What Is a Database?

People often need to retrieve specific data rapidly while on the job. For example, a customer service representative may need to locate a customer's order status quickly while the customer is on the telephone. The registrar at a university may have to look up a student's grade point average or rapidly determine if the student has any outstanding fees before processing his or her class registration. A librarian may need to determine if a particular book is available to check out and, if not, when it is scheduled to be returned. The type of software used for such tasks is a database management system. Computer-based database management systems are rapidly replacing the paper-based filing systems that people used in the past to find information. The most common type of database used with personal computers today is a relational database. The basic features and concepts of this type of database software are discussed next.

A database is a collection of related data that is stored on a computer and organized in a manner that enables information to be retrieved as needed. A database management system (DBMS)—also called database software—is the type of program used to create, maintain, and organize data in a database, as well as to retrieve information from it. Typically data in a database is organized into fields, records, and files. A field (today more commonly called a column) is a single type of data, such as last name or telephone number, to be stored in a database. A record (today more commonly called a row) is a collection of related fields, for example, the ID number, name, and address.

What is Microsoft ® Access?

Microsoft ® Access is a database management system from Microsoft Corporation that combines the relational Access Database Engine with a graphical user interface and software-development tools.

Microsoft ® Access stores data in its own format based on the Access Database Engine (formerly Jet
Database Engine). It can also import or link directly to data stored in other applications and databases.

Open Microsoft ® Access:
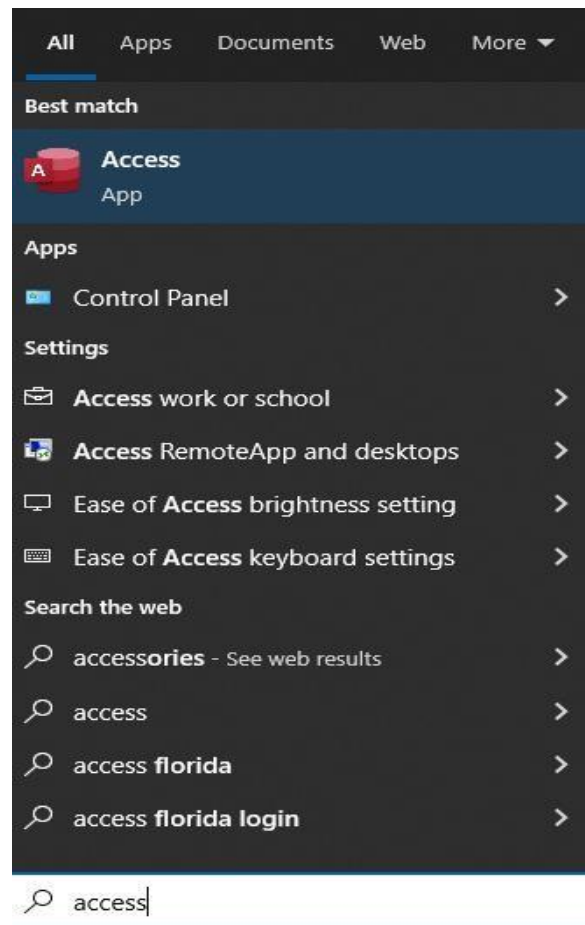
- Type **"Access"** in the search bar

Fig. 1 (Searching Microsoft ® Access)

- Select **"Access"** application
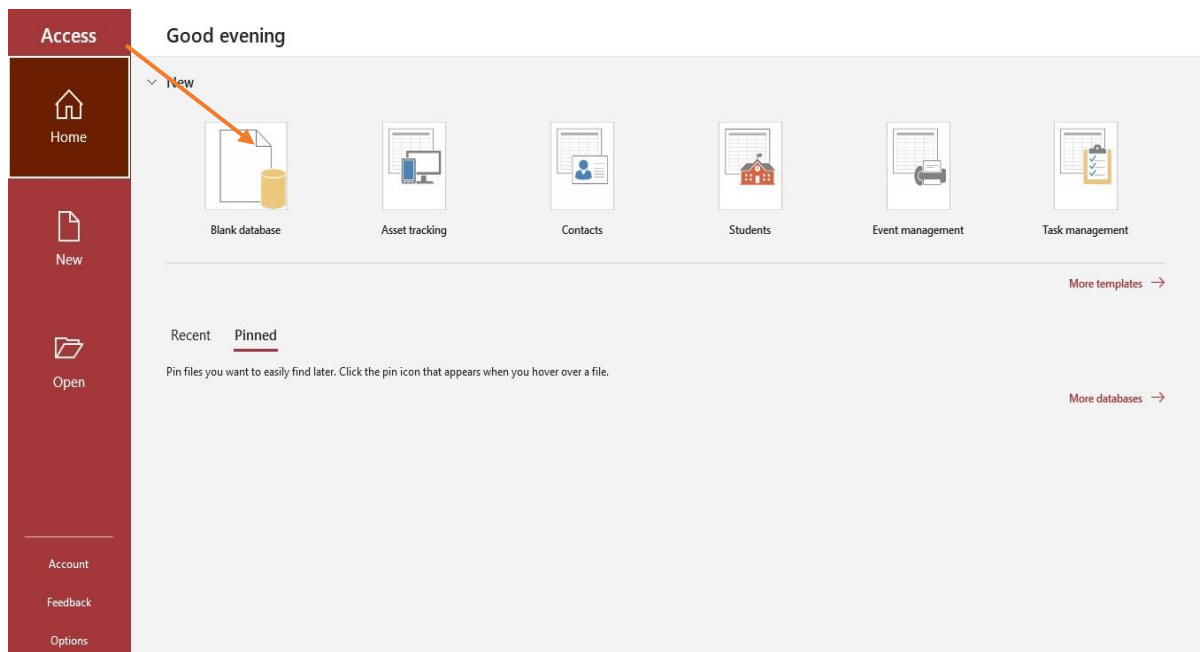- Select a Blank database

Fig. 2 (Open BlankDatabase)

Using Navigation Pane:

Fig.   3   (Navigation   Pane)

Change Views:

•   On the **"Home"** tab, in the **"Views"** group, click the down arrow on the **"View"** button
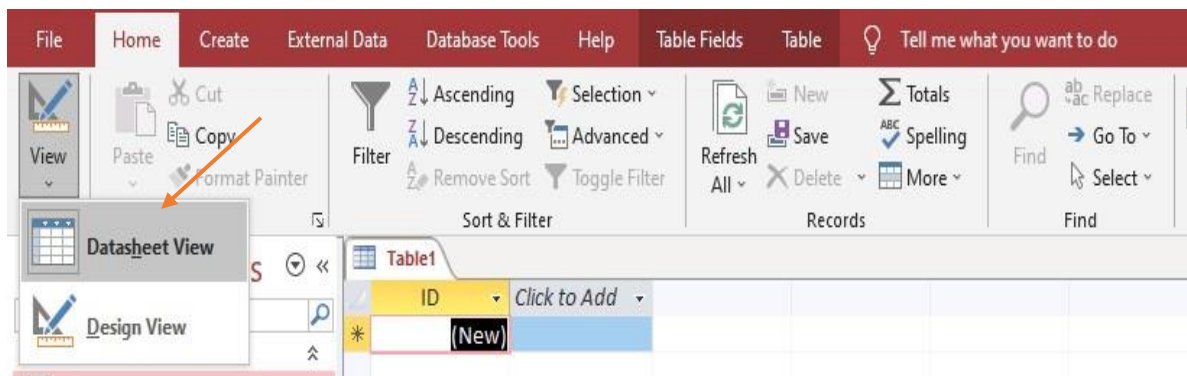   Click **"Design View"**. The table is displayed in Design View

Fig. 4 (Change View)

The Design tab is now displayed on the Ribbon.

