Name: OMAR ISMAIL ABDJALEEL ALOMORY

Matric No: S63955

Date: 4/11/2022

Lab: MP3

Lecturer:

DATABASE (CSF3123) k2

LAB 1 – Installation and Configuration of MySQL, MySQL Workbench and Implement Query By Examples (QBE)

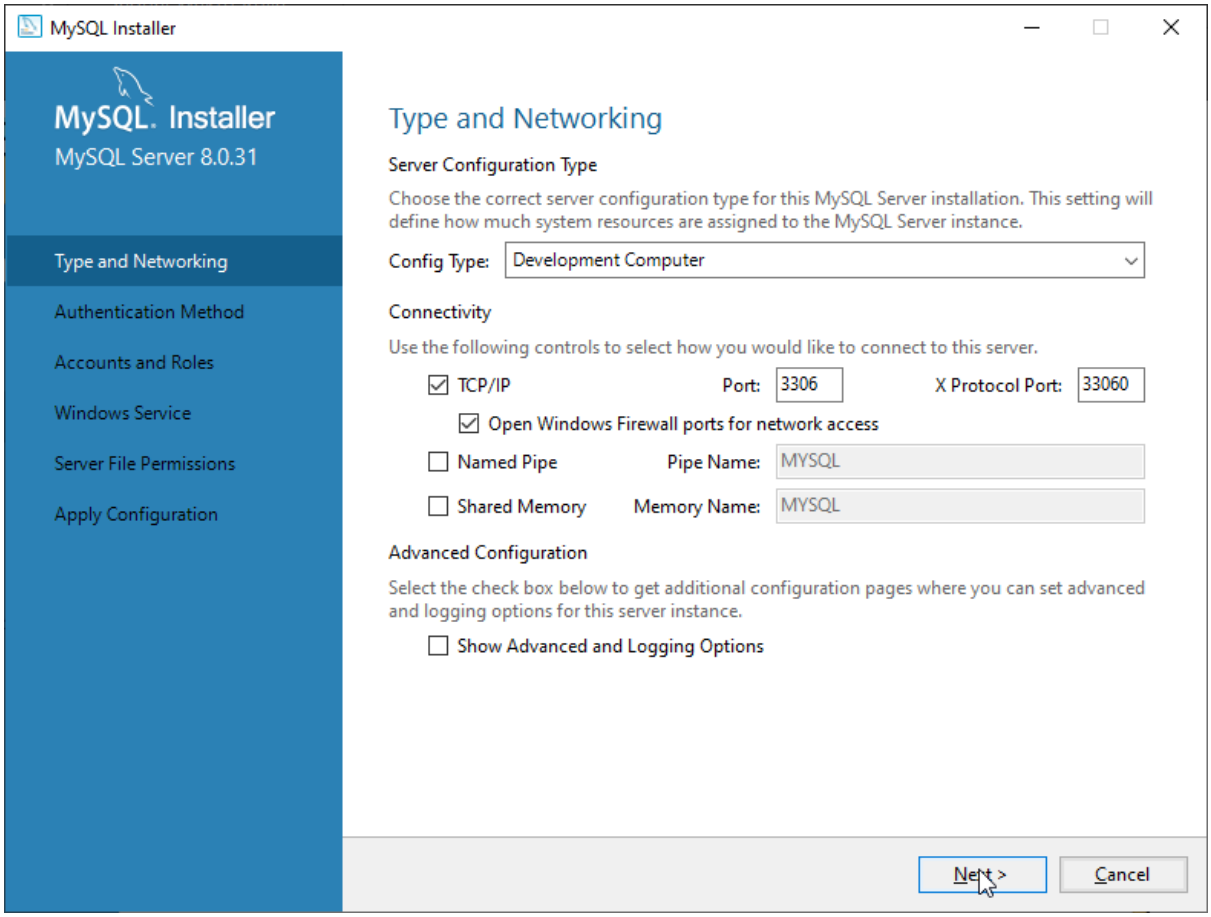
Activity 1

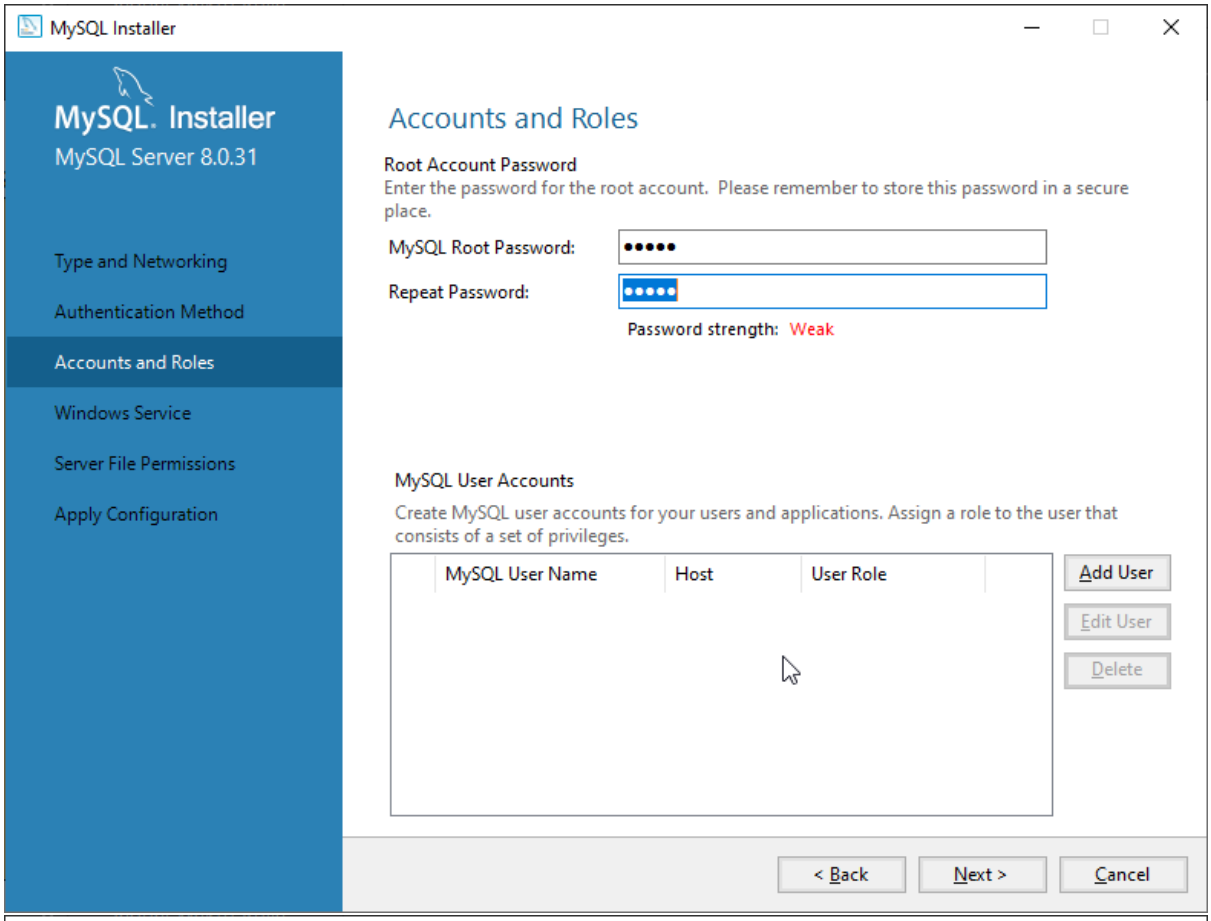
Objective:

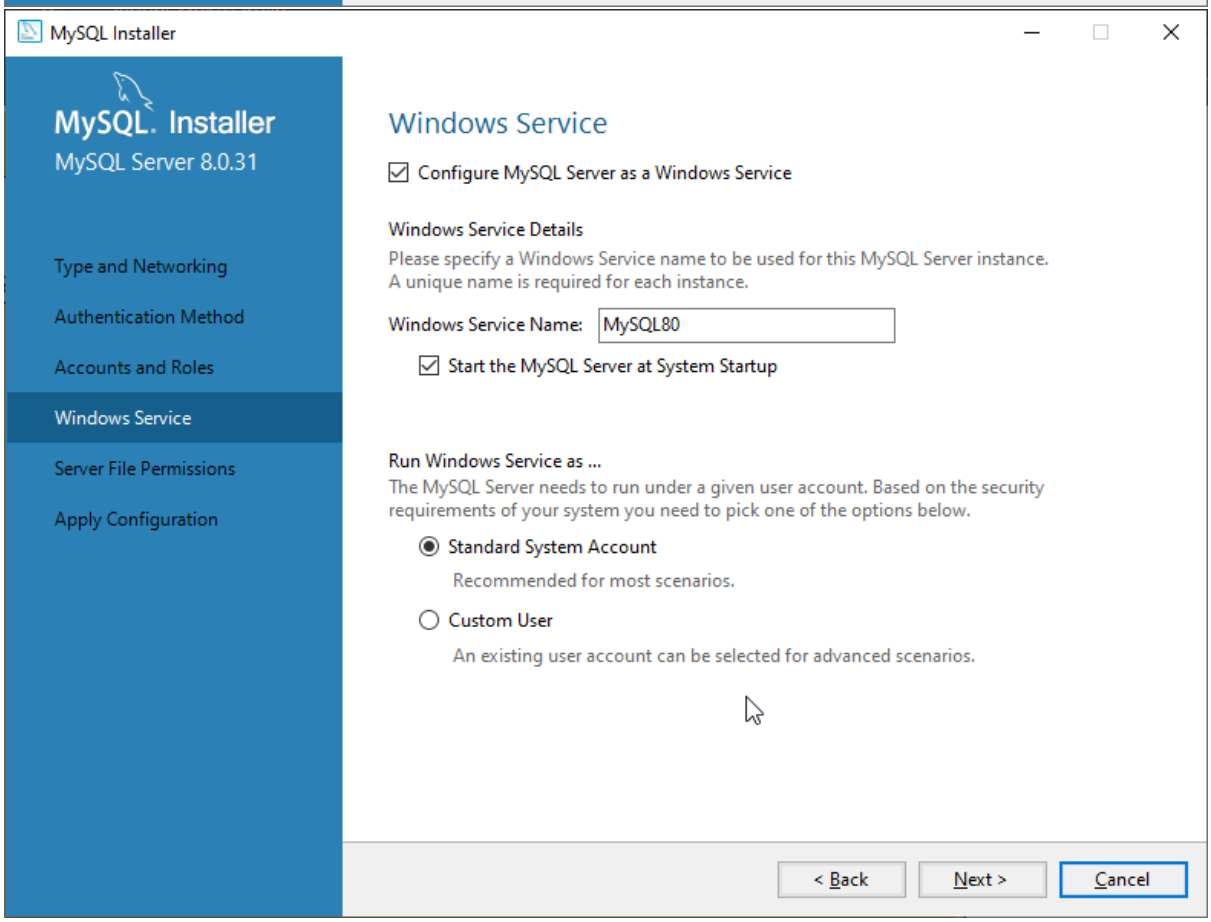
Perform installation and configuration of MySQL database and MySQL Workbench.

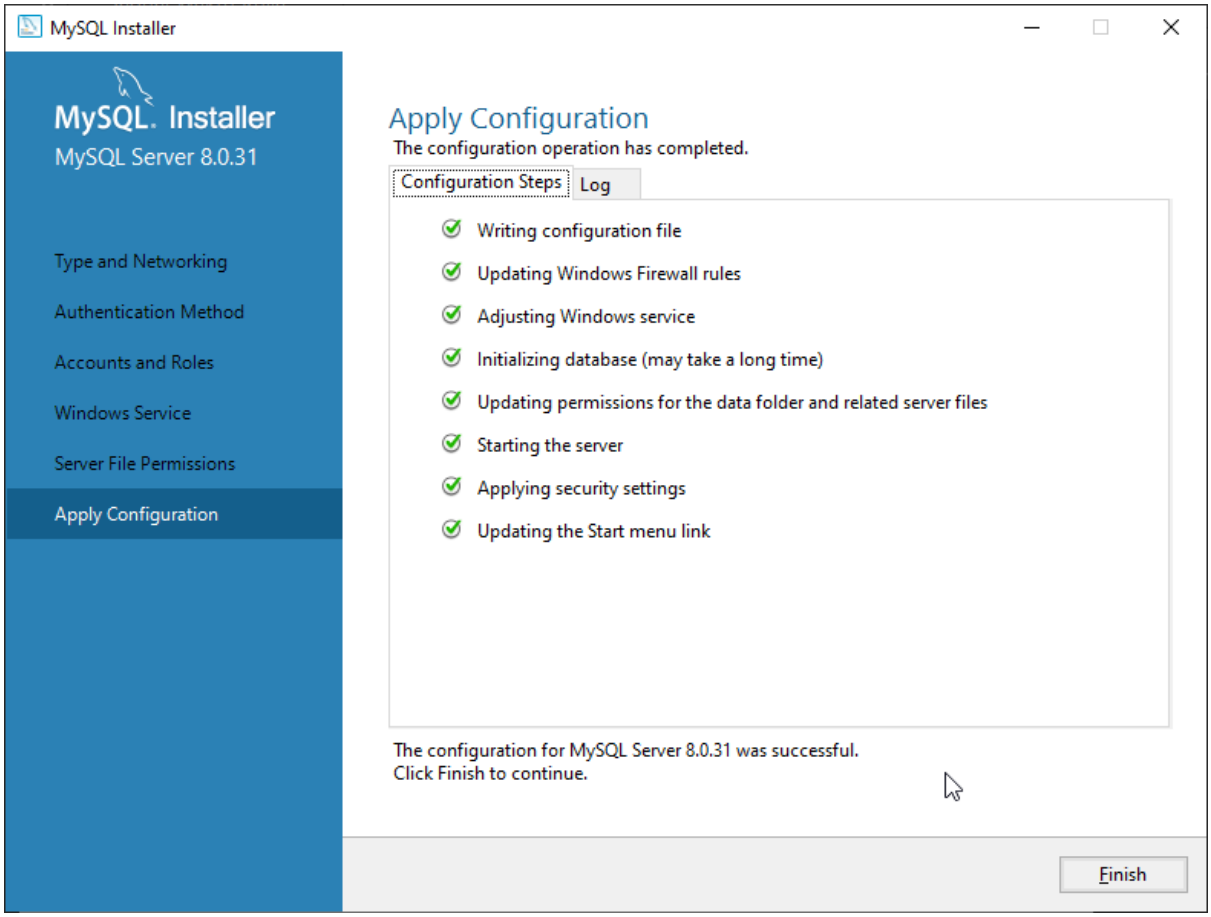
Problem descriptions:

You are required to install MySQL database and MySQL Workbench by using MySQL Installer.




