Steel Authority of India Limited
Rourkela Steel Plant
Human Resource Development Centre

Programme on "MS Access"

Programme Schedule

Day / Date	Time	Topic
Day-I	8.30 am – 9.30 am	Registration and Programme Briefing, Pre Test
	9.30 am – 1.00 pm	General Concept of Database and Features in MS Access, Briefing and demonstration on different features of tables and their manipulation Exercise - I
	2.00 pm – 5.30 pm	Searching, Sorting and Filtering Records Exercise - II
Day-II	8.30 am – 5.30 pm	Learning Review, Briefing and Demonstration on Querying a Database Exercise - III
Day-III	8.30 am – 1.00 pm	Learning Review, Briefing and Demonstration on Forms and their Manipulation Exercise - IV
	2.00 pm – 4.00 pm	Briefing and Demonstration on Reports, Data Importing and Exporting to other Applications, Printing. Exercise - V
	4.00 pm – 5.30 pm	Post Test, Feedback and Valediction

An Introduction to Database Development

The fundamental concept underlying Access databases is that data is stored in tables. Tables are comprised of rows and columns of data, much like an Excel worksheet. Each table represents a single entity, such as a person or product.

As you work with Access, you will spend considerable time designing and refining the tables in your Access Applications. Table design and implementation are two characteristics that distinguish database development from most other activities you may purse.

After you understand the basic concepts and terminology, the next important lesson to learn is good database design. Without a good design, you constantly rework your tables, and you may not be able to extract the information you need from your database. Throughout this book, you learn how to use the basic components of Access applications, including queries, forms and reports. You also learn how to design and implement each of these objects.

In Access, a database is the overall container for the data and associated objects. It is more than the collection of tables, however **a database at the same time and simultaneously work with more than one database.** Many Access databases contain hundreds, or even thousand, of tables, forms, quires, reports, macros, and modules.

Table

A table is just a container for raw information (called data), similar to a folder in a manual filing system (Fig.-1). Each table in an Access database contains information about a single entity, such as a person or product, and the data is organized into rows and columns.

After you create a table, you view the table in spreadsheet-like forms, called a datasheet, comprising rows and columns; knows as records and fields respectively. Fig.-1 shows the datasheet views of the Employee table.

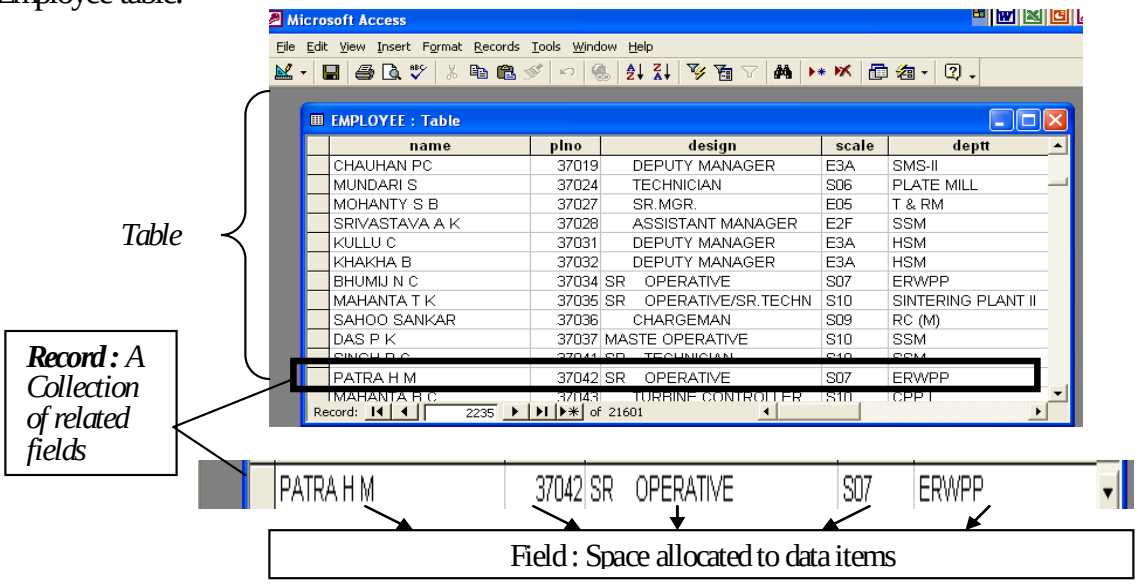


Fig.-1: Table, Records and Fields

In the Employee Table, you can note how the table is divided into horizontal (left-to–right) rows, and vertical (top-to-bottom) columns of data. Each row (or record) defines a single employee, while each columns (or field) represents one type of information about the employee.

For instance, the marked row in Fig-1 contains data describing Employee Name-HM Patra, Pl. No., Designation and his Department. Each bit of information describing Mr. Patra is a field (Name, Pl. No., Designation and so on). ***Fields are combined to forms a record, and records are grouped to build the table.***

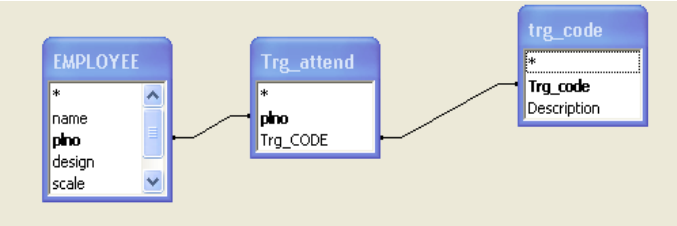
Each fields in an Access table include many properties that specify the specify the type of data contained within the field, and how Access should handle the fields data. These properties include the name of the fields (Name) and the type of data in the fields (Text). A fields may include other properties as well. For instance, the Size property tells Access how many characters to allow for a persons last name. (You learn much more about fields and fields properties in Chapter2.)

Records and fields

As Fig. - 1 shows, the datasheet is divided into rows (called records) and columns (called fields), with the first row (the heading on top of each column) containing the names of the fields in the database. Each row is a single record containing fields that are related to that record. In a manual system, the rows are individual forms (sheets of paper), and the fields are equivalent to the blank areas on a printed forms that you fill in.

Values
At the intersection of a row (record) and a column (field) is a value-the actual data element. For example, HM Patra, the name in the first record, represents one data value.

Relational Databases
Microsoft Access is relational database development system. Access data is stored in related tables, where data in one table (Employee) is related to data in another table (such as Trg. Attended). Access maintains the relationships between related tables, making it easy to extract a Training Module and all the employees attended that module without losing any data.



Working with multiple tables

Multiple tables simplify data entry and reporting by decreasing the input of redundant data. By defining two tables for an application that uses Employee table, for example, you do not need to store the Employee's name and other details every time in the Training Attended Table.

Separated data into multiple tables within a database makes the system easier to maintain because all records of a give type are within the same table. By taking the time to segment data properly into multiple tables, you experience a significant reduction in design and work time. This process is known as normalization.

Knowing why you should create multiple tables

The prospect of creating multiple tables always intimidates beginning database users. Most often, they want to create one huge table that contains all of the information they need. So, they create a single table containing a lot of fields, including fields for Employee Details (Name, Pl. No., Scale, Design, Deptt.) Training Attended (Training Code, Module Name), Address (Qr. No., City, State, Country, Contact No.) for each employee. Such a table quickly grows to an unmanageable number of fields and continues growing as new items are added.

It is important to create tables that hold the minimum of information while still making the system easy to use and flexible enough to grow. To accomplish this, you need to consider making more than one table, with each table containing records with fields that are related only to the focus of that table. Then, after you create the tables, you link them so that you are able to glean useful information from them. Although this process sounds extremely complex, the actual implementation is relatively easy. Again, **this process of creating multiple tables from a singles tables from a single table is known as normalization (or normalizing your tables).**

Access Database Objects and Views

If you are new to database (or even if You are an experienced database user), you need to understand some key concepts before starting to build Access database. The Access database contains seven types of top-level objects(Fig.-2), which consist of the data and tools that you need to use Access.

Fig-2: Access Database Objects

- ✓ **Table :** Holds the actual data
- ✓ **Query :** Searches for, sorts, and retrieves specific data
- ✓ **Forms :** Lets you enter display data in a customized format
- ✓ **Report :** Displays and print formatted data
- ✓ **Pages :** Publishes data to a corporate intranet
- ✓ **Macros :** Automates tasks without programming
- ✓ **Modules :** Contains programs written in the Visual Basic for Applications (VBA) programming language

Designing Your Database

Before you touch the keys of the computer, you need to sit down with a scratch pad and pencil and choose a design and structure for your database. In the first place, you need to decide which fields to include in the database. How many distinct pieces of information does your database require? In the database, include fields for each type of information you conceivably might need some day.

Creating your Database (extension is .mdb)

Steps:

1. Start MS Access by clicking the MS Access icon on the shortcut bar

2. Click the **Blank Database** option button in the Microsoft Access dialog box (fig-3) and then click OK.

3. You will find the File New Database dialog box. **Specify the folder** in which you want to save the file and double-click on it, and then enter a **name for the database in the File Name text box.** Click Create when you have finished.

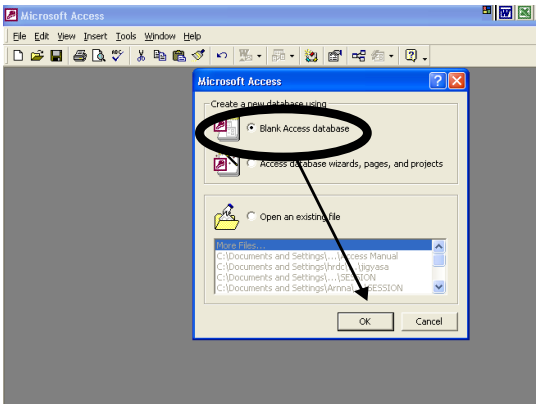


Fig.-3: Blank Database

Access opens the Database window with its seven buttons: Table, queries, Forms, Reports, Pages, Macros, and Modules (Fig-2). This is the starting point for creating the different parts of the database. It also opens a blank table, since tables are the fundamental building blocks of a database.

Creating a Table

Access offers three ways to create a database table. You can start in **Design view** and enter the field names yourself, create a table with **Access's Table Wizard,** or **import the data from a table you already created.** You start from the Database window, Click the Tables button and then the New buttons. You see the New Tables dialog box (Fig-4).

This dialog box is where you decide how to create your table:

- **Datasheet View:** Choose Datasheet View and click OK to view a blank datasheet in which you can begin entering data fields and table data.
- **Design View:** Choose Design View and Click OK to design the table yourself.

