

Introduction to MS Access 2010



Learning in this chapter

- Database Management System (DBMS)
- Relational Database Management System (RDBMS)
- Different Database Objects
- Microsoft Access 2010
- Database views in MS Access
- Creating a table in Database
- Defining a primary key
- Adding new record to a table
- Editing and Deleting Records
- Sorting Data in a table





UNDERSTANDING A DATABASE

A database or an electronic database refers to an organized collection of data stored on a computer in such a way that its contents can be quickly accessed, updated and queried with the help of a software program.

A database usually contains data pertaining to one particular entity or organization. For example, the database of a particular school contains data about its students, their academic co-curricular achievements, details of teachers and other administrative staff, and so on. Similarly, the database of a library contains data about all its books, members, its various other activities, and so on.



DATABASE MANAGEMENT SYSTEM (DBMS)

The software program that allows us to create, access, update and query a database is known as a Database Management System or DBMS. Using a DBMS we can access and modify the data in a database, query the database to view a particular set of data, print the data in a predefined format and perform many other useful manipulations on the data.

In simple words we can say that Database Management System allows us to manage a database. The management of a database involves creating a database, modifying, deleting and adding datain it.























Advantages of Using a DBMS

A computerized Database management System or a DBMS offers several advantages over the conventional filing systems. Some of these advantages are as follows:

Organized storage of Data: The Database Management System allows us to store, retrieve and process a collection of data in a central database file. It eliminates the need of using different files for the storage of data.

Efficient Information Retrieval: The main task of the Database Management System is provide the correct information in the required format as and when required. One can use a query to extract the require data from the database.

Reduces Data Redundancy: In a conventional filing system two or more files may store the same piece of data. This leads to data duplication or data redundancy, resulting in an inefficient use of memory space.

In a DBMS, all the data is kept at one central location. The centralization of data ensures that no unnecessary duplication of data takes place. This leads to reduction in the total amount of data (that, otherwise, is bloated due to redundant entries), and a better and more efficient use of memory space.

Improves Data Consistency: Data consistency, here, refers to the lack of contracdiction in the data. Since all the data in a database is kept at one central location, any changes made to a particular data item are, immediately, reflected across the whole database. This reduces the chances of data being changed in one file and remaining unchanged in some other file, thus improving the overall consistency of data.

Data Sharing and Protection : The DNMS allows sharing of the centralized database by many users. The DBMS makes sure that only authorized access is given to the database. This keeps the data confidential and secures it from unauthorized access.

Maintains Data Integrity: Since the same database is being shared by many users, an important job of the DBMS is to see that data, which is being transmitted to or received from several users does not get corrupted. In other words it maintains **data integrity**.

Standardization of Data: The use of DBMS allows the entry of data in a standard format using its data validation feature. This make sure no one enters a wrong type of data in a database that may, later, lead to problems.



RELATIONAL DATABASE MANAGEMENT SYSTEM (RDBMS)

A relational database is a special type of database where data is stored in a number of separate, but linked tables. The software system that is used to create, maintain and query a relational database is called a Relational Database Management System or RDBMS.



























In a relational database two tables are linked together using a common field or column, When a user makes a query, the RDBMS, temporarily, combines the data in the related tables and presents it in the form of a query table to the user.

Each relational database may consist of a number of tables. Each table has a number of records. Each record is made up of many fields and each field can contain many data entries.



The concept of Relational database was given by E.F. Code at IBM. There are many RDBMS available. Some of them are Oracle, foxPro, and Microsoft Access.

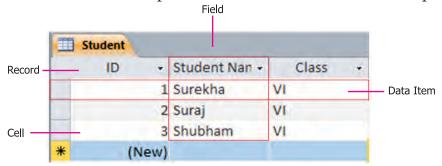


DIFFERENT DATABASE OBJECTS

A database contains a specific structure to store data. Following are some basic terminologies used in a database that will help us in getting acquainted with the functioning of a DBMS: Tables, Queries, Forms and Reports.

Table

A Table is a database object that stores data in the form of records (rows) and fields (columns). It is the building block of a database. All other elements of a database are created based on the data stored in the tables. The basic components of a table are shown in the picture given below:



Records: The rows in a table are called records. Record is a collection of related fields that contain complete information about an entity in a table. For example, in the above table each record is a collection of information about one particular student such as his ID, Name and class.