MySQL Installer
MySQL. Installer
MySQL Server 8.0.31
Type and Networking
Authentication Method
Accounts and Roles
Windows Service
Server File Permissions
Apply Configuration
Accounts and Roles
Root Account Password
Enter the password for the root account. Please remember to store this password in a secure place.
MySQL Root Password:
Repeat Password:
Password strength: Weak
MySQL User Accounts
Create MySQL user accounts for your users and applications. Assign a role to the user that consists of a set of privileges.
MySQL User Name
Host
User Role
Add User
Edit User
Delete
< Back
Next >
Cancel


MySQL Installer
MySQL. Installer
MySQL Server 8.0.31
Type and Networking
Authentication Method
Accounts and Roles
Windows Service
Server File Permissions
Apply Configuration
Windows Service
Configure MySQL Server as a Windows Service
Windows Service Details
Please specify a Windows Service name to be used for this MySQL Server instance.
A unique name is required for each instance.
Windows Service Name:
MySQL80
Start the MySQL Server at System Startup
Run Windows Service as ...
The MySQL Server needs to run under a given user account. Based on the security requirements of your system you need to pick one of the options below.
Standard System Account
Recommended for most scenarios.
Custom User
An existing user account can be selected for advanced scenarios.
< Back
Next >
Cancel


MySQL Installer
MySQL. Installer
MySQL Server 8.0.31
Type and Networking
Authentication Method
Accounts and Roles
Windows Service
Server File Permissions
Apply Configuration
Apply Configuration
The configuration operation has completed.
Configuration Steps
Log
Writing configuration file
Updating Windows Firewall rules
Adjusting Windows service
Initializing database (may take a long time)
Updating permissions for the data folder and related server files
Starting the server
Applying security settings
Updating the Start menu link
The configuration for MySQL Server 8.0.31 was successful.
Click Finish to continue.
Finish

Activity 2

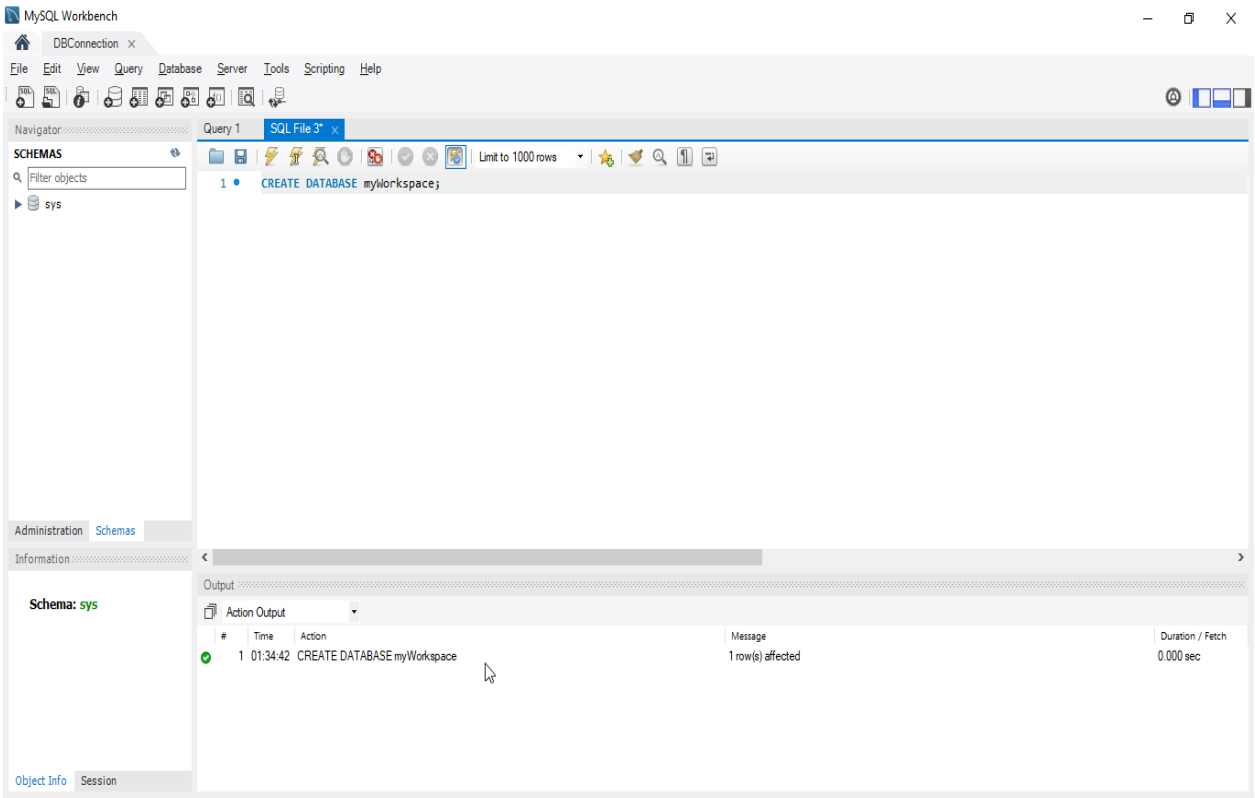
Objective

1. Creating a new database connection in MySQL Workbench.

2. Creating a new database schema.

Problem Description

You have been requested to create a new database known as DBConnection for your project. Once you have successfully creating the connection, create a new database schema known as *myDatabase*. You need to use MySQL Workbench to perform this task.



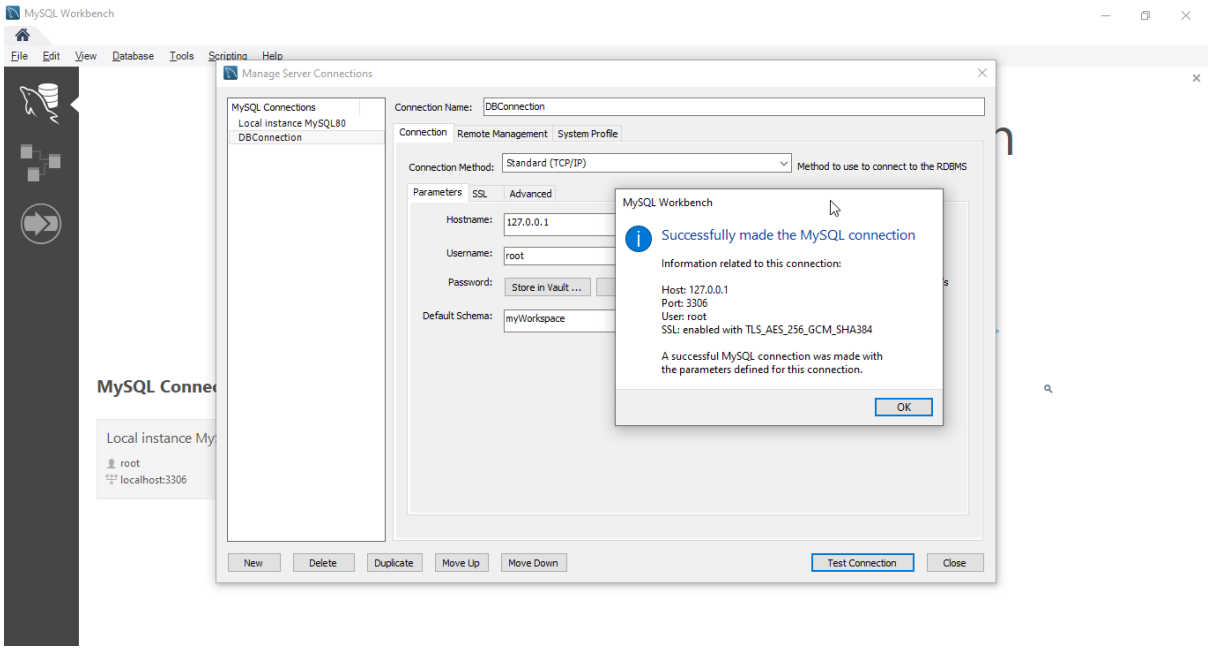
Activity 3

Objective

- Assigning specific database schema to an existing database connection.

