

Lab 3: Database (Microsoft Office Access 2016)

3.1 Learning Objectives:

Students will be able to create:

- Tables, store data in.
- Update data in tables.
- Build Query to retrieve data from one table or many tables.
- Create relations between tables.

3.2 General Introduction

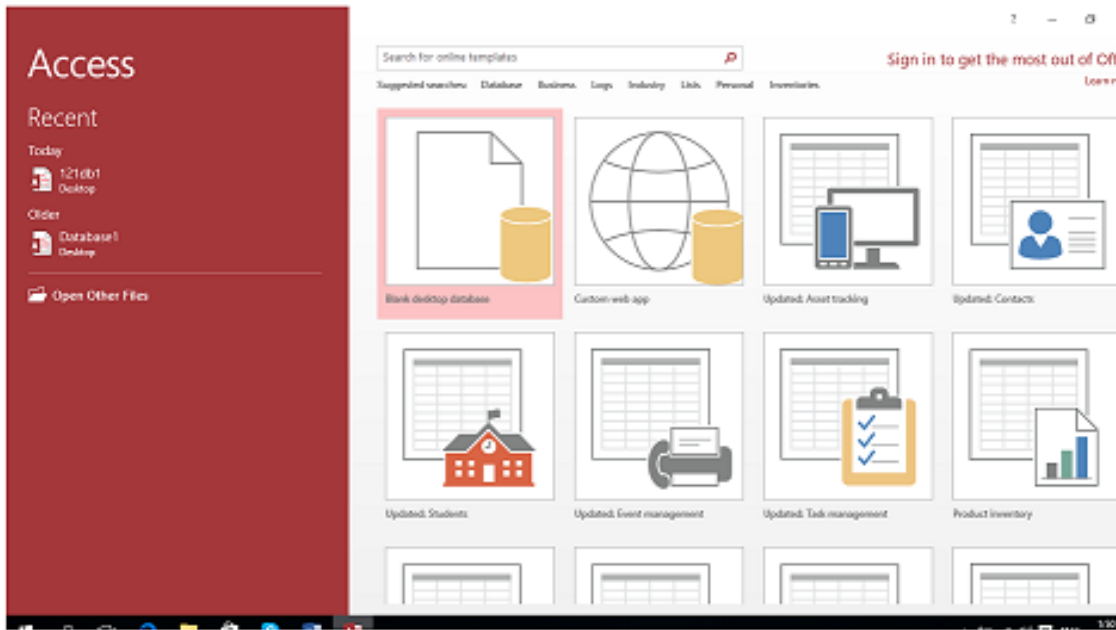
You may have heard a lot about database systems. Database systems are everywhere. Your social security information is stored in a database by the government. If you shop online, your purchase information is stored in a database by the company. If you attend a university, your academic information is stored in a database by the university. Database systems not only store data, they also provide means of accessing, updating, manipulating, and analyzing data. Your social security information is updated periodically, and you can register for courses online. Database systems play an important role in society and in commerce.

This chapter introduces database systems, the SQL language.

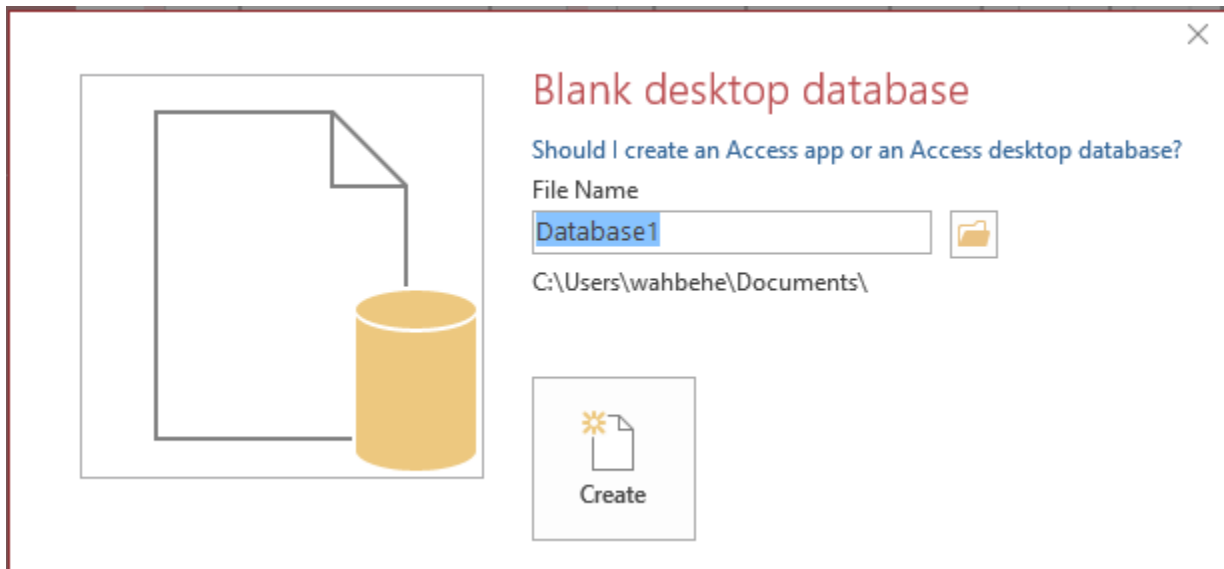
3.3 Creating a database system:

We will use Access2016 to do that.

Search for the application Access2016, click it you will see this screen:



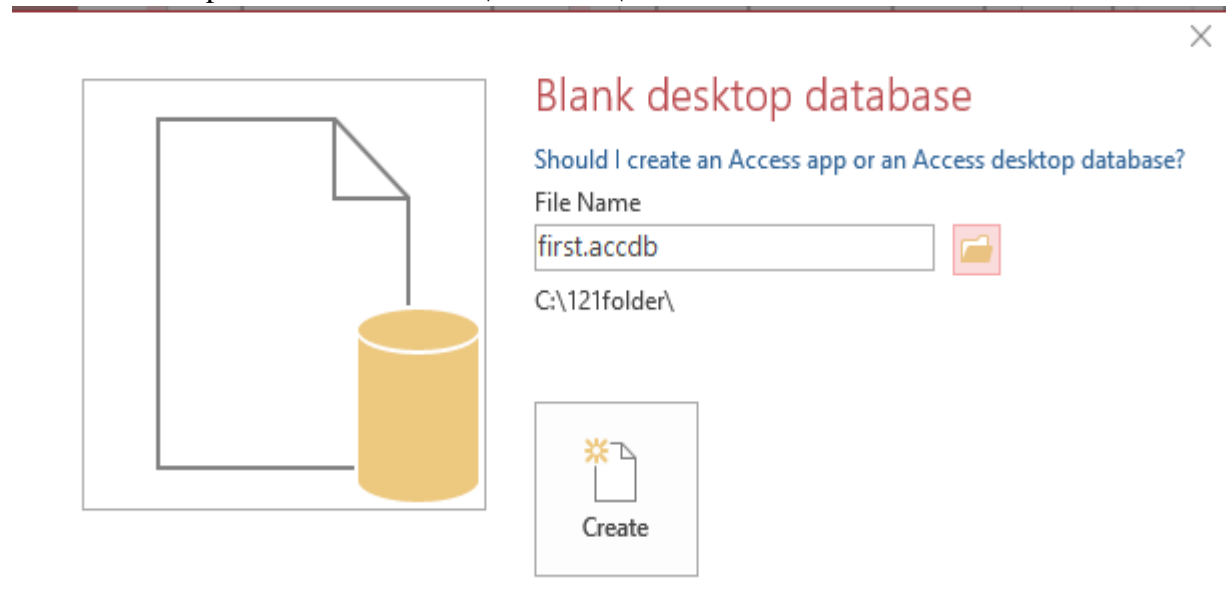
Click the first box (“blank desktop database”) you will get the following screen:



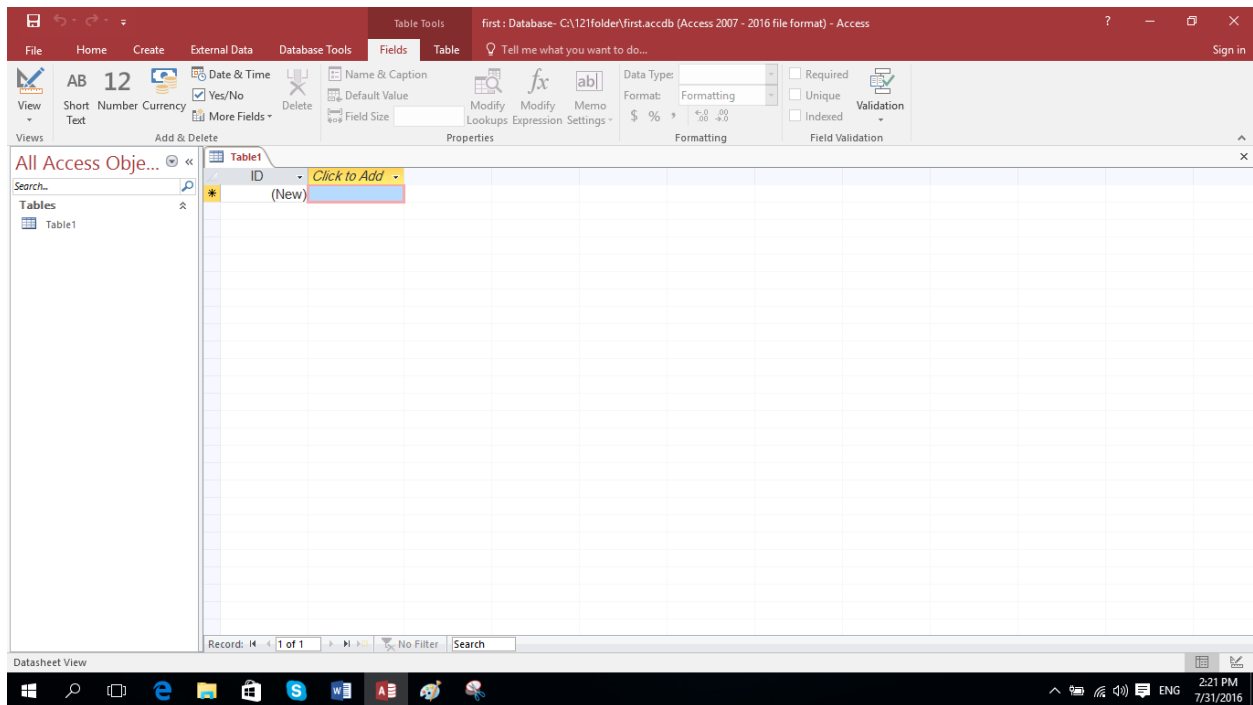
In the box File Name put the database name for example (“first”) and click on the small box to the right of the file name box to specify the location where you like to put the database in.

The next screen:

Notice that we put our database in c:\121folder\



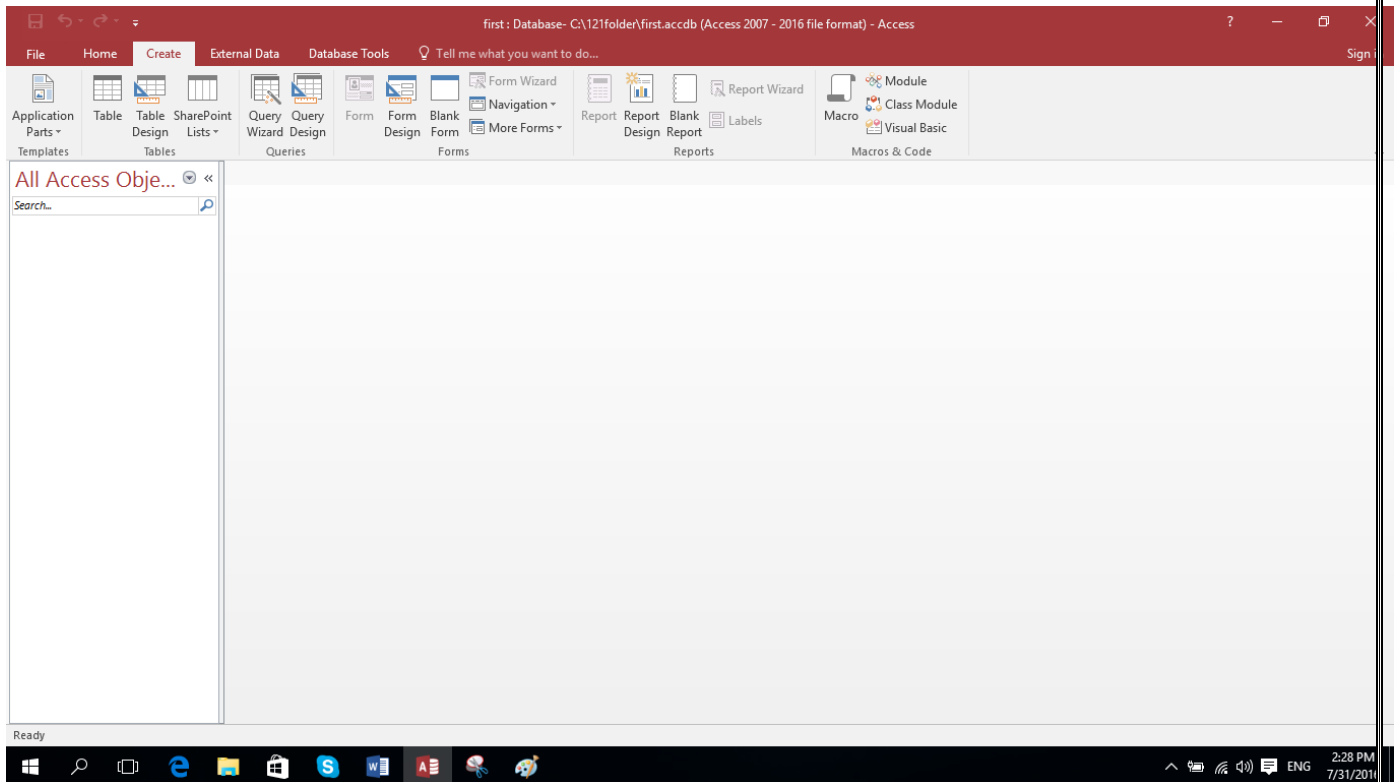
Then click the Create box you get:



Which is the Access main screen in which you create the database items (tables , queries,forms,reports, modules,macros,relationships).

