## LECTURE SCHEDULE 13

## MSACCESS: Concept of Database- Units of database, creating database

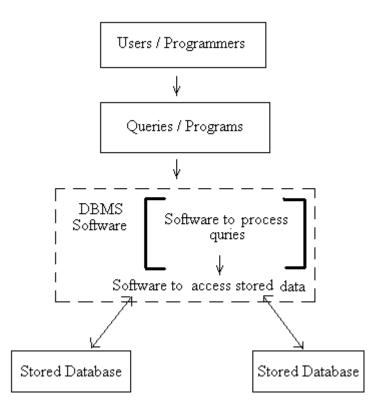
## **Database**

- A database is a collection of interrelated data that is organized so that it can easily be accessed, managed and updated.
- A database-management system (DBMS) is a collection of interrelated data and a set of programs to access those data.

## **Characteristics of Database**

- Self-describing- a database gives description about itself.
- Multiple users can access the same data.
- Data exists permanently
- Data security protects the data from unauthorized access with the help of the passwords.
- Many software are used as Database Management Systems. Example: MS-Access, ORACLE etc.

## Structure of Database Management System



# <u>Tables</u>

- Tables contain data
- The main components of tables are:
  - o Field
  - o Record
- A field is the smallest data item stored in one particular format.
- A record is one complete set of related field.
- Example: Following is Student table in an University database

Student Name	ID	STAM Mark	AGR Mark	PBG Mark
Adithi	BSA-10-001	98	99	95
Bhargavi	BSA-10-002	56	75	67
Natarajan	BSA-10-003	86	70	75
Madhavan	BSA-10-004	78	79	76

- The columns in the table are fields or attributes. Fields store the smallest unit of data.
- The rows in the table are called tuple or record. The record is one complete set of relation.

## **Database concepts**

- Data is a known fact.
- Data may be name of a student or mark scored by a student or age of a student or dat of birth of a student. Thus the type of the data varies, that if it is a name then it will contain only any combination of the alphabets, if it a mark then it will be only a number, if it date of birth then it will only be a date.
- The data types supported by the DBMS are :
  - o Numeric numbers
  - o Alphanumeric letters and digits
  - o Date/Time dates
  - o Logical logical data
  - o Auto number unique value

#### **Numeric**

- Numbers only (no letters) includes numbers with decimal points.
- Numeric field can contain:
  - Only the numeric characters of 0 to 9
  - The decimal point

# **Alphanumeric**

- Alphabets (letter), symbols and numbers
- Alphanumeric data can be made up of the following characters:
  - o Numbers 0 to 9
  - o Alphabets A to Z, a to z
  - Special characters #, /, \$, \* etc.

## Data/Time

• Used to specify the field contains date

#### **Logical**

• Logical data type used to store Yes or No and True or False

#### Auto number

• A unique value generated for each record.

#### **Components of database**

- Tables contains data
- Queries selected information is displayed on the screen
- Reports formatted printed information
- Forms screen created to add, modify, and delete records

#### **Primary Key**

- The primary key is a field in the table which uniquely identifies that particular record in the table.
- The primary key cannot have a duplicate value in the table.
- Every table should have a primary key associated with it.

#### Tasks associated with the tables

- Creating a table
  - Specifying field names, data types, field sizes
- Adding records to the table
- Modifying data in the table
- Deleting records from the table
- Creating relationship between tables

## Tasks associated with the queries

- Creating queries to obtain information
- Creating queries to update data
- Creating queries to update data

#### MS-Access



- MS-Access is a Relational Database Management System (RDBMS) developed by Microsoft Corporation.
- It provides the software tools to organize the data in a flexible manner.
- It provides facilities to add, modify or delete data from the database, ask questions or queries about the data stored in the database and produce reports summarizing selected contents.

#### **Creating Database**

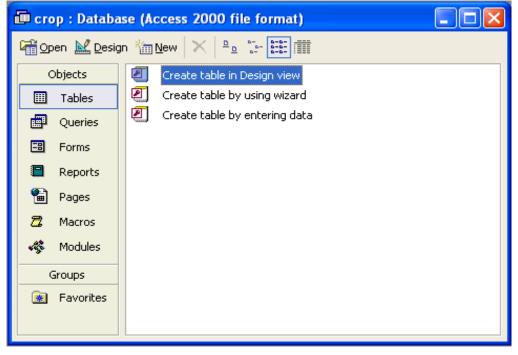
- Click on Start button → Select All Programs → Click Microsoft Access
- The opening screen of the MS-Access will get displayed

Microsoft Access	<b>- - X</b>
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	Open a file
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	🖲 Blank Database
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	New from existing file
	Choose file
	New from template
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	Microsoft Access Help
	Microsoft Access Help

- As we are going to create a new database, in the New File window click blank database.
- File New Database dialog box will get displayed asking us to choose the location of the database and the name of the database. Enter the name of the database as crop.

File New Data	base	? 🔀
Save <u>i</u> n:	🖙 Local Disk (C:) 💽 🖕 🕈 🔃 🗸 🖄 🖽 🕶 Tools 🔻	
History History My Documents Desktop	ACDFREE10 Agress Documents and Settings Inetpub off-xp ORANT Perl Program Files Python24 spdbv TC WINDOWS	
	File name: crop	⊆reate
	Save as type: Microsoft Access Databases	Cancel

- Click Create button.
- Crop database is created and crop database window will get displayed as shown below:



• Choose create in Design view option.

