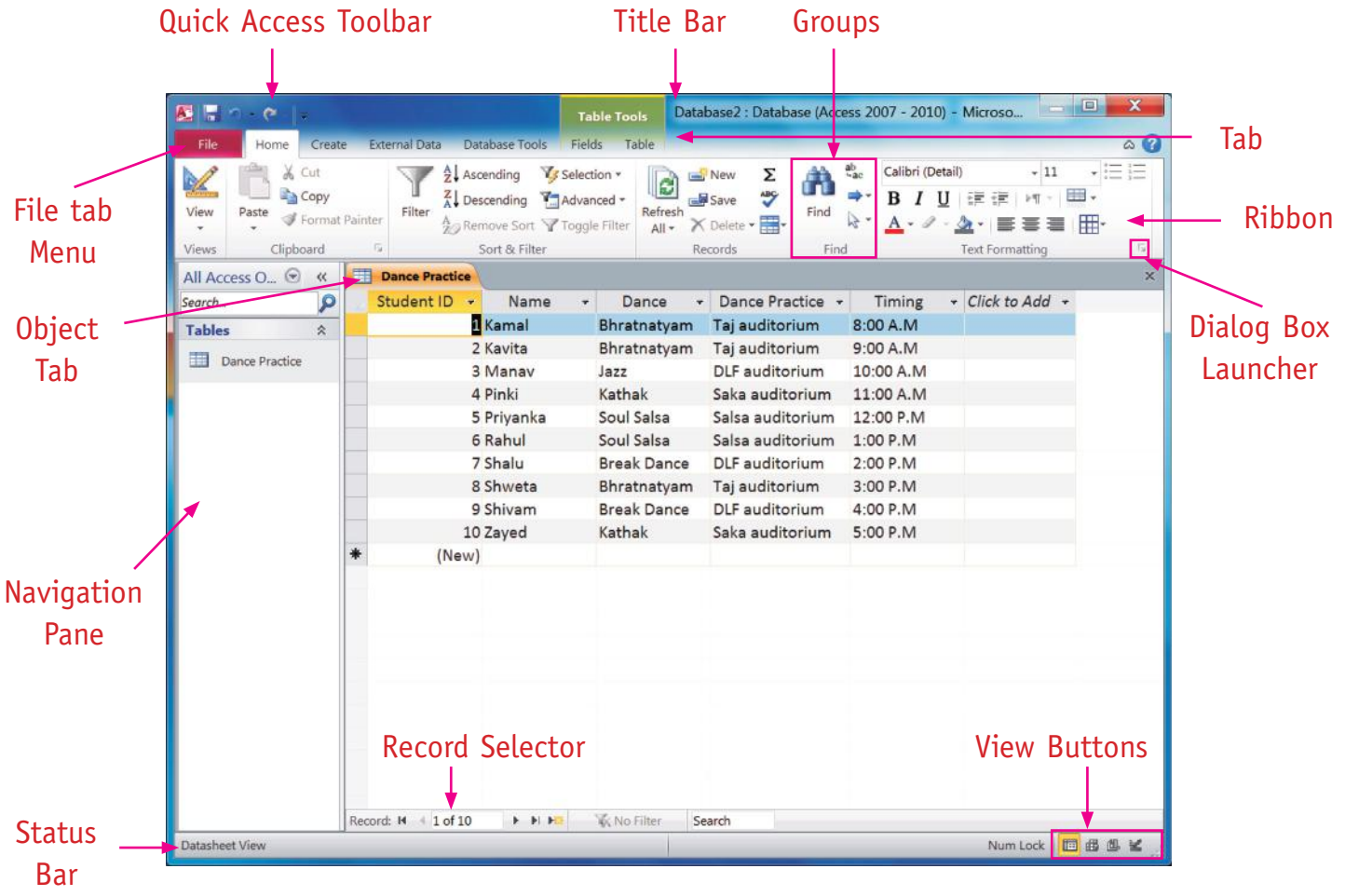
**Tabs :** Contain buttons and other controls for working with data.

**Groups :** Organise controls into sections within tabs.

**Dialog box launcher :** Opens a dialog box related to the group.

**Object tabs :** Provide access to all open database objects, such as tables, reports, and forms.

**Navigation pane :** Lists all available database objects.



View buttons : Switch between various views of the selected object.

Record selector : Displays the current record number and navigates to other records.