Creating a Database using a Template:

- On the top of the startup screen window, in the **"Search for online templates"** search box, type **"personal"**, and then press **"Enter**
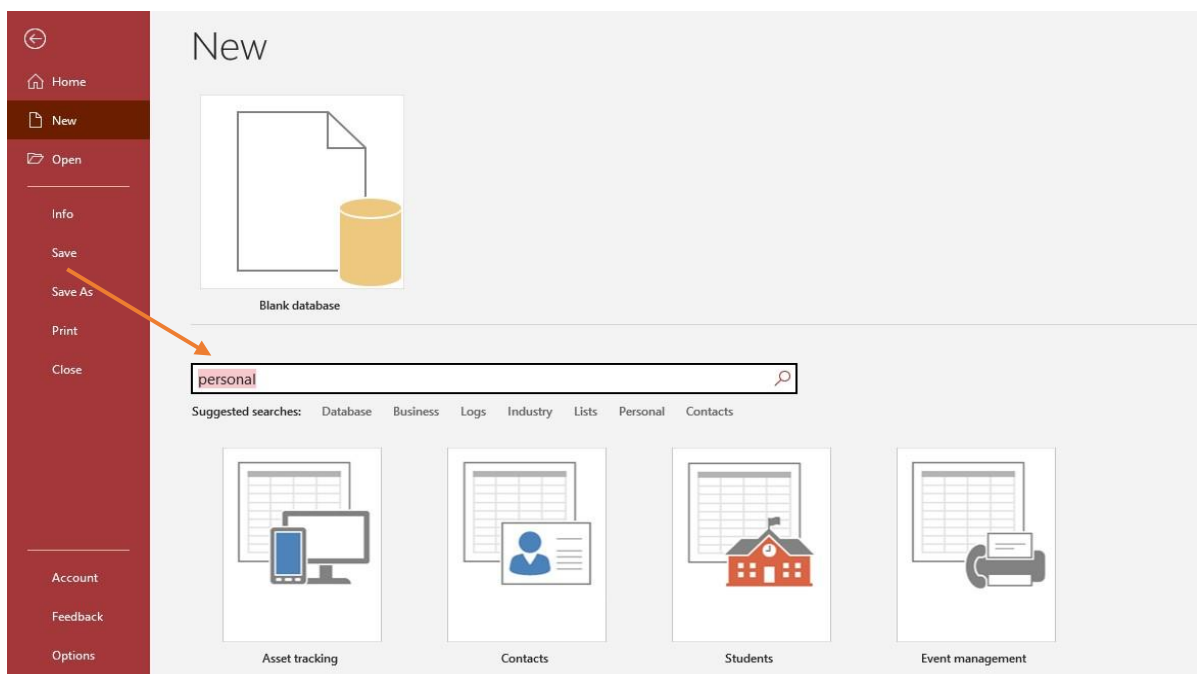
Fig. 5 (Searching template)

- In the list of Personal templates that appears in the middle of the startup screen results pane, click **"Home inventory"**
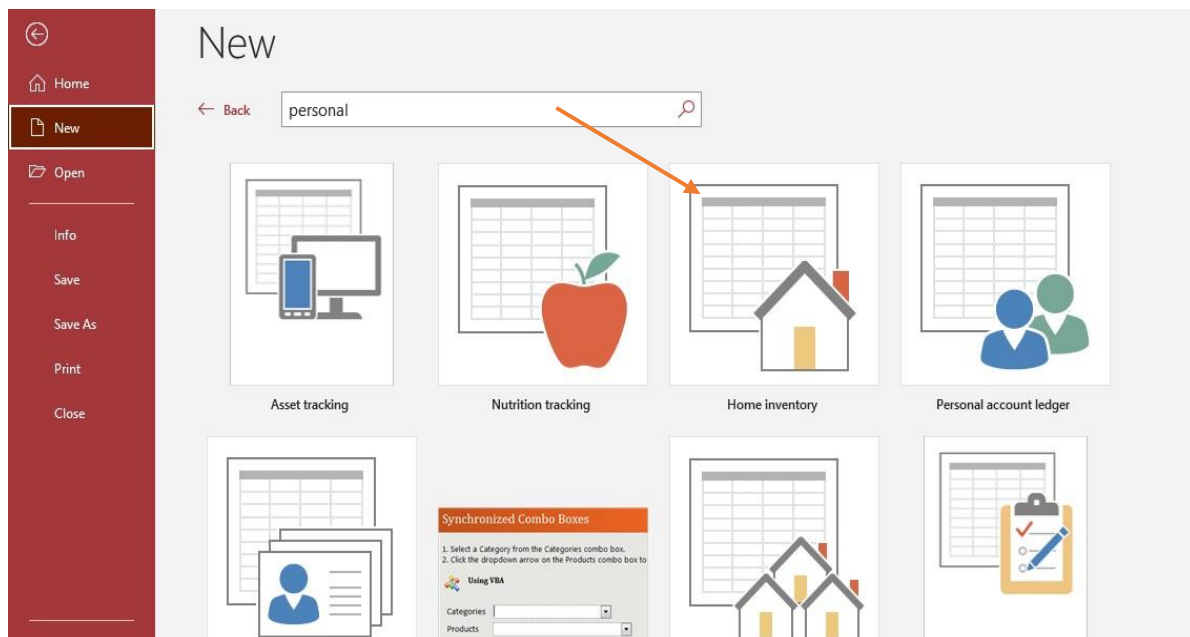
Fig. 6 (Database Templates)
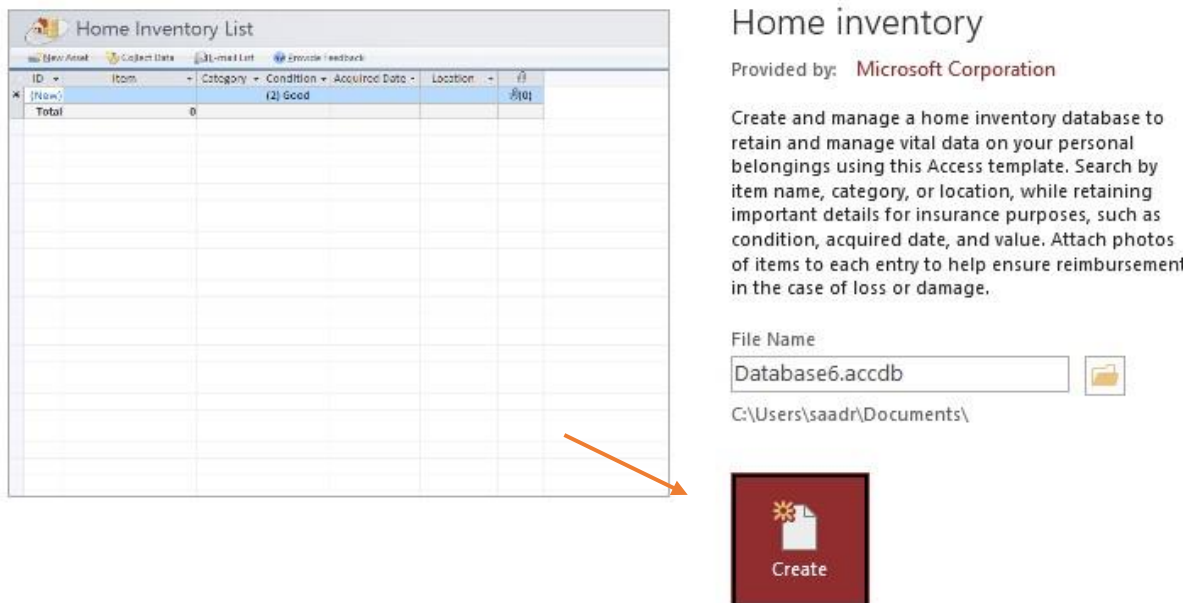
- Click the **"Create button"** at the bottom of the preview pane

