

INFORMATION AND COMMUNICATION TECHNOLOGY LAB

LAB MANUAL



DEPARTMENT OF COMPUTER SCIENCE

THE ISLAMIA UNIVERSITY, BWP, PAKISTAN



Lab: Introduction to Microsoft Access

Objective(s) :

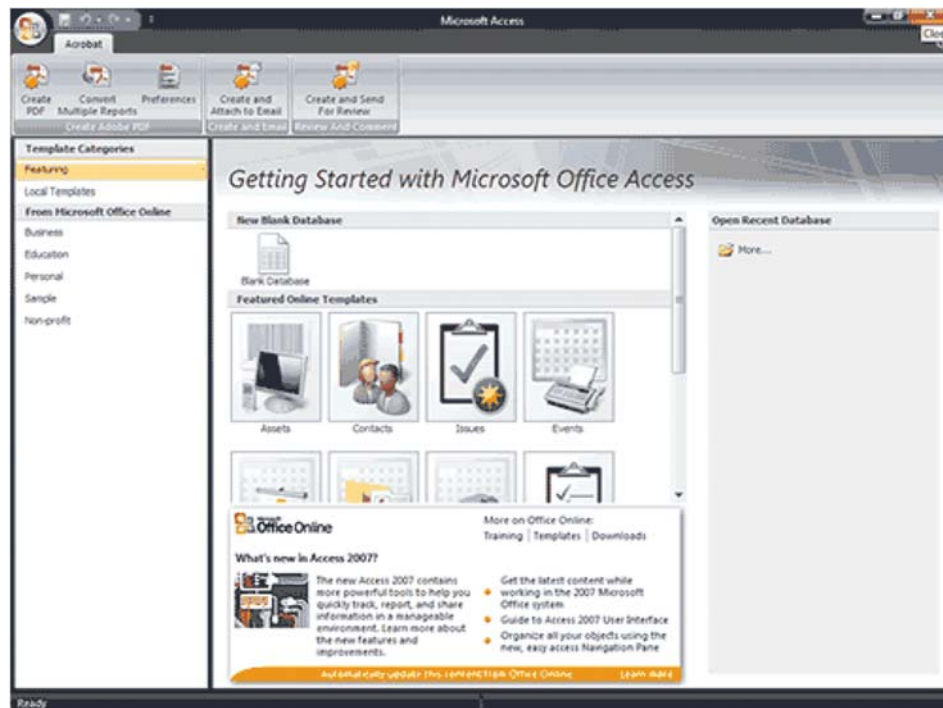
To become familiarize with the features of Microsoft Access.

Getting Familiar with Microsoft Access 2007

Microsoft Access is a database software package. A *database* is an organized collection of records. Telephone and address books are examples of paper databases. With Access, you can create a computerized database. For example, you can use Access to organize the students who attend a school, the courses they take, and the instructors who teach them. After you create an Access database, you can search it, manipulate it, and extract information from it. This lesson introduces you to Access windows and teaches you how to create a database.

Getting Started

You use windows to interact with Access. To begin, start Access 2007. Your screen will look similar to the one shown here.



The Microsoft Office Button



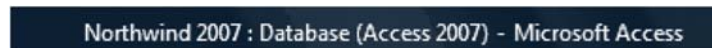
In the upper-left corner of the Access window is the Microsoft Office button. When you click the button, a menu appears. You can use the menu to create a new file, open an existing file, save a file, and perform many other tasks.

The Quick Access Toolbar



Next to the Microsoft Office button is the Quick Access toolbar. The Quick Access toolbar provides you with access to commands you frequently use. By default, Save, Undo, and Redo appear on the Quick Access toolbar. You use Save to save an object, Undo to roll back an action you have taken, and Redo to reapply an action you have rolled back.



The Title Bar



The Title bar is located at the top in the center of the Access window. The Title bar displays the name of the database on which you are currently working.

The Ribbon



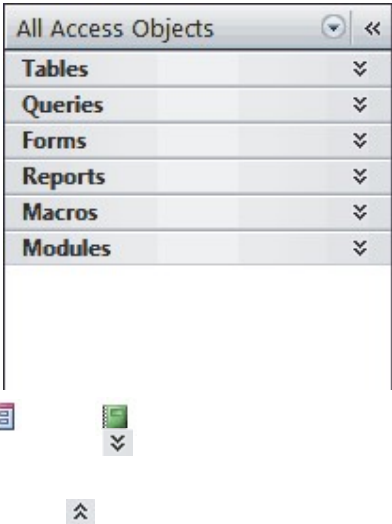
You use commands to tell Access what to do. In Access 2007, you use the Ribbon to issue commands. The Ribbon is located near the top of the Access window, below the Quick Access toolbar. At the top of the Ribbon are several tabs; clicking a tab displays related command groups. Within each group are related command buttons. You click buttons to issue commands or to access menus and dialog boxes. You may also find a dialog box launcher  in the bottom-right corner of a group. When you click the dialog box launcher , a dialog box makes additional commands available.