Problem Description

You need to add *myWorkspace's* database schema to your current database connection known as *DBConnection* in your MySQL Workbench.



Activity 4

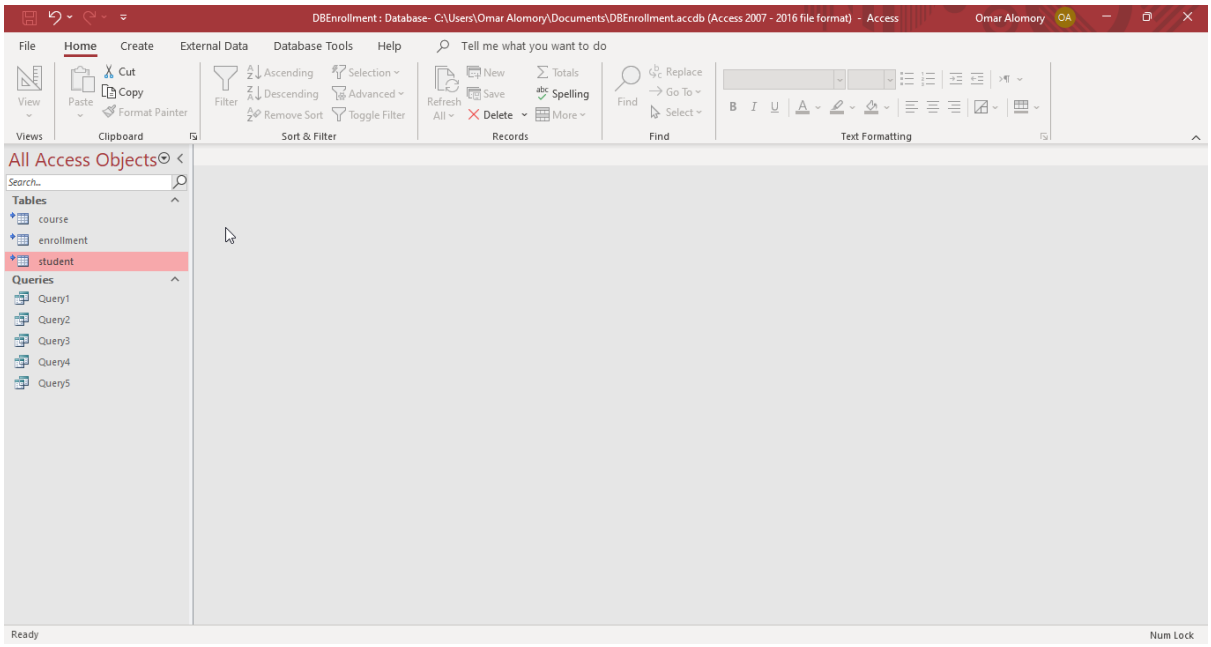
Solution

Task 1

1. Create a database known as DBEnrollment in Microsoft Access.

Task 2

1. Create a table known as student, course and enrollment in DBEnrollment.



2. The structure of these tables must based on the records display in Figure 1.

Student Table

course | enrollment | student

StudentID	StudentNam	Program	intake
S1001	Ali bin Abdulla	BSC. Computer	2014
S1002	Chew Meng Ye	BSC. Biology	2014
S1003	Naimah binti R	BSC. Chemical	2014
S2002	Freez Ahmed	BSC. Computer	2015
S2004	Krishnan a/l Ra	BSC. Physics	2015
S3002	Amran bin Rosl	BSC. Computer	2016
			0

Course Table

course | enrollment | student

CourseID	Description	Credit
BG1001	Introduction to Biology	3
BG3110	Human Biology	4
CH2001	Basic Chemical	3
CH3000	Chemical Themodynamics	4
CS1001	Basic Programming	3
CS2010	Networking	3
CS2020	Data Structure	4
PY1001	Fundamentals of Physics	3
PY2004	Quantum Physics	4

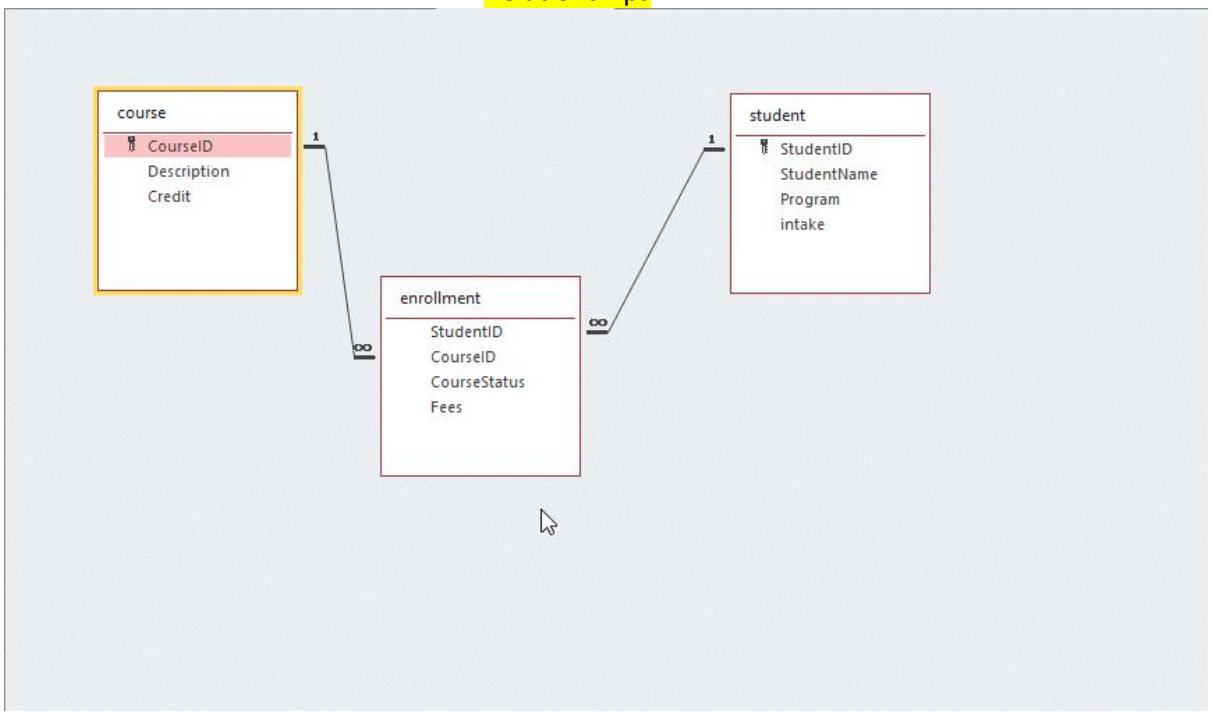
Enrollment Table

course | enrollment | student

StudentID	CourseID	CourseStatu	Fees
S1003	CH2001	Active	Paid
S1003	CH3000	Active	Paid
S1001	CS1001	Active	Paid
S3002	CS1001	Active	Paid
S2002	CS1001	Active	Paid
S2002	CS2010	Blocked	Not Paid
S1001	CS2010	Active	Paid
S3002	CS2010	Active	Paid
S3002	CS2020	Blocked	Not Paid
S2004	PY1001	Active	Paid
S2004	PY2004	Blocked	Not Paid

3. Create a relationships between these tables by enforce integrity constraints among the tables and apply on delete and on update cascade for related tables.