Fig. 7 (Home Inventory)

Create a blank Database:

- In the **"templates section"** of the new screen, click the **"Blank database"** icon
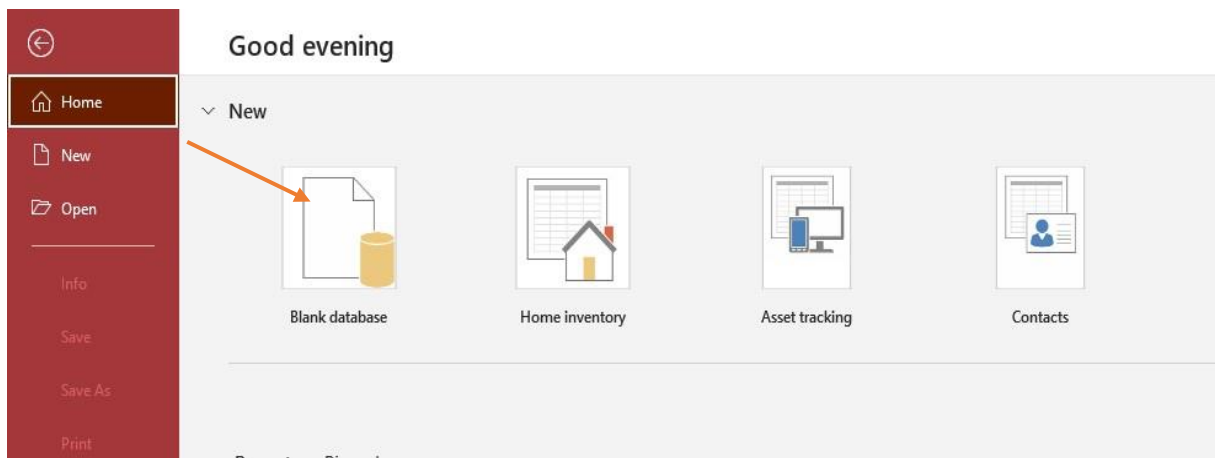
Fig. 8 (Blank Database)

- In the **"File Name"** box, type **"Database"**
- If you want to save the file in a location other than the one shown beneath the File Name box, click the **"folder icon"** to the right of the File Name box and browse to a different location
- Click **"Create button"** to create the blank database. Access creates the database and then opens an empty table named **"Table1"** in **"Datasheet view"**
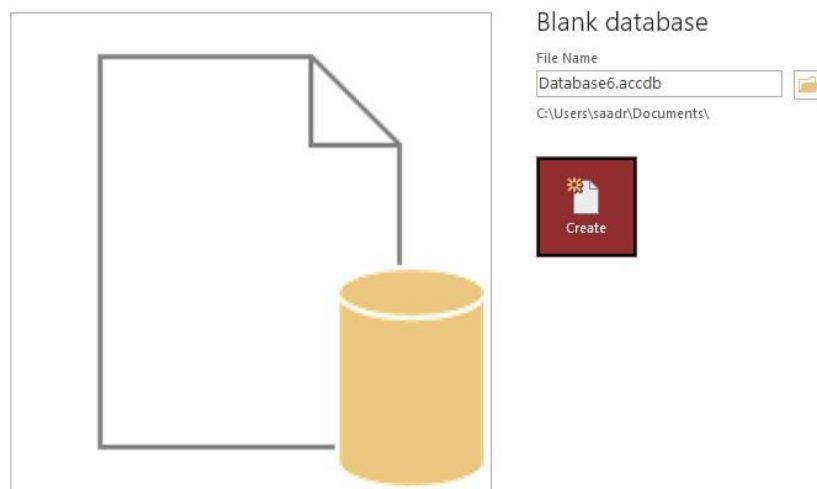

Fig. 9 (Blank Database)

Creating a Table:

- On the **"Create"** tab in the **"Templates"** group, click the **"Application Parts"** button to display the gallery
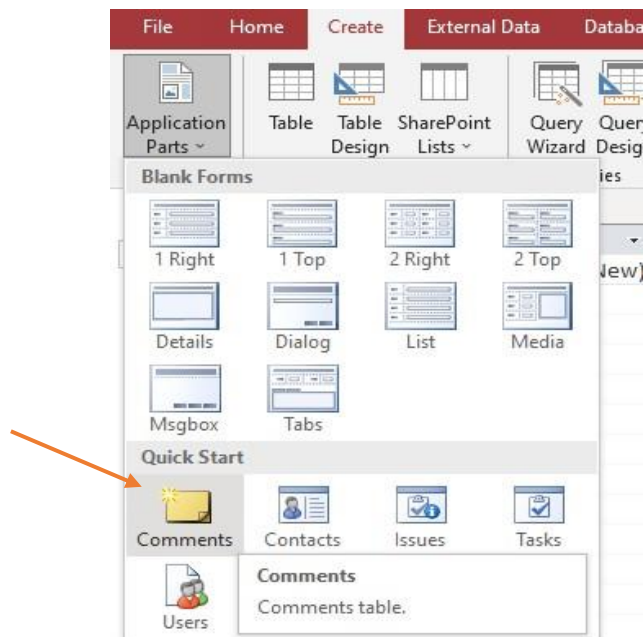- In the **"Quick Start"** section of the gallery, click **"Comments"**

Fig. 10 (Creating Table)

- If you are prompted to close all open objects before instantiating this application part, click **"Yes"** in the dialog box that appears
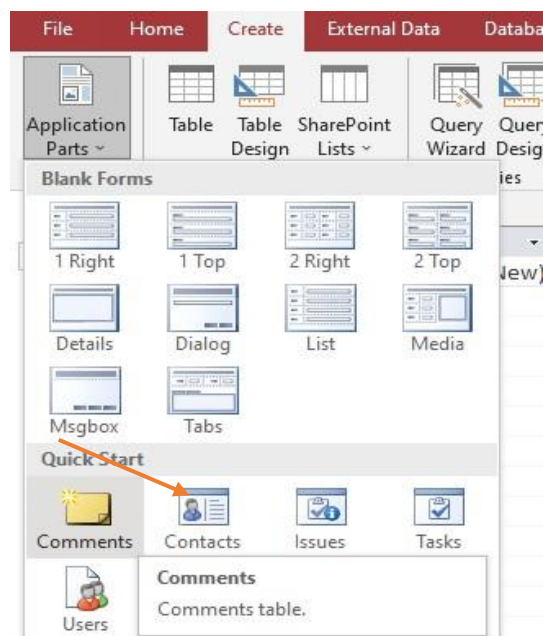- Open the **"Application Parts"** menu and then click **"Contacts"**

Fig. 11 (Creating Table)