Access Objects

To view or hide the objects on the Navigation pane:

- You click the double objects. The double up-arrows
- You click the double up- The double up-arrows

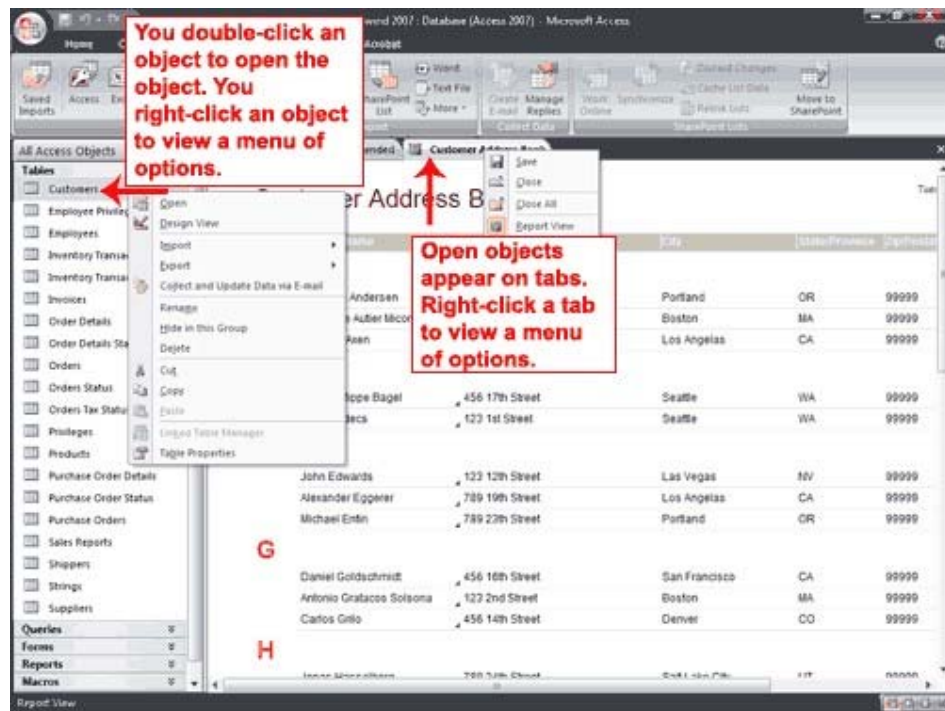
As stated earlier, the Navigation database: tables, queries, forms, Objects always display with an icon you the object type: table, macro, and module.



down-arrows to view down-arrows change to double arrows to hide objects. change to double down-arrows

pane stores the objects in your reports, macros, and modules. icon to the right. The icon tells query, form, report, module

Objects	
Tables	In Access, data is stored in tables. A table is a set of columns and rows, with each column referred to as a field. Each value in a field represents a single type of data. Each row of a table is referred to as a record.
Queries	You use queries to retrieve specific data from your database and to answer questions about your data. For example, you can use a query to find the names of the employees in your database who live in a particular state.
Forms	Forms give you the ability to choose the format and arrangement of fields. You can use a form to enter, edit, and display data.
Reports	Reports organize or summarize your data so you can print it or view it onscreen. You often use reports when you want to analyze your data or present your data to others.
Macros	Macros give you the ability to automate tasks. You can use a macro to add functionality to a form, report, or control.
Modules	Like macros, modules give you the ability to automate tasks and add functionality to a form, report, or control. Macros are created by choosing from a list of macro actions, whereas modules are written in Visual Basic for Applications.



You double-click an object to open the object. You right-click an object to view a menu of options. You can use the menu to do such things as open objects, rename objects, and delete objects.

Objects that are open appear on tabs. Right-click a tab to view a menu of options you can perform, such as save the object, close the object, or change the view.

Change Views



A view is a way of looking at an object. For example, in Access, data is stored in tables. Two of the possible ways you can view a table are Datasheet view and Design view. You can see the data contained in a table in Datasheet view. You can see the design of a table in Design view. When you open an object, buttons appear in the lower-right corner of the Access window. You can use the View button on the Home tab to change views, or you can click the proper button in the lower-right corner of the window.

