C.P. PATEL & F.H. SHAH COMMERCE COLLEGE
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BCA, BBA (ITM) & PGDCA PROGRAMME
BBA (ITM) Sem-1(Personal Computer and Software Packages)
UNIT 4: Database Tools

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INTRODUCTION TO ACCESS

A database is any collection of information organized into group .The information should be organized in a way that allows for easy retrieval. For example, a telephone book is a non-computerized database of information. It is organized database of information. It is organized in alphabetical order and includes information such as names, addresses, and telephone numbers. Other examples of non-computerized databases include lists: Electronic databases can maintain on a computer. Computerized databases allow you to manipulate large amount of data quickly and easily. They simplify tasks such as searching for specific data, organizing and sorting data, and making to data.

In Microsoft Access 2007, the database information is stored in data tables. Every data table has a structure that provides for the collection, organization, storage, and retrieval of data. These tables of information are contained in a database file. Each database file can have numerous data tables.

A data table consists of fields and records. Fields are categories of information. For example, in an address table, you may maintain names, addresses, cities, states, and zip codes. Each of these categories is a field in the address database.
The set of fields containing the data for a single entry is called a record. For example, Charles Hardy, 1234 Main St., Bridgeville, NY, 11012 is a record in the address data table. Each piece of information in the record is stored in a field and is referred to as a field value. NY is the field value for the State field in this particular record. An address table would most likely consist of a number of records, and. the data values for each record would be stored in the appropriate fields.

Access is a relational database application. A relational database contains a large amount of data that is split into numerous tables; each table should include only the information to one subject, such as Customer, Orders or items. As a result, each table is smaller more tangible and, in turn, more efficient. These tables can then be joined together to make them related When tables are related, you can access information from any field in any related table, eliminating the need to add the same information to more than one table. In addition, you can create reports, forms, and queries from data stored in any related table.

OPENING ACCESS

1. Select the Start button on the taskbar.
2. Select All Programs.
3. Select Microsoft Office.
4. Select Microsoft Office Access 2007

CREATING DATABASE THROUGH TEMPLATES

When you create a database in Access, you are creating a container for related tables, forms, queries, reports, and other database objects. You can create a new database manually or with he help of a Database Template. If you create a new database manually, you must then create your own tables, queries, and other objects. To save time, you can use a Local or Online Template. Access 2007 offers several database templates you can use to quickly to create a database. The templates include pre-formatted database objects, such as tables, forms and reports. A variety of business and personal database templates are available on the Template Categories section on the Getting Started task pane. If you use any template, Access creates not only the database, but also the tables, queries, and other objects in it. After you have used a database template, a link to it appears under the Open Recent Database, section in the Getting Started task pane.

1. Select Local Templates in the Getting Started task Pane.
2. Select the desired database template.

3. Type the desired file name.
4. Select the Save in folder icon.
5. Select where you want to store the file.
6. Select OK.
7. Select CREATE.
8 Open the Navigation Pane.

When you open the Navigation Pane, a good idea to select Show All, in order to display all the objects in the Database You can double-click any object in the Navigation Pane to open it. You can now enter the data directly into the new database, or modify it to meet your needs. Close CONTACTS.ACCDB

CREATING A NEW DATABASE

You can create a new database in Access without using a template; however, you must then create the tables, queries, and other objects in the database. When you create a new database, you must specify the desired file name, as well as where you want to store the database file. After you have created the database, the Database window opens. The Ribbon command buttons allow you to open objects, modify the design of existing objects, and create new objects. The Navigation Pane bar in the Database window allows you to access the following object types: Tables, Queries, Forms, and Reports.

1. Click the b1ank Database button on the Getting Started Task Pane.
2. Type the desired file name.
3. Select the Save in folder icon.
4. Select the drive where you want to store the file.
5. Open the folder where you want to store the file.
6. Select OK.
7. Select CREATE

DESIGNING TABLES

in Access, there are five steps to designing a table. The first step is to develop a thorough understanding of the system, including all the data to be entered and all the reports, statistics, labels, and other output you want to generate. It is helpful to gather all the forms you use for input and all the reports generated from the data. This process serves two purposes. First, these forms and reports are invaluable when you begin detailing exactly what information you want stored in each table. Second, once you have collected a set of these forms, you can make sure that every item of information on your reports is either included in your database can be derived from data in your database. The second step is to determine how many tables you need and what

information to store in each table. Once you have gained an overview of the system you are ready to begin designing your database. The most important decision you must-make before you begin creating tables is how many tables you want the database to include. The third step is to design the tables by selecting the fields you want to include the type of data you want to store in each field, and the size of the fields. Once you have developed an overview of your application and a list of tables, you can make preliminary list of fields, based on the categories of information that each table will include. You can considering the following: if the data is to be sorted or selected, it should be a separate field.; if the data is to be calculated from other fields, do not need to store in its own field, and if the table is to be linked to another table, both tables should contain common fields. The fourth step is to create the table structures by defining the name, data types and size of the field. The fifth and final step is to enter sample data. This step is important because you determine whether or not the table fields are the correct size and in necessary fields have been included. You can then modify the tables as necessary.