Status bar : Shows status information about the current task.

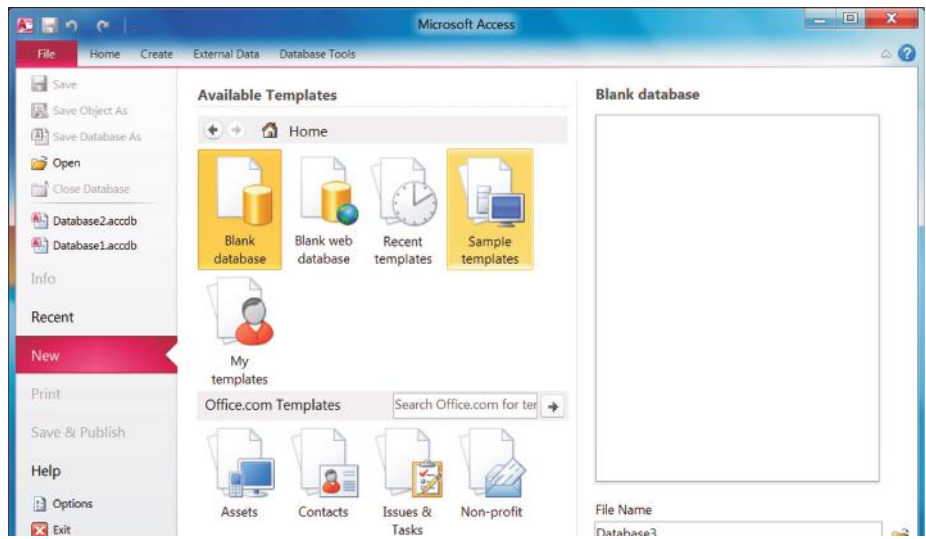
### CREATING A DATABASE USING TEMPLATE

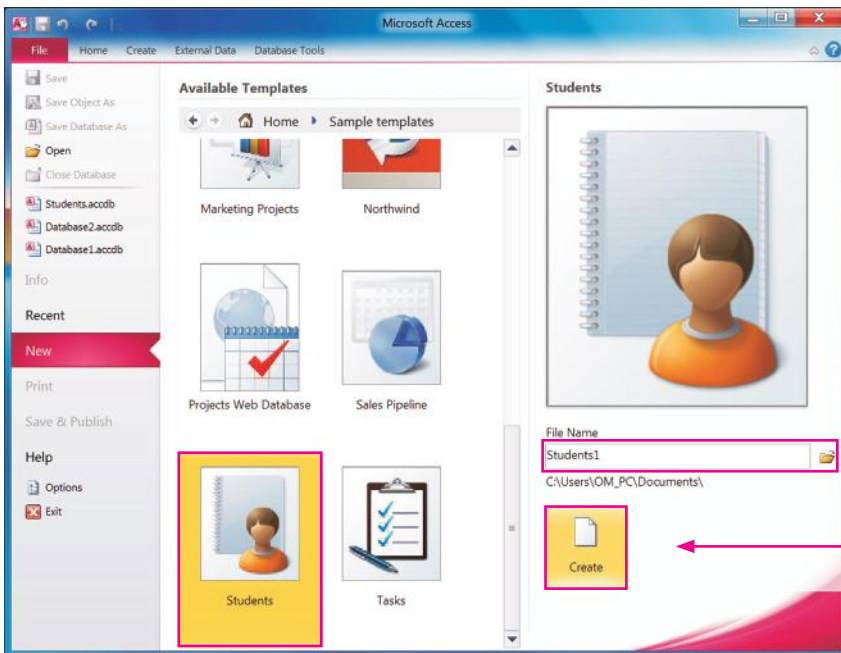
The new database can be created using a template that includes pre-built tables and forms which can be used to fill the data. To create the database follow the given steps :

**Step 1 :** Start Access and click on the **Sample template**.

If Access is already open, you can bring this page by clicking on the **Office** button, and then clicking on **New**.