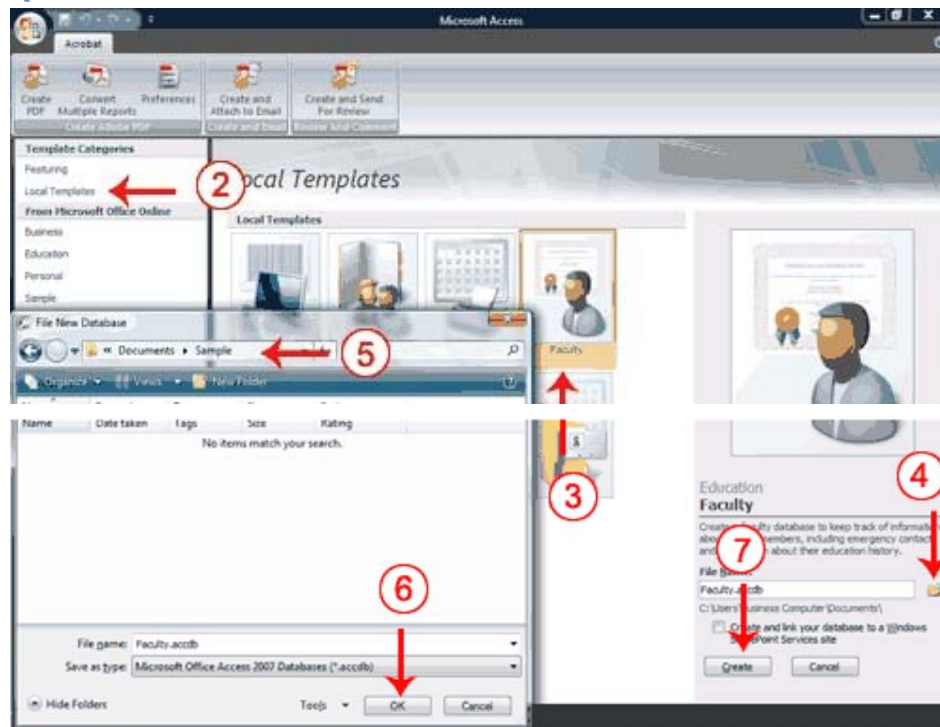
Create a Database

When you start Access, the Getting Started With Microsoft Office Access screen appears. You can use this screen to create a database. Within a database, you can do such things as enter data, create reports, and retrieve data. You can create a blank database or you can use one of the templates provided by Microsoft. When you use a template, Access creates forms you can use to enter data, reports you can use to retrieve data, and more. You can modify the forms, reports, and other objects to suit your needs. This tutorial will teach you how.

The following templates are included with Access: Assets, Contacts, Events, Faculty, Issues, Marketing Projects, Projects, Sales Pipeline, Students, and Tasks. Other templates are available online. Each template creates a database related to the title. For example, the Faculty template creates

a faculty database that includes tables, queries, forms, and reports related to faculty. In Access, you use tables to store data, queries to retrieve data, forms to enter data, and reports to display data.

To use a template to create a database:



1. Start Access. The Getting Started With Microsoft Office Access screen appears.
2. Click Local Templates. Icons representing local templates appear in the center of the window.
3. Click the icon for the template you want to use.
4. Click the Browse button. The File New Database window appears.
5. Locate the folder in which you want to store your database.
6. Click OK.
7. Click Create. Access creates and opens your database.






8. Open the Navigation pane. Access displays the tables, queries, forms, reports and other objects related to the database you selected. You may wish to display the objects by type.



How do I create a database based on the templates that are found online?

Online templates fall into the following categories: Business, Education, Personal, and Non-profit. To create a database based on one of these templates:

1. Start Access. The Getting Started With Microsoft Office Access screen appears.
2. Make sure you are connected to the Internet.
3. Click the category for the template you want to create. Icons representing Internet templates appear in the center of the window.
4. Click the icon for the template you want to use to create your database.
5. Click the Browse button .
6. Locate the folder in which you want to store your database.
7. Click Download. Access prompts you.
8. Click Continue. Access downloads and opens your database.
9. Open the Navigation pane. Access displays the tables, queries, forms, reports, and other objects related to your database.



How do I open an existing database?

1. Click the Office button. A menu appears.
2. Click Open.
3. Locate the folder in which you stored your database.
4. Click the database name.
5. Click Open. Access opens the database.



Tip: You can also open an existing database by pressing Ctrl-O and then following steps 3 through 5.

Create a Blank Database

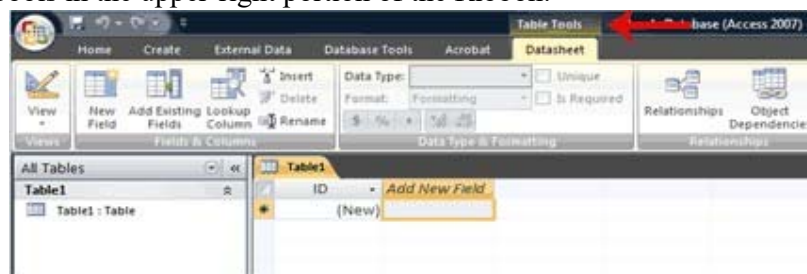
A blank database is a database with nothing in it. You must create all the tables, forms, reports, queries, and so on. If you cannot find a template that suits your needs, create a blank database. After you create the database, Access opens to a datasheet and makes available the tools you need to create objects. Creating tables is the first step in building a database. You will learn more about creating tables in the next lesson.