Fields: Fields are different columns within a table. Each field in the above table contains the same type of information for each student such as their ID, Student Name, Class, and so on.

Cell: A table can be viewed as a collection of several rectangular boxes known as Cells. All the data in a table is entered into its different cells. Each data entry in a cell of a table is called a Data Item.

Querie

A Query is a database object that gives out a selective output based on certain criteria or conditions in the form of a query table. Queries are always based on tables and other queries.





















Form

A Form is an interactive graphical object of a database that allows the user to enter, edit and view records from a table or query table. A form focuses on one record at a time, i.e., it displays only a single record from a table or a query table, at a time. A Form is always based on a table or query table. Data entered through a form is stored in the table based on which it is created.

Report

A Report is a database element that allows users to present information from a table or a query in a formatted, printable manner. Reports in a database can be created either in the Design view or using the Report Wizard.

Field Data Types

A table stores various types of data. The data entry varies according to the types field in a table. The following table explains various data types that are commonly assigned to the fields in a table:

Data Type	Description	Size
Text	It is used to store short text and data like names and addresses that may be formed of the combination of letters, numbers, spaces and special characters.	Upto 255 characters
Memo	It is used to store long textual messages, comments or notes.	Upto 65,535 characters
Number	It is used to sore numeric values like distance, salary, quantity sold or purchased and so on.	8 bytes
Date/Time	It is used to store date and time values like Date_of_birth or Date_of_joining, and so on.	8 bytes
Currency	It is used to store currency values like rates, prices, and so on. A currency symbol (\$) automatically appears before each value entered in this field.	8 bytes
Autonumber	This is used when you want a sequential series of numbers to be generated automatically. The initial value is 1 and the value is incremented by 1 with each record.	8 bytes
Yes/No	This is a logical data type and is used for storing Yes/No, True/False or On/Off values.	4 bytes
Attachment	This data type is used for storing files such as an image file in a field.	4 bytes



MICROSOFT ACCESS 2010

MS Access 2010 is the most popular and powerful Relational Database Management System























(RDBMS) that comes as an integral part of the MS Office 2010 suite of applications. It is a powerful GUI based RDBMS using which we can create customized databases for self-use or for use by small and medium sized businesses. It enables them to store, manage and utilize their data in an efficient manner.





The initial code name of MS Access was Cirrus.

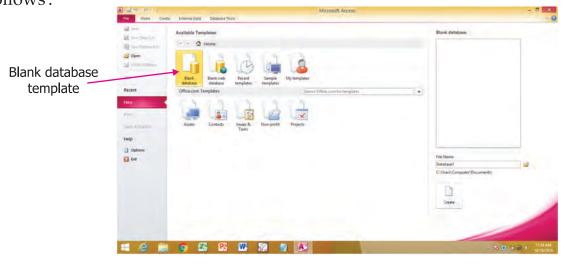


STARTING WITH MICROSOFT ACCESS 2010

We can start MS Access 2010 by typing 'Microsoft Access 2010' in the Search box on the Start screen and then pressing the Enter key.

... The opening screen of the Microsoft Access will appear with New Backstage view active.

This opening screen gives us a number of options to create a new database using various readymade templates. The steps to create a new database using the New Backstage view are as follows:



- 1. Click on any template listed in the right pane. Here we are selecting the Blank Database template as we want to create a blank database.
- 2. Click on the Folder icon to choose the location where you want to create the database file.
- 3. Enter a name for your database.
- 4. Click on Create button.
 - ...The new database with the given name gets created and opens in the MS Access window.



Remember

A database file created in MS Access 2010 has an extension of .accdb.





















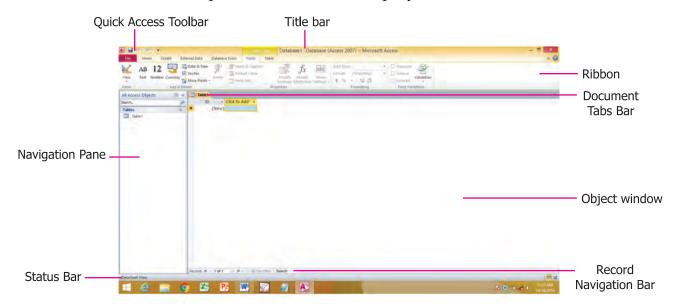


Components of the Database Window

Once we have created a database file, it will be displayed on the screen in the form of a database window, with components as shown below:

Title bar: Appears at the top of the program window and displays the name of the database and the program.