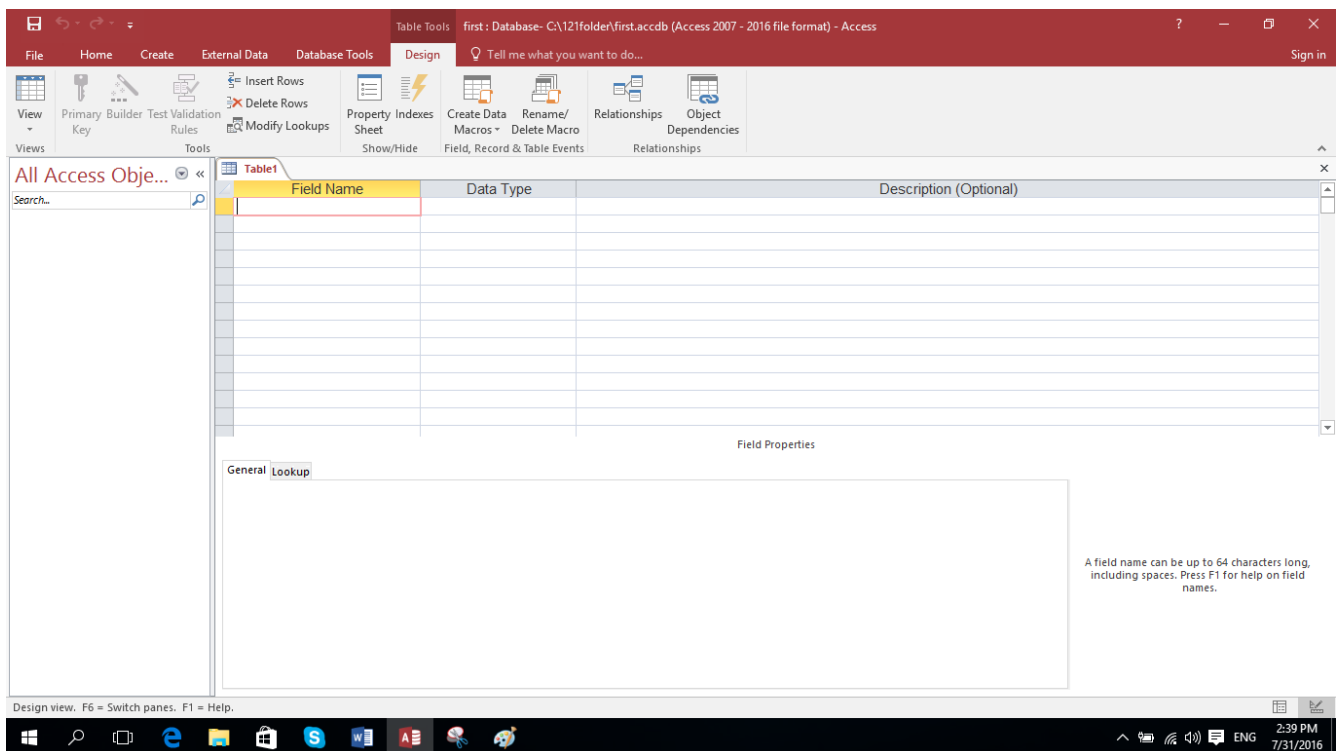
Table Creation

Now click create on the menu.



Now we are going to create a table with the name student which contains information about students (student's no, name, gender, tawjihi grade, major).

Click table design you get the screen:



We start entering the fields and their types in the following screen :

The screenshot shows the Microsoft Access Design view for a table. The ribbon is set to 'Design'. The table design grid has the following content:

Field Name	Data Type	Description (Optional)
No	Number	

The 'Field Properties' pane is open, showing the 'Lookup' tab with the following settings:

Field Size	Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	
Default Value	0
Validation Rule	
Validation Text	
Required	No
Indexed	No
Text Align	General

Help text on the right: "The size and type of numbers to enter in the field. The most common settings are Double and Long Integer. If this field will be joined to an AutoNumber field in a many-to-one relationship, this setting must be Long Integer."

Notice in the field name I enter NO, in data type I selected Number , in the field size(shaded) I selected integer , I will continue entering the remaining fields by using the same way.

The screenshot shows the Microsoft Access Design view for a table with five fields. The table design grid has the following content:

Field Name	Data Type	Description (Optional)
No	Number	
sname	Short Text	
gender	Short Text	
tawjih grade	Number	
major	Number	

The 'Field Properties' pane is open, showing the 'Lookup' tab with the following settings:

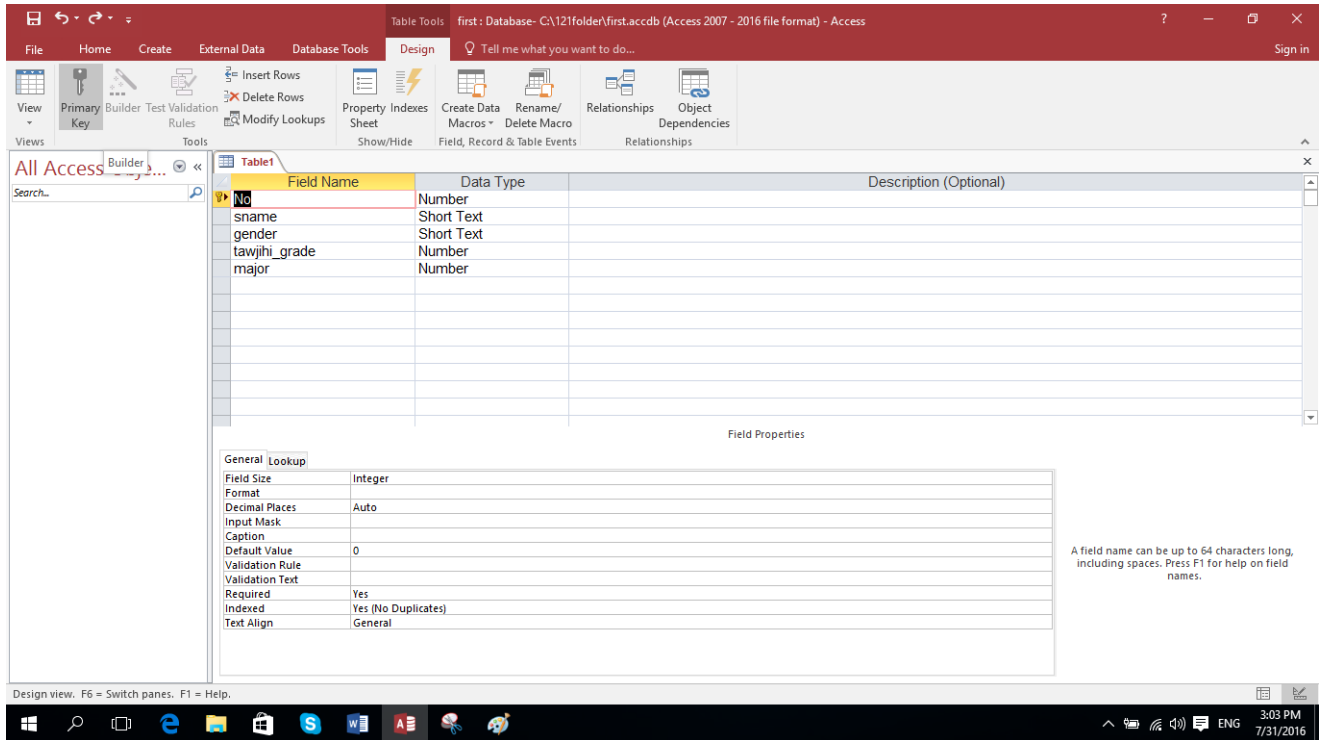
Field Size	Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	
Default Value	0
Validation Rule	
Validation Text	
Required	No
Indexed	No
Text Align	General

Help text on the right: "The data type determines the kind of values that users can store in the field. Press F1 for help on data types."