To create a blank database:



1. Start Access.
2. Click Blank Database.
3. Type the name you want to give your database in the File Name field. Access will automatically append .accdb to the name.
4. Click the Browse button. The File New Database window appears.
5. Locate the folder in which you want to store your database. Note that the name of the file appears in the File Name field.
6. Click OK.
7. Click the Create button. Access creates the database and opens a datasheet with the Table Tools available to you.

Note the Table Tools in the upper-right portion of the Ribbon.





What is a Datasheet?

In Access, data is stored in tables. A datasheet displays the information stored in a table in columns and rows. The columns are called fields and the rows are called records. You can use a datasheet to create a table, enter data, retrieve data, and perform other tasks.

Creating Microsoft Access Tables

Tables are the foundation of an Access database. Access stores data in tables. This lesson teaches you how to create a table, add fields to a table, assign data types to fields, and set field properties.

Understanding Tables

A table is a set of columns and rows. Each column is called a field. Within a table, each field must be given a name and no two fields can have the same name. Each value in a field represents a single category of data. For example, a table might have three fields: Last Name, First Name, and Phone Number. The table consists of three columns: one for last name, one for first name, and one for phone number. In every row of the table, the Last Name field contains the last name, the First Name field contains the first name, and the Phone Number field contains the phone number. Each row in a table is called a record.

Employees			
	Last Name	First Name	Phone Number
	Smith	John	(555) 123-4567
	Jones	Mary	(555) 123-1234
	Adams	Steve	(555) 123-5678
	*		

All of the data in a table should refer to the same subject. For example, all of the data in the Employees table should refer to employees, all of the data in the Students table should refer to students, and all of the data in the Courses table should refer to courses.

You can view an Access database as a collection of related tables. For example, in a database that contains tables for Employees, Students, and Courses, the Employees table lists the employees, the Students table lists students, and the Courses table lists the courses students can take.

After Access creates a blank database, it opens in Datasheet view and makes available the tools you need to create a table. Datasheet view displays a table as a set of columns and rows. When you view a blank database for the first time in Datasheet view, you see a column named ID. This column is by default the primary key field.

A *primary key* is a field or combination of fields that uniquely identify each record in a table. No two records in a table should have the same values in every field. For example, the following should not occur in a table.

Last Name	First Name	City
Smith	John	Jonestown
Smith	John	Jonestown

In the real world, it is possible to have two people from the same city with the same first and last name. In cases like this, you can use the ID field as the primary key field and use it to make each record unique. The ID field has a data type of AutoNumber; as a result, Access automatically creates a unique number for each record in the database. The resulting table will look like the one shown here.

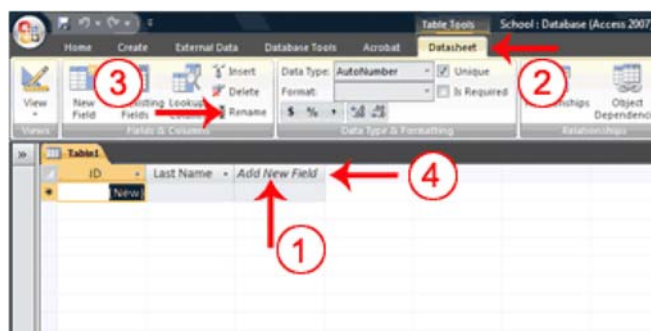
ID	Last Name	First Name	City
1	Smith	John	Jonestown
2	Smith	John	Jonestown

Access provides several methods for creating a table. One method is to use the Rename option with the Add New Field column label to give each column the field name you want it to have and then to type or paste your data into the table. Field names can include letters, numbers, and spaces and can be up to 64 characters long. When choosing a field name, try to keep it short.

When you save your table for the first time, Access gives you the opportunity to name your table. Each table name must be unique; hence, two tables in the same database cannot have the same name. The table name should describe the data in the table; can consist of letters, numbers, and spaces; and can be up to 64 characters long. When choosing a table name, try to keep it short.

You can save a table by clicking the Save button on the Quick Access toolbar or by right-clicking the Tables tab and then choosing Save from the menu that appears.

To add fields to a table:



1. Click the Add New Field column label.
2. Activate the Datasheet tab.
3. Click Rename in the Fields & Columns group.
4. Type the field name.

5. Press Enter. Access creates the field.
6. Type the next field name. Access creates the field. Continue until you have created all of the fields in your table.
7. Press Enter without entering a field name to end your entries.