Relationships



Task 3

1. Insert all records into the table.
2. All records must be based on information shown in Figure 1.

course | enrollment | student

StudentID	StudentNam	Program	intake
S1001	Ali bin Abdulla	BSC. Computer	2014
S1002	Chew Meng Ye	BSC. Biology	2014
S1003	Naimah binti R	BSC. Chemical	2014
S2002	Freez Ahmed	BSC. Computer	2015
S2004	Krishnan a/l Ra	BSC. Physics	2015
S3002	Amran bin Rosl	BSC. Computer	2016
			0

course | enrollment | student

CourseID	Description	Credit
BG1001	Introduction to Biology	3
BG3110	Human Biology	4
CH2001	Basic Chemical	3
CH3000	Chemical Themodynamics	4
CS1001	Basic Programming	3
CS2010	Networking	3
CS2020	Data Structure	4
PY1001	Fundamentals of Physics	3
PY2004	Quantum Physics	4

course | enrollment | student

StudentID	CourseID	CourseStatu	Fees
S1003	CH2001	Active	Paid
S1003	CH3000	Active	Paid
S1001	CS1001	Active	Paid
S3002	CS1001	Active	Paid
S2002	CS1001	Active	Paid
S2002	CS2010	Blocked	Not Paid
S1001	CS2010	Active	Paid
S3002	CS2010	Active	Paid
S3002	CS2020	Blocked	Not Paid
S2004	PY1001	Active	Paid
S2004	PY2004	Blocked	Not Paid

Activity 5

Solutions

1. Retrieve student id, nama and program for all students. Your query should produce the following output.

Answer.

Query1

StudentID	StudentName	Program
S1001	Ali bin Abdullah	BSC. Computer Science
S1002	Chew Meng Yeng	BSC. Biology
S1003	Naimah binti Ramlan	BSC. Chemical Engineering
S2002	Freez Ahmed	BSC. Computer Science
S2004	Krishnan a/l Ramesh	BSC. Physics
S3002	Amran bin Rosli	BSC. Computer Science

2. Retrieve student id, name, course id for students who register course CS2010. Your query should produce the following output.

Answer.

Query2

StudentID	StudentNam	CourseID
S1001	Ali bin Abdulla	CS2010
S2002	Freez Ahmed	CS2010
S3002	Amran bin Rosl	CS2010

3. Retrieve student name, course id and name of course students make registration, but they are unable to attend the course and year of intake is 2015. Your query should produce the following output.

Answer.

Query3

StudentNam	CourseID	Description
Freez Ahmed	CS2010	Networking
Krishnan a/l Ra	PY2004	Quantum Physics

4. List all SQL query for query no 1., 2. and 3.

Answer

Query1 | Query2 | Query3 | Query4 | Query5 | **Query6**

StudentID	StudentName	Program
Freez Ahmed	CS2010	Networking
Krishnan a/l Ramesh	PY2004	Quantum Physics
S1001	Ali bin Abdullah	BSC. Computer Science
S1001	Ali bin Abdullah	CS2010
S1002	Chew Meng Yeng	BSC. Biology
S1003	Naimah binti Ramlan	BSC. Chemical Engineeri
S2002	Freez Ahmed	BSC. Computer Science
S2002	Freez Ahmed	CS2010
S2004	Krishnan a/l Ramesh	BSC. Physics
S3002	Amran bin Rosli	BSC. Computer Science
S3002	Amran bin Rosli	CS2010

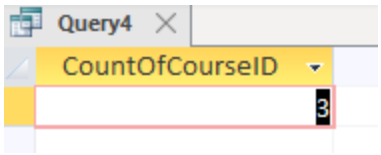
```
SELECT student.StudentID, student.StudentName, student.Program
FROM student
UNION
SELECT student.StudentID, student.StudentName, enrollment.CourseID
FROM student INNER JOIN enrollment ON student.StudentID = enrollment.StudentID
WHERE (((enrollment.CourseID)="CS2010"))
UNION
SELECT student.StudentName, enrollment.CourseID, course.Description
FROM student INNER JOIN (course INNER JOIN enrollment ON course.CourseID = enrollment.CourseID) ON student.StudentID = enrollment.StudentID
WHERE (((student.intake)=2015) AND ((enrollment.CourseStatus)="Blocked"));
```

Activity 6

Solution

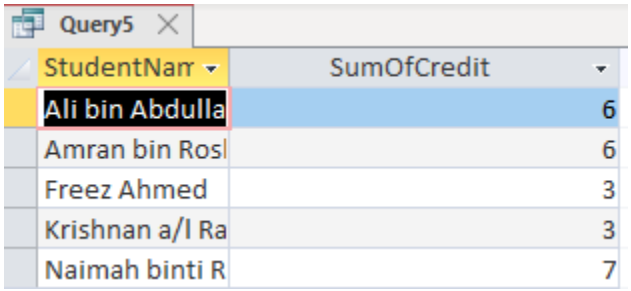
1. Find total number of student who enroll *Basic Programming* course. You should get the following output. Get the SQL query for the output.

Answer.



2. Find the total credit for each student that having course status is *Active*. You should get the following output.

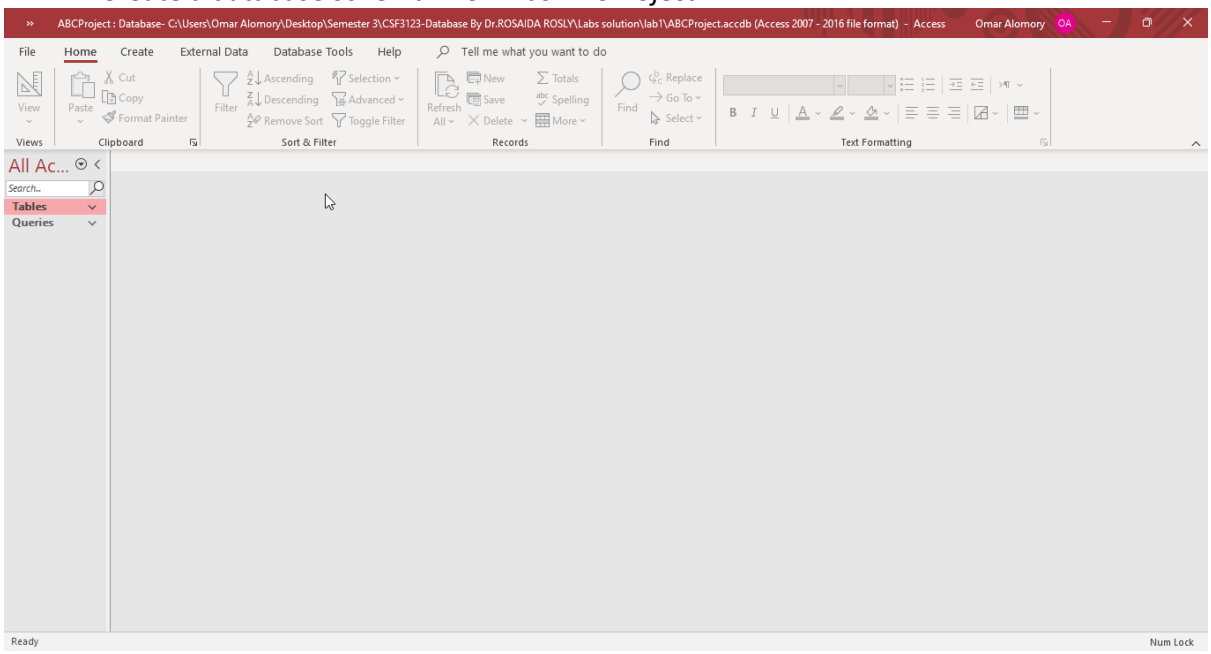
Answer.



