



Introduction to Database - MS Access 2013

LEARNING OUTCOMES

After the lesson, students will be able to:

- » Work with MS Access.
- » List the features of a database.
- » Design a database.
- » Define and describe Database Management System (DBMS).
- » Identify the components of Microsoft Access 2013.
- » Create a database.
- » Label the components of the Microsoft Access 2013 window.
- » List and define data types.
- » Create tables.
- » Set a primary key.
- » Modify table design.

WARM UP

Make a list of data requirements a school might have from its database of student information such as name, address, phone, parents' occupations, etc.

Ans. Teacher can initiate a discussion in the class and then ask the students to do this on their own.

CHAPTER NOTES

- » Facts related to any object in consideration are collectively known as data.

- » A database is a collection of inter-related data which helps in efficient retrieval, insertion and deletion of data from the database, where the data is organized in the form of tables, views, schemas, reports etc.
- » Field: It is also the column heading and contains a set of values for single type.
- » Record: It is the row containing values under each field for one entity.
- » Value: It is the data item which is the smallest unit in a database. It can be numeric, a character or alphanumeric.
- » The designing process of a database consists of the following steps:
 - Determining the purpose of your database
 - Finding and organising the information required
 - Dividing the information into tables
 - Turning information items into columns
 - Specifying the primary keys
 - Setting up the table relationships
 - Refining the design
 - Applying the normalisation rules
- » Data Definition: It helps in organising data into various types so that a relation can be set for accessing information.
- » Data Updation: It helps in insertion, modification and deletion of the actual data in the database.
- » Data Retrieval: It helps in taking out relevant information from the data stored in an organised manner.
- » User Administration: It also helps in data security by monitoring different users using a single database system.
- » File-based data management systems contained multiple files that were stored in many different locations in a system, or even across multiple systems.
- » In a database, the users can share the data among themselves. There are various levels of authorisation (for example: password) to access the data, and the data can only be shared based on the correct authorisation entered by the users. Many remote users can

also access the database simultaneously and share the data between themselves.

- » Data integrity means that the data is accurate and consistent in the database. Data integrity is very important as big organisations are totally dependent upon database systems. Any errors in the data may total shut down of the working of the organisation. So it is necessary to ensure that the data is correct and consistent in all the databases and for all the users.
- » Data security is a vital concept in database management. Only authorised users should be allowed to access the database and their identity should be authenticated using a username and password. There are levels of database access and a user can only view the data he/she is allowed to.
- » Database Management System automatically takes care of backup and recovery.
- » Data consistency is ensured in a database because there is no data redundancy or duplication. All data appears consistently across the database and the data is the same for all the users viewing the database. Moreover, any changes made to the database are immediately reflected to all the users and there is no data inconsistency.
- » Tables: Tables are responsible for storing information within the database. They contain columns and rows. Each column has a name at the top, and each row has a number. Improper tables can lead to slow or unpredictable performance and wrong results.
- » Queries: Queries are requests for information. Queries can sort, calculate, filter, update data and more based on the results you are looking for.
- » Forms: A form is a database object that can be used to create a user interface for a database application. A bound form is linked to a data source, whereas an unbound form isn't.
- » Reports: Once you have entered data into the database, you can run reports to view, summarise or format various types of information. Reports cannot be edited as forms can, but you can pick and choose the information you want to compare it before creating the report.

- » Macros: Macros perform a series of actions based on how you enter them. For example, you can create macros that will open forms, change values, run queries and even run other macros.
- » Modules: Modules add functionality to a database and are stored collections of Visual Basic for Applications (VBA) programming language statements and procedures.
- » The Backstage view occupies the File tab on the Ribbon and contains many commands.
- » The Quick Access Toolbar is a toolbar adjacent to the Ribbon that allows one-click access to various commands. The default set of commands include Save, Undo, and Redo, and you can customise the Quick Access Toolbar to include other commands that you use often.
- » The Navigation Pane helps you organise your database objects, and is the main means of opening or changing the design of a database object.
- » Ribbon is the primary replacement for menus and toolbars. It primarily consists of tabs that have groups of buttons. On the Ribbon tabs, some of the buttons provide a gallery of choices, while others launch a command.
- » Different tabs when clicked display their own set of commands on the Ribbon. Common tabs of MS-Access are Home, Create, External Data, Database Tools.
- » It shows the information about the database and also allows shifting between views of MS Access.
- » A primary key is a field or a set of fields that needs to be unique.

DEMONSTRATION

- » Design a database
- » Identify the components of Microsoft Access 2013
- » Create a database
- » Label the components of Microsoft Access 2013 window

- » List and define data types
- » Create tables
- » Set a primary key
- » Modify table design

LAB ACTIVITIES

1. Create a table in MS Access containing the following data:
 - (a) Electronic item name (Data type: Text)
 - (b) Quantity (Data type: Number)
 - (c) Date of purchase (Data type: Date/Time)
 - (d) Needs repair (Data type: Yes/No)
 - (e) In warranty (Data type: Yes/No)
2. Now delete the 'In warranty' field from the table.
3. Save the table.

ASSESSMENT

Teacher can assess the students by asking them about the following:

1. Database Management System (DBMS) and its advantages.
2. The objects of DBMS.
3. Components of MS Access window.
4. Steps to rename a field present in a table.
5. Meaning and importance of the term 'Data Consistency'.

SUGGESTED CLASS ACTIVITIES

Define the following terms.

1. Records
2. DBMS
3. Title bar
4. Data