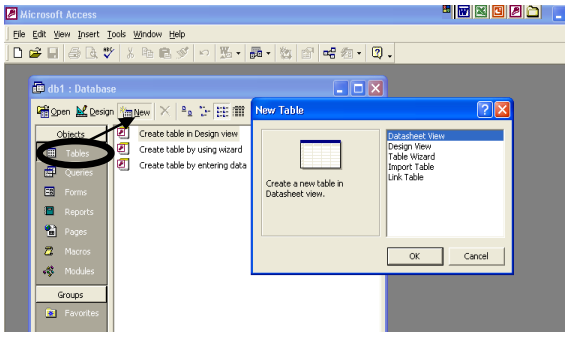


Fig.-4: New Table Dialog Box

- **Table Wizard:** Choose Table Wizard and click OK to get Access's help in designing and creating the table.
- **Import Table:** Choose Import Table and Click OK to import a table from another Access database; an Excel spreadsheet; a dBASE, FoxPro, or other database; or from a text file.
- **Link Table**: You can also choose Link Table, which is a variation of Import Table. You don't bring the data into the database; you create a link, which allows the data to continue to be worked with and updated in the other application.

Creating a Table in Design View

Steps:

1. Click on **Table Tab** of Access Window, then click **New**
2. In the new table dialog bix, **double-click on Design View**
3. Enter the **Field Names, Data Type and Description** as shown un Fig.-5

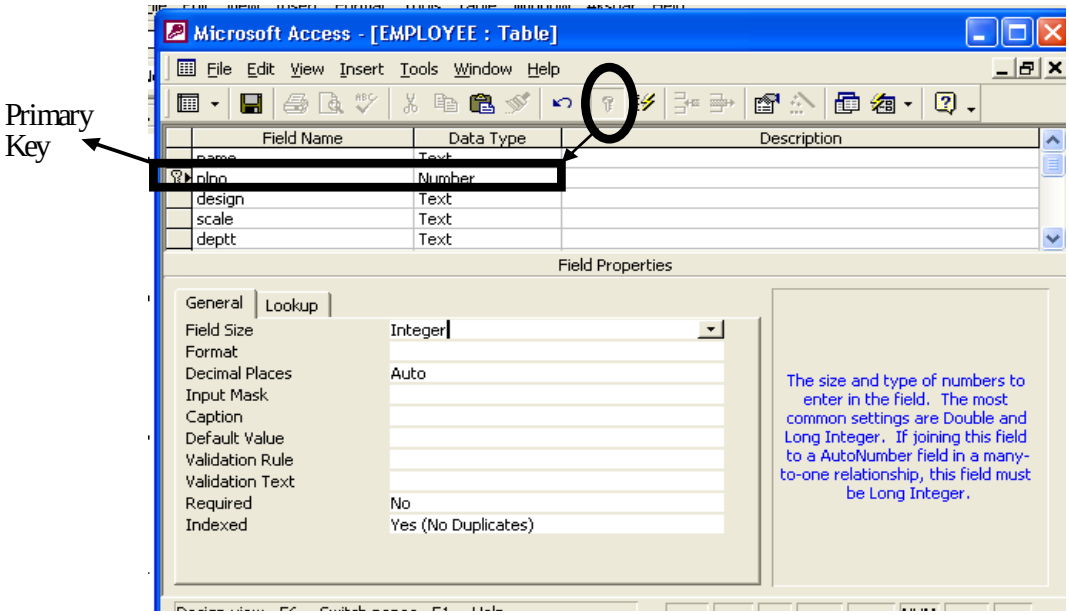


Fig-5: Table in Design View

4. Set **Primary Key* for Pl. No** field by moving the mouse pointer over Pl. No and then click on primary Key Icon  from Tool Bar.

*** Primary Key**

A Primary Key Identifies one or more fields in a table that will hold unique data. No two records have the same entry in the primary key fields. Access will not allow it. In most database tables, one field should contain database table shown here, Employee Pl. No. is the primary key because, while two or more employees might have the same name or address, no two employees will have the same Personal Number. Primary key fields make it easier for Access to organize and identity records in database. When you create a database table, Access asks you to specify the primary key. ***Another advantage of a Primary Key is that it speeds up data search in a large table.***

5. Click on the **Save** Button in the Standard tool Bar. You are prompted for a name for the table.
6. Enter File Name **'Employee'** and click on the OK button.
7. Click on the **Datasheet View** icon  on the standard toolbar.
8. Enter data
9. Close the Datasheet view of the table by clicking on the **Close**  button.

Design View vs. Datasheet View

Design view is used to change the structure of the table, such as the fieldnames or data types, or to change field and table properties.	Datasheet view is used for entering data, modifying it, deleting it; in short; this view is used for manipulating the data

The Data Types

When you create a field, Access asks you to choose a data type. Following are explanations of the ten data types:

Data Types	Description
Text	For storing text (name, for example), combinations of text and numbers (street addresses), and numbers that aren't meant to be calculated (Social Security numbers and telephone numbers). **A text field cannot be longer than 255 characters.**
Memo	Stores data that exceeds 255 characters. Choose this data type when you want to include Long descriptions in a database table. For really long chunks of text (say, a page or more) use the OLE object data type instead.
Number	For storing numbers that are to be used in calculations.
Data / time	For storing dates and times. (To choose how the date or time is formatted, click the Format box in the lower half of the Design View dialog box and choose a format from the drop-down menu.)
Currency	For storing monetary figures that are to be used in calculations
AutoNumber	For entering numbers in sequence each time you add a new record to the table. For example, the first records is 1; the second, 2; and so on. Each number can only be used once in the field. By choosing the AutoNumber data type, you make sure that the data in the field is unique and is not repeated. Use the AutoNumber data type for the primary key field if no other field in the table stores unique, one-of-a kind numbers such as Pl. No.. To make the AutoNumber Field assign random numbers instead of sequential numbers, click in the New values box on the lower half of the Design View dialog box and Choose Random from the drop-down menu instead of Increment.

Yes/No	For storing logical or Boolean values such as Yes/No, True/False, Checked Out?,Beautiful/Ugly. When you choose this data type, a box appears in the field. Checking the box means Yes, True, Checked Out, Beautiful, and so on; an Empty check box means No, False, Not Checked Out, Ugly; and so on.
OLE Object	For storing text, spreadsheets, photograph of Employees, sounds, and other data created in Word, Excel, or other programs. The Memo data entry type is fine for Entering a paragraph or two; but if you want a page or more to appear in a Database table, you are better off choosing the OLE Object data type.
Hyperlink	Used to stroe URLs, e-mail address or links to other files on the system.
Lookup Wizard	For retrieving values either from another database table or from a list of Values in a Combo box. When you choose this data type, the Lookup Wizard comes onscreen so you can designate which table to get the data From or enter the values that will appear in the combo box. See "Creating a Data-Entry drop-Down List," later in this chapter, for more information.

Establishing Field Properties for Easier Data Entry

As shown in Fig.-5, the lower half of the design view window offers boxes for choosing properties for fields. Properties make data entry easier. They also help make entries more accurate, make searches go faster, and make sorting faster. The field size property, for example, determines how many characters can be entered in a field. If you will set it to 2, it will not allow for data more than two characters.

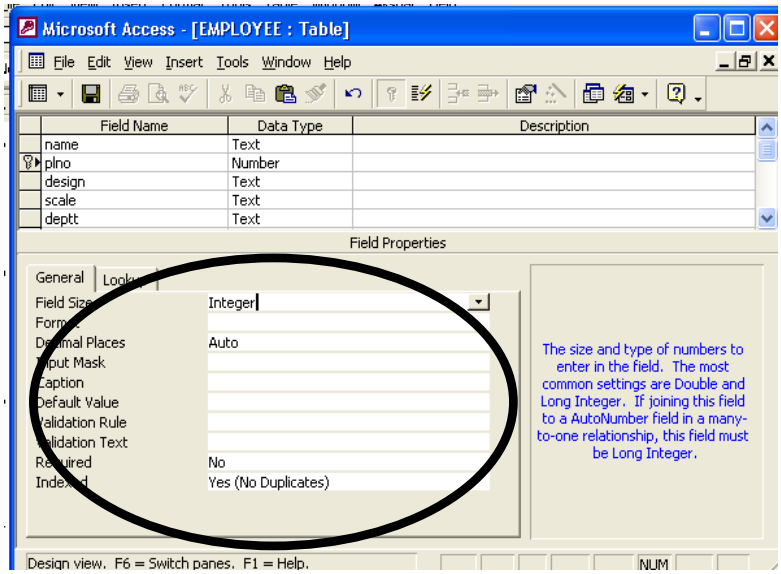


Fig.-6: Field Properties

CAUTION : Before you choose properties for a field, make sure that the cursor is in the correct field in the top half of the window in Design View. Property settings apply to whatever field the cursor is in.

TIP:

A brief description of some the common field properties are provided below:

Field Size: Determines how many numbers or characters at maximum can be entered in the field. Use the field size property to make data entry more accurate. If the field stores phone number, for example, and you know that no phone number can be longer than 14 characters, enter 14 in the field Size box.

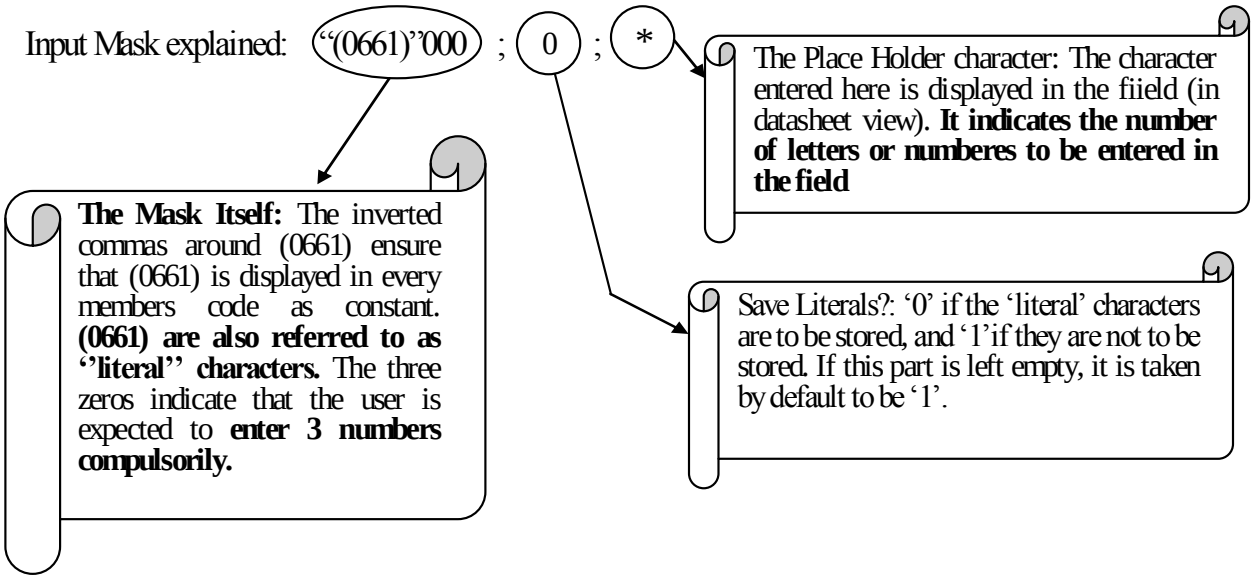
Format: This property is for determining the format in which dates, times, numbers, currency figures are displayed. For example, if date is to be displayed in 12-Jun-2008 format, then **"dd–mmm- yyyy"** properties is to be used. You can also format text. To do so, enter one of the following characters in the format box:

Character	Description
@	Tells that a text character or a blank space is required in the field.
&	Tells that a text character is not required in the field
<	Requires all characters in the field to be lowercase
>	Requires all characters in the field to be uppercase

Input Mask: This property is used to control the values that can be entered by a user in a field. It lays down blank spaces and punctuation in the field so that numbers and letters can be entered accurately. The following illustration shows an input mask for entering a telephone number.