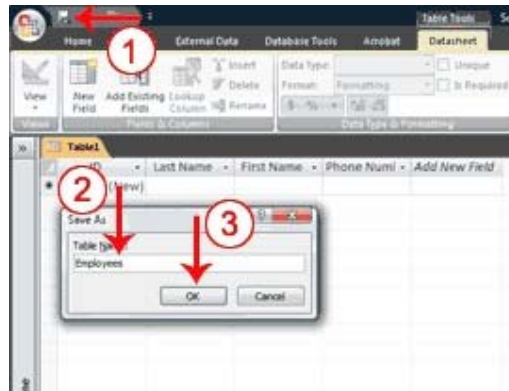
Or

1. Right-click the Add New Field column label. A menu appears.
2. Click Rename Column.
3. Type the field name.
4. Press Enter. Access creates the field.
5. Type the next field name. Access creates the field. Continue until you have created all of the fields in your table.

Name and Save a Table

After you create a table, you must name and save it.

To name and save a table:



1. Click the Save button on the Quick Access toolbar. The Save As dialog box appears.
2. Type the name you want to give your table.
3. Click OK. Access names your table.



Tip: You can use the Rename option at any time to rename any column. For example, you can rename the ID column Employee ID.

Understanding Data Types

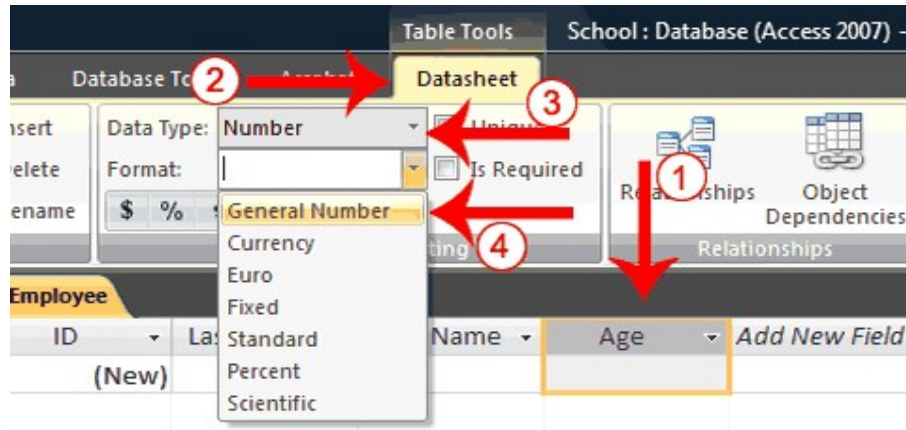
In Access, you use data types to specify the type of data each field can capture. A field with a data type of text can store alphabetic characters and numbers. Generally speaking, you cannot perform mathematical calculations by using a text field. For example, you can use a text field to store a street address. Unless you do some manipulation, you cannot use the numbers in the street address in mathematical calculations. You will not be able to sum or average the numbers in an address field, which is fine, because you probably do not want to. Alternatively, you can assign a Test Score field a data type of Number. You can enter numbers into the field and then average, sum, or perform other calculations with the numbers. However, you cannot enter an alphabetic character in a number field.

Data Types		
Data Type	Use	Notes
Text	Alphanumeric data. Use for text and for numbers that are not used in mathematical calculations. Use for names, addresses, and other relatively short pieces of text. Can store up to 255 characters.	.
Memo	Long text. Use for long pieces of text, such as notes and long descriptions. Can store up to 64,000 characters.	
Number	Numeric data. Use for numbers you want to use in mathematical calculations.	If you are working with currency, use the currency type.
Date/Time	Use for dates and times.	
Currency	Use for currency.	Prevents rounding during calculation.
AutoNumber	Unique sequential numbers or random numbers automatically inserted when you create a record. Use to create a primary key.	
Yes/No	Logical data. Use when only one of two values is valid. Yes/No, True/False, etc.	
Hyperlink	Use to store hyperlinks.	
Attachment	Use to store attachments.	

OLE Object	Use to attach an OLE object such as a Word document, Excel spreadsheet, or PowerPoint presentation.	
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After you create the fields for a table, you can enter data by typing in each field. As you type, Access assigns a data type to each field based on your entry.

To explicitly assign a data type or format to a field:



1. Click the field label for the field to which you want to assign a data type.
2. Activate the Datasheet tab.
3. Click the down-arrow next to the Data Type field and then choose a data type.
4. Click the down-arrow next to the Format field and then choose a format. Access assigns a data type and format to the field you selected.



Tip: If you want every record in a field to be unique, check the Unique box on the Datasheet tab in the Data Type & Formatting group. If you do not want the user to leave a field blank, check the Is Required box.