- In the **"Create Relationship"** dialog box that appears, select the **"There is no relationship"** option button
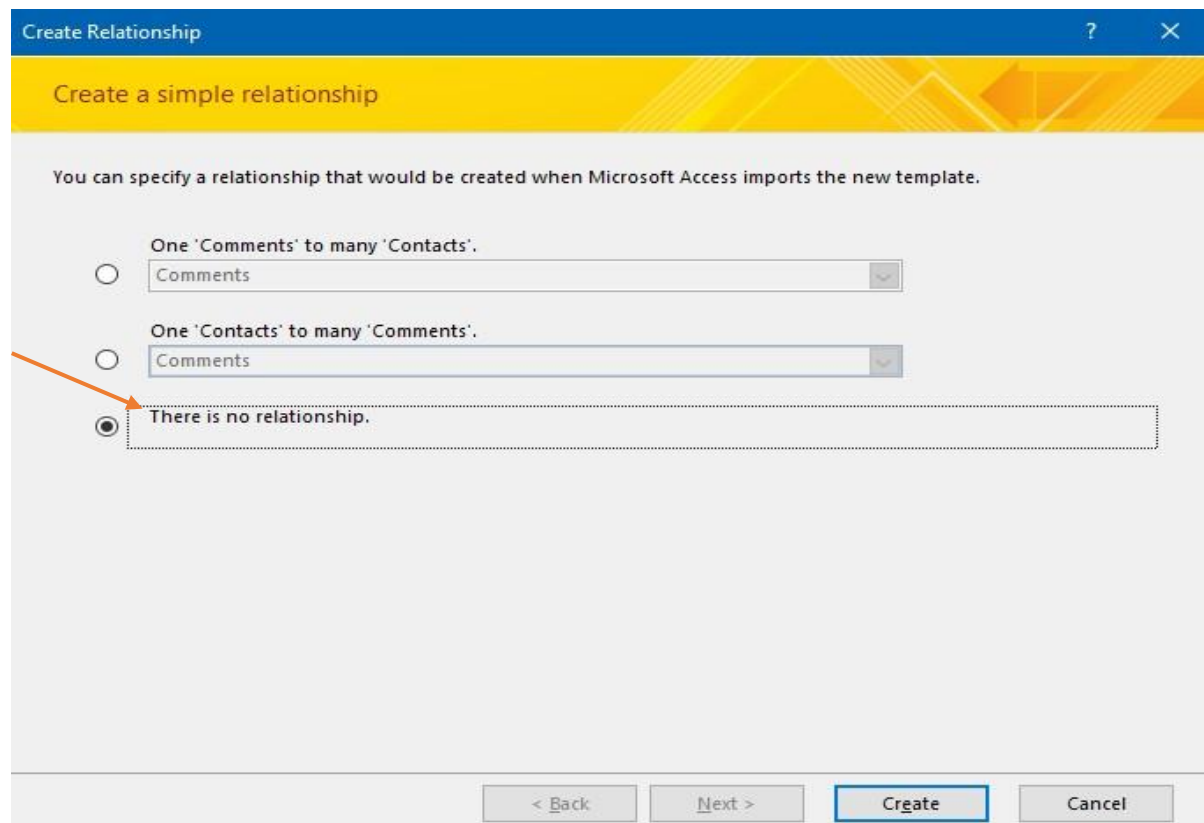- Click **"Create"**

Fig. 12 (Create Relationship dialog)

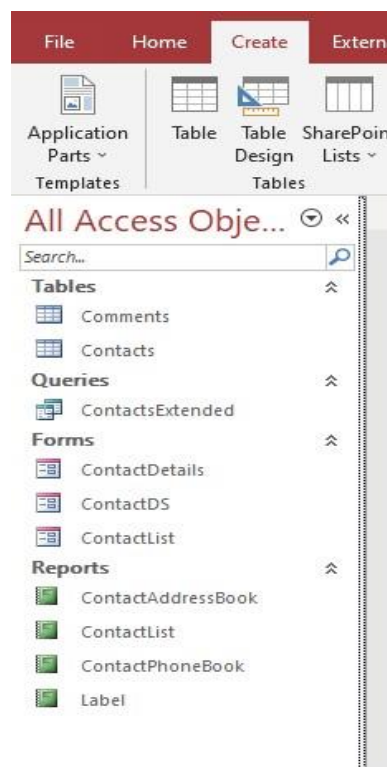A new table is created along with supporting forms and report objects.

Fig. 13 (Creating Table)

Navigating using Keyboard:

| Keys	Movement
Tab or Right Arrow Key	Moves cursor to the next field
End	Moves cursor to the last field in the current record
Shift + Tab or Left Arrow Key	Moves cursor to the previous field
Home	Moves cursor to the first field in the current record
Down Arrow	Moves cursor to the current field in the next record
Ctrl + Down Arrow	Moves cursor to the current field in the last record
Ctrl + End	Moves cursor to the last field in the last record
Up Arrow	Moves cursor to the current field in the previous record
Ctrl + Up	Arrow Moves cursor to the current field in the first record
Ctrl + Home	Moves cursor to the first field in the first record

Record Navigation Buttons:
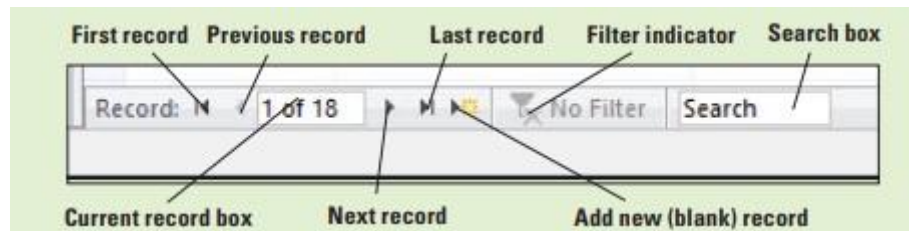
Fig. 14 (Navigation buttons)

- Click the **"First record"** button. The selection moves to the first record
- Click the **"Next record"** button. The selection moves to the next record
- Click the **"Last record"** button. The selection moves to the last record
- Click the **"Previous record"** button. The selection moves to the previous record
- Click the "**Search box**" to position the insertion point
- **"Current record box"** shows the position of current record

Add Record:

The insertion point should be positioned in the first field of the new, blank row at the bottom of the datasheet. Notice the **"asterisk"** in the Record Selector box, which indicates that this is a new record
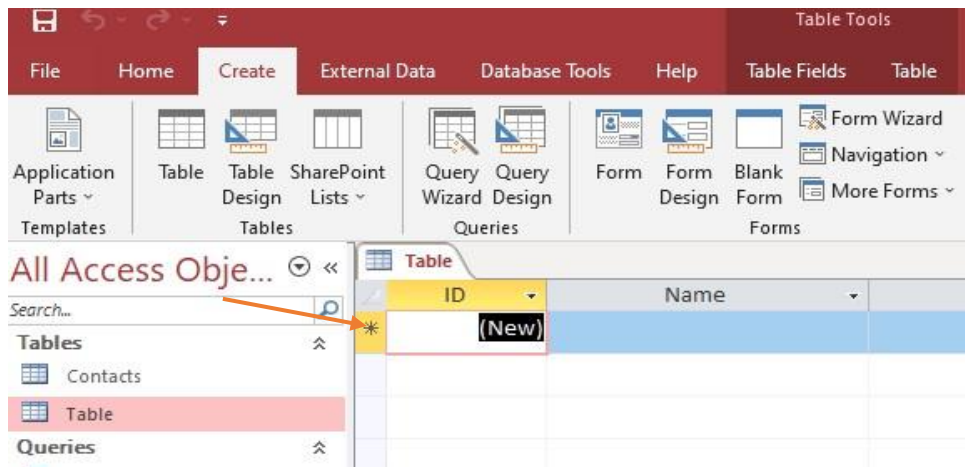

Fig. 15 (Add Record)

- Type **"0"** and then press **"Tab"**. Notice that the asterisk has changed to a **"pencil icon"**
  □ Type **"Saad"** and press **"Tab"**
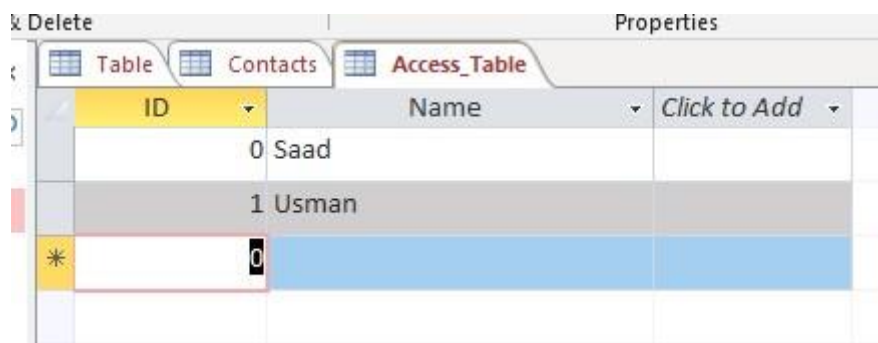
Similarly Add Record in the second row.