Telephone
(0661) 264-5050
(0661) 264-9281
(0661) 264-8659
(____) ___-____

Suppose the input mask "(0661)"000;0;* were to be entered in the ''Input Mask'' property for the Phone Field. We would be able to enter only numbers such as (0661) 264, (0661) 367, (0661) 526, etc. Note that the ''Input Mask'' has three parts, which are separated by semicolons, of which only the first part (the 'mask' itself) is mandatory.



Caption: A meaningful alternative name can be assigned to a field by entering a value in the caption property. **The word or words you enter will be appear in datasheet view, on reports, and on forms in place of original field name.**

Default Value: The default value property enters a value in each new record so you don't have to enter it yourself. It can be a word, abbreviation, or number. You can always delete the default value and enter a different value.

Validation rule: the validation rule lets you set down rules that have to be followed in order for data to be entered in the field. To create a validation rule, you enter an expression in the Validation Rule box. For example, the expression **Is Not Null'** tells access not to allow an empty or null entry in the field. Or, if you wanted to exclude negative amounts in the field, you might use the expression **'>0'.**

Validation Text: if you established a validation rule for a field and someone enters data that breaks the rule, Access displays an error message. **You can however, write an error message of your own by entering it in the Validation Text text box.** This error message, for example, warns a data-entry employee that they have to enter a value for the field:

Fig.-: 7: Error Message

Required: This property can be set either 'Yes' or 'No'. when set to 'Ye rily enter values in that particular field, otherwise an error message will be dis t to 'Yes'.

Moving, Copying, Deleting, and Renaming Fields

After you have gone to the trouble creating all the fields for the database table, you might discover to your dismay that fields are in the wrong order, that some fields don't belong in the table, or that some fields need new names. The following pages explain how to move, delete, and rename fields.

Moving and Copying Fields

Move a field when you want it to appear in a different place in the table. To move a field, follow these steps:

1. Select the field by clicking on the box to its left. The field is highlighted.
2. Drag the field up or down across the small squares to the left of the fields. As you drag, a gray line appears between fields to show where the field will land when you release the mouse button.
3. Release the mouse button.

Copy a field when all its setting-its data type and field properties-can be used over again in another field. After you have copied the field, be sure to rename it. Identical fields cannot appear in the same table. To copy a field, follow these steps:

1. Select the field to be copied by clicking the box to its left in Design view.
2. Press CTRL-C or right click and choose Copy from the shortcut menu.

3. Click on the field that you want the copy to appear above.
4. Either press CTRL-V or right-click and choose Paste on the shortcut menu.
5. Change the field name for the field you copied.

Renaming a Field
Steps:

1. In Design view click in the box where the field's name is
2. Delete the name that is there, and enter a new name.

It doesn't matter if the field whose name you change in linked to a field in another table, because changing the name of a field doesn't affect the relationships between tables.

Deleting a Field

Think twice before you delete a field. After you delete it, all the data contained in that field is lost from every record in the database table. You can't recover it.

Steps:

1. In Design view, select the field you want to delete by clicking the little box to its left. The field is highlighted.
2. Either click the Delete Rows button or right-click and choose Delete Rows.
3. When Access asks if you really want to go through with it, click Yes.

Exercise-I

1. Create a database named MASTER
2. Create the following tables using **Design View** with specified fields:

Employee

Field name	Type
Name	Text
Pl. No	Number (Primary Key)
Design	Text
Deptt.	Text
Scale	Text
Basic	Number
DA	Number

Trg_Attend

Pl. No	Number
Trg_Code	Number

Trg_Code

Trg_Code	Number(Primary Key)
Description	Text

3. Enter the Data as shown below:

EMPLOYEE

name	plno	design	scale	deptt	Basic	DA
CHAUHAN P C	37019	DY. MGR.	E3A	SMS-II	18250	7280
MUNDARI S	37024	TECH.	S06	PM	6890	2820
MOHANTY S B	37027	SR.MGR.	E05	T & RM	25000	12800
SRIVASTAVA A K	37028	ASST. MGR.	E2F	SSM	12000	6290
KULLU C	37031	DY. MGR.	E3A	HSM	18600	7300
KHAKHA B	37032	DY. MGR.	E3A	HSM	18600	7300
BHUMIJ N C	37034	SR OPTV.	S07	ERWPP	9870	3500
MAHANTA T K	37035	SR OPTV./SR.TECHN	S10	SP-II	9870	3500
SAHOO SANKAR	37036	CHARGEMAN	S09	RC (M)	13250	6200
DAS P K	37037	MASTE OPTV .	S10	SSM	11760	6000
SINGH P C	37041	SR TECH.	S10	SSM	10280	5790
PATRA H M	37042	SR OPTV.	S07	ERWPP	9820	3460

Trg_attend

plno	Trg_CODE
37024	30309
37024	30310
37036	30310
37041	30310
37024	30310
37037	30311
37037	30312
37027	32601
37019	32602
37031	32602
37032	32602
37028	32603
37035	32604
37042	32604
37024	32604

trg_code

Trg_code	Description
30309	MS WORD
30310	MS EXCEL
30312	MS ACCESS
32601	EME
32602	MDP-II
32603	MDP-I
32604	SDP

4. . Insert **Telephone_ No field** to Employee Table
5. Set the field properties of **Telephone_ No** field with the help of **Input Mask** so that numbers and letters can be entered accurately in the following manner:

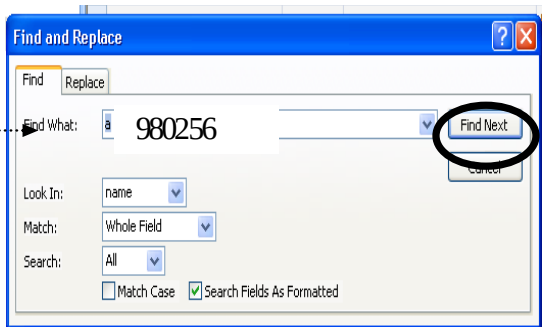
Telephone
(0661) 264-5050
(0661) 264-9281
(0661) 264-8659
(____) ___-____

6. In the Trg_code table ensure that the **Trg_code field should never be below '0.** Also **provide an appropriate message** that will be displayed in case the user enters an invalid value
7. In the Trg_attend Table, ensure that data **must** be entered for the Trg_code field.

Searching, Sorting and Filtering Records

Searching:
To search for example a Pl. No, the Find and Replace Dialog box can be used.
Steps:

1. Open the table in datasheet view
2. Click on the Find Icon on the toolbar
3. This displays the box shown (Fig.-8)
4. Enter the Pl. No. in the **Find What Box**
5. Then press find **Next Button**



Note:

- ***The searching can be narrowed to a particular field by clicking in that particular field and selecting the field in the 'Look In' box.***
- ***The 'Match Box' is used to narrow the search by specifying whether the search should be done to find the exact match of the entire word or only a few characters should be compared.***

Sorting: Very often records need to be sorted in some order. To do this follow the following steps:

Steps:

1. Open the table in datasheet view
2. Select the field to be sorted
3. Click on the  (for ascending order) or  (for descending order) on the standard toolbar.

Note: when the records are sorted or ordered, an entire record (not just the selected field) is treated as a single unit, and is sorted.

Filtering:
Besides the need for sorting, sometimes you may need to see all the records for a particular department. In such a case, **records meeting the necessary criteria have to be displayed. This is known as 'Filtering'.**

Filtering in Access can be done in two ways: **Filtering by Selection** and **Filtering by Form**. The figure (fig-9) below displays the tools that help create the two types of filters. The third button is used to **'Run'** the filter.

		
Filter by Selection	Filter by Form	Apply filter

Fig.-: 9: The 'Filtering' tools

Filter by Selection:

Steps:

1. Open the table in datasheet view
2. **Place the cursor in any of the cells in deptt. field** for example in ERWPP
3. Press **'Filter by Selection'** button. This will display only the records where the deptt. is 'ERWPP'. The other records are **temporarily hidden.**

> ***Note: Here you can notice that the 'Apply Filer Button' appears pressed. To make all the records appear once again, click on 'Apply Filter' button.***

Filter by Form:

Steps:

1. Open the Employee Table in datasheet view
2. **Place the cursor anywhere in the deptt. field**
3. Press **'Filter by Selection'** button. The result will be shown in the figure-10 below:
4. Click on the down arrow in the **"Deptt"** field and select **'ERWPP'.** This will display the records where Deptt. Is ERWPP.
5. Click on the **Or Tab** and give deptt. Option **HSM**
6. Click on the **Apply Filter** button again to display ***all records for ERWPP and HSM.***

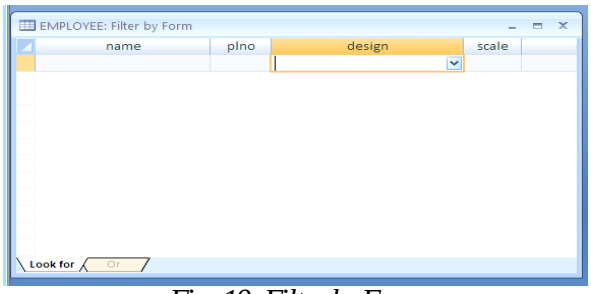


Fig.-10: Filter by Form

Exercise-II

1. In the Trg_Attend Table replace all the Trg_code to 30309 with 30399.
2. Set all the Trg_codes (30399) back to 30309
3. View the records of Employee Table in the Order of Basic
4. Using Filter by Selection, display all the records in of Trg_attend for Trg_code 30310
5. Display all the records in trg_attend table for Trg_code either 30309 or 30310 using Filter by Form

Queries and Relationships

Relationship in Microsoft Access

Retrieving records from a single table is easy enough. But to access records from more than one table, we need to set relationships. Once the relationships are set, the user can access the required fields from different table with the help of **'Query'**.