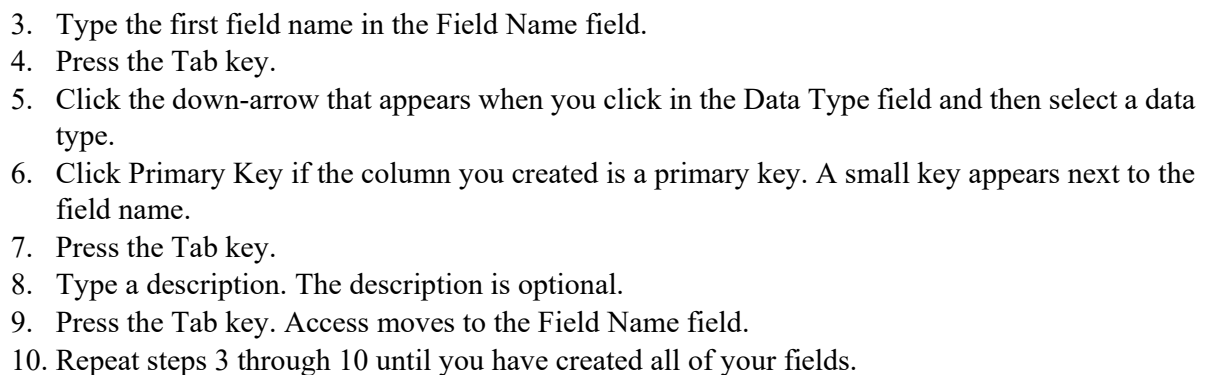
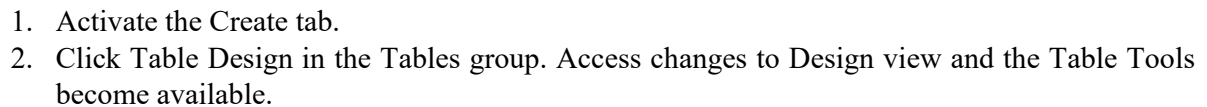
Tip: In the Data Type & Formatting group, there are several formatting options you can apply to numbers. If you want to use the Currency format, click the Currency button ; if you want to use the Percent format, click the Percent button ; if you want to use a Comma number format, click the Comma button or if you want to increase or decrease the number of decimal place, click the Increase Decimal or Decrease Decimal button.



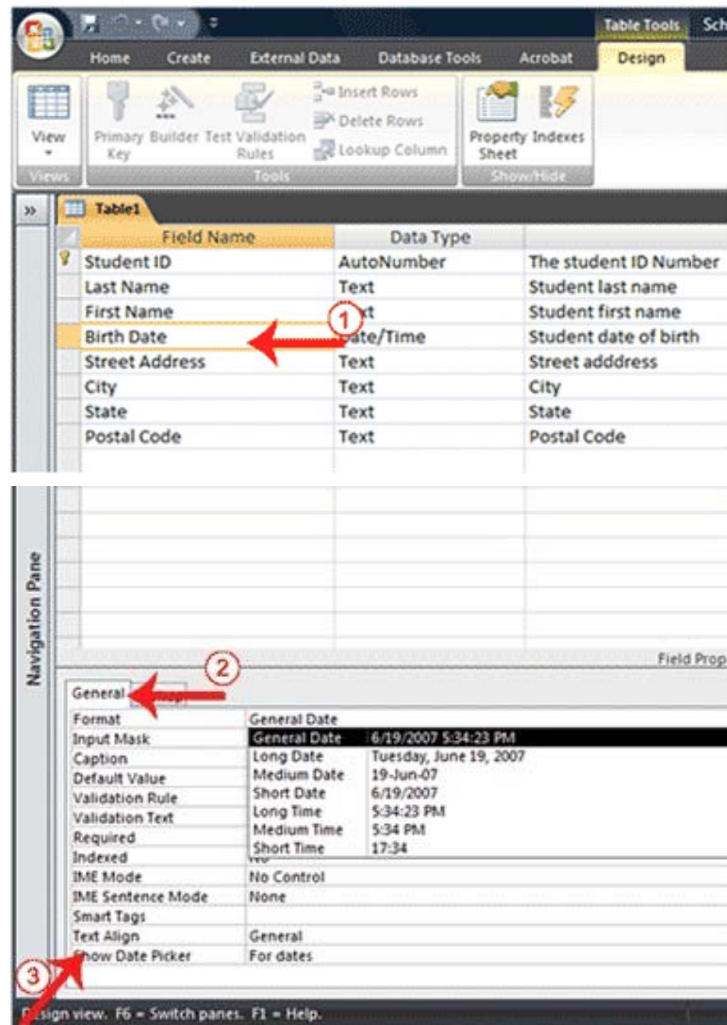
Tip: You can create a new table at any time by activating the Create tab and then clicking Table.

Understanding Design View

To use Design view to create a new table:



To set field properties:



1. Click the field for which you want to set the field properties.
2. Activate the General tab in the Field Properties area.
3. Set the properties you want to set.
4. Repeat steps 1 through 3 until you have set all the properties for all fields.

You can use Design view to create or modify a table. After you finish the task, you must save the table by clicking the Save button on the Quick Access toolbar.