You will get the table above.

Primary Key Setting

Now we want to set the key of the table, we select the student's No since it is unique and must be not null. To do this we select the first row and do right click you see a key shape just click it, key will show up near the No field.



Click the x to the right to close the table designing, he asks you to save click yes, he gives you a screen to give a name to the table give it "student" as a name.

Exercise:

Create a table with the name specialize that has the fields (major code has numeric type, major name text type, entering date of the student to the major).

After you create this table you will get this screen.

The screenshot shows the Microsoft Access interface in Design view. The ribbon includes File, Home, Create, External Data, Database Tools, and Design. The Design ribbon has groups for Views, Tools, Show/Hide, Field, Record & Table Events, and Relationships. The 'specialize' table is open, showing a design grid with the following fields:

Field Name	Data Type	Description (Optional)
major_code	Number	
major_desc	Short Text	
start_date	Date/Time	

Below the design grid is the 'Field Properties' pane, showing the 'General' tab for the 'major_code' field:

Property	Value
Field Size	Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	
Default Value	0
Validation Rule	
Validation Text	
Required	Yes
Indexed	Yes (No Duplicates)
Text Align	General

A note on the right side of the Field Properties pane states: "A field name can be up to 64 characters long, including spaces. Press F1 for help on field names."

Modify TABLE design

If you like to modify the design of any table, follow these steps:

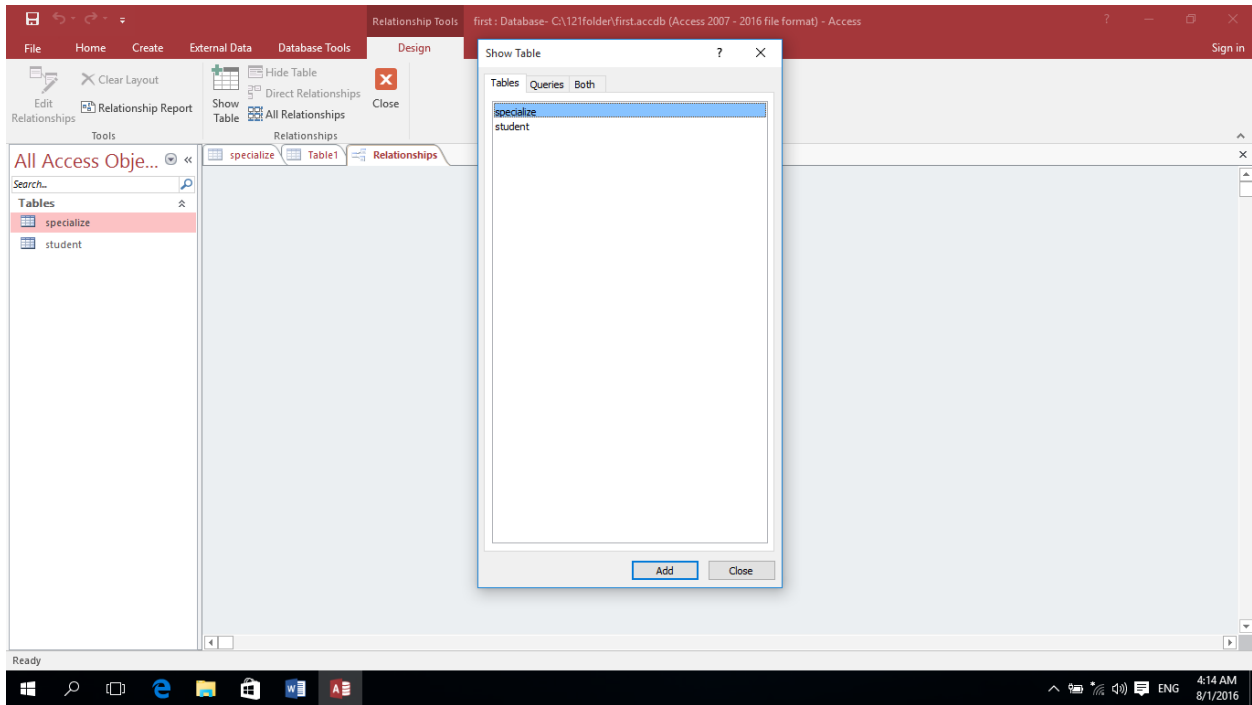
Click create, then click table, you will see all tables, right click the table you want to modify its design, in this stage you can change the name, type of the field and whether it is key or not.

Foreign Key

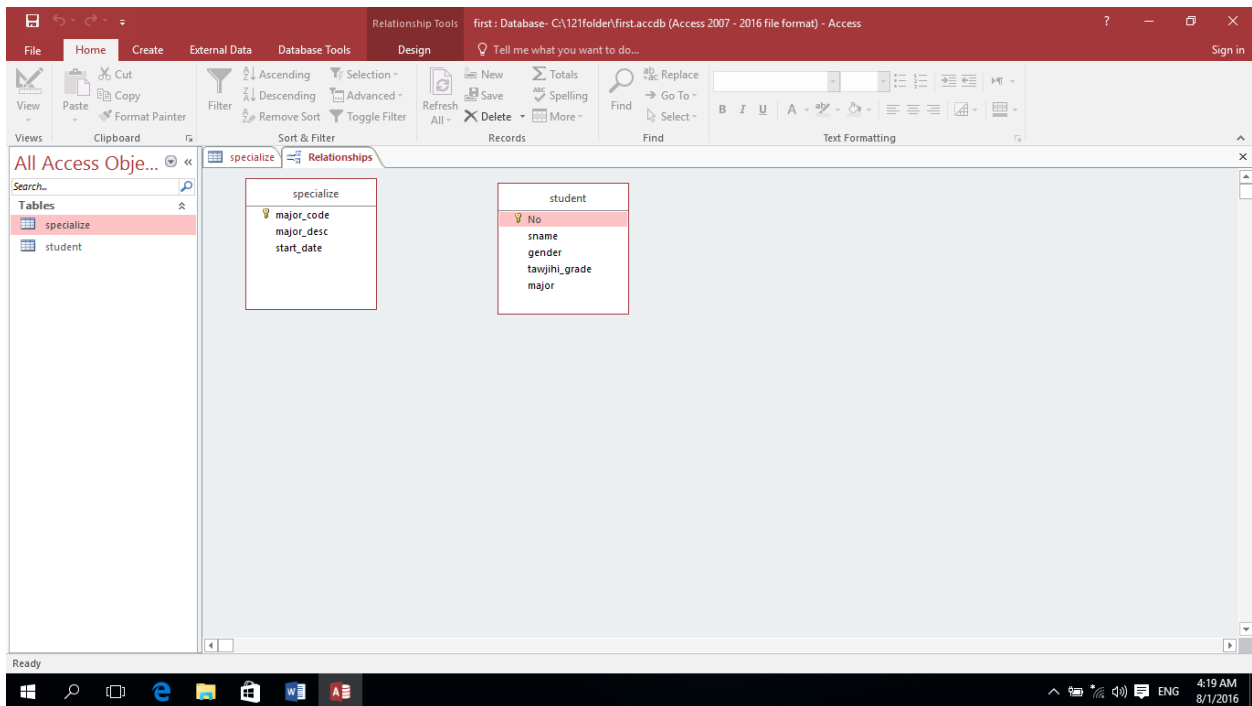
Look at the 2 tables we have designed there is a common field which is the major field, it is Primary key in table specialize and it is field in table student, we can create a relation between these two tables by drawing the relationship diagram as follow:

Design a Relationship Diagram

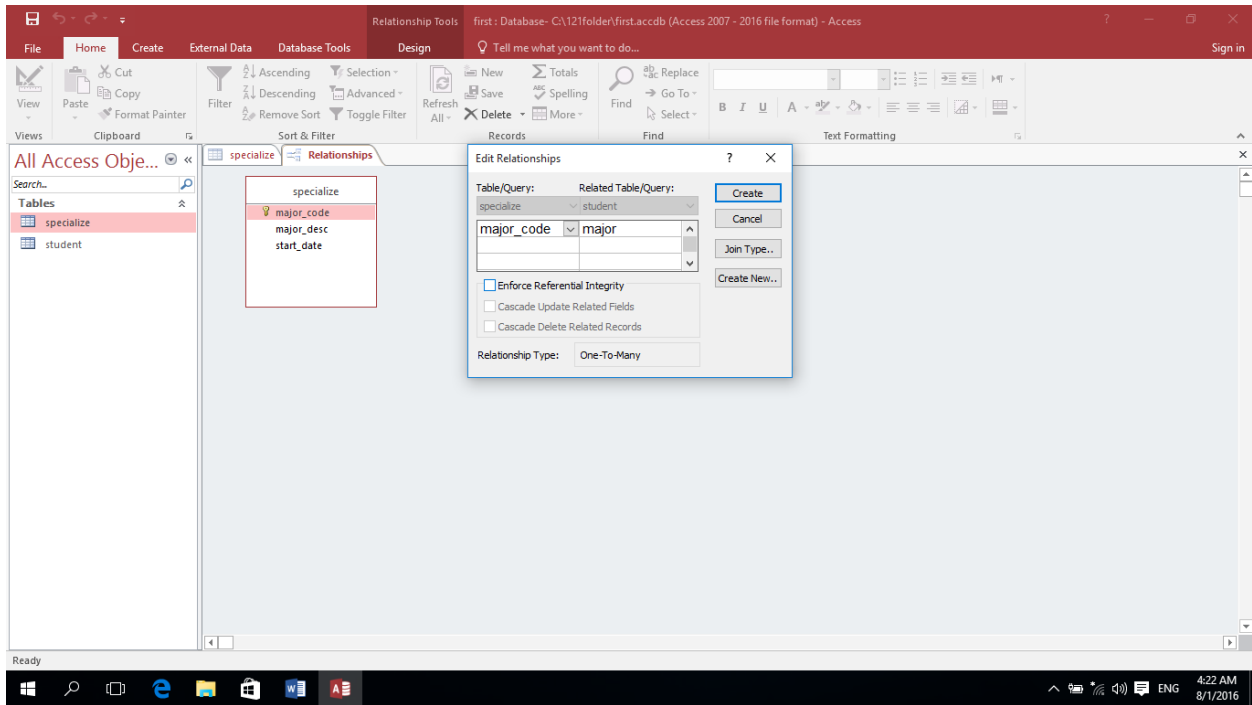
Click Database Tools, click relationships in the bar below the menu.



Click the Add key in the screen show table, you add the specialize table then add also the student table, you get the screen:

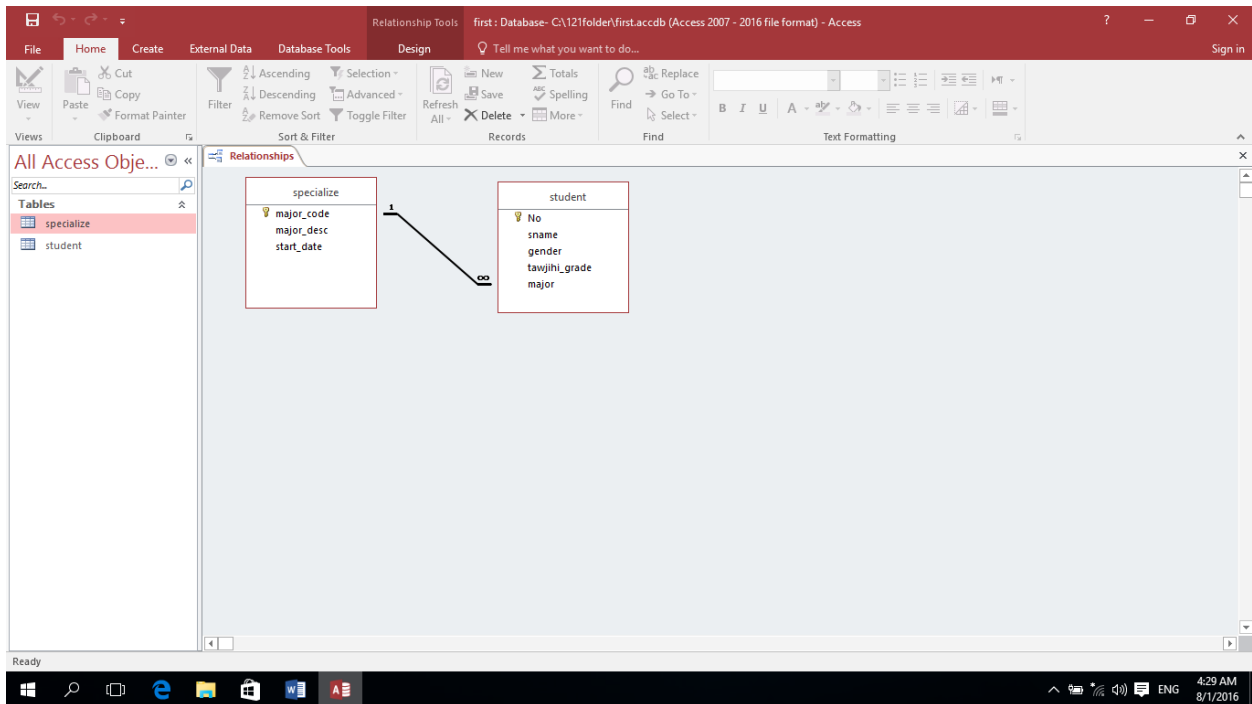


Draw a line from major field(key) in specialize table to major field in student table.