In the previous chapter, you might have noted that the personal numbers that existed in Employee Table were entered in Training Attended Table. The reason for this will get clearer as we proceed further.

As seen in Fig. -11 below, every Pl. No in Attended Table has to have an entry in Employee table. In both the tables, the Pl. No. field is common, and it is that field helps us to establish an association between the two tables. Such an association is called a **'Relation'.**

Attended Table **Employee Table**

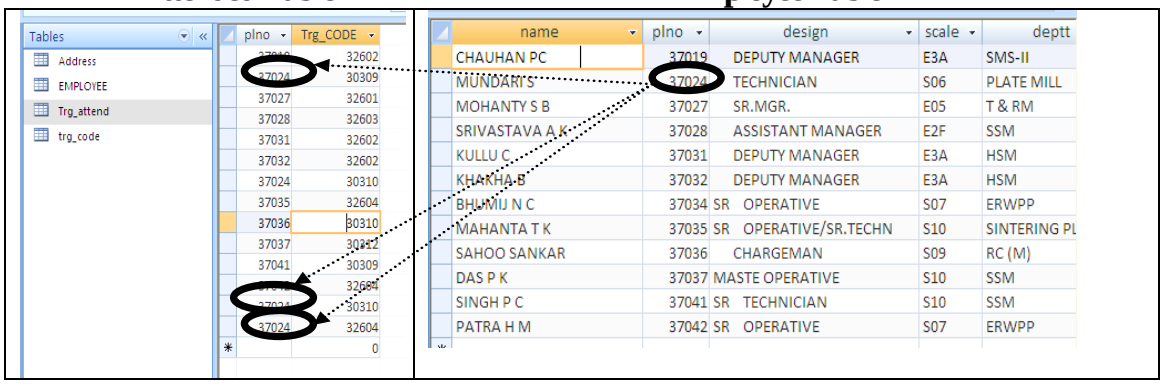


Fig. -11: Relation Between Tables

Once such a relationship is established, relevant data from the two tables can be obtained by matching data with the help of the common field. The table below can be obtained by matching data with the help of common field.

name	plno	design	Trg_code
CHAUHAN PC	37019	DEPUTY MANAGER	32602
MUNDARI S	37024	TECHNICIAN	30309
MOHANTY S B	37027	SR.MGR.	32601
SRIVASTAVA A K	37028	ASSISTANT MANAGER	32603
KULLU C	37031	DEPUTY MANAGER	32602
KHAKHA B	37032	DEPUTY MANAGER	32602
MUNDARI S	37024	TECHNICIAN	30310
MAHANTA T K	37035	SR OPERATIVE/SR.TECHN	32604
SAHOO SANKAR	37036	CHARGEMAN	30310
DAS P K	37037	MASTE OPERATIVE	30312
SINGH P C	37041	SR TECHNICIAN	30309
PATRA H M	37042	SR OPERATIVE	32604
MUNDARI S	37024	TECHNICIAN	30310
MUNDARI S	37024	TECHNICIAN	32604

*Fig.-12: Accessing fields from **'Employee'** and **'Attended Table'***

Thus, a relationship can be defined as an association between common fields in two tables, which helps us put together information from different table.

Data is stored in the table as shown in fig.-12(previous page). However you may wish to view the data as follows:

- ✓Only some fields at a time
- ✓Only some records at a time
- ✓With calculated fields
- ✓Arranged in order of any one of the fields

So, requesting specific information from one or many tables is called **'Querying'**. In other words a **'Query'** is a **'request'** for information from a database.

Familiarity with the Query Environment in Access

Before we proceed further, we need to be familiar with the 'Query 'environment in Access. Like all the objects in database, the queries have also two views.

1. Design View : used to create the query
2. Datasheet View : used to display the results.

Design View

The Design View (fig-13) has two parts. The **upper part displays the table or tables which contain the required fields.** The **lower portion of the window is a grid, which usually has 6 rows** (the no. of rows may increase or decrease).

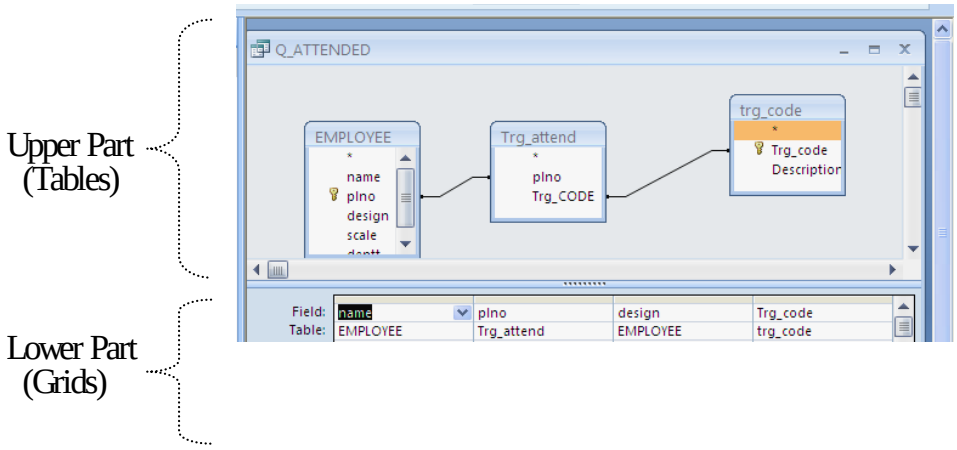


Fig.-13: design view of the Query

An explanation of each of the rows is given below:

Field : as the names of the fields that are to be included in the query.

Table : Displays the names of the table to which the corresponding field belongs

Sort : Is used for setting the sorting order (ascending, descending or neither) for any of the rows.

Show : Contains a small check box. When this check box is ticked, that particular field is to be shown. If the check box is empty, the field is hidden in the datasheet view.

Criteria : Contains criteria, based on which the records will be selected.

> ***Note: When multiple criteria has to be set, and records need to be selected provided both the criteria are met, the criteria are written in the same row (AND Gate Condition), under the appropriate fields. However when the multiple criteria have to be set such that either one or the other criterion has to be met, one criterion is written in the 'Criteria' row, and the other written in the 'Or' row(OR Gate condition).***

Creating a Query in Design View: Let us suppose that the in-charge of the SSM wants to know the list of employees along with training attended for a given module say: MS Word. For this proceed as follows:

Steps:

1. Open the database
2. Click on the **Query Tab** and then click 'Create **Query in Design View'** and press **OK** (fig.-14)
3. The show table box is displayed in the foreground with the query's design view in the back ground as shown in fig-15 below. **Select the tables** to include in your query and click **Add**
4. **Double click** or Drag and drop the required field(s) form the table (s) to the field grid(fig-16).
5. Click the **save button** and give a name to the query
6. To view result, **click the data sheet** button on the stand Toolbar

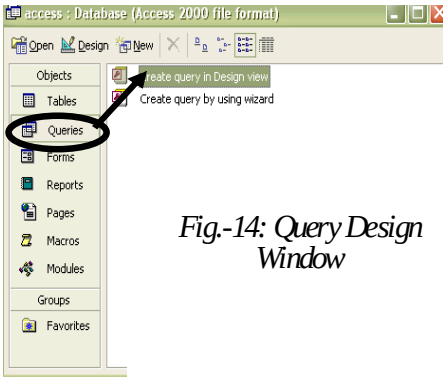


Fig.-14: Query Design Window

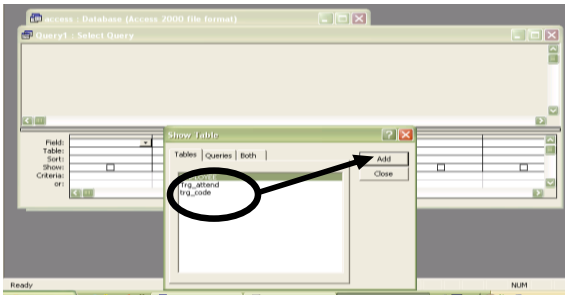


Fig.-15Show Table Dialog Box

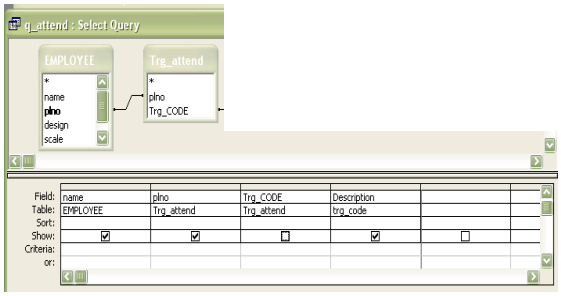


Fig.-16

Entering the Query Criteria:

Include Criteria on the line of the Query Grid (Fig.-16) when you want to query for certain kinds of records. Unless you enter the criteria correctly, Access can't query a data base. In fact, if you enter criteria incorrectly, the programme shows you a message window with a cryptic explanation of why your criteria are wrong. For example, to query the records of people who have attended MS Excel (Tg. Code: 30310), the query grid looks like this:

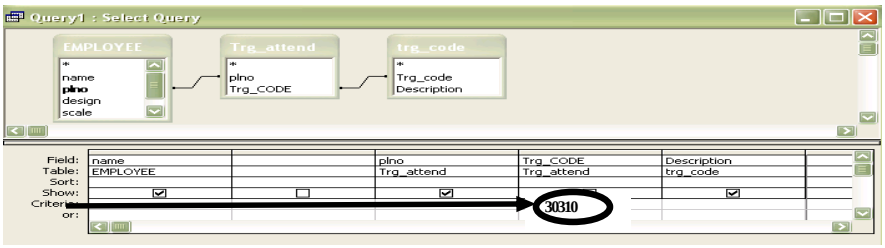


Fig.-17: Query with criteria

Besides querying for records that meet criteria in different fields, you can require records to meet more than one criteria in the same field. Consider the criteria in the following illustration. This query not only seeks the records of employees who have **attended MS Excel,** also it will restrict the seek for only **'Plate Mill, RC (M) and SSM'.**

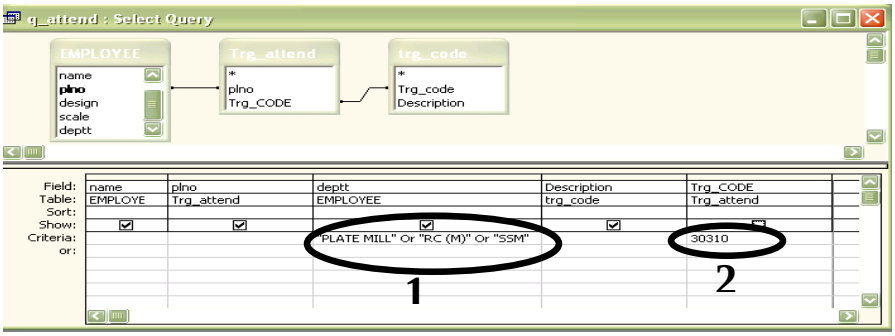


Fig.-18: Query with multiple criteria in the same field ***(marked 1)***

Guide Lines for Entering Criteria on the Query Grid

Following are guidelines for entering criteria on the query grid:

- **Quote Marks(") and Pound Sign (#):** Access puts quotation marks around text criteria and pound signs around the date criteria. However, ***you do not need to enter those symbols yourself. The programme enters them for you after you move the cursor out of the criteria box.***
- **Number formats :** ***Do not enter commas when you enter numbers on the query grid.*** For example, to enter the number 45,000 you need only enter 45000. If you include a comma in number or currency figures, access flashes a message that says you created the expression incorrectly.
- **Date Formats :** You can enter dates in all three of access date formats. For example, to find records dated December 31 , 1978, you can enter the date in the query grid in any of the following ways; 12/31/78 , 31-dec-78, or December 31, 1978.
- **Operator Names:** It doesn't matter whether you enter operator names such as Not and Between in all uppercase or all lowercase letters. Access capitalizes the first letter and lowercases the other letters for you.