1. Click the Save button on the Quick Access toolbar. Access saves the table unless you are saving for the first time. If you are saving for the first time, the Save As dialog box appears.
2. Type the name you want to give your table.
3. Click OK. Access saves the table. You can now access the table by using the Navigation pane.



What are views?

Views are different ways of looking at the same object. Tables have four views: Datasheet view, Pivot Table view, Pivot Chart view, and Design view. You use Datasheet view to create a table, edit data, or view data; Pivot Table view to create a pivot table; Pivot Chart view to create a pivot chart; and Design view to create a table or modify an existing table.

To change the view:

1. Activate the Home tab.
2. Click the down-arrow under the View button. A menu appears.
3. Click the view you want. Access changes to the view you chose.



Tip: You can also use a template to create a table. Access has several templates from which you can choose. When using a template, you create the table and then modify it to suit your needs.

1. Activate the Create tab.
2. Click the Table Templates button in the Tables group. A menu appears.
3. Click the template you want to use. Access creates a table based on the template.

Create a Lookup Column

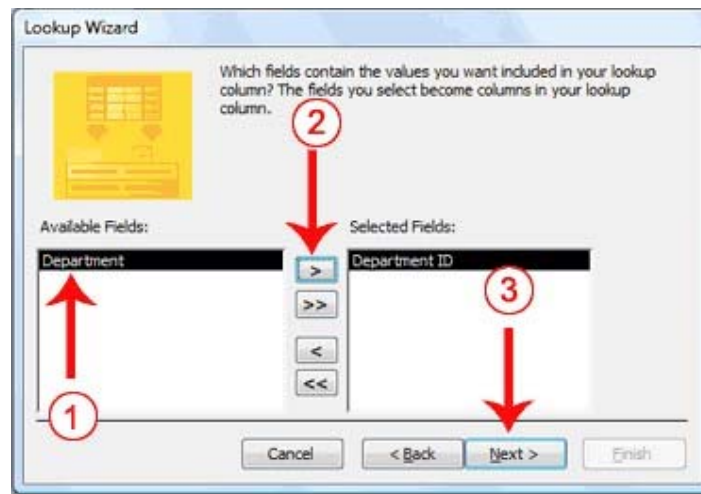
If a field can contain a finite list of values, you can create a Lookup Column and users can select the value they want from a list. For example, if the employees at a school can only work in one of the following departments: Administration, Computer Science, English, History, or Math. You can create a table Departments table that lists the departments and then use the list in the Employee table to assign each employee to a department.

Departments	
Department ID	Department
Primary Key	
1	Administration
2	Computer Science
3	English
4	History
5	Math

Access has a wizard to help you create lookup columns. Creating a Lookup column creates a relationship between two tables.

Select fields

You choose the fields you want to appear in your lookup column. Be sure to include the primary key.



1. Click the field you want.
2. Click the single right-arrow button . Access places the field in the Selected Fields column. Repeat this process to select additional fields. If you want all the fields in the table, click the double right-arrow button . **Note:** Use the single left-arrow and the double left-arrows to deselect fields.
3. Click Next. The Lookup Wizard moves to the next page.

Sort fields

The Lookup Wizard allows you to sort the records in a lookup column. You can display records in order, either ascending (alphabetical from A to Z, lowest number to highest number, earliest date to latest date) or descending (alphabetical from Z to A, highest number to lowest number, latest date to earliest date). You can also sort within a sort. For example, you can sort by state and then within each state by city, and then within each city by street address. If you are creating a sort within a sort, create the highest level sort on line one, the next level sort on line two, and so on. In the state, city, and street address example, you create the state on line one, the city on line two, and the street address on line three.

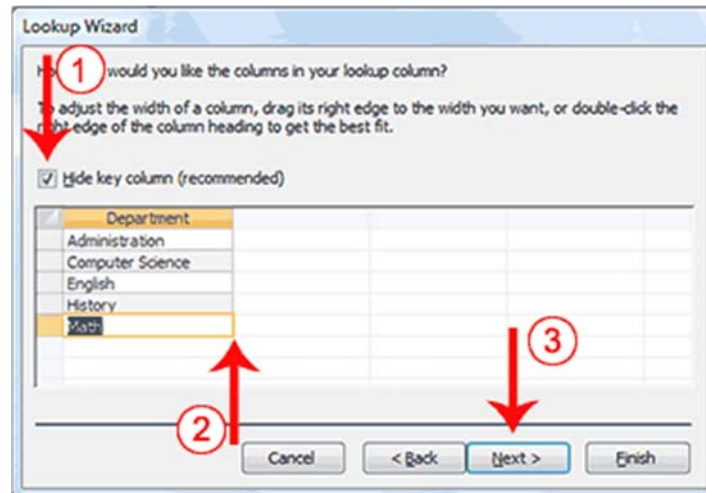


1. Click the down-arrow and then select the field you want to sort by.
2. Click to select a sort direction (the button toggles between ascending and descending). You can sort within a sort for up to four levels.