Quick Access toolbar: Appears on the left side of the Title bar and contains the frequently used commands that are independent of the tabs displayed on the Ribbon.



Ribbon: Extends across the top of the program window, directly below the Title bar and consists of a set of tabs, each of which contains groups of related command buttons.

Navigation pane: It appears on the left side of the program window and displays a list of all the objects in a database. You can click on the ($\langle \langle \rangle$) button to hide and on the ($\langle \rangle \rangle$) button to show the navigation pane.

Object window: It appears below the Ribbon and displays the open database objects.

Document Tabs bar : It appears at the top of the object window. All open objects are displayed on this bar. To view an object, click its tab. Click the Close button on the right edge of the bar to close the currently selected tab.

Status bar: It appears at the bottom of the program window and displays information about the database and provides access to certain program functions.

Record Navigation bar: This bar is located at the bottom of the object window and allows you to navigate records one at a time. You can move to the next record, previous record, first record or last record by clicking on their respective icons on the navigation bar.





























Tick (✓) the correct answer in the ____.

1. Which of these is a database management system?

a. MS Excel b. MS Word

Which of these is not a feature of a DBMS?

a. Data consistency b. Data security c. Data duplication

3. Which of these is the file extension of a file created in MS Access 2010?

4. Which of these is not a part of MS Access database window?

a. Ribbon b. Module c. Navigation pane

5. From where can you access database objects in a database file?

a. Navigation pane b. Design pane c. Create tab

b. .acxmb

DATABASE VIEWS IN MS ACCESS

a. .accdb

MS Access allows us to create and edit tables and other database objects in two main views. These are called Datasheet view and Design view.

- Datasheet view: In Datasheet view tables are seen exactly the way they are. We generally use the Datasheet view for creating tables, entering data into them and also for editing data.
- **Design view**: The Design view is useful to specify the design (field names, their data types and field properties) of a table or to modify the design of an existing table.



MS Access

.amdb

Tables Views in Access

How to change the View?

Follow these steps to change the view:

1. Select the table whose view you want to change in the Navigation pane and click on the Home tab.

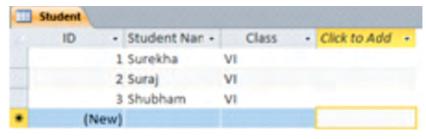


Table in Data Sheet View





















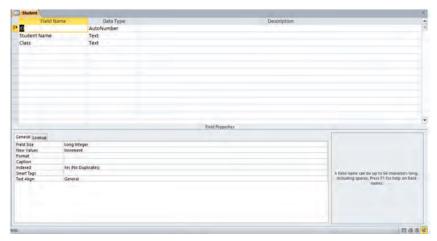


Table in Design View

- 2. Click the down-arrow under the View button.
- 3. In the drop down menu, click the View you want. ... The table will be displayed in the selected view.

You can also change to the required view by right clicking on a table icon in the Navigation pane (left pane) and selecting the desired view from the shortcut menu.

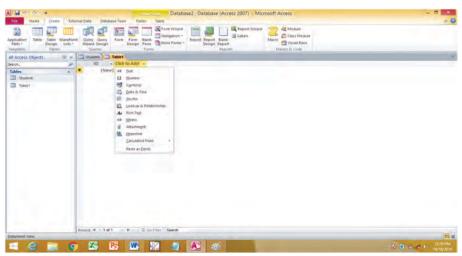
CREATING TABLES IN A DATABASE

When we create a blank new database, a new table named Table1 is created automatically and opens in the datasheet view. However, we can also create new tables either in the Datasheet view or in the Design view. Let us learn how to do it.

Creating a Table in the Datasheet View

The steps to create a table in the datasheet view are as follows:

- 1. Open the required database and click on the Create button.
- 2. From the Tables group select the Table command button.



Select a data type for the field

...A new table will appear in the database window with two fields. By default, the word Click to Add will appear in the column header of the blank second field.