Text Criteria

Text criteria are the *simplest and easiest type* of criteria. To enter text criteria, all you do is enter letters on the query grid.

Two operators, **Not and Like,** can come in handy when you are working with text criteria. **The Not operator tells Access to exclude a criterion from the search. By using the Like operator along with the asterisk wildcard, you can search for groups of records.** Some examples are given below:

- If you enter **Like F*** in a query grid, it will find all the records, whose names begin with the letter ”F”.
- Entering **Like[A-E]*** finds the records, whose names begin with the letters “A”, “B”,”C”, “D”, and “E”.
- Entering **Like *Ltd.** Finds the records, whose name end with the “Ltd”. Suffix.

Numeric Criteria

Use numeric criteria in Number and Currency fields to find specific kinds of records. The table given below lists the operators you can use in Numeric and Currency fields.

Operators	Name	Example (in a Basic Field)	Query Results
=	Equal to	=6500	Basic exactly Rs.6500
<>/Not	Not equal to	<>6500	Basic not Rs.6500
<	Less than	<6500	Basic less than Rs.6500
<=	Less than or equal to	<=6500	Basic Rs.6500 or less
>	Greater than	>6500	Basic more than Rs.6500
>=	Greater than or equal to	>=6500	Basic Rs.6500 or more
Between . . ..And. . ..	Between	Between 6500 And 7500	Basic between Rs.6500 and Rs.7500

Date Criteria

All the numeric operators that can be used in numeric fields on a query grid can also be used in date fields. For example, entering <3/8/97 in a field finds all records that were made before (or less than) March 8, 1997.

Note : Access offers a function called Date() that represents today's date and can be useful in date expressions.

Performing Calculations on Query

By performing calculation query, you can make a query results table work like a spreadsheet. For example, you can find out, how much will be DA of each employee, if the DA will be increased by 2 percent.

Steps:

1. Open the Query in design view
2. Drag the fields you want to display in datasheet view
3. **Click in the last column in the 'Field' (marked 1 in the fig. 19) and type <u>New DA:[Employee]![DA]*1.02</u>**
4. **Press enter.** Run the Query
5. In the similar process, you can enter expressions to other fields

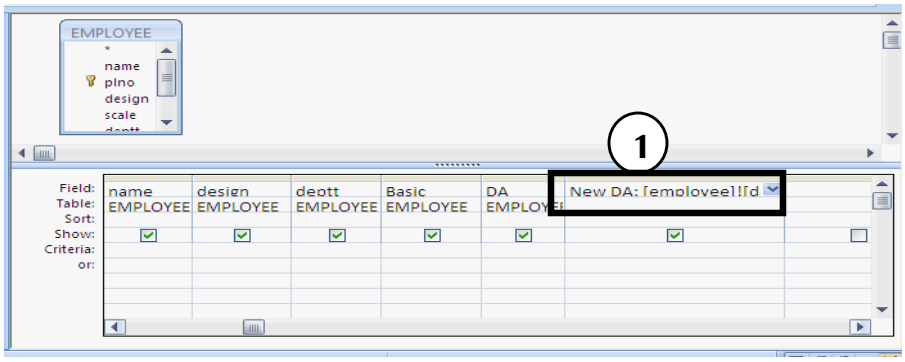


Fig.-19: Query displaying a calculated field

The expression we have written is explained below:

New DA:[Employee]![DA]*1.02

'New DA' is the name we would like the new field have. **(Ensure that a colon(:) follows it).** If the name is left out, in data sheet view, the calculated field is given the name 'Expr1'. The rest of the expression can be explained as the 'DA' field from 'Employee' table multiplied by 1.02. **(Ensure that an exclamation mark (!) separated the table name from field name)**

Summery: Getting comprehensive Information About Data in a Field

A summery can find the Sum, Average, Lowest or Highest value, Number of, Standard Deviation, Variance, or First or Last value in a field. **Only Numeric Data can be summarized.** Access offers a menu with functions for summarizing the data in a field. The table given below explains the different functions and their use:

Function	What it Does
Sum	Totals the values in the field
Avg	Finds the average value in the field
Min	Finds the lowest value in the field
Max	Finds the highest value in the field
Count	Counts the number of values in the field
StDev	Find the standard deviation of the values in the field
Var	Finds the variance of the values in the field
First	Finds the first value in the field
Last	Finds the last value in the field

Follow these steps to create a query that summarizes data in a query results table:

1. Create a new query, choose which tables to query, and choose which fields to query
2. **Choose View ->Totals or click the Totals button**  **on the Query Design toolbar.** A Total row and the words **'Group By'** appear on the query field. (Fig.-20 a)
3. Click on the Total row of the field you want to summarize
4. Open the drop-down menu on the Total row and choose the function from the drop down menu.
5. Run the Query to see result

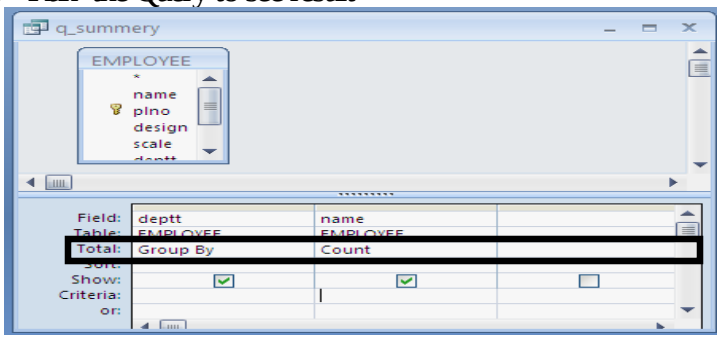


Fig.-20 (a): Query with data summary

This Summery Query will group all the Employee deptt. wise and will give the no. of employees(Count) of the departments as follows: **(Fig 20 b)**

q_summery

deptt	CountOfname
ERWPP	2
HSM	2
PLATE MILL	1
RC (M)	1
SINTERING PLA	1
SMS-II	1
SSM	3
T & RM	1

Fig-20(b)

Exercise-III

Create the following Queries in Design View and Display the data in datasheet View:

1. **Q_attend:** with Employee name, Deptt, Design from Employee Table, Trg_Code from Trg_Attend Table and Description from Trg_Code Table.

   Note: ***(Trg_code need not be displayed)***

2. In the above query display only the records for Trg_code 32601
3. Modify the criteria to display records for:
   - either Trg_code 30310 or 30312
   - for Trg_codes begins with 303
   - for Trg_codes 32604 and deptt. SP-II
   - deptt. Either "PM" Or "RC (M)" Or "SSM" and trg_code 30310
   - deptt. names begin with letters P", "Q", "R", "S", and "T"
4. Create a new query Displaying the name, Design., Deptt for **Basic between 12000 to 25000.**
5. Modify the above query to Display **Total Basic for Deptt. HSM with calculation Query.**
6. With Calculation query**,** find out, how much will be the new DA for each employee, if the DA will be increased by 5 percent.
7. Prepare a summery of deptt. wise employee list ***(hints: Use Count option for Pl. No.)***

Action Queries: While a select query only selects records or fields from tables, 'Action' queries modify the table and its contents. There are four 'Action' queries in Access. They are:

- **Delete Query** : used to delete unwanted records
- **Append Query** : append (Add - at -End) some records from Table 1 to Table 2 provided the design view of both the tables are same
- **Make table query** : creates another new table from a query based on some criteria
- **Update query** : updates the value of a field to a new value

Delete Query: Suppose you want to delete all the Records of attended Table for Trg_Code 30310, follow the steps:

1. Create a new Query in Design View
2. Give the criteria for Trg_code field(30310)
3. Click the **Query Type Button**(Fig.- 21) and **Select Delete Query**
4. The title of the Window now will change to Delete Query from existing Select Query
5. Click the Run Button
6. A prompt appears to inform you that some records will be deleted. Click on the 'Yes' button
7. Open the Trg_attended table and you can find the records for code 30310 are no more in the Table.
8. In the similar process you can create the other Action Queries.

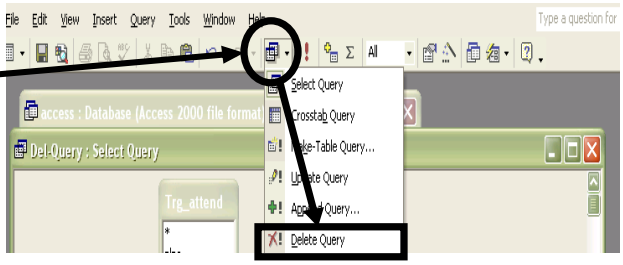


Fig.-21

Exercise-IV

CAUTION : Create a copy of database MASTER and design the following **Action Queries:**

1. Delete all the records from Trg_attend table for Trg_code 30309 using **Delete Query**
2. Using **Append Query** add the records from Employee Table to Employee _copy for deptt SSM
3. Find out the records from Trg_attend Table for ERWPP and store it in **ERWPP_attend table using Make Table Query**
4. Using **Update Query** Replace the Old Basic to New Basic as Baisc+DA

Forms: A 'Form' is a document containing blank fields into which a user enters data. Access forms are very much like the forms you fill out to apply for a job or a driver's license. Although a Table or Query's datasheet view can be used to do the same data entry, a form presents the data in an organized and attractive manner. Access forms create the user interface to the tables. **The forms are designed from a collection of design elements called 'controls'.**

Things that can be done in a database application using forms are:

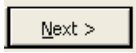
- → Manipulate data in the Tables
- → Run Queries
- → Print Reports

Thus, a form is essentially the binding element of an application.