CREATING A TABLE IN DATASHEET VIEW

When you create a new table, you can use either Datasheet or Design view, use table temple another data source, or link to data in. another data source.

Datasheet view displays a grid of rows and columns. Field names are entered as column headings.

1. Display the Tables object list in the Navigation Pane, if necessary.
2. Select the Create tab on the Ribbon.
3. Select the Table button. ᵛ

Notice that the Datasheet Tab automatically appears on the ribbon when a datasheet is displayed. The new table appears in the Table object list in the Navigation Pane. Close the table without saving.

CREATING A TABLE IN DESIGN VIEW

you can also create a table in Design view. When you create a table in Design view, you have control over the database design.

The Design view window is split into two panes The upper pane displays a design grid you can use the rows and columns in this design grid to enter the field names, data types, and field descriptions for each field in the table. The small box to the left of each field name is the row lector. A black triangle in the row selector indicates the current field. The lower pane displays e properties of the selected field. A property is a characteristic of a field, such as the number of

characters a field can contain. Access automatically assigns default field properties, which you n modify as desired.

1. Select the Create tab on the Ribbon
2.Select the Table Design button in the Tables group .

ADDING FIELD NAMES

Field names are entered into the Field Name column in the Design view window. Field names are labels that identify the data stored in a field. For example, the **Order Number** field will most likely contain order numbers. Field names can be up to 64 characters long and can include letters, numbers and spaces. (Field names, however, cannot begin with spaces. (Field names cannot contain a period (.), an exclamation point (!), a back quote (‘), bracket ([]), or ASCII control characters. In addition, field names within a table must be descriptive and meaningful can help with data entry and data retrial-However you should avoid long and complicated field names because they can be cumbersome to remember and difficult to reference when performing database functions.

DATA TYPES

The field data type tells access what kind of values you plan to store in a field and how much storage space to set aside for fields. Although you can change a data type after a field contains data, doing so many erase some or all of the information in the fields. The following table describes the available data types:

Date type	**Description**
Text	Text is the default data type; a text field can contain any combination of letters, number, punctuation marks, and spaces. The default width is 50 characters and the maximum length is 255 characters.
Demo	A memo field is similar to a text field, except that a memo field can contain up to 65,535 characters. -You can use memo fields for notes or long descriptions in a database.
Number	A number field can contain only numeric characters, a comma (used as a thousand separator), a period (used as a decimal point), and a hyphen (used as a negative number sign) You should use a number field only

	when you want to perform calculations using the field values For example, even though zip codes and telephone numbers consist of numeric characters, you would not use them in calculations, therefore, they should be entered in text rather than number fields.
Date / Time	The Date / Time data type is used for dates and/or times. Access automatically validates all entries to ensure that they are valid dates and/or time' F1ocample, Access will not allow you to enter *2131199* because February does not have 31 days. Date/Time fields are useful in performing calculation on dates and times.
Currency	The Currency data type is similar to the Number data type and can be used in calculations. However, the values in a currency fields can have maximum of four decimal places and automatically appear with dollar signs and thousands separators (commas). You should use currency fields whenever possible because they use fixed point calculation, Which faster than the floating point calculation used in number fields.
AutoNumber	The AutoNumber data type allows Access to automatically assign a unique number (consecutively from 1) to each record in the database. You cannot manually enter a value into an AutoNumbered field or change a number Access has assigned to a record. You use this data type When you want a unique identification number for each record.
Yes/No	A Yes/No data type is used to signify one of two conditions, Yes or No. You use a yes/no field when only two possibilities (i.e., True or False) exist for a field value.
OLE object	The OLE object data type allows you to either embed an object created in another Windows application or create a link to such an object. You use an OLE object data type for graphics, spreadsheets, or sound files.
Hyperlink	Hyperlink data type is used to store a link to anywhere you choose The link could go to an Internet page a Word document on an intranet, or even a form in the current database .A hyperlink field can contain a description ,an address, and a sub-address [separated by number signs (#)j, as well as up to 2,048 characters; only the address, however, is mandatory.