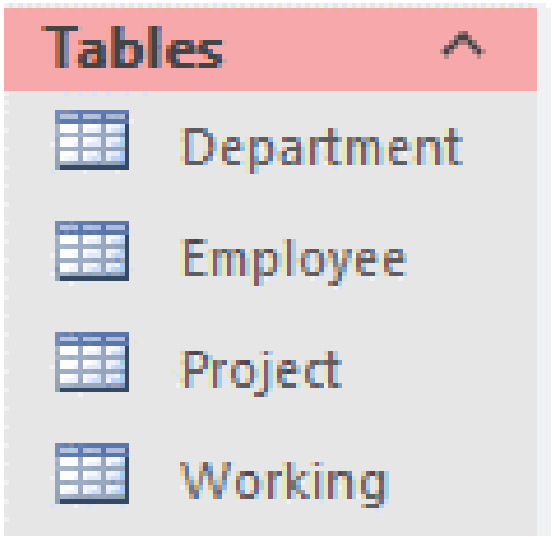
Lab Exercise

Solution

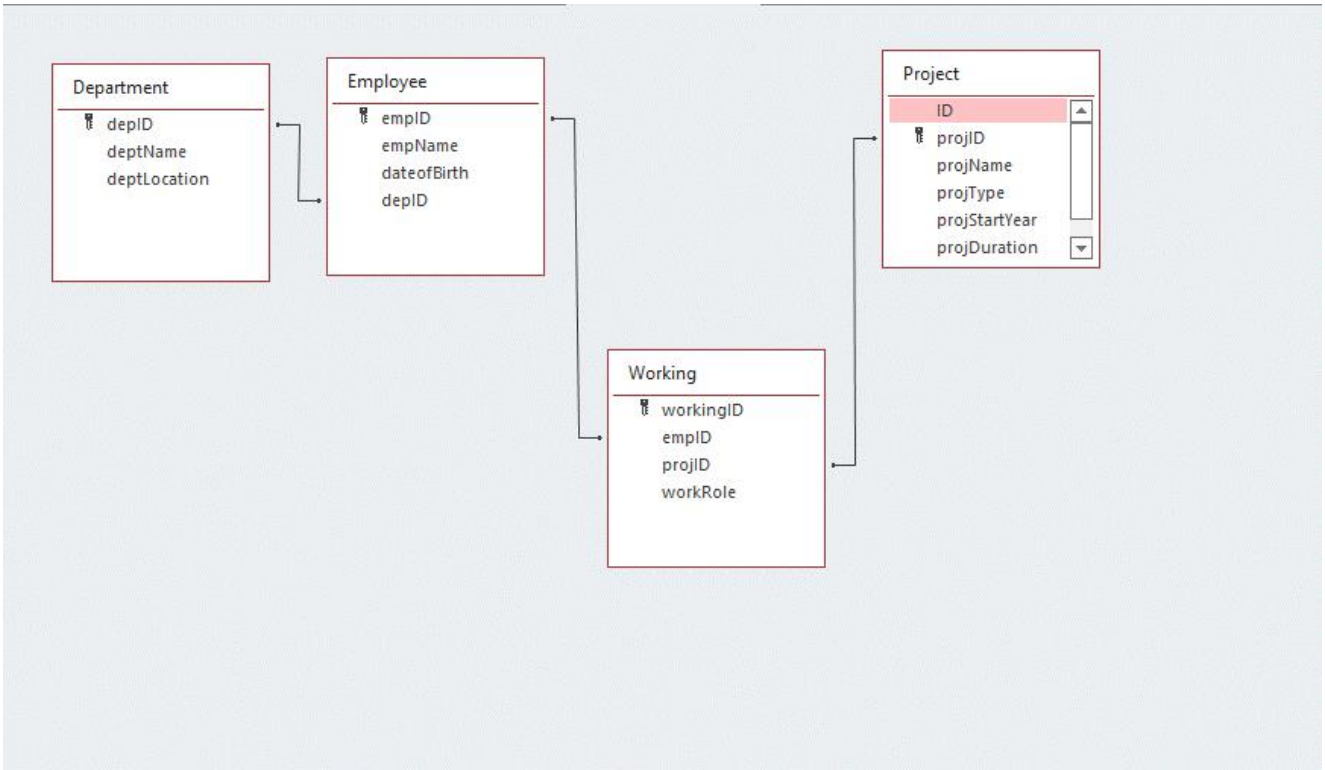
1. Create a database schema known as *ABCProject*.



2. Create a related tables for this system by incorprate all the constraints and relevant data type.



3. Construct the Entity-Relationship (ER) diagram and build the relationships between the entities.



4. Populate **minimum six (6) records** for each table you have created.

Employee Table

Department | Employee | Project | Working

empID	empName	dateofBirth	depID
E0001	Omar Alomry	5/21/1998	D1001
E0002	Ali Omar	8/29/1999	D1001
E0003	Gary Lim	1/1/2000	D1004
E0004	Fatchurrachma	1/23/2000	D1006
E0005	Fikry Iskander	7/19/1996	D1003
E0006	Moad	5/18/1970	D1008
E0007	Shahdad	1/1/1995	D1003
E0008	Irman	9/20/1987	D1006
E0009	Faris Mohemm	2/1/1990	D1010
E0010	MD Akash Ali	12/10/1998	D1002
E0011	Hesyam	12/5/1994	D1008
E0012	Mohemmed Al	6/16/1975	D1010
E0014	Elya Montaser	6/8/2000	D1002
E0016	Hazim	1/15/1992	D1004

Department Table

Department | Employee | Project | Working

deptID	deptName	deptLocation
D1001	Administration	Kuala Lampur
D1002	Finance	Malaka
D1003	Human Resources	Kelantan
D1004	Operations	Sarawak
D1006	Public Relations	Kudah
D1008	Information Technology	Johor
D1010	Research and Development	Kuala Terengganu

Project Table

Department | Employee | Project | Working

ID	projID	projName	projType	projStartYea	projDuratior	projCost
3	10001	Corporate Social Responsibility	Social Project	2018	1	120000
5	10005	Hospital Registeration Apps	Government Project	2018	2	500000
6	10008	Project MCDonald	Private Project	2022	2	265000
2	10011	Oracle Database Migration	Private Project	2020	2	160000
1	10012	National Identity Database	Government Project	2019	3	200000
4	10015	Website Developmet	Private Project	2015	6	100000