A form consists of the following:

- → User-interface components
- → Instructions

The most common example of a user interface component is a button, such as the one shown below:



Associated with the button is an instruction that displays the next record from the table in the form. Thus, clicking on this button will display the next record in the table.

Common User Interface Components

The user interface consists of several different components, which we referred to as 'controls' that are put together as required. These controls have to be placed in some sort of container. In access this 'container' is a 'Form'(Fig.-22)

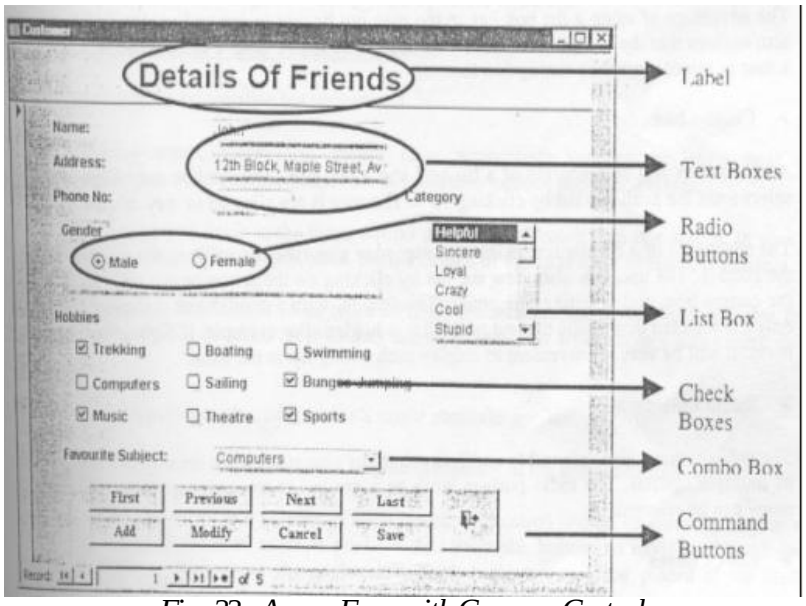


Fig.-22 : Access Form with Common Controls

Button

A button is used to perform an action. A user clicks on a button to indicate the action is to be performed. For example, the user clicks on the Save Record button to indicate that the details entered in the form should be saved as a record. A button can have text or a picture on it as shown in the above figure.

Text box
A text box is a user interface component used to accept information from the user. It is also called an input box. Typically, an interface will use one text box per piece of information required from the user.

Label
A label is a component used to place text in a form. Typically, a label is used to identify components like a text box. In the figure above, the label 'Name' is used to indicate that the text box next to it should be used to enter the Name.

List box
This control is used to present a list of available options. When the number of display items is more than that can be displayed in the list box, a vertical scroll bar is automatically added. The user selects one or more items by clicking on the required item in the displayed list.

The advantage of using a list box lies in the user not having to remember all possible options. It also ensures that the user doesn't enter something that is not valid. Futhermore, a list box allows a user to select more than one option too.

Combo box
A combo box is a combination of a list box and a text box. The list box only allows the user to select from the available list by clicking on it. The user is not allowed to key-in a value.

The advantage of a combo box is that the user may also type the value in the text box portion of the control. The user can also view the list by clicking on the arrow on the right hand corner of the combo box, and selecting one option. In addition, with a combo box it is possible to display only the selected item while the rest of the list is hidden. For example, if Stronghold Inc. sells 15 items, it will be very inconvenient to display such a long list in the form.

Radio buttons
The radio buttons, also referred to as 'Option buttons', are used when the user can select only one of multiple options. The radio buttons work as a group. At any point of time, only one of the many can be selected.

Check boxes
The check box component is used when a user can select multiple options from those specified, unlike the radio buttons. The user can select as many check boxes as required.

Creating a form:

A form can be created easily, by using 'AutoForm Wizard'. This just prompts the user for the name of the table or query whose records are to be displayed in the form. The Wizard then takes the default settings for the font, background etc., and creates a form in a columnar, tabular or datasheet format, depending on which of these options had been initially selected by the user.

Follow the steps given below to create a 'Columnar' form:

Steps:

1. Click on the Forms tab and click on the New Button
2. In the box that follows, select 'AutoForm: Columnar' (Fig.22, next page)

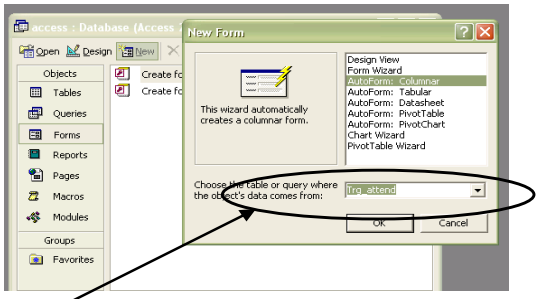


Fig.-22: Different ways of creating a form

3. Select the **'Table' as the 'Record Source',** (as shown in the figure above) and click on the 'OK' button.
4. Save the Form followed by a name

A form is created as shown below. The source for the records in the form is the **'Trg_attend'** table.

Figure 23: Creating a 'Columnar' form using the 'AutoForms' Wizard

Note: in the same way, a form can be created in the 'tabular' or 'datasheet' format by using the'AutoForm' Wizard.

Creating a Form using the Form Wizard:

3. Click Forms tab and select the'Form Wizard' option.you will get the first wizard dialog box as shown in fig.-23 (next page).
4. In the Tables/Queries dropdown list, choose the table or query to get fields from the form
5. Click a field and then click right-pointing arrow to include the field in the form. You can click on the double-arrow to include all the fields to the Form and then press **Next.**

6. Select **Columnar** as the layout for the form, and click on the **Next**
7. Select the **Style** for the form and click on the **Next**
8. Give the **Title of the Form** and Click on the **Finish**

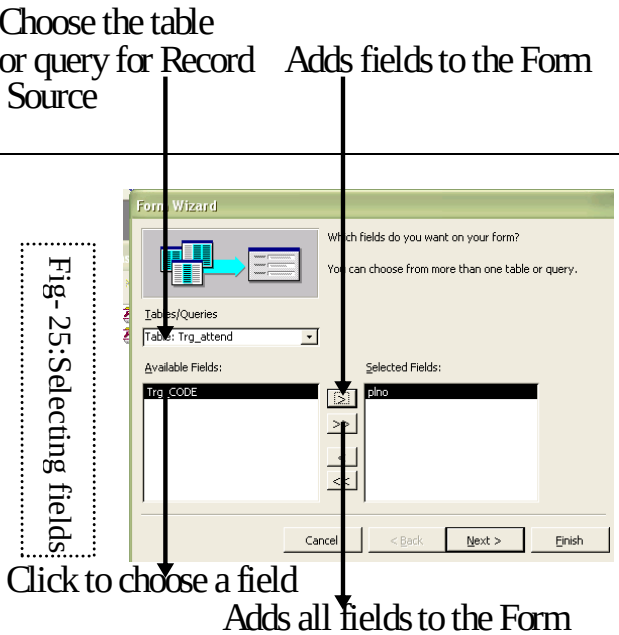


Fig- 25:Selecting fields

Note that using any of the forms created above, we can navigate through records using the **Navigation Buttons** at the bottom of the form. Records can also be added in the same way.

Entering Data in Forms:

1. To enter data in a form, click **New Record button**
2. When you do so, an empty form appears onscreen. **Enter data.**
3. To move to the next field, press **TAB or Enter Key.**

Viewing Records on Forms:

Use the Toolbar (Fig.26) along the bottom of the Form Window to move from record to record and view data.

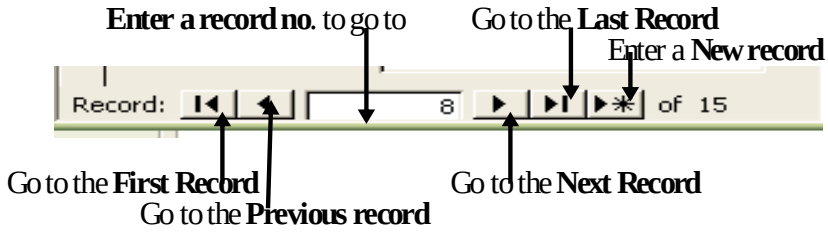


Fig.-26: Form Toolbar

Copying Data from one Record to Another

Steps:

1. **Display the Record** that you want to copy
2. Click on the **Vertical bar on the left side of the form** (fig.-27, next page). It will select all the data in the record.
3. Click on **Copy**
4. Click on **New Record button**
5. Click the **Vertical bar on the left side of the blank form**
6. Click **Paste**

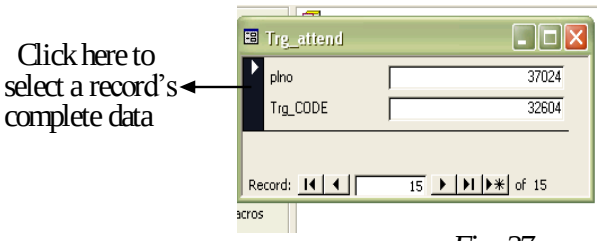


Fig.-27

Creating a Form in Design View

Steps:

1. Create a new form by clicking on the **New button** in the **Forms tab.**
2. Select **'Design View'** and 'Trg_attend' as the name of the table, in the combo box below. Click on the OK button.
3. The 'Design View' of the form is displayed as shown in the figure below.

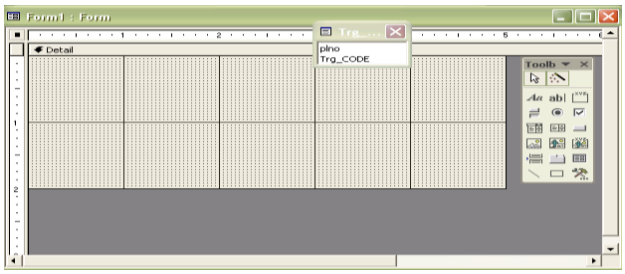


Fig.-28: Design View of the form

4. Click on the **'Plno'** field in the field list and drag it to the form. Similarly, drag the other fields to the form.
5. Switch to Form View by clicking the Form View button 

Note, that a miniature of the 'Trg_attend' table is displayed above, alona with the fields in the table. ***If this is not visible, or you have closed it, click on the 'Field List' button***  ***in the toolbar.***

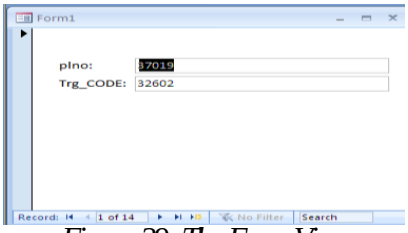


Figure 29: The Form View

In the form above, it may be seen that a lot of the form area is blank.To modify this, as well as the background, the font formatting etc.. The steps are given in next page.