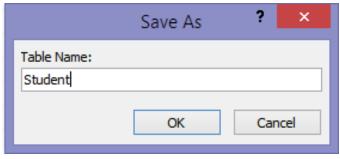






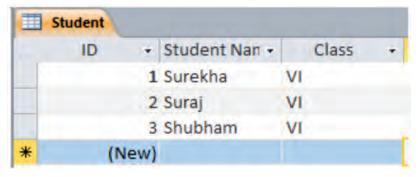


- 3. Click on the Column header.
 - ... A drop down list of data types will appear.
- 4. Select a data type based on the kind of data you want to enter into the field.
- 5. Double click on the Column header and type out a name for the new field. You can also rename a field by right clicking on the Column header (field name) and then selecting the Rename option from the shortcut menu.
- 6. In a similar way, add more fields on the table and rename them as required.
- 7. To save the table, click on the Save button on the Quick Access toolbar. ... The Save As dialog box appears.



Saving the Table

- a. Type a name for the table in the Table Name box. (Here we name the table as 'Student'.)
- b. Click on the OK button....The table will be saved by the given name.
- 8. You can now add data to the table by clicking in the different cells and typing out data entries in the different fields one-by-one.



- 9. After adding data, click on the Save button on the Quick Access toolbar to save the changes made to the table.
 - ...The changes will be saved. Entering data into the table



Remember

Notice that when a table is created two contextual tabs — Fields and Table appear on the ribbon under the heading Table Tools. The Fields tab contains options to work with fields of the table and the Table tab contains options to set the table properties and relationships.



















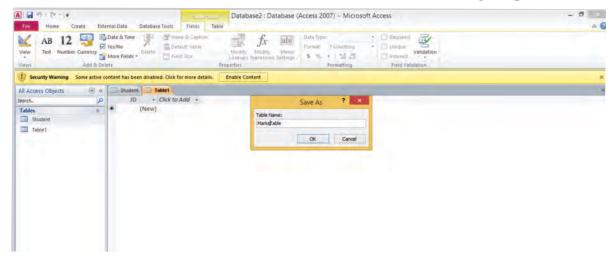




Working with the Table in the Design View

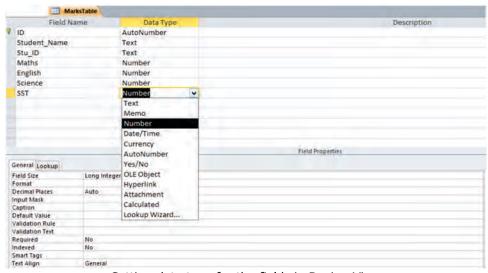
Though MS Access 2010 allows us to set field data types and properties in the Datasheet View itself, it is always best to set these attributes in the Design view. Let us create another table and learn to set data types for its various fields in the Design view.

1. Click on the Create tab, select the Table button from the Tables group.



Saving the table by the name 'Marks Table'

- ...The empty table structure layout will open in the datasheet view.
- 2. Click on the Design View button on the ribbon.
 - ...The Save As dialog box opens.
- 3. Give a name to the Table and click on the OK button.
 - ...You will see one field with the field name "ID" automatically inserted with the Auto Number type.
- 4. You can click in the cell below the ID field and type the name of the new field (here, Student_Name) and press the Enter key.



Setting data type for the fields in Design View

... The cursor will shift to the Data Type column.

















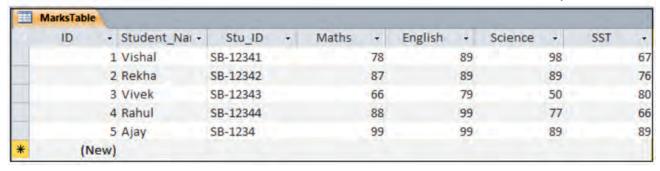






- 5. Select the data type for the field.
- 6. Add a description about the field in the Description column, if required.
- 7. Similarly define other fields, their data types in the Design view and click on the Save button to save the changes made to the table design.

We can now view the table in the datasheet view and add data to it as required.



Entering data to the table in datasheet view



DEFINING A PRIMARY KEY

A Primary key is a field that uniquely identifies a record in a table. For example, in our table Stu_ID is a primary key field as it has a unique value for every record. To set a primary key, follow the steps given below:



Remember

- A primary key does not allow Null values and must always have a unique value.
- 1. Open the Home tab and click on the down arrow of the View command in the Views group.
- 2. From the list of views select Design view. You can also click on the Design view button from the status bar to switch over to the Design view.
- 3. Select the field name Stud ID.
- 4. Click on the Primary key button, in the Tools group of the Design tab.
 - ... A key mark will appear in front of the field name showing that it has been set as the primary key field.