Working Table

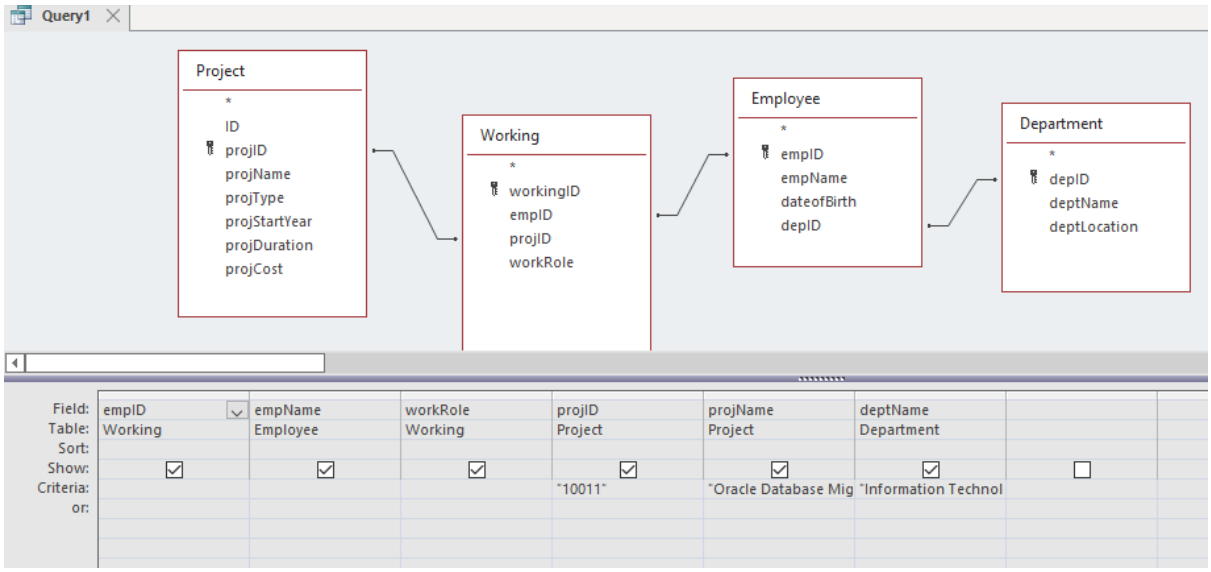
Department | Employee | Project | Working

workingID	empID	projID	workRole
1	E0001	10011	Administrative Assistant
2	E0010	10011	Accountant
3	E0002	10012	Risk Manager
4	E0003	10012	Assistant Manager
5	E0005	10001	Media Relations Assistant
6	E0004	10001	Communications Coordinator
7	E0014	10015	Budget Analyst
8	E0016	10015	Team leader
9	E0007	10005	Recruitment and Hiring
10	E0016	10005	Operations Manager
11	E0010	10008	Accountant
12	E0006	10008	Technical support
13	E0006	10011	Project Manager
14	E0011	10012	Project Manager
15	E0008	10001	Project Manager
16	E0009	10015	Project Manager
17	E0001	10005	Project Manager
18	E0012	10008	Project Manager

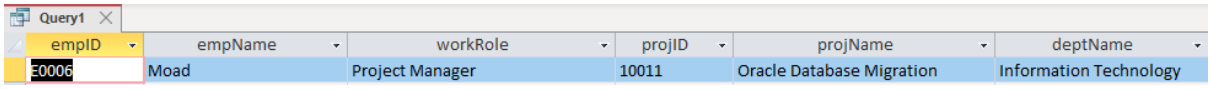
5. By using Query By Example (QBE), retrieve the records based on the following criteria;

   i. Get a employee id, name, role who work in project code as '*10011' and project name as 'Oracle Database Migration*' and the employees is from '*Information Technology (IT)*' department.

Answer

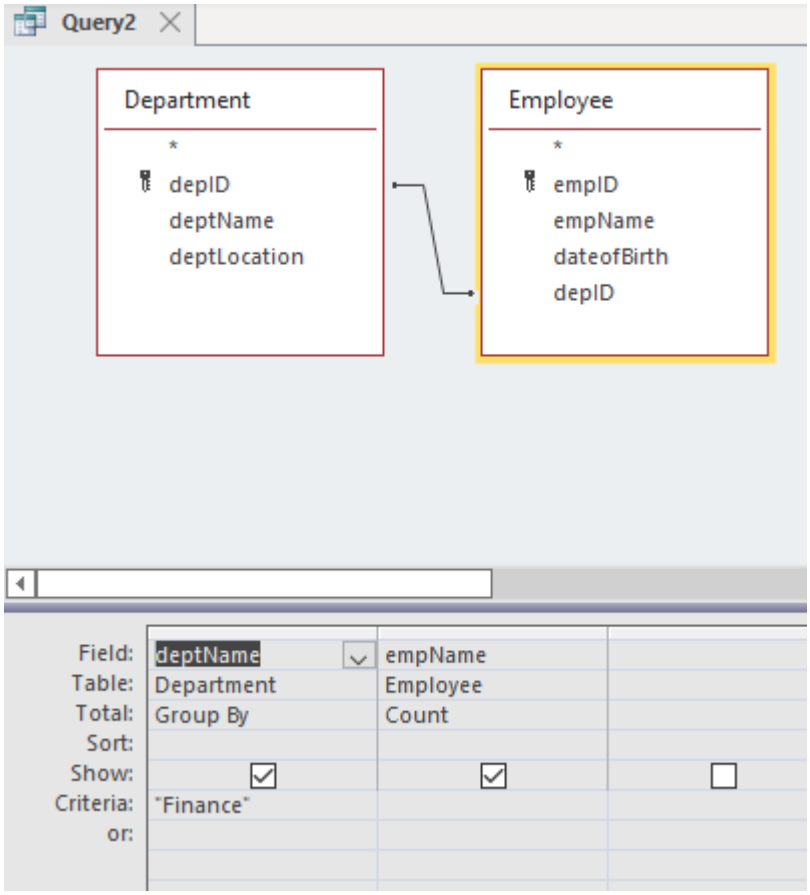


output

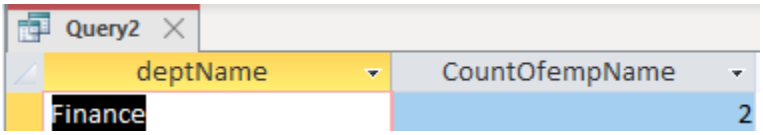


ii. List number of of employees who worked in ‘Finance’ department.

Answer

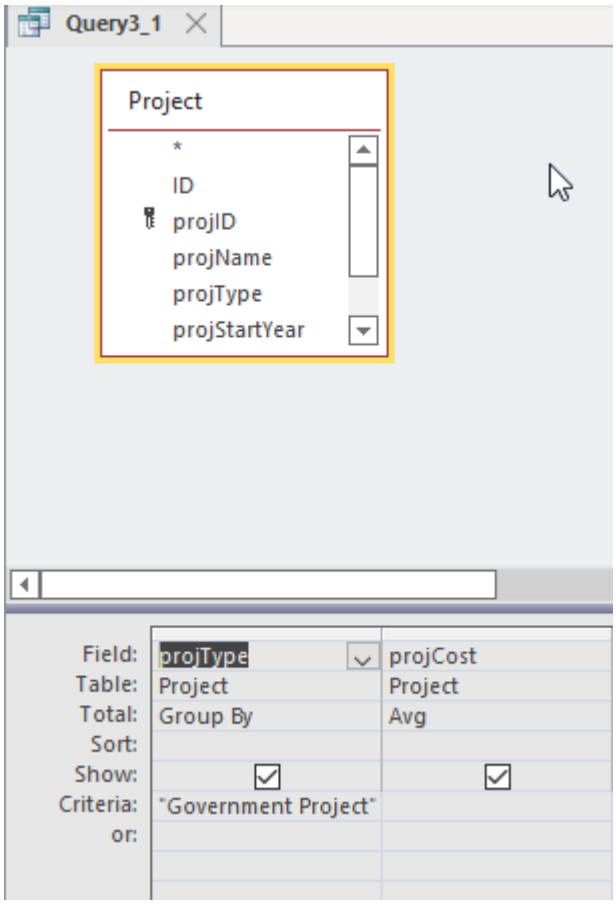


output

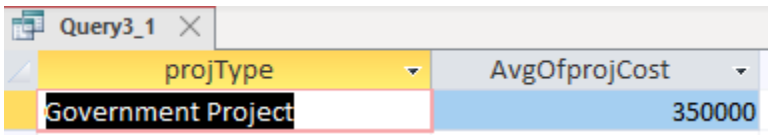


iii. Retrieve project type and average cost of the project that have project type as ‘Government Project’.