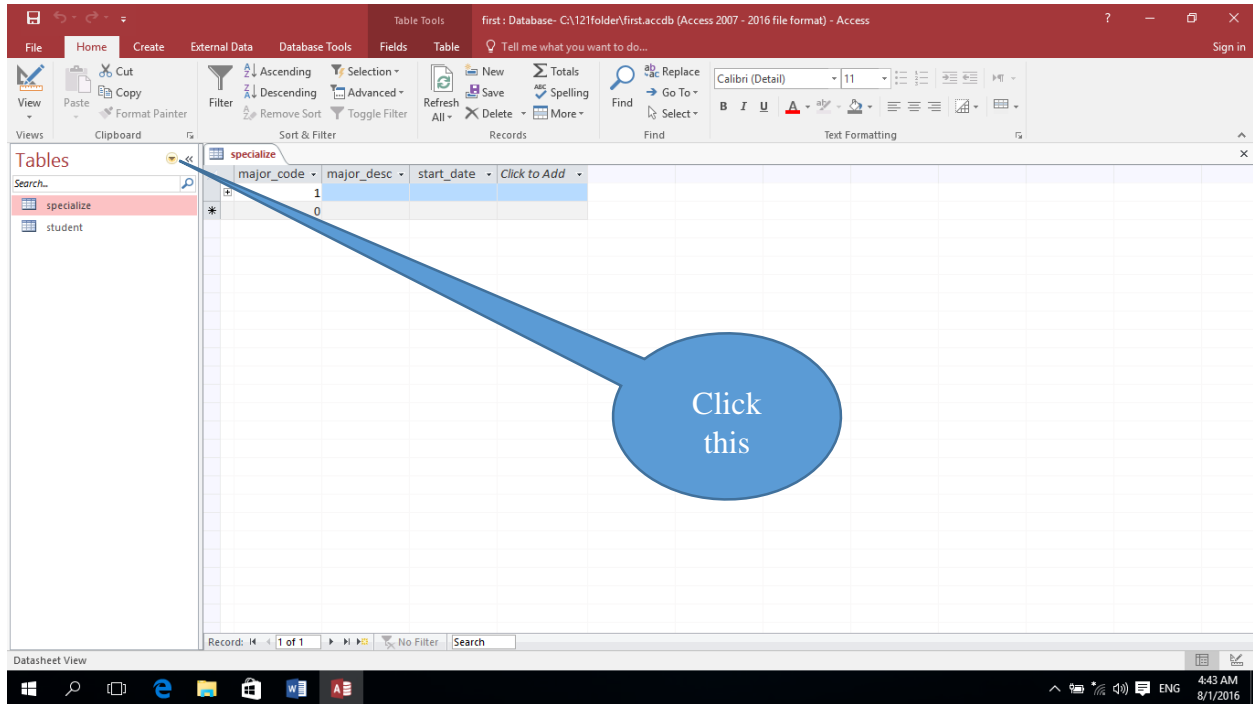
In the screen Edit Relationships click the small box beside **Enforce Referential Integrity**
Then click create in the same screen, by doing this you create a **one to many** relations between the two tables.

Notice this screen:



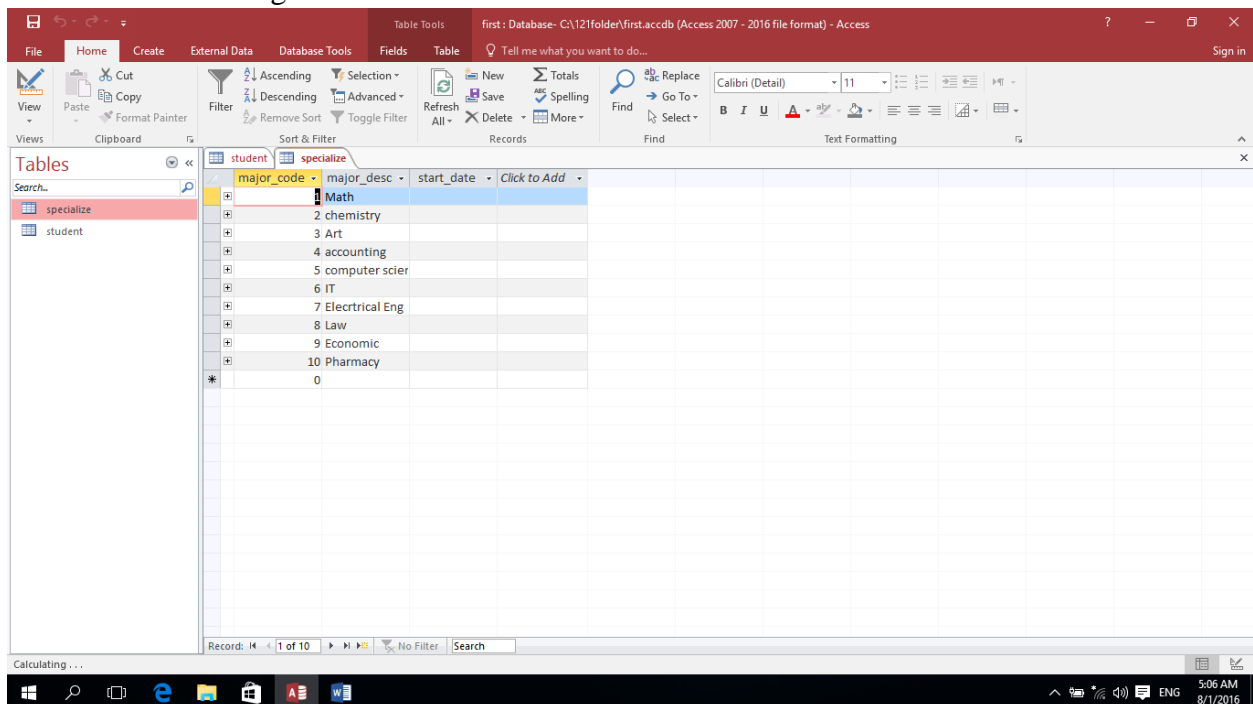
Inserting Data Into tables

Click home in the menu, you see this screen:



Click the button pointed at in the above screen, then select table, next section you will select query when we get to create query.

Double click the table you want to insert data in, and start entering the data you get this screen after the data entering.