We can now save the changes made to the table by clicking the Save button on the Quick Access toolbar. Switch over to the datasheet view to add data to the table or edit the data it contains.



The Primary key is a toggle key. To remove the primary key property from a field select that field and click on the primary key button.













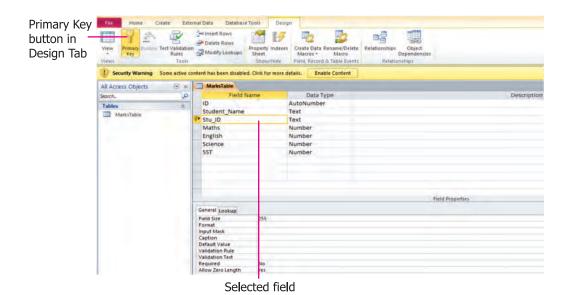










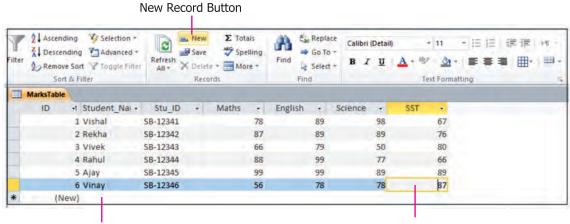




ADDING NEW RECORDS TO A TABLE

The steps to add a new record to an existing table are as follows:

- 1. Open the required table (to which you want to add records) in the datasheet view.
- 2. In the Records group on the Home tab, click the New button Or, click the New Record button on the Record Navigation bar.



Click to enter another record

New record entered

- ... This will place the cursor in the NEW record below your last added record.
- 3. You can also simply click in the NEW record row (which is below your last added record) and start typing data to add a new record to a table.
- 4. After entering the records, save them by clicking on the Home tab and then selecting the Save command button from the Records group.
- 5. You can also format the data in a table by clicking on the various command buttons given in the Text Formatting group on the Home tab.



EDITING AND DELETING RECORDS

Editing Records

To quickly edit any record within a table, follow these steps:















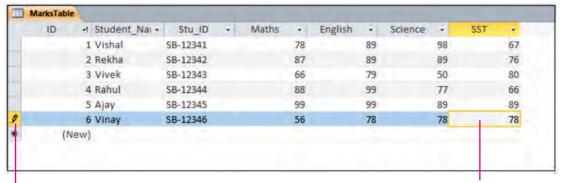








- 1. Click in the cell containing the data that you want to edit or change.
- 2. Delete the existing data using the Backspace or Delete keys and type the new data as required. A pencil icon (()) appears to indicate the Edit mode.
- 3. Save the changes by clicking on the Save button in the Records group on the Home tab.



This icon shows that the record is being edited.

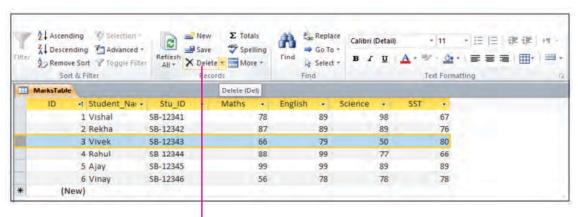
Editing a record by changing a data entry

Similarly, make corrections to the data given in the other cells/records as required.

Deleting Records

The steps to delete a record from a table are as follows:

- 1. Select the entire record by clicking the gray border (known as the Record Selector) on the left side of the record.
- 2. Select the Home tab, and locate the Records group.
- 3. Click the Delete command button.



Delete button in the Records group

...The record will be permanently deleted.



MODIFYING THE TABLE DESIGN

We can modify a table's design in both the Datasheet view and the Design view. Here we will learn to modify the design of a table in the Datasheet view.

Moving a Field

To change the position of a field or to move a field, follow the steps given below:

1. Select the field that you want to move. Take the pointer to the bottom border of the























- field's header cell. The pointer will change shape to move icon (+).
- 2. Click and drag left or right in the desired direction. ... While dragging, a vertical line will guide you.
- 3. Once the vertical line is positioned at the desired location, release the mouse button. ... The selected field will move to new position in the table.