Fig. 16 (Add Record)

Delete Record:

- Click the **"Record Selector box"** to the left of the **"ID"** field of the first record **"0"**

Fig. 17 (Delete Record)

- On the **"Home"** tab, in the **"Records"** group, click the **"Delete"** button drop-down arrow
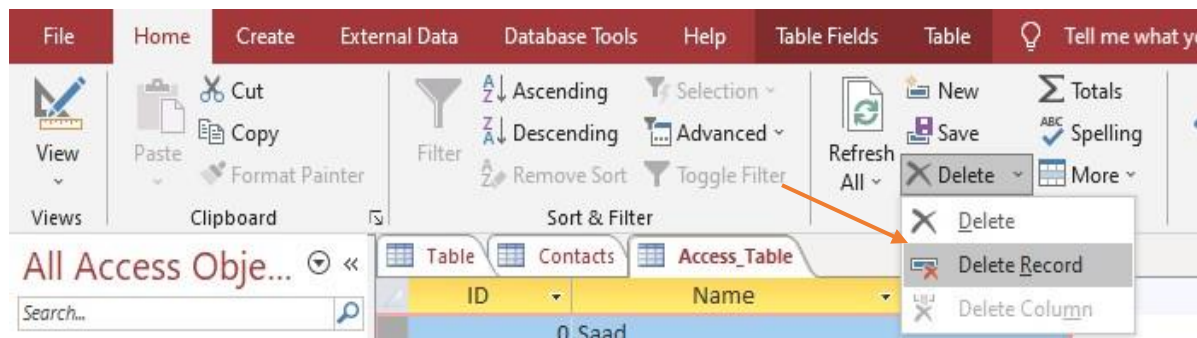 □ Click **"Delete Record"**

Fig. 18 (Delete Record)

Define a Primary Key:

A primary key is a column that uniquely identifies a record or row in a table. Customer IDs, serial numbers, or product IDs usually make good primary keys. Each table should have a primary key, and some tables might have two or more. When you divide information into separate tables, the primary keys help Access bring the information back together again.

- On the **"Home"** tab, in the **"Views"** group, click the bottom half of the **"View"** button 🗆 Select **"Design View"**
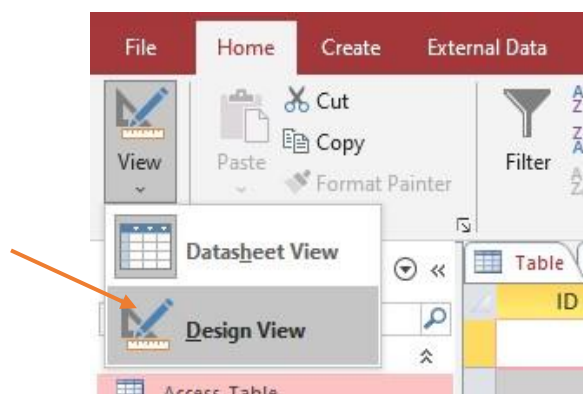
Fig. 19 (Change View)

- Click the **"Row Selector"** box beside the **"ID"** row to select the row
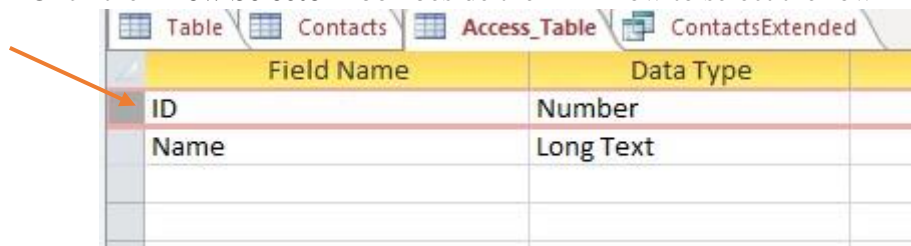
Fig. 20 (Row Selector)

- On the **"Design"** tab, in the **"Tools"** group, click the **"Primary Key"** button.

The Primary Key button is highlighted. A key icon appears on the **"ID"** row to designate the field as a primary key.

Two or more primary keys in a table are called the **"composite key".**

Find & Replace Data:

- On the **"Home"** tab, in the **"Find"** group, click the **"Find"** button. The **"Find and Replace"** dialog box appears with the **"Find"** tab displayed
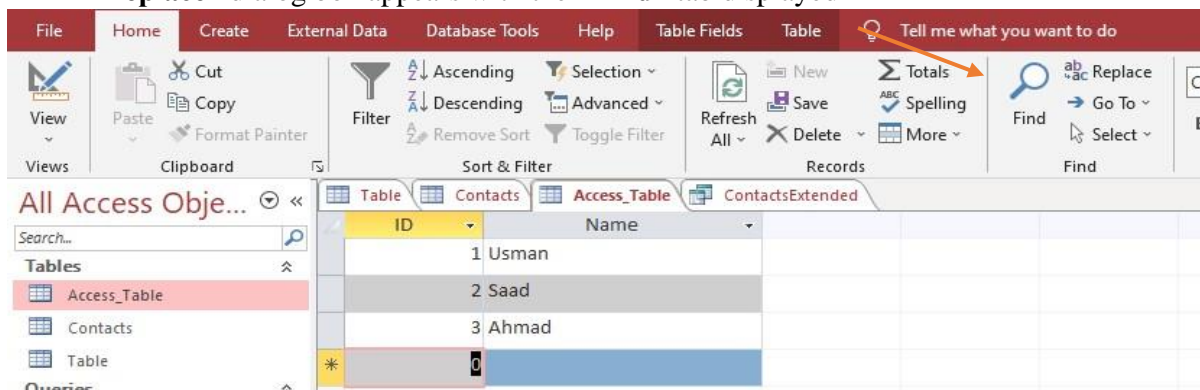

Fig. 21 (Find & Replace)

- Click the **"Replace"** tab in the **"Find and Replace"** dialog box
- Type **"Ahmad"** into **"Find What"** box
- Type **"Ali"** into **"Replace With"** box
- Click the down arrow beside the **"Look In"** menu, and then select **"Current document"** if it is not already selected
- Click the down arrow beside the **"Match"** menu and then select **"Any Part of Field"** if it already is not selected
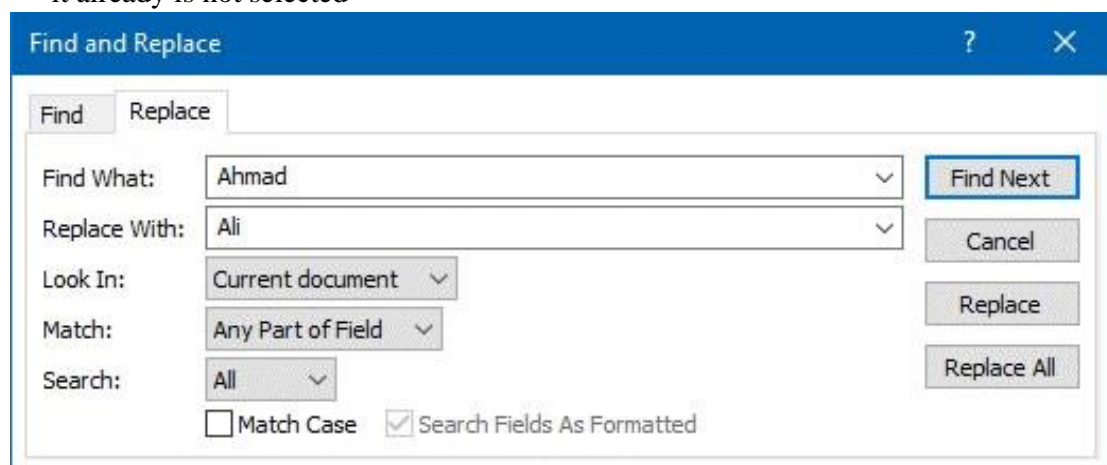
Fig. 22 (Find & Replace dialog)