3. Click Next. The Lookup Wizard moves to the next page.

Adjust column widths

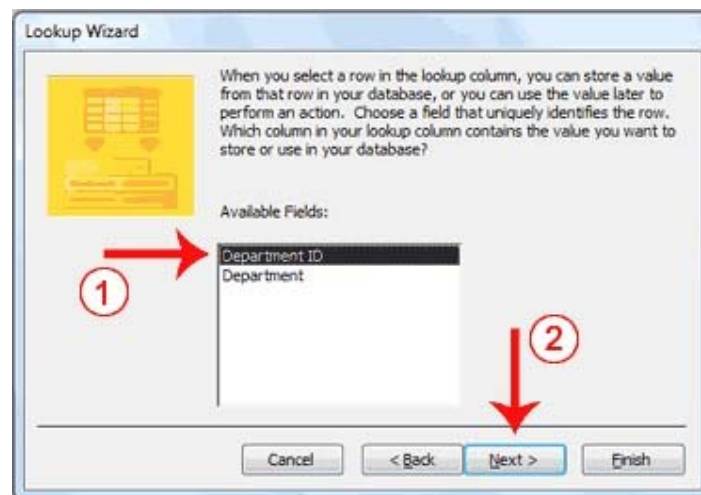
A key column is the column that connects one table or query to another table or query. For example, you can use the Department ID field in the Employees table and the Department ID field in the Departments table to connect the two tables. You may, however, want to display the name of the department when you view the table but not the department ID; if so, leave the Hide Key Column box checked.



1. Deselect Hide Key Column, if you wish.
2. Adjust the column widths by dragging or double-clicking the right vertical border for the column.
3. Click Next. The Lookup Wizard moves to the next page.

Specify the Key Field (if you deselected Hide Key Column)

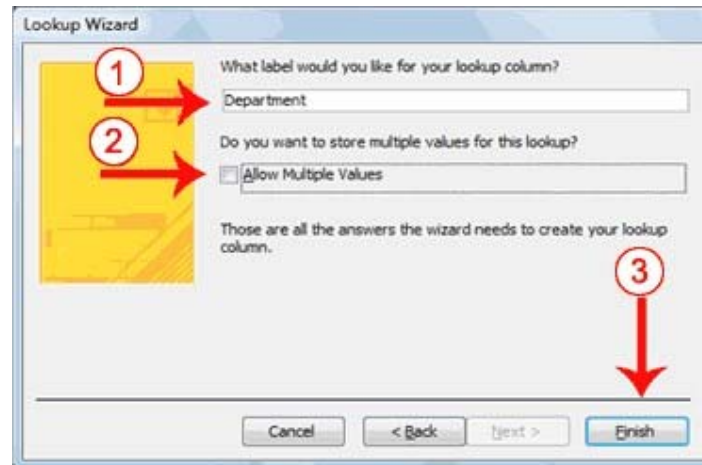
A key field is a field that uniquely identifies a record. If you deselected Hide Key column, you must tell Access which field is the key field.



1. Click the key field.
2. Click Next. The Lookup Wizard moves to the next page.

Name the column

Field names appear at the top of each column. On this page of the Wizard you tell Access what you want to name your lookup column. In Access 2007, multiple values can appear in a field; click the Allow Multiple Values checkbox if you want to allow multiple values.



1. Type the name you want to give the column.
2. Click if you want to allow multiple values in the field.
3. Click Finish. Access creates the lookup column.



How do I create a lookup column by typing a list?

1. Activate the Datasheet tab. (These instructions assume you are in the Datasheet view.)
2. Click the Lookup Column button in the Fields & Columns group. The Lookup Wizard appears.
3. Click the radio button next to “I will type the values I want.”
4. Click Next. The Lookup Wizard moves to the next page.
5. Type the number of Columns you want in the Number Of Columns field.
6. Type the values you want under the column heading.
7. Click Next. The Lookup Wizard moves to the next page.
8. Type the column label you want.
9. Click Finish. Access creates a lookup column based on your list.

Lab 05 Tasks

(Microsoft ACCESS)

Exercises

Exercise 1

Create a table Student using Microsoft Access. Insert 10 records. Include the following fields in the table through Design View:

- Registration number
- Name
- Father's name
- Date of birth
- Telephone Number
- City* (Use Lookup Column to select City Name).

Attach the printed screen-shots of the table created and specifications in Design view.

Student Dept			
	Student_Reg	Dept	Click to Add
+	101	CS	
+	102	Mgmt	
+	103	EE	
+	104	CS	
+	105	Telecomm	
+	106	CS	
+	107	Mgmt	
+	108	EE	
+	109	CS	
+	110	CS	
*			