Inserting a Field

To insert a field, follow the steps given below:

- 1. Right-click on the header cell of the field before which you want to insert a field.
- 2. In the shortcut menu that appears select the Insert Field option. ... A new field will be inserted.
- 3. Change the name of this field as you want and add data to it as required.

Renaming a Field

To rename a field name, follow the steps given below:

- 1. Take the mouse pointer to a header cell of field that you want to rename and right click on it.
- 2. From the shortcut menu select the Rename Field option. The field name will become highlighted.
- 3. Enter a new name to replace the highlighted field name and press the Enter key.

Deleting a Field

To deleted a field from a table, follow the steps given below:

1. Right-click on the header of the required field and select the Delete Field option from the shortcut menu.

OR

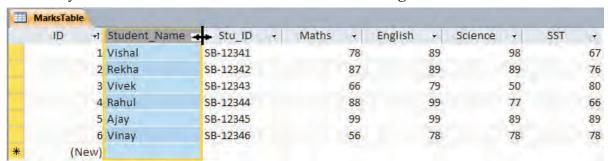
Select the required field and click on the Delete button in the Add & Delete group on the Field tab.

2. In the dialog box that appears click on the Yes button to permanently delete the selected field.

Changing the Width of a column

To change the width of a column, follow the steps given below:

1. Click anywhere in the field whose width to be changed.



Drag left or right to change field width





















- 2. Take the mouse pointer on the left or right border of the field header. ... The mouse pointer changes into a horizontal double arrow crossed by a vertical line (++).
- 3. If you double-click now, the column would be resized to the widest possible size of that type.

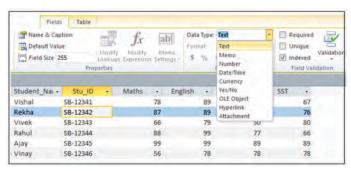
OR

Click and drag the mouse in the desired direction, left or right, until you get the desired width.

Changing the Data Type of a Field

To change the data type of a field, follow the steps given below:

1. Click on the field whose data type you want to change.



Select the required data type

- 2. Click on the drop down arrow of the Data Type option in the Formatting group under the Fields tab and click on the required data type.
 - ... The data type of the field will change.



Remember

To go to a specific record in Datasheet view, press Alt+F5 keys. The cursor will appear in the Current Record box. Type the record number and Press the Enter key.



SORTING DATA IN A TABLE

We can sort data alphabetically or arrange numbers in ascending or descending order. To sort data, follow the steps given below:

1. Click on the drop down arrow on the right of the field name you want to sort.



Sorting options for a Number Field





















2. Click on the sorting options displayed.

(Remember, sorting options will be different for fields having different data types)

...The records will be sorted in the order as per your selection. A small upward / downward arrow will also appear in the sorted field name.

Click on the Ascending/Descending option in the Sort & Filter group under the Home tab.

To undo the sort, click on the Remove Sort option in the Sort & Filter group under the Home tab.

POINTS to Recall

- A database is an organized collection of data stored on a computer in such a way that it can be easily accessed, updated and queried with the help of a software program.
- The software program which allows you to create, access, update and query a database is known as the Database Management System or DBMS.
- A Relational Database is a type of database where data is stored in a number of separate but related tables. The software that allows you to create and manage a relational database is called a Relational Database Management System (RDBMS).
- MS Access 2010 is a Relational Database Management System.
- Tables, Forms, Queries and Reports are the main objects of a database.
- The type of data that a field (in a table) can store is called its data type.
- Table is the main object of a database. All data in a database is stored in tables.
- Tables can be created in both the Datasheet View and Design View. Data can be entered into a table in the Datasheet View.
- A Primary key is a field that uniquely identifies each record in a table.

TERMS to Learn

An organized collection of data stored on computer that can be accessed, Database

updated and queried with a DBMS software.

DBMS Database Management System is a software used to create and manage a

database.

RDBMS A special type of database management system where data is stored in related

tables.

Table The main object of MS Access database where actual data is stored.