- Click the **"Find Next"** button
- Click **"Replace"** button
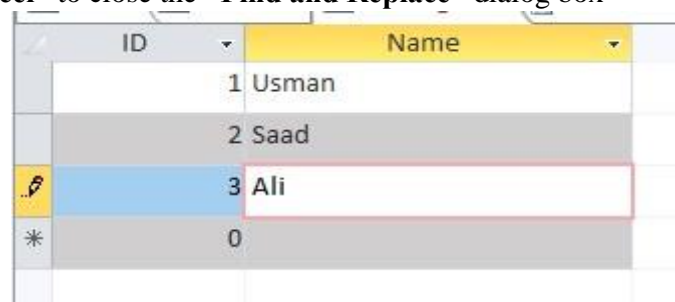- Click **"Cancel"** to close the **"Find and Replace"** dialog box

Fig. 23 (Find & Replace)

Sort Data within a Table:

- Click the header row of the **"ID"** field to select it
- On the **"Home"** tab, in the **"Sort & Filter"** group, click the **"Descending"** button. The data is sorted from largest to smallest
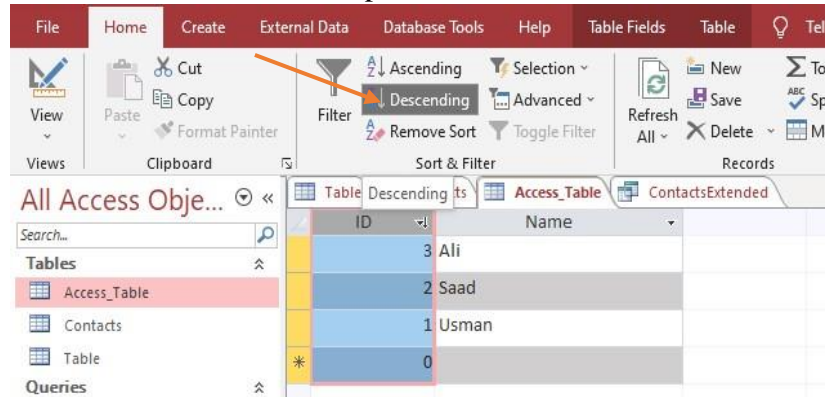- Select **"View Macros"** from the drop-down list

Fig. 24 (Sort data)

Filter Data:

- Select the **"Name"** field
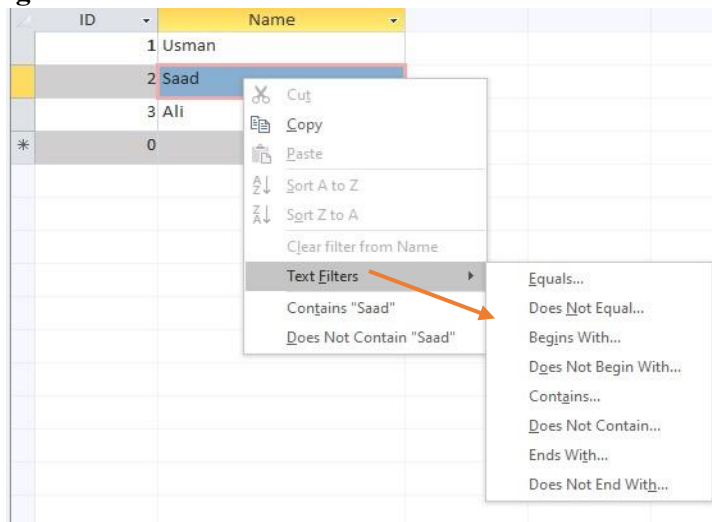- **"Right click"** and select **"text filters"** from shortcut menu
- Click **"Begins With…"**

Fig. 25 (Filter data)

"Custom Filter" dialog box opens.

- Enter **"S"** in **"Name begins with"** field
- Click **"OK"**
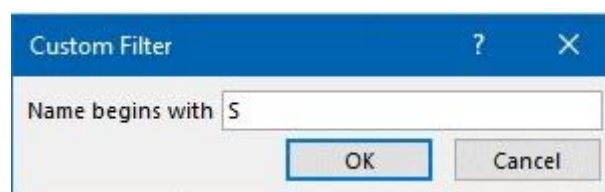
Fig. 26 (Custom Filter dialog)

Filtered Data will be shown.

Fig. 27 (Filter data)

Define Table Relationships:

You can create three types of relationships in Access tables: one-to-one, one-to-many, and many-tomany. In a one-to-one relationship, both tables have a common field with the same data. A one-to-many relationship is more common, because each record in the first table can have many records in the second table. In a many-to-many relationship, many records in the first table can have many records in the second table.

- On the **"Database Tools"** tab in the **"Relationships"** group, click the **"Relationships"** button
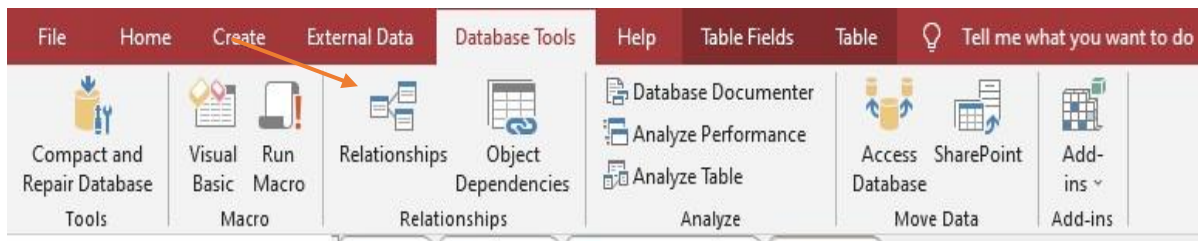
Fig. 28 (Table Relationships)

"Show Table" dialog appears.

- Select **"Student"**
- Click **"Add"**
- Select **"Contacts"**
- Click **"Add"**

Fig. 29 (Show Table dialog)

- Click the **"ID"** primary key field in the **"Student"** table, drag it to the **"ID"** field of the **"Contacts"** table, and then release the mouse button. The **"ID"** field represents the common field between the two tables
- The **"Edit Relationships"** dialog box appears
- Select the **"Enforce Referential Integrity"**, **"Cascade Update Related Fields"**, and **"Cascade Delete Related Records"** check boxes
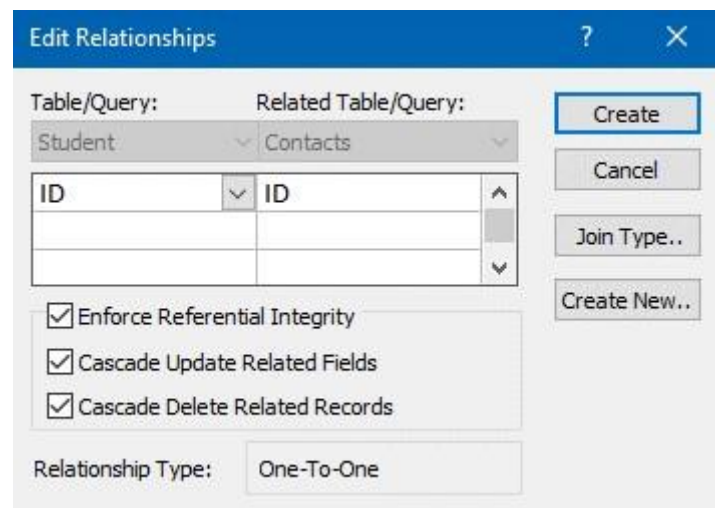