Answer

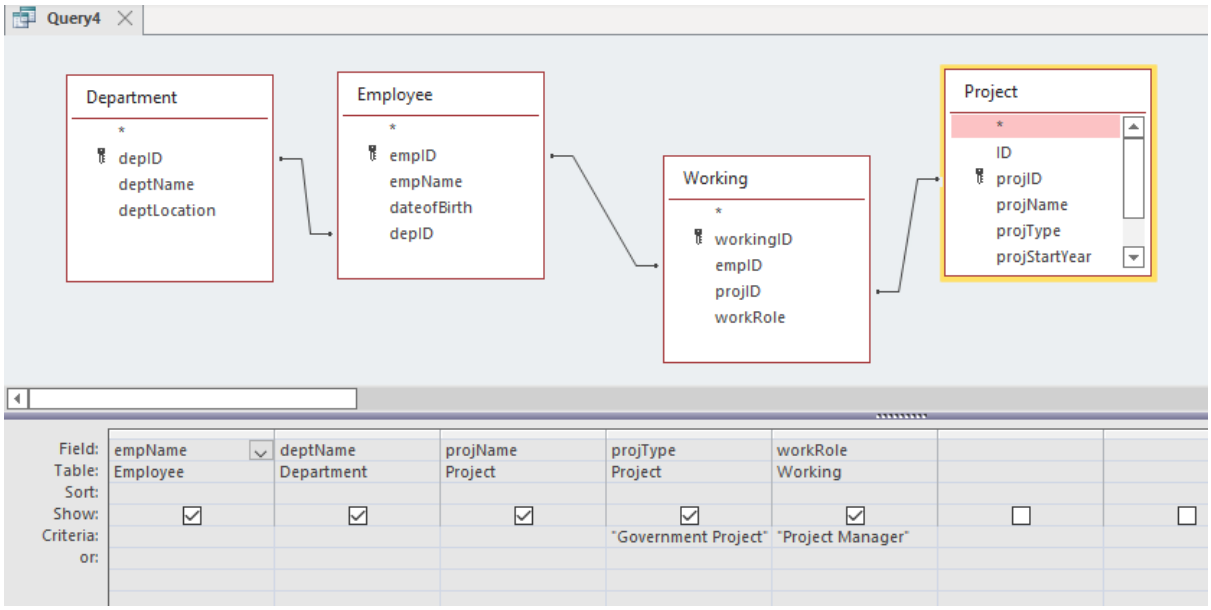


output

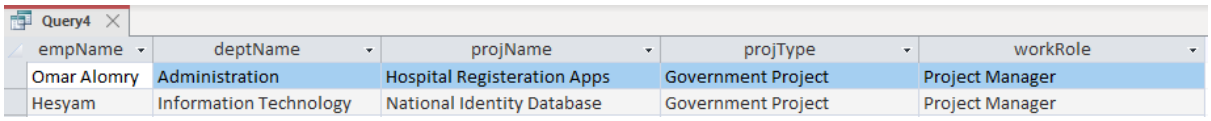


iv. List employee name, their department name, project name for those who involve in project type as '*Government Project*' and their role as *'Project Manager'*.

Answer

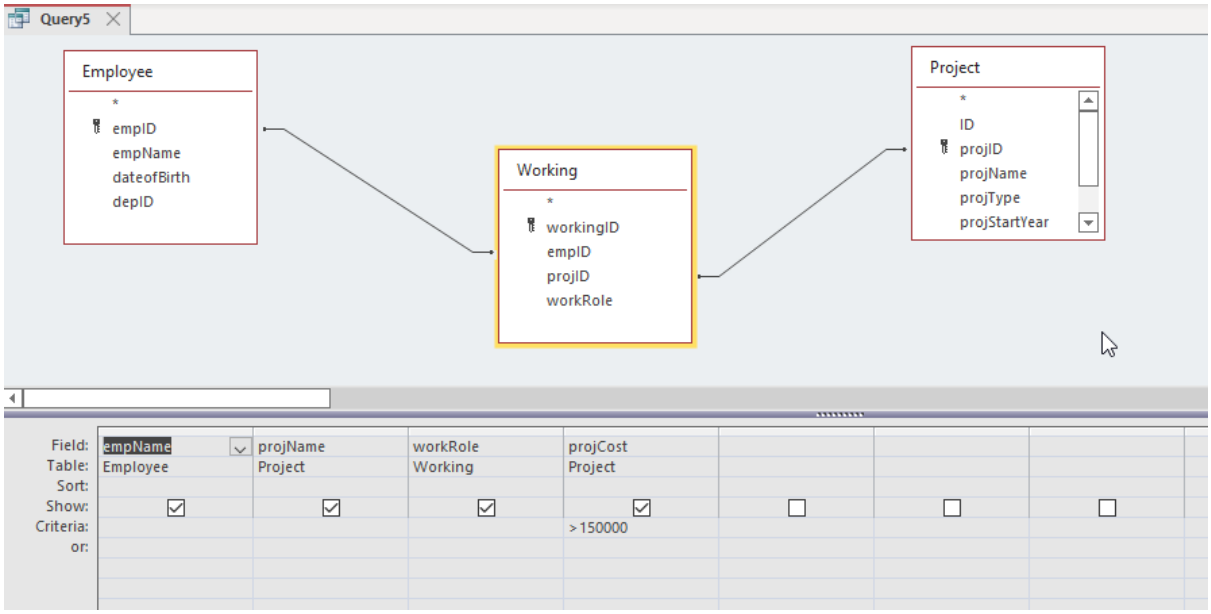


output



empName	deptName	projName	projType	workRole
Omar Alomry	Administration	Hospital Registeration Apps	Government Project	Project Manager
Hesyam	Information Technology	National Identity Database	Government Project	Project Manager

v. Retrieve employee name, project name and their role for project cost is greater than RM150K.



Query5

empName	projName	workRole	projCost
Shahdad	Hospital Registeration Apps	Recruitment and Hiring	500000
Hazim	Hospital Registeration Apps	Operations Manager	500000
Omar Alomry	Hospital Registeration Apps	Project Manager	500000
MD Akash Ali	Project MCDonald	Accountant	265000
Moad	Project MCDonald	Technical support	265000
Mohemmed Al	Project MCDonald	Project Manager	265000
Ali Omar	National Identity Database	Risk Manager	200000
Gary Lim	National Identity Database	Assistant Manager	200000
Hesyam	National Identity Database	Project Manager	200000
MD Akash Ali	Oracle Database Migration	Accountant	160000
Moad	Oracle Database Migration	Project Manager	160000
Omar Alomry	Oracle Database Migration	Administrative Assistant	160000