A field that uniquely identifies every record in a table. Primary key

























Multiple Choice Questions

	110	k (✓) the correct answer.						
	1.	A row of information in a tab	ole is call	ed a				
		a. Record	b.	Field	O c	. Value		
	2.	A column of information in a	table is	called a	_•			
		a. Dataitem	b.	Record	<u> </u>	. Field		
	3.	Which icon indicates the Edi	t mode i	n MS Acess?				
		a. Pencil	b.	Eraser	<u> </u>	. Pen		
	4.	A primary key does not allow	_					
		a. Zero			<u> </u>	. Numeric		
	5.	While designing a table		-				
		a. Field Name		3,	<u> </u>	. Description		
3.		l in the blanks with the help						
		Ais a softwa			-			
	2.	software stores data in the form of multiple tables that are related to each other.						
	3.	Four objects in a MS Access	databas	se are			and	
	4.	A field containing names wil	ll most pi	robably be assig	ned a	data type	2.	
	5.	3		- · · · · · · · · · · · · · · · · · · ·				
	٠.	A data type i	is used to	store long text	ual message, co	mments or note	es.	
		A data type i A is a field th		_	_		es.	
			nat uniqu	uely identifies a	record in a tabl	e.		
	6.	Ais a field th	nat uniqι Γext, Με	uely identifies a	record in a tabl	e.		
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•	6. Wri	Ais a field the HINTS: Tables, DBMS, Tables ite 'T' for True statements and	nat uniqu Text, Me Id'F'for ach recor	uely identifies a emo, RDBMS, F False statemer d in a table unio	record in a tablerimary Key, Question the	e.		
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	6. Write 1. 2. 3. 4.	A is a field the HINTS: Tables, DBMS, Tables ite 'T' for True statements and The primary key identifies ear A column in an Access table. The primary key button is av A number data type can store	Text, Me Id 'F' for Ach recor is called ailable o e only in	emo, RDBMS, False statemer d in a table union a field. n the design taketeger values.	record in a table rimary Key, Quits in the quely.	e.		
	6. Write 1. 2. 3. 4. 5.	A is a field the HINTS: Tables, DBMS, The Ite 'T' for True statements and The primary key identifies ear A column in an Access table. The primary key button is av A number data type can store DBMS stands for Data and Button is available.	Text, Me Id 'F' for Ach recor is called ailable o e only in usiness M	emo, RDBMS, F False statemer d in a table union a field. n the design table teger values. lanagement Sof	record in a table rimary Key, Quits in the quely.	e.		
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D. Match the following. 1. Field a. Rectangular area where data is entered. Record b. A column containing a particular type of information in a table. 3. Cell c. A data entry made into a cell. d. A complete row of information in a table. Table e. A grid of cells. 5. Data Item **Very Short Answer Questions.** 1. What is data item in a table? 2. Name the Database views in MS Access. 3. Which is known as Toggle key in MS Access? F. **Short Answer Questions.** 1. Write the full form of RDBMS. 2. What is a Record? 3. What do you mean by the Primary key? **G.** Long Answer Questions. 1. Define the following terms: Table Data Record 2. What do you understand by a database? Give some examples of database. 3. What are the advantages of databases?





















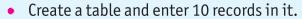






Practical 1: Create a table with the given fields. Enter 10 records in it. Save the data base with the name Student_Result.

Field Name	Admin. No	Name	English	Maths	Science	SST	Percentage	Rank
Data Type	Text	Text	Number	Number	Number	Number	Text	Text



- Make changes in this table. Rename the field name 'Name' to student_name'.
- Set Admin-No as the 'Primary key.
- Insert a new field 'Total' before the percentage.
- Edit records from the rows 4 to 7 replacing their information with the new values.
- Delete the first two records.
- Sort the records in an ascending order.
- Save the table and exit Microsoft Access.

Practical 2: Create another table with the given fields. Enter the records in it. Save the database with the name Student Details.

Field Name	Admin_No.	DOB	Name	Fathers_Name	Address	Contact_No	Age
Data type	Text	Text	Text	Text	Text	Number	Number

- Create a table and enter 10 records in it.
- Modify the table and insert the field Name 'Roll No' after the field 'Admin-No'.
- Set Roll_No as the Primary key.
- Insert new field, 'Mother's_Name' after the 'Father's_Name'.
- Add two more records at the end of the table.
- Delete the record number 6.
- Save the table and Exit Microsoft Access.











