Fig. 30 (Edit Relationships dialog)

- Click **"Create"**

A relationship line representing the one-to-one table relationship of the Student and the Contacts tables is displayed
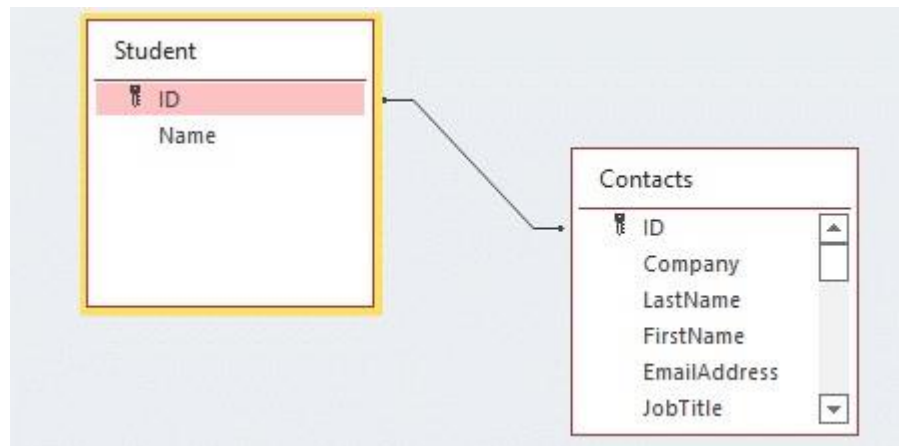
Fig. 31 (Table Relationships)

Define Input Masks:

An input mask whenever you want users to enter data in a specific way. An input mask can require users to enter dates in a specific format, for example, DD-MM-YYYY, or telephone numbers that follow the conventions for a specific country.

- In the Field Name column in the upper portion of the table design grid, click in the **"Date"** cell
- Click the Input Mask property box in the lower portion of the table design grid to display the **"Input Mask Wizard"** button (**"..."**) on the far right of the cell

Fig. 32 (Input Masks)

"Input Mask Wizard" dialog appears.
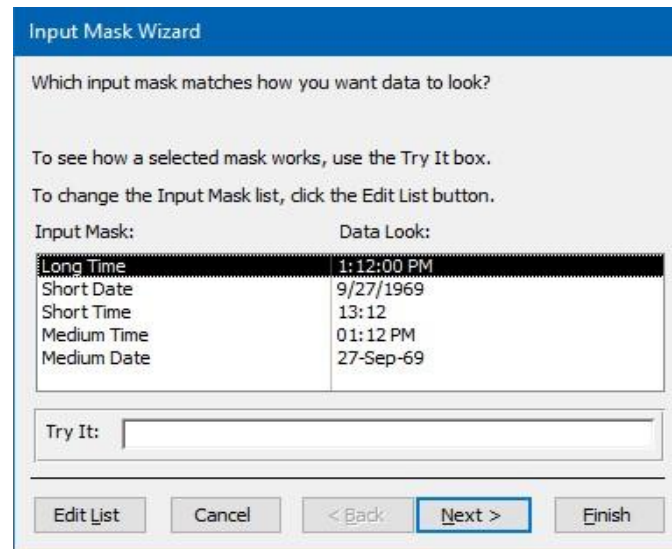
Fig. 33 (Input Mask Wizard dialog)

- Click **"Medium Date"** to select the **"DD-MON-YR"** date format and then click **"Next"**
  ❑ Click **"Next"** to accept the default settings
- ❑   Click **"Finish"**

Fig. 34 (Input Mask)

Create a Simple Form:

- Open the **"Contacts"** table
- On the **"Create"** tab, in the **"Forms"** group, click the **"Form"** button. Access creates the form and displays it in Layout view
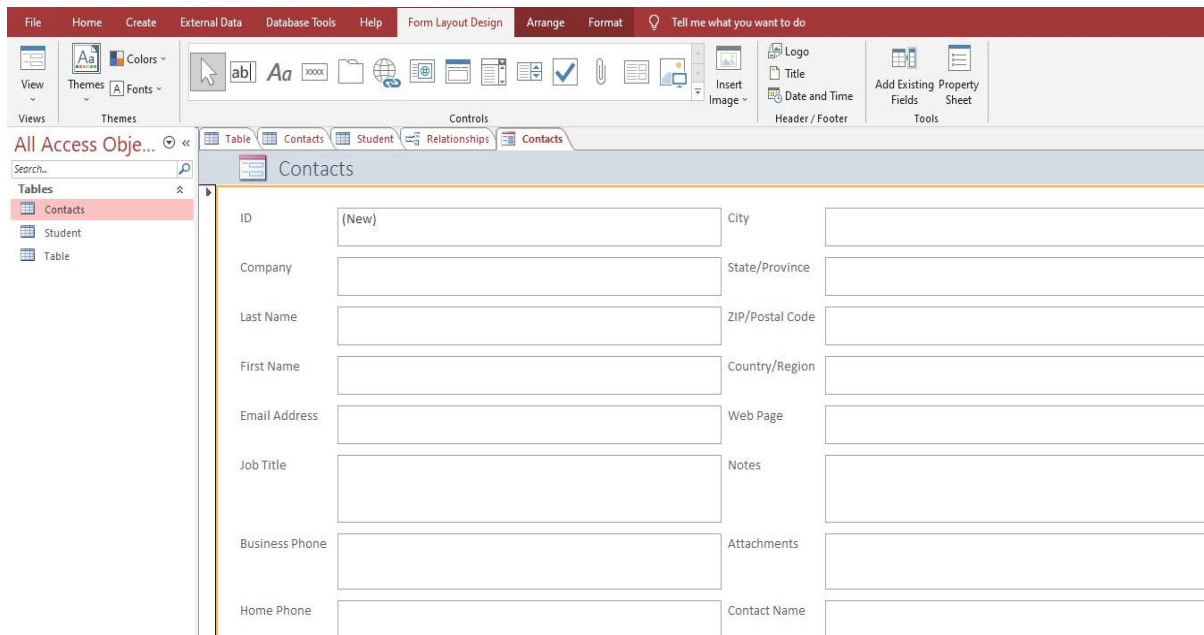
Fig. 35 (Creating Form)

- . Click the **"File"** tab and then click **"Save"** Apply a Theme:

- Double-click the **"Contacts"** form in the Navigation Pane to open it
- On the **"Home"** tab, in the **"Views"** group, click the lower half of the View button and then click **"Layout View"** on the **"View"** menu
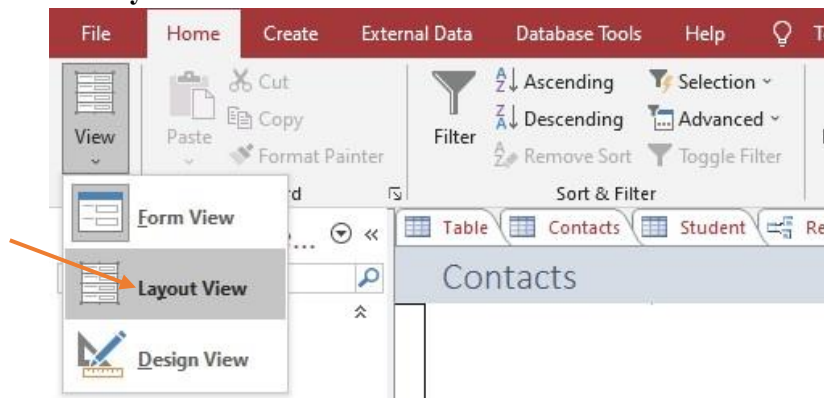
Fig. 36 (Form themes)