- Default name of the table is Table1 will get displayed in the title bar of the Table window.
- Enter the field name under Field Name column.
- Data type can be selected with by clicking the down arrow key in the Data Type column as shown below.

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- After choosing the data type of the field set the required field size in the field size tab.
- Enter the description of the field in the Description column.
- Following the above said instructions enter the other fields in the table.

Ⅲ	Table1 : Table			×	
	Field Name	Data Type	Description	~	
►	Crop_ID	Text	Identification number of the crop in the database		
	Crop_Cultivated	Text	Name of the crop cultivated		
	Crop_Yield	Number	Yield of the crop in tonnes		
	Water_Wastage	Number	Water wasted in gallons		
	Drought_Resistence	Text	Drought resistance remark		
				~	
			Field Properties		
		s	The label for the field when used on a form. If you don't enter a caption, the field name is used as the label. Press F1 for help on captions.		

- To set Crop\_ID as the primary key of the table right click the field Crop\_ID.
- From the right context menu choose Primary Key option.

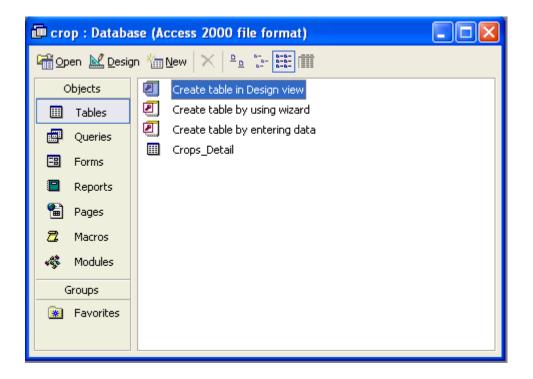
	Field	Field Name		Data Type	Description		
►	Erop_ID	[rop_ID		<u></u>	Identification number of the crop in the datab		
	Crop_Cultiva	¥.	Primary Key		Name of the crop cultivated		
	Crop_Yield	1410		er	Yield of the crop in tonnes		
	Water_Wast		Cu <u>t</u>	êr	Water wasted in gallons		
	Drought_Re:	6	⊆ору	-	Drought resistance remark		
		8	Paste				
		3-	Insert Rows				
		₽•	Delete Rows		Field Properties		
	General Loc	1	Build				
	Field Size Format	P	Properties				

• A small picture of a key appears next to Crop\_ID.

- Now the definition of the table structure is complete.
- To save the table click the File menu and Save.
- In the Save As dialog box specify the name of the table.

Save As	? 🛛
Table Name: Crops_Detail	ОК
[crops_becau	Cancel

- Close the table by clicking on File menu and Close option.
- The Crop\_detail table is displayed in the 'Tables' tab as shown below:



#### Adding Records to the Table

- In the design view under the Crop database we have created the table Crop\_Detail and assigned Crop\_ID as the primary key.
- To add the records right click the table Crop\_Detail and select Open option.
- The datasheet view of the Crop\_Detail table will get opened.

	Crops_Detail :	Table			
	Crop_ID	Crop_Cultivated	Crop_Yield	Water_Wastage	Drought_Resistence
▶			0	0	
Re	ecord: 🚺 🔳	1 🕨 📕	▶ <b>米</b> of 1		

- The field names are displayed as headings and a blank row is provided to enter data.
- Enter the data in the corresponding fields. When all the records are added the screen will be as shown below:

	III Crops_Detail : Table						
	Crop_ID	Crop_Cultivated	Crop_Yield	Water_Wastage	Drought_Resistence		
	CR-001	Bhendi	567	24536	Partial		
	CR-002	Paddy	1896	29623	Less		
	CR-003	Bajra	289	12658	Exterme		
	CR-004	Sesame	143	10467	Extreme		
	CR-005	aize	2876	27543	No		
	CR-006	Groundnut	952	15489	Less		
	CR-007	Cowpea	1045	20567	Moderate		
	CR-008	Anhurium	2645	24678	Less		
	CR-009	Sorghum	437	12784	Moderate		
	CR-010	Tomato	956	4327	Moderate		
*			0	0			
Re	Record: I I I II II II II II III						

# To Delete a Record from the table

To remove the 5<sup>th</sup> record with Crop\_ID CR-005 and Crop\_name as aize right click on the arrow () tabin front of the record and choose Dekete option as shown below:

	Crops_Detail : `	Table				
	Crop_ID	Crop_Cultivated	Crop_Yield	Water_Wastage	Drought_Resistence	
	CR-001	Bhendi	567	24536	Partial	
	CR-002	Paddy	1896	29623	Less	
	CR-003	Bajra	289	12658	Exterme	
	CR-004	Sesame	143	10467	Extreme	
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	Paste		0	0		
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- Access prompts the user for the final confirmation because the record once deleted cannot be recalled back.
- Click on 'Yes' if you are sure to delete it.

🖩 Crops_Detail : Table						
	Crop_ID	Crop_Cultivated	Crop_Yield	Water_Wastage	Drought_Resistence	
	CR-001	Bhendi	567	24536	Partial	
	CR-002	Paddy	1896	29623	Less	
	CR-003	Bajra	289	12658	Exterme	
	CR-004	Sesame	143	10467	Extreme	
	CR-006	Groundnut	952	15489	Less	
	CR-007	Cowpea	1045	20567	Moderate	
	CR-008	An Microsoft A	COSE			
	CR-009	So	56633			
	CR-010	To Yo	ou are about to de	elete 1 record(s).		
*						
Yes No						
Re	cord: 🚺 🖣	5 🕨 🕅	▶₩ of 9			