Steps:

1. Switch to the **Design View.**
2. **Right click on the form (marked 1)** , as shown below, and select '**Form Header/Footer'** from the shortcut. This displays a header and footer section for the form.

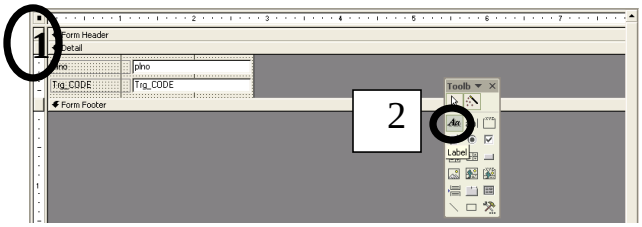


Figure 30: The Form View

3. Select the **'label' control (marked 2)** and drag it into the 'Form Header' portion, and enter 'Training Attended Form', as the heading for the form
4. **Right-click on the label** that we just created, and select **'Properties'**. The 'Properties' window of the particular label is displayed
5. Scroll down through the **All** tab in the Properties window.
6. Change the **Font Size to 12, Font weight to Bold.**
7. Click in the **Fore Color** row and click on the button alongside. Choose some appropriate colour in the box that follows.
8. Close the Properties window and observe the changes in the label.
9. Select individual text boxes and align them within the form area.
10. Switch to Form View

Adding command buttons to the Form
(to help us in navigating, deleting and adding records).

1. Switch to the '**Design View**' of the above created form.
2. **Drag the 'Footer'** down to make some space for the command buttons below the text boxes.
3. Select the **'Command Button' tool in the toolbox(fig.-30)** . Click and drag it in the form. This Activates the control Wizards button **(fig.-31).**

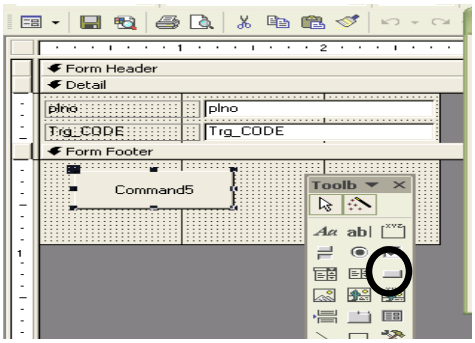


Figure 30: Selecting the action to be associated with the button

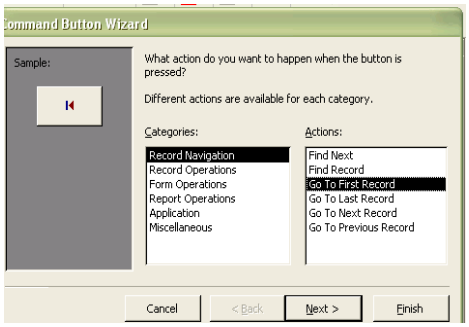


Figure 31: Control Wizard

4. In the 'Actions' list box, select 'Go To First Record'. Click on the 'Next' button.
5. In the second step, we need to specify what is to be displayed on the face of the button. **If you want a caption to be displayed, enter it into the textbox marked '1'** in the figure below. **To display a picture, select the picture from the list (marked '2' in the figure).**

6. Click on the **'Next'** button.
7. In the last step, we need to provide a meaningful name for the button, which will be useful to refer to it in code.
8. Enter the name as **'cmdFirst'** (without the inverted commas), and click on the **'Finish'** button. *Similarly you can create buttons to navigate to the next, previous and last records. You can also create buttons to add, save and delete records.*

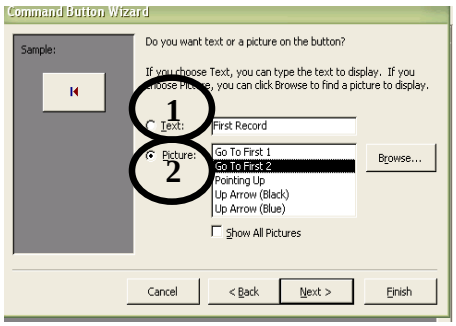


Figure 32

Since we have created our own buttons to navigate through the records, we don't need the default navigation buttons that appear on all forms. To disable these buttons, change the 'Navigation Buttons' property in the 'All' tab of the Properties' window to 'No'.

Creating a 'Modal' Form and setting it as the 'Startup' Form

In Applications such as Microsoft Word, it is observed that when open a dialog box, the document in the background can't be accessed unless the dialog box in the foreground is dealt with, usually by clicking on the OK or Cancel button. The dialog box in this case, is said to be **'modal'** in nature. In a database application, there might be a need for such a form, which requires users input

before proceeding with the rest of the application. Such a form is called Modal form. A **'Startup'** form in most applications is an example of such a form. Steps for creating a Modal form is given below:

1. Create a new form in the '**Design View'. Don't specify any record source.**
2. Select the label control. Click on the form and drag it. Enter **'Welcome to Training Management System'**. as the caption for the label. Similarly, create another label with the caption **'Human Resource Development Centre'.**
3. Select the **'Image' control' and drag it in the form**. In the dialog box that follows, select the name of any image file, and click on the 'OK' button.
4. **Add a command button to the form**. Using the **'Control Wizard'**, select **'Form Operations'** in the **'Categories'** list box, and **'Open Form'** in the **'Action' list box**.
5. Select the name of some form in the next step. Select some option in the consequent steps.
6. Add more labels **(Rourkela Steel Plant)** and then align all the controls.
7. In the **'Form' properties,** change the **'Modal'** property to **'Yes'.**
8. Save the form as **'TMS'**

This form will now be the form that opens first, when we start up the application. **To make it the 'Startup' form, follow the steps given below:**

1. Click on **Tools -> Startup**
2. In the 'Display Form/Page' combo box, select the name of the form we just created, that is 'TMS', and click on the'OK' button.
3. Close the database.
4. Open the database again.
5. Notice that the TMS form appears first.
6. Clicking on the 'OK' button opens the form specified.

Exercise-V

- **Using Autoform Wizard**
  1. Create a tabular form for the Employee table and save it as Form_Employee
- **Using Form Wizard** Create a form using table Trg_Code and name it as Form_ Code
- **Using Design View**
  1. Create a form for Trg_attend
  2. Add **Label** "Training Attended"
  3. Browse through the Properties and change the label such that text in it should be **centre-aligned, change the back ground colour, font colour** etc.
  4. Attach **a proper header** to your form
  5. **Create buttons** to navigate to the **next, pervious, first and last** records. Name them cmdNext, cmdPrev, cmdFirst and cmdLast
  6. Also create buttons to **add, save, delete records** and **Run MS Word** and align therse buttons neatly
  7. Try adding Record, deleting and saving
  8. Create a **Modal Form** – Training Management System, **design it with SAIL Logo**
  9. Make it the **Startup Form** of the database

Generating Reports

A Report is a properly presented and explanatory listing of data, printed on a paper. It can contain data from:

- Some fields in a Table
- All the fields in Table
- Fields from more than one Table

And a report should have:

- All the required information
- Additional information for good presentation value
- Highlighting of important data

Components of a report:

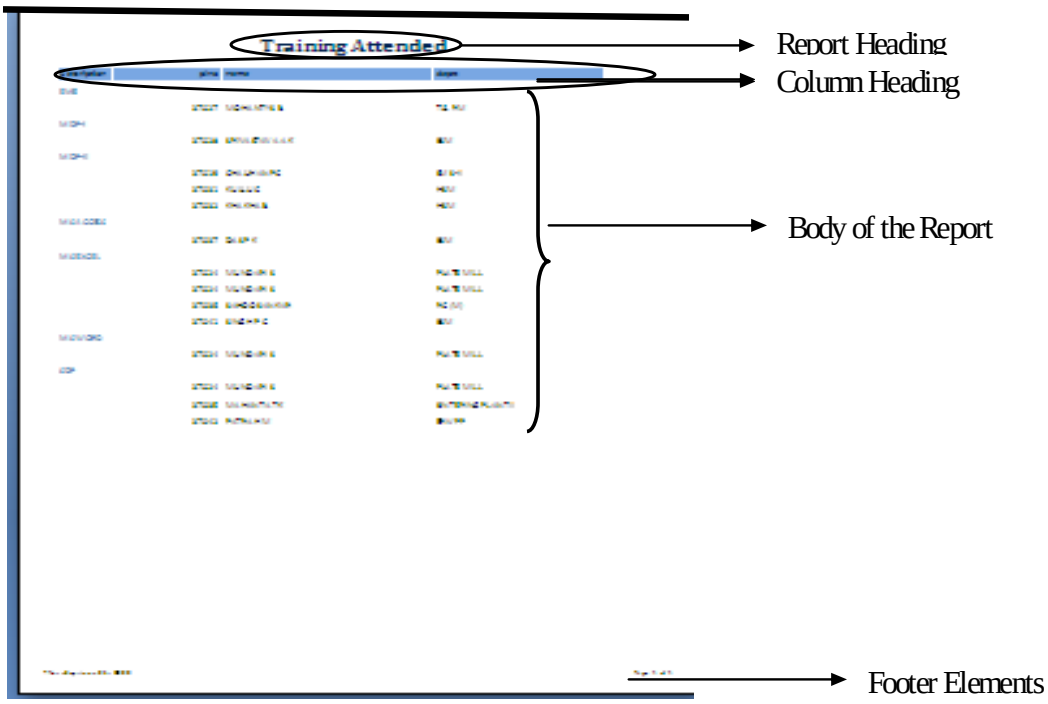


Fig.-33: Components of a Report

Report Headings :	◈ Contain information such as Name of the company, De ◈ Appears at the Top of the page.
Column Headings :	◈ Headings of data provided in the body section of the R ◈ Should be appropriate for the data and clearly indica data ◈ Should be formatted so that they can be distinguished a
Body of the Report:	◈ Data for which the report is created. ◈ Located just below the relevant column headings
Footer Elements :	◈ Usually include details such as the date, time name of the person preparing the report, page number etc. ◈ Appears at the bottom of the page

Creating Report using 'Report Wizard'

Steps:

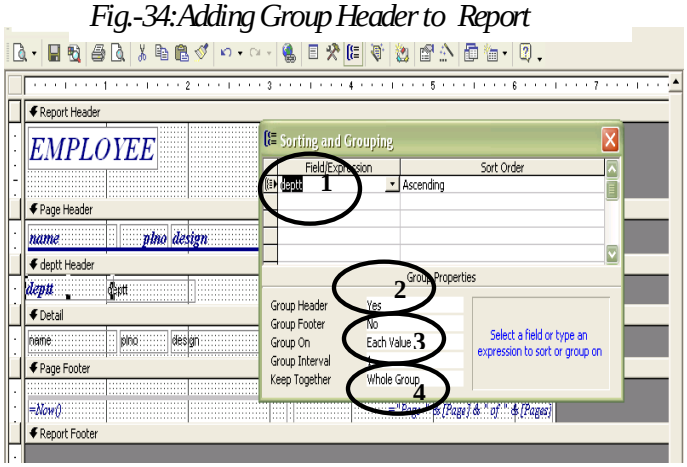
1. **Double click** on the **'Create Report by Using Wizard'** option in the Report Tab or click on the **New->Report Wizard**
2. Select the '**Table or Query (let Trg_attend)'** as source data
3. **Select the fields** to include in the report -> **Next**
4. Select '**Deptt'** as Group Header -> **Next**
5. Select 'Pl_no'as sorting order -> **Next**
6. Select a **Layout** for your Report (Tabular) -> **Next**
7. Select a **Style** for your Report ->**Finish**

Adding Groups to a Report

Reports are much more readable when data is sorted or grouped. For example, in a Employee list you can sort list of employees by the department to which they belong. Each department has its own header and all employees in same department can be sorted. for adding grouping level, follow the steps:

1. Open the Report in design view
2. Click on the Sorting/ Grouping button  on the tool bar. It will display the Sorting and Grouping Option Box. (fig.-34)

Fig.-34:Adding Group Header to Report



3. Select **the field on which to group *(marked 1)***
4. To add a Group Header, change the **Group Header field to Yes *(marked 2)***
5. To change the value that will begin a new group when the report is run, select **Each Value** from the **Group on Field *(marked 3)***
6. Select **whole Group** from **Keep Together *(marked 4)***
7. **Save** and **Run** the Report

Adding Sl. No. to a Report

To add Sl. No. to a report follow the steps:

1. **Insert a Text Box** from the Tool Box in Design View. When you insert a Text Box, you will get two fields named **Text and Unbound.**
2. Separate the two fields. Use the **Text field as Label** and in **Unbound field Type=1***(Fig.-35)*

3. **Right click on the unbound** field to display Property Box
4. On **Running Sum** option select **Over Group** or **Overall** as per Requirement
5. **Save** and **Run** the Report.

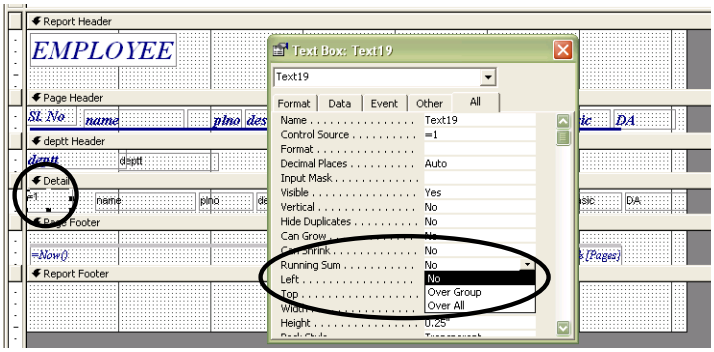


Fig.-35: Adding Sl. No to a Report

Exercise-VI

1. Create a report that will display the Employee details from the **Employee table.** The report should **group the employees together by Deptt-wise** and **sorted in ascending order**. Also **display with summery of the report.**
2. Add Label, Header and Footer to your Report
3. Add Sl. No and change the properties so that the a new sl. no will be started for each group
4. Create a report that displays the **Employee Name, Pl. No. Design, Deptt** and **Training attended for MS Access Deptt.-wise.**

Import Data from Another Data Source

Import data is very much like copying it. Data stored in different formats can be imported into one or more Access Tables. The source data is not modified in any way and remain intact.

Steps :

1. Open a database into which you would like to import data and select table tab.
2. Click on New and from the dialog box select Import Table.
3. From the import dialog box, select the file name and file type.
4. Click Import. A message box confirms that the table was imported.
5. Repeat the above steps to import additional tables, if desired.
6. Click close. The imported tables will be displayed on the Tables tab of the database window.

Export a Table/Query to a Spread Sheet/Dbase

The same data stored in an Access table/query can be used in a spreadsheet without retyping. This is accomplished by exporting.

Steps:

1. Open a database and select table or query tab.
2. Select **a table or query** to export.
3. Select **Save As/Export** from the **File Menu.**
4. Select **To an External File or Database** in the save as dialog box and click OK.
5. Select the folder and file type into which you would like to export the table/query
6. Click **Export.**

To Export a Selection to Microsoft Excel/Word

Steps:

1. Open a database and **select the desired data** to be exported.
2. Select **Tools-> Office Link -> Analyze it MS Excel or Publish it With MS Word.**
3. The selected data will be saved in Excel/Word File.

Merge Data with Microsoft Word

Data from an Access Table (or Query) can be used as the data source for a merge in MS Word.

Steps:

1. Open a database and **select a table or query.**
2. Select **Tools->Office Link -> Merge it with MS Word.**
3. Then select **Link Your Data to an Existing MS Word Document** and click **OK.**
4. Select the **MS Word Document to which you want to Merge Data** and press **Open.**
5. Then **Insert the Merge fields** as you normally do in MS Word Mail Merge Data.

GLOSSARY

Auto Number	Access field type that automatically inserts a sequentially numbered value in each record.
Bound Control	A control on a report that displays field data stored in a field in an underlying table.
Cell	A single rectangle of a datasheet or design grid that can contain data or instruction.
Check Box	A control on a form/report that displays a check for a yes/true condition or nothing for a no/false condition.
Clipboard	A area of windows memory where any cut or copied information is stored and from which stored information is pasted.
Criteria	Instructions to limit records to be displayed in a query, form, or report.
Data	Information stored in tables in a database.
Datasheet	Data from a table or query displayed in columns and rows.
Design View	The mode in which form or report layouts can be modified.
Export	To copy an object or data to a separate file.
Expression	A combination of fields, constants, variables, operands and functions, the result of which is a single value.
Field	One item of information on a record of table; a column in datasheet view.
Filter	Criteria applied to a group of records to limit the display or printing of records.
Footer	A section of a form or report that appears at the bottom of a page or a report.
Grid	Data displayed in column and row format, known as a datasheet. Also, a design aid in design view.
Header	A section of a form or report that appears at the top of a page or a report.
Index	A file in which field values are sorted in a sorted order. Index speed up searches, queries and filters.
Label	An unbound control that displays text on a form or report.
Operator	A keyword or a symbol (e.g. And , Not, +, -, *) that indicates the action to be taken usually between two values, strings or variables.
Preview	To view on the screen the printed version of a table, query, form or report.
Primary Key	A Field (or Combination of fields that uniquely identifies a record.
QBE Grid	The bottom part of a query window.
Query	A stored set of instructions regarding displaying or changing data in a table.
Record	One row of data in a table.
Relationship	A link between two fields in one or more tables of a database.
Sort	To arrange records of a table or query in either ascending or descending order based on the field values.
Template	A stored form or report layout that can be used as the basis for new forms and reports.
Text Box	A control on a form or report that displays text and can accept text enties.
Toolbox	A group of buttons that aids in database activities and provides shortcuts to selections.
Toolbar	A varying group of buttons that aids in database activities and provides shortcuts to menu selections.
Variable	A placeholder in an expression that stores changing data.
Wizard	A Microsoft tool that automates many database design tasks.
Zoom Box	A window that gives a larger view of information in a cell or field.

Safety Instructions

1. Never insert anything metallic into the computer openings. Doing so may create the danger of electric shock.	2. Locate your computer near an easily accessible AC outlet.
3. Do not open the computer case on your own. Only a qualified technician should open the computer's case.	4. If your computer does not operate normally – in particular, if there are any unusual sound or smells coming from it – unplug it immediately and contact an authorised dealer or service centre.
5. Never use your computer if the power chord has been damaged. Do not allow anything to rest on the power chord, and keep the cord away from areas where people can trip over it.???	6. High temperatures can cause problems. Don't use your computer in direct sunlight, and keep it away from heaters, stoves, fireplaces and other sources of heat.
7. Be sure to hold the plug, not the chord, when disconnecting the computer from an electrical socket.	8. Unplug the computer when it is going to be left unused for an extended period of time
9. Do not expose the monitor to rain or use it close to water outlets. . If the monitor accidentally gets wet, unplug it and contact an authorised technician immediately. You can clean the monitor with a damp cloth when necessary, but be sure to unplug the monitor first.	10. Unplug your computer from the AC outlet before any service.
11. Openings in the monitor cabinet are provided for ventilation. To prevent overheating, these openings should not be blocked or covered. Be sure to provide adequate ventilation if the monitor is placed in an enclosed space.	12. .Put your computer in a location with low humidity and a minimum of dust.

Safety and Comfort Guidelines at Computer Workstation

Posture, lighting, furniture, work organization and other work conditions and habits may affect the way you feel and how well you work. By adjusting your work environment and personal practices, you may be able to minimize fatigue and discomfort, and reduce the risk of resulting strains that some scientists believe can lead to injury.

RIGHT	WRONG
Feet, Knees and Legs	
✓ Put your feet on the floor, flat on the floor or use a footrests and ✓ Be sure you have sufficient space under your work surface ✓ Stretch your legs and vary your leg posture throughout the day ✓ Take a break every now and again, some recommended atleast five to ten minutes per hour when sitting in front of the computer. Because all these postures prevent circulation of blood in the body. Just make some rounds to switch off the posture and the get the blood flowing again	× Do not curl and twist
Back	
✓ Distribute your weight evenly and use the entire seat and back rest to support your body	× Don't bend forward
Forearms, wrists and Hands	
✓ Hold a straight, natural wrist position while typing ✓ Use a computer desk with a pull-out self for keyboard	× Don't rest your palms on a × work surface while typing × Don't rest your wrists on sharp edge
Shoulders	
✓ Adjust your chair or key board height so that your shoulders are relaxed and your elbows hang properly at your sides and it should be at the height of your keyboards home row (row that includes the letter G and H)	× Don't support the arms up on the edge of the desk
Eyes	
✓ Give your eyes frequent breaks ✓ Periodically look away from the monitor and focus at a distant point ✓ While looking at your computer and also while resting your eyes, remember to blink	× Don't use bright colour schemes
Monitor	
✓ The monitor should be at eye level; one should not have to crane his neck upwards to see it	× If you look at the monitor more than you look at paper documents, avoid placing your monitor to the side
Keyboard and pointing devices	
✓ Position the key board directly in front of you to avoid twisting your neck ✓ Positing your pointing device immediately to the right or left of your keyboard	× Don't position your keyboard and pointing devices at different levels and distance

Computers are indeed a pain, in more ways than one. But with a little thought and experimentation, we can reduce that pain, and may be even eliminate altogether.