No	sname	gender	tawjih_grac	major	Click to Add
10	Ali	M	89	2	
11	Moh	M	90	1	
12	Aseel	F	78	1	
13	Hala	F	81	2	
14	sara	F	77	1	
15	kameel	M	85	2	
*	0		0	0	

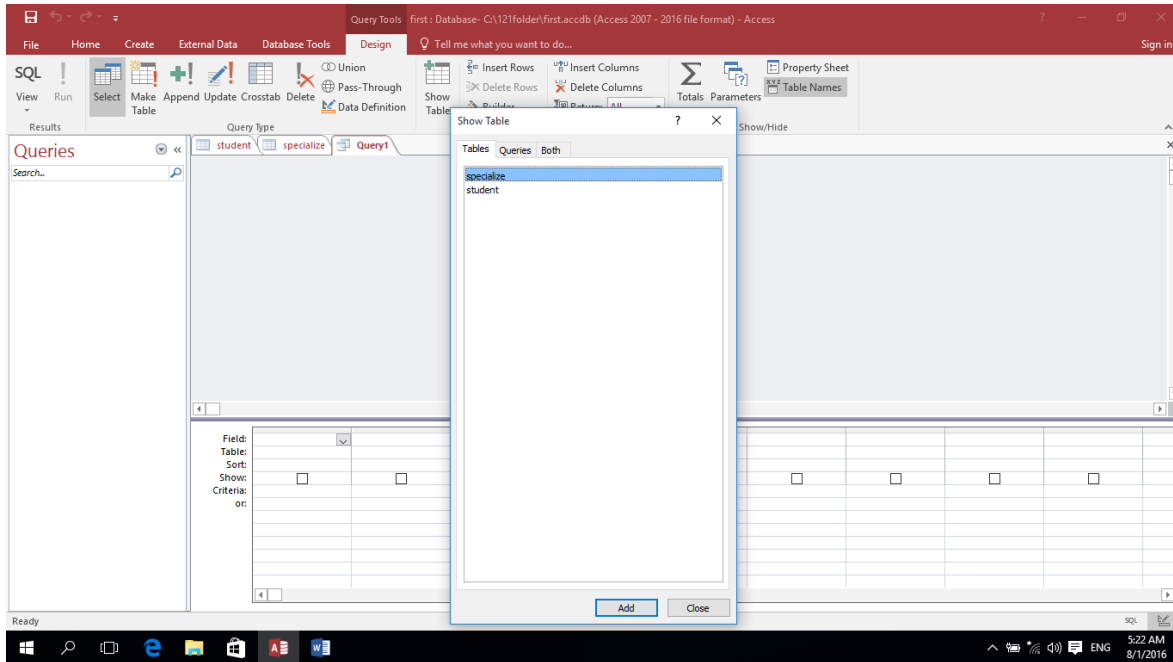
Retrieving Data:

To retrieve data we need to build queries:

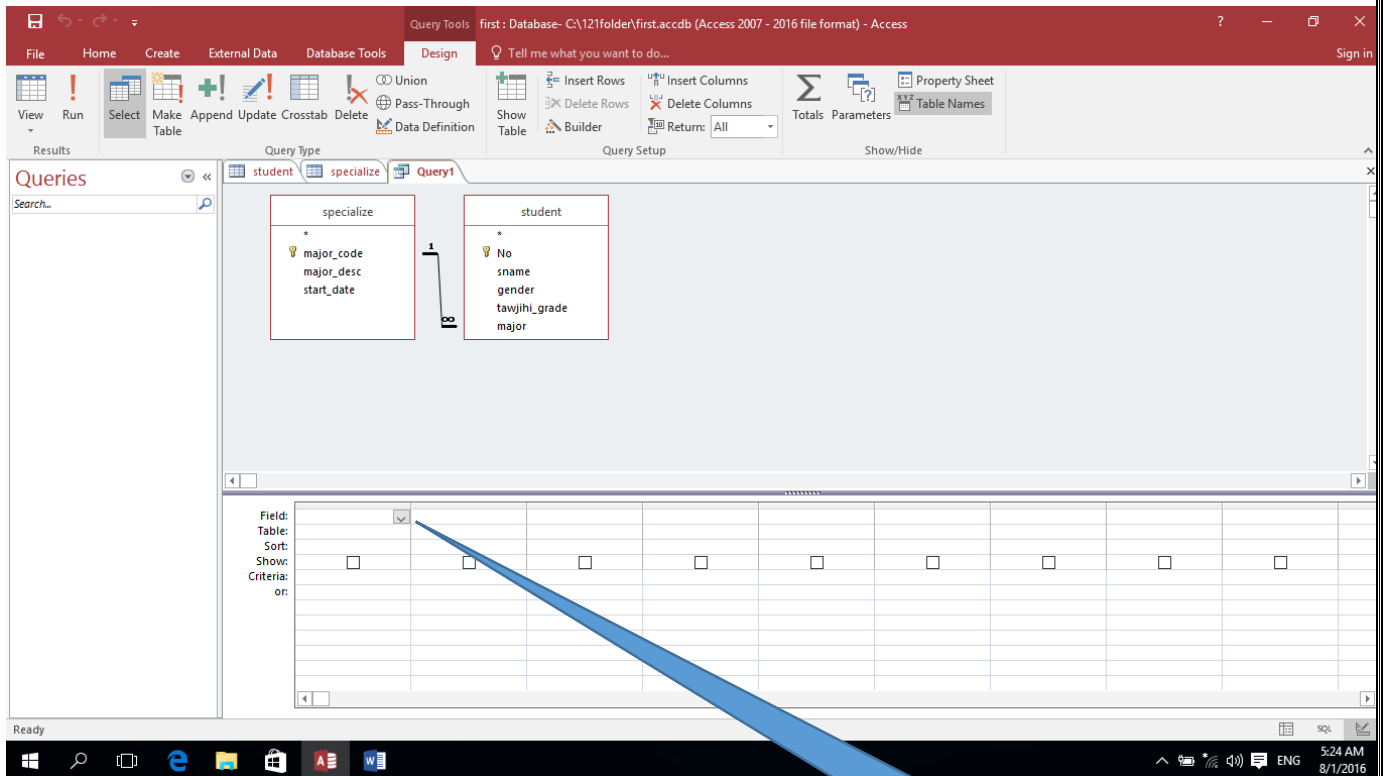
We want to build query to get all students who got more than 80 in tawjih and they are in the math major.

Follow these steps click create in the menu, click query design:

You get this screen:



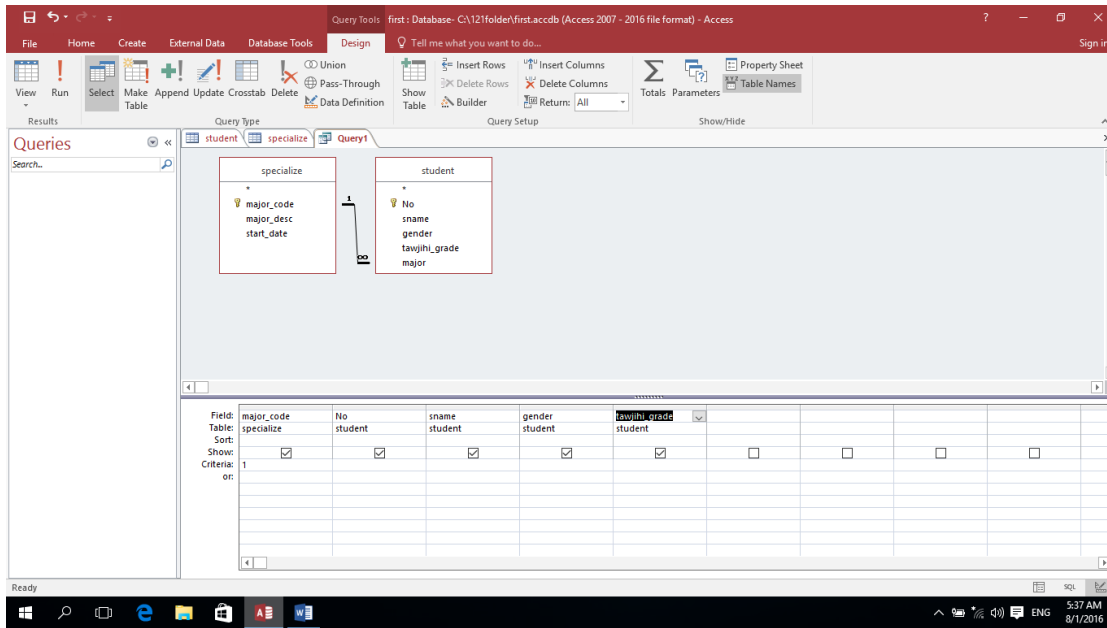
Add the two tables, you will see this screen:



Start selecting the field you like to see in the result by clicking the down arrow buttons in the design grid in the previous screen.

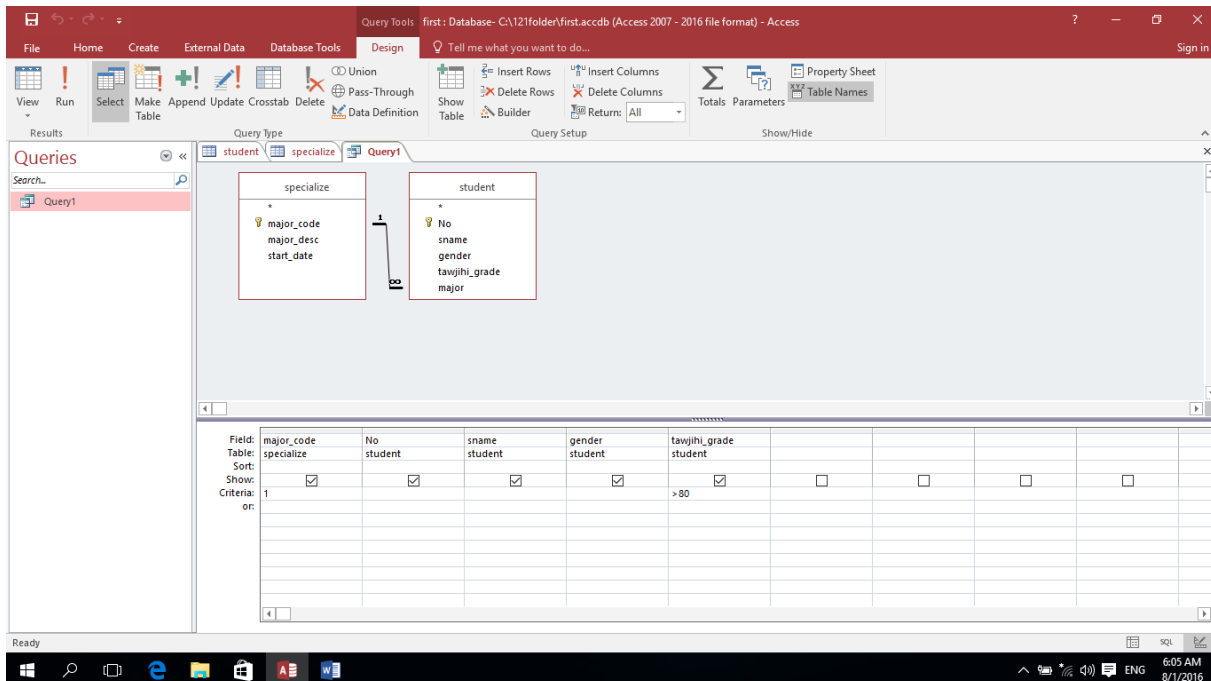
After doing the selection you will get this screen:

Click this and select a



To put the conditions (more than 80 in tawjihl and the major is math that has the code 1), beside the criteria and under the field tawjihl put >80, and under major put 1).

The final screen as shown below:



To execute(run) this query to get the result just click ! above, there is run under this ! . The screen below shows the result, we got just one student who satisfy the conditions.

first - Database- C:\121folder\first.accdb (Access 2007 - 2016 file format) - Access

File Home Create External Data Database Tools Tell me what you want to do... Sign in

View Paste Copy Format Painter Filter Sort & Filter Selection - Ascending Descending Advanced - Refresh All - Delete - Records New Save Spelling More - Find Replace Go To - Select - Text Formatting

Queries

student	specialize	Query1		
major_code	No	sname	gender	tawjihl_grad
*		11 Moh	M	90

Datasheet View

Record: 1 of 1 No Filter Search

6:07 AM 8/1/2016

Lab 4: Medical record: openEHR structure

4.1 Learning Objectives:

- to apply uses of tables and relations and MS Access functions from Lab 3.
- to learn developing a simplified patient record
- to learn and practice translating patient data into a patient record

4.2 Practical Exercises

Q1. Create the required set of tables that can store the following patient information. Choose the appropriate data types for each.

A patient, named Ahmad Mahmoud, born on the 1/1/1995, lives in Birzeit, ID number 333244423 and his tel number is 023222323, Ahmad had tommy pain two weeks ago. Ahmad range his Doctor, Dr Khalid, clinic and his receptionist, Huda, and she booked him an appointment at 11:15 on that day. Ahmad explained to Huda on the telephone that he is suffering from a tommy pain, which is record on the system. Dr Khalid saw Ahmad at 11:30 that day and diagnosed him with stomach bug and he prescribed him to take Paracetmol 500mg, one tablet 3 times a day, and Spasmanol 20 mg, 2 tablets two times a day, to ease the pain.

Q2. Building on the tables you have created above in Q1, expand your records/tables to store the following patient information.

After one week, Ahmad was still suffering from an abdominal pain and he range the receptionists, Huda, at his doctor's clinic. He explained that he was still suffering from tommy pain, which she recorded on the system. She booked him an appointment to see his General physician, Dr Khalid, tomorrow, at 10:10 in the morning. Ahmad came in at the clinic and he was first seen by the clinic nurse, Rida, at 10:15. Rida measured Ahmad's vital signs, including his blood pressure and temperature, which came out normal at 120/80 mmHg and 37 C degree respectively.

Q3. Building on the tables you have created above in Q2, expand your records/tables to store the following patient information.

Dr Khalid then seen Ahmad at 11:00 and examined him. He asked Ahmad to do a white blood count lab test. Ahmad did the test on the same day, his white blood count came out as normal at 6.5 b/l, which he has shown to his doctor. Dr Khalid then referred Ahmad to another Gastroenterologists or a specialist doctor.

Q4. Analyse the above scenarios and patient case and identify the different types of patient (personal and medical) information, representing each type as a table.

Q5. Draw how these tables are related to each other. Compare the types of information you identified to the openEHR general patient model

Hint: Think of data organized across the following Tables and data fields as suggested below

Tables: Patient, Clinic, Appointment, Receptionist, Doctor, Nurse, Encounter, Vital_Signs, Lab_Tests, Diagnosis, Medications.