Lookup Wizard	Lookup Wizard data type allows you to create a lookup field A lookup field Wizard displays a list of values that are either stored in another table or created by you A lookup field allows you to choose values from a list during data entry, thereby reducing repetitive typing and eliminating typing errors

ASSIGNING A DATA TYPE

1. Open or create a table in Design view.
2. Enter field names as desired.
3. Select the Data Type column in the field for which you want to change the data type
4. Select the arrow.
5. Select the desired data type.

SAVING A NEW TABLE

After you have designed the fields for a table, you must save the table before you can add any data. When you save a new table, you should give it a name that describes the record it stores. You can use up to 64 characters, including can include letters, numbers, and spaces. (I), a back quote (‘), brackets () or When you save a table for the first enters the desired table you can add any the records it stores. (.), an exclamation point When you save a table, you are not creating a file. You are adding an object to the existing database.

1. Create a table in Design view.
2. Enter the desired table data
3. Select save
4. Type the desired data type.
5. Select ok

UNDERSTANDING FIELD PROPERTIES

Field Size	Adjust the size of the text or member field.
Input Mask	Displays formatting characters for place holder so that they do not have To be typed.
Decimal point	Number of places to the right of the decimal point
Caption	A label used in forms and report. The default is field name.

Default value	Automatically entered in a new record
Validation rule	Limit to the date entered in new record.
Validation text	The text displayed when incorrect data is entered into a validation field.
Required	Set the field so data must be entered
Allow Zero length	Allow zero-length strings to be stored in a text or memo field
Indexed	Speed up searches on fields that are searched frec1uently

UNDERSTANDING QUERIES

A query is a means of extracting information from tables. You can use queries to analyze the data in a table or to extract data for a form or report. Queries are commonly used to display data in related tables and enable you to control not only which records o Display, but also which fields. For, example, you may want to give sales representatives a list of the contacts and telephone numbers for a particular region; you can create a query does not contain date; rather, it is a set of instruction. Access uses these instructions and-display the desired records in a table. As a result, whenever new data is required table, the query is automatically updated; if the new records meet the conditions of the query, they will be included when the query runs. \

When you open or run a query, a record set appears contains all the fields and records that meet the conditions of the query. Although the record set is not a table, it can be used to edit or add new records in the queried tables.

USING THE SIMPLE QUERY WIZARD

The Simple Query Wizard guides you through the steps for creating a basic select query. When you use the simple query wizard, you select the table you want to use and fields you want the query to display.Then, name the query and choose to display weather to display the results of the query (record set) or go to the design view to work with the query design.

1. Display the Create tab on the Ribbon.
2. Select the Query Wizard button on the Create tab.
3. Select Simple Query Wizard.
4. Select OK.

5. Select the arrow next to the **Tables/Queries** list.
6. Select the table or query you want to query.
7. Select the first field you want to query.
8. Select the arrow to the right of the Available Field list box.
9. Add other field to the selected fields to the list box, as desired.
10. Select NEXT.
11. Type the desired query name.
12. Select FINISH.

add the Customer Number, Contact Name, and Phone Number fields to the query *Return to e table and continue on to the next step (step 10)* Close the query Notice that the Contacts arid Phone Numbers query now appears in the Queries object list .

CREATING A QUERY IN DESIGN VIEW

You can create a query in Design view. This option gives you the most flexibility in designing a query. It allows you to add criteria for selecting records, as well as sort the record set. When you create a query in Design view, the design grid is used to set up the query. The field list of all tables to be used in the query appears in the top pane. The design grid appears in the bottom pane. You drag the fields you want to use in the query to the design grid and then the desired criteria and sorts.

1. Select the Create tab on the Ribbon.
2. Click the QUERY DESIGN button on the create tab.
3. Add the table you want to query
4. Select CLOSE.
5. Add the desirefI&Is4o the\query.
6. Click the Save Access Toolbar.
7. Type the desired query name.
8. Select OK

Add the Store names, Sales Rep, Region, and Credit Limit fields to the query. *Return to the table and continue' on to the next step (step* 7,). Close the query. Notice that the **Customer Query** query now appears in the Queries object list.

OPENING A QUERY

When you open a query, Access runs the query and displays its recordset in Datasheet view. If you have added records since the last time you ran the query, the new records Will appear as long as they meet the query criteria.

1. Select All Access Objects in the Navigation Pane.
2. Double-click the name can add the desired tables. However, when you modify an existing query in **Design** view; you must of the query you want to run.