**Step 4 :** Click on a template.





**Step 2:** Type a name for the database.

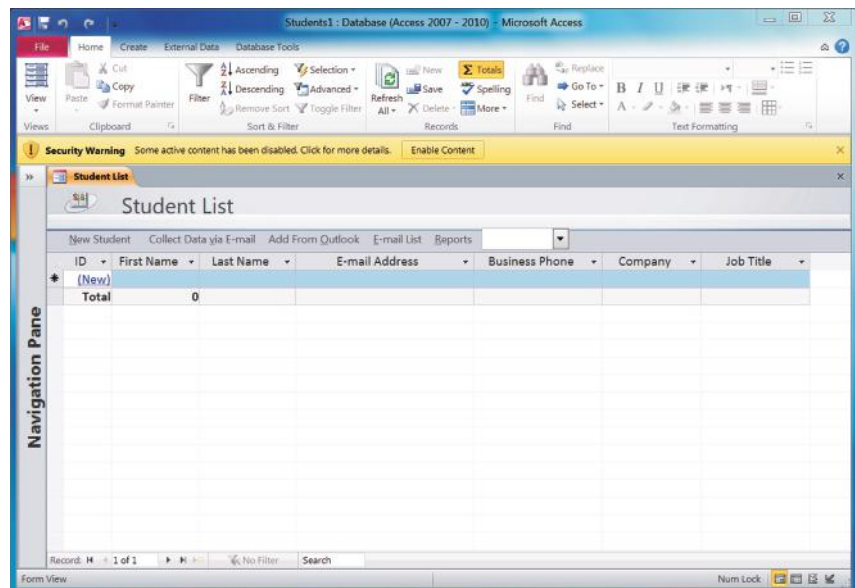
**Step 3:** Access automatically assigns the **.accdb** extension to all database files.

**Step 1:** Click on **Create**.

This area will show the location where you will save the database file.

**Step 2:** Access prepares a new database and a new table ready for data.

**Step 3:** You can now fill the table by entering records in it.



## Points to Remember

- Field is a single column or a unit in a table with unique name.
- Tables are the place where all the information in your database is stored in the form of rows (records) and columns (fields).
- By default, each table appears as a spreadsheet grid called a datasheet.
- The field size defines the maximum number of characters a field can contain.
- Components of a database are– Field, Record, Table, Table Structure, etc.
- RDBMS stores information in the form of related tables.
- Microsoft Access is a popular Relational Database Management System.
- A query is a specific set of instructions for retrieving data from the database.
- You can create tables in Design and Datasheet view.



## EXERCISE



### A. Tick (✓) the correct option :

- Popular Database software is :  
(a) Coral Draw  (b) MS Access  (c) Photoshop
- Phonebook or telephone directory is an example of :  
(a) tables  (b) fields  (c) database
- Which field type has a limit of 255 characters?  
(a) Text  (b) OLE Objects  (c) Number
- A set of all data fields in a row is called :  
(a) field  (b) record  (c) table
- A database object that allows you to extract information from the table :  
(a) reports  (b) queries  (c) forms
- The toolbar that displays buttons to save, undo and redo command :  
(a) ribbon  (b) Quick Access toolbar  (c) view buttons

### B. Fill in the blanks :

- A \_\_\_\_\_ is a collection of related information.
- The process of collecting data is known as \_\_\_\_\_.
- \_\_\_\_\_ are like dialog boxes that prompt for field entries and used to make data entry more convenient.
- A \_\_\_\_\_ uniquely identifies each field.
- A \_\_\_\_\_ is a group of related fields.
- A single column or a unit in a table is called \_\_\_\_\_.
- \_\_\_\_\_ database revolve around the term 'table'.
- RDBMS is an acronym for \_\_\_\_\_.
- \_\_\_\_\_ fields only stores numbers representing valid dates and times.

### C. Write (T) for true and (F) for false statements :

- A database is a collection of related information.
- Phonebook is an example of subscriber.
- When we searching for data in a database, we often specify the field name.
- Query is a specific set of instructions for retrieving data from the database.



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5. RDBMS provides a comprehensive and relational model of data.



**D. Answer the following questions :**

1. Explain the components of database.
2. What is database? Give some examples.
3. What is the use of field type? Explain any three commonly used of field type.
4. What do you understand by RDBMS?
5. Write a short note on MS Access 2010.
6. What is database?
7. How would you record the data in manual database?
8. Write the difference between manual and computerized database.
9. What are the limitations of characters in text field type?
10. What is the extension of database files?



**ACTIVITY**

- Start MS Access and write in your practical notebook about the various steps you will follow to open it.
- Open the MS Access Database Interface Window and make a chart showing its various parts in your practical notebook.