- On the **"Form Layout Tools Design"** contextual tab, in the **"Themes"** group, click the **"Themes"** button
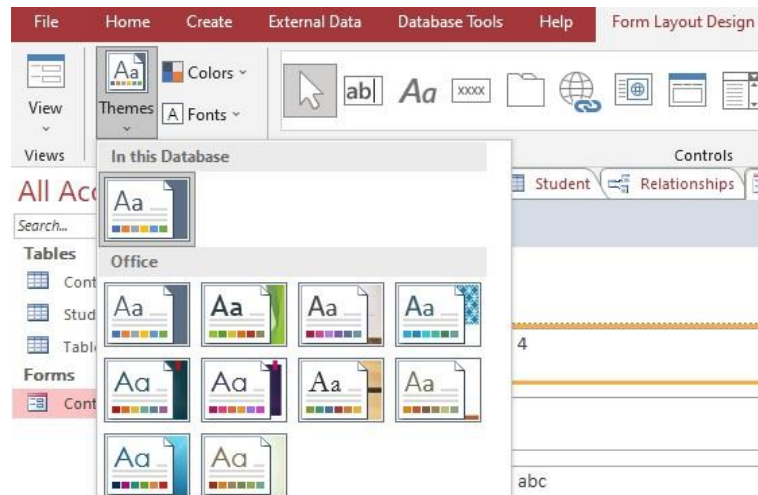
Fig. 37 (Form Themes)

• Click **"Integral"** theme to apply it to the form
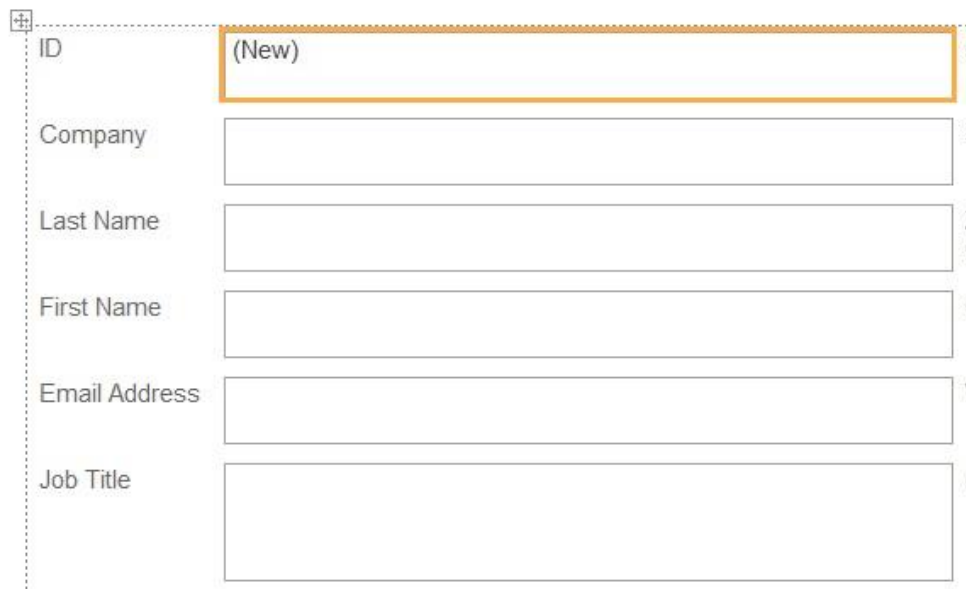
Fig. 38 (Form Themes)

Create Reports:

Reports are commonly used as formatted hard copies of table or query data. You can modify a report's design, but you cannot add or edit data in a report. The purpose of a report is to allow users to view data, not edit it

• . In the Navigation Pane, click the **"Contacts"** table to select it
• . On the **"Create"** tab, in the **"Reports"** group, click the **"Report"** button
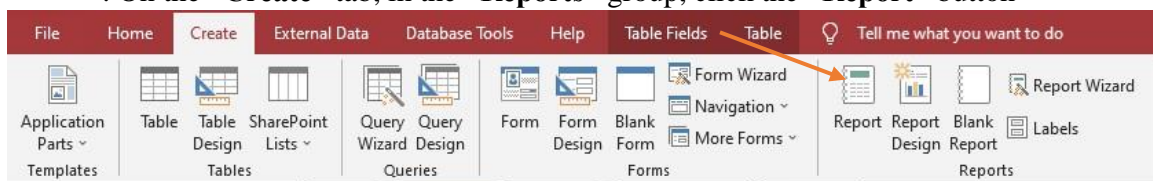
Fig. 39 (Creating Report)

The report will be displayed.

Fig. 40 (Creating Report)

Apply a theme:

- Double-click the **"Contacts"** report in the Navigation Pane to open it
- On the **"Home"** tab, in the **"Views"** group, click the lower half of the View button and then click **"Layout View"** on the **"View"** menu
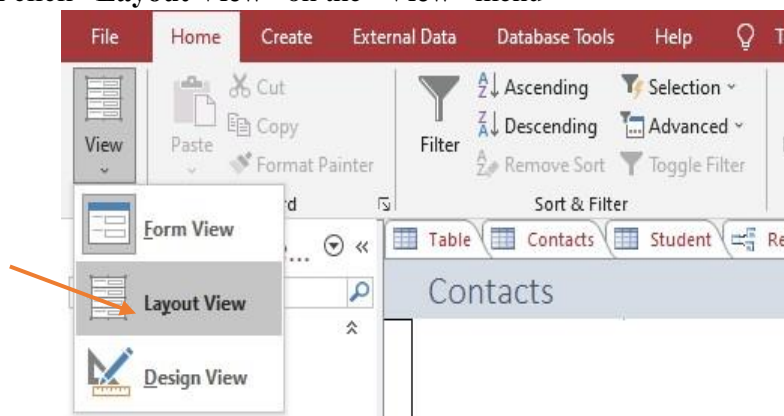

Fig. 41 (Change View)

- On the **"Report Layout Design"** contextual tab, in the **"Themes"** group, click the **"Themes"** button
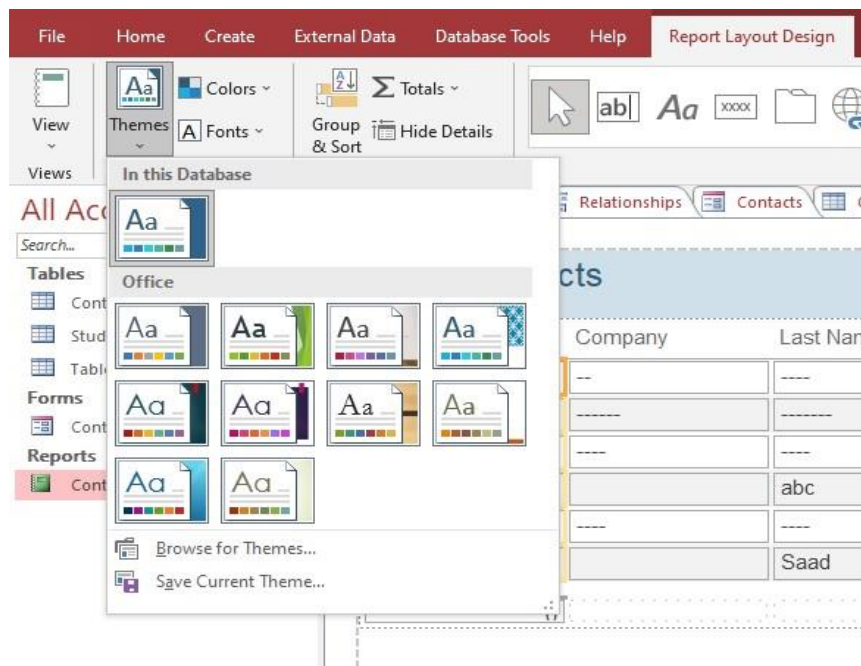
Fig. 42 (Report Themes)

• Click **"Integral"** theme to apply it to the report

Fig. 43 (Report Themes)