3. Close the record set.

ADDING A TABLE TO A QUERY

You can use more than one table in a query. The tables must be joined, however, in order for the query to produce accurate results. If the tables are not yet joined, you can create a join in the top pane of Design view. The field lists of all tables added to a query appears in the top pane of Design view. The tables are already related, join lines appear as well. Once you have added a able to a query, you can then add fields from its field list to the design grid. The Table *row* in the design grid indicates the table in which a field is stored. When you create a new query in Design view, the Show Table dialog box opens automatically so that you manually open the Show Table dialog box.

1. Select All Access Objects in the Navigation Pane.
2. Open the query you want to edit.
3. Select the Design view button on the Ribbon. •.
4. Click the Show Table button on Design tab on the Ribbon. ‘ -
5. Double-click the table you want to add to the query.
6. Select CLOSE.

Add the **Order Number and Order Date fields** from the **Orders** field list of the query. You may have to scroll the design grid to display additional columns in the Field rows Save and Close the Query.

CREATING SELECT QUERIES

Instructs the Microsoft Access database engine to return information from the database as a set of records.

Syntax

SELECT *[predicate]* **{*|** *table.* j [table.]field1 [AS alias 1]* **[,** *[table.]field2 [AS alias2]* **[,** **]]} FROM** *table expression* **[IN** *external database]* **WHERE...] [GROUP BY...] [HAVING...] [ORDER** *BY..* **.1** *(WITH* **OWNERACCESS** *OPT1ONS].*

The SELECT statement has three parts:

Predicate	One of the following predicates: ALL, DISTINCT, DISTINCTROW, or TOP. You use the predicate to restrict the number of records returned. If none is specified, the default is ALL.

*	specifies that all fields from the specified table or tables are selected
table	1he name of the table containing the fields from which records are selected.
Field1, field2	The names of the fields containing the data you want to retrieve. If you include more than one field, they are retrieved in the order listed.
Alias1, alias2	The names to use as column headers instead of the original column names in *table.*
Table expression	The name of the table or tables containing the data you want to retrieve.
External database	The database containing the tables in *table expression* if *they* are not in the current database.

Remarks:

To perform this operation, the Microsoft® Jet database engine searches the specified table or tables, extracts the chosen columns, selects rows that meet the criterion, and sorts or groups the resulting rows into the order specified.

SELECT statements do not change data in the database.

SELECT is usually the first word in an SQL statement Most SQL statements are either SELECT INTO statements

the minimum syntax for a SELECT statement is

SELECT *fields FROM table.*

You can use an asterisk (*) to select all fields in a table. The following example selects all of the fields in the Employees table:

SELECT * FROM Employees,

If a field name is included in more than one table in the FROM clause it with the table name and the. (Dot) operator. In the following example, the Department Field in both the Employees table and the Supervisors table. The SQL statement selects from the Employees table and supervisor names from the Supervisor's table.

SELECT Employees, Department, Supervisors, Supvname FROM Employees INNER JOIN

Supervisors
WHERE Employees. Department =Supervisores.Department.

When a Record set object is created the Microsoft Jet database engine uses the table's field name as the Field object name in the Record set object. If you want a different field name or a name is not implied by the expression used to generate the field, use the AS reserved word. The following example uses the title Birth to name the returned Field object in the resulting Record set object

SELECT Birth Date
AS Birth FROM employees;

Whenever you aggregate functions or queries that return ambiguous or duplicate Field object names, you must use the AS clause to provide an alternate name for the Field object. The following example uses the title HeadCount to name the returned Field object in the resulting Recordset object:
SELECT COUNT(EmployeelD) AS HeadCount FROM Employees;
You can use the other clauses in a SELECT statement to further restrict and organize your returned data. For more information's the Help topic for the clause you are using.

USING FILTER BY SELECTION

You can filter data in Access. Filtering data allows you to view only those records with which you want to work by hiding the records you do not want to see. For example, you can filter data in a customer's table so that only the records of those customers located in a specific region appear. quick and easy way to filter data in Access is to use the Filter By Selection feature, in which only those records that match the data in the selected field are displayed A filter remains in effect until you remove it.
Note:

When a filter s in effect, the (Filtered) indicator appears on the status bar
1. Open a table in Datasheet view.
2 Select any field that contains the data by which you want to filter.
3. Click the Selection button on the Sort & **Filter** group on the Home tab.

APPLYINGIREMOVING A FILTER

If a filter is in effect, the Toggle Filter button becomes active, you can use this button to remove a filter. Sort or to re-apply the previous filter.

1. Open a table in Datasheet view.

2. Click the Toggle Filter button in the Sort & Filter group on the Home tab, as applicable.