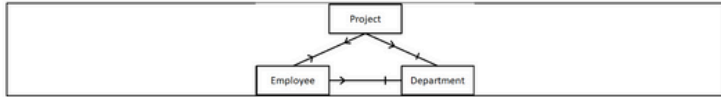


Question 5: [PHP and MySQL]

[34 marks] At a company, each employee belongs to one department and can participate simultaneously in multiple projects. Each department can work on multiple projects simultaneously. We will create a MySQL database for this company. The information we collect is as follows:

- for each employee, an identification number, name, address and birth date
- for each department, the department identification number and name
- for each project, the project identification number, name and start date

a) [3 marks] Draw the entity relationship diagram for the database.



b) [3 marks] Using **PHP**, open a connection, create a database named “company” and select it.

```
$link = mysqli_connect("localhost", "root", "");
mysqli_query($link, "CREATE DATABASE company");
mysqli_select_db($link, "company");
```

c) [8 marks] Using **MySQL console**, create the tables required to build the database.

```
CREATE TABLE employee (employee_ID int(4) NOT NULL, employee_name VARCHAR(40),
employee_address VARCHAR(100), employee_dob date, employee_deptID int(4), PRIMARY
KEY(employee_ID))

CREATE TABLE department (department_ID int(4) NOT NULL, department_name
VARCHAR(40), PRIMARY KEY(department_ID))

CREATE TABLE project (project_ID int(4) NOT NULL, project_name VARCHAR(40),
project_startDate date, project_deptID int(4), PRIMARY KEY(project_ID))

CREATE TABLE empProj (empProj_empID int(4) NOT NULL, empProj_projID int(4) NOT
NULL, PRIMARY KEY(empProj_empID, empProj_projID))
```

d) [2 marks] Using **PHP**, record the “construction” department giving it the ID 1.

```
mysqli_query($link, "INSERT INTO department (department_ID, department_name)
VALUES (1, 'construction')");
```

e) [4 marks] There are two current projects under the “construction” department. These are

- “building” with ID 1 and start date ‘2022-12-12’
- “bridge” with ID 2 and start date ‘2023-1-1’

Using **MySQL console**, create these records.

```
INSERT INTO project (project_ID, project_name, project_startDate, project_deptID)
VALUES (1, 'building', date('2022-12-12'), 1)
INSERT INTO project (project_ID, project_name, project_startDate, project_deptID)
VALUES (2, 'bridge', date('2023-1-1'), 1)
```

f) [10 marks] There are two employees working with the “construction” department. These are

- “Ahmed” with ID 1, date of birth ‘2000-12-12’ and living in “New Cairo”. He is associated with the “building” project.
- “Magdy” with ID 2, date of birth ‘1999-1-14’ and living in “Nasr City”. He is associated with the “building” and “bridge” projects.

Using **PHP**, create these records.

```
mysqli_query($link, "INSERT INTO employee (employee_ID, employee_name,
employee_address, employee_dob, employee_deptID) VALUES (1, 'Ahmed', 'New Cairo',
date('2000-12-12'), 1)");

mysqli_query($link, "INSERT INTO employee (employee_ID, employee_name,
employee_address, employee_dob, employee_deptID) VALUES (2, 'Magdy', 'Nasr City',
date('1999-1-14'), 1)");

mysqli_query($link, "INSERT INTO empProj (empProj_empID, empProj_projID) VALUES
(1, 1)");
mysqli_query($link, "INSERT INTO empProj (empProj_empID, empProj_projID) VALUES
(2, 1)");
mysqli_query($link, "INSERT INTO empProj (empProj_empID, empProj_projID) VALUES
(2, 2)");
```

g) [4 marks] Using **PHP**, list the names of employees associated with the “building” project.

```
$info = mysqli_query($link, "
SELECT employee_name FROM employee, project, empProj WHERE project_name=
'building' AND empProj_empID = employee_ID AND empProj_projID = project_ID");

while($row = mysqli_fetch_array($info, MYSQLI_ASSOC))
    echo $row['employee_name']."<br>";
```

Question 4 [PHP and MySQL]:

[25 marks] Using your mobile phone, you take a lot of photos. Now, you have thousands of them stored. Many persons may appear in one photo and a person may appear in many photos. It takes a lot of time to find a photo for someone, at some location or on some day. You thought about creating a MySQL database that will help you find what you look for instantly.

a) [3 points] Draw the ER diagram for this database.

Answers to Question 4 a):



b) [1 mark] Create the database using **MySQL Console**.

Answers to Question 4 b):

```
CREATE DATABASE photos;
```

c) [8 marks] In a **PHP** file, set the current database, create the tables and set the primary keys.

Answers to Question 4 c):

```
$link = mysqli_connect("localhost", "root", "");
mysqli_select_db($link, "photos");

mysqli_query($link, "CREATE TABLE person (personID int(4) NOT NULL, personName
VARCHAR(20), PRIMARY KEY(personID))");

mysqli_query($link, "CREATE TABLE photo (photoID int(4) NOT NULL, location VARCHAR(20),
date DATE, PRIMARY KEY(photoID))");

mysqli_query($link, "CREATE TABLE person_photo (peID int(4), phID int(4), PRIMARY
KEY(peID, phID))");
```

d) [7 marks] Through **PHP**, insert the following information in the database for photo number 1.

- People in photo: Ahmed (ID = 1), Ramy (ID = 2), Sara (ID = 3)
- Location: GUC
- Date: May 26, 2016

Answers to Question 4 d):

```
mysqli_query($link, "INSERT INTO person (personID, personName) VALUES (1, 'Ahmed')");
mysqli_query($link, "INSERT INTO person (personID, personName) VALUES (2, 'Ramy')");
mysqli_query($link, "INSERT INTO person (personID, personName) VALUES (3, 'Sara')");

mysqli_query($link, "INSERT INTO photo (photoID, location, date) VALUES (1, 'GUC',
'2016-05-26')");

mysqli_query($link, "INSERT INTO person_photo (peID, phID) VALUES (1,1)");
mysqli_query($link, "INSERT INTO person_photo (peID, phID) VALUES (2,1)");
mysqli_query($link, "INSERT INTO person_photo (peID, phID) VALUES (3,1)");
```

e) [2 marks] Develop a MySQL query using **MySQL Console** to list the locations of all photos taken on May 26, 2016.

Answers to Question 4 e):

```
SELECT location FROM photo WHERE date="2016-05-26";
```

f) [4 marks] Develop a MySQL query using **PHP** to list all the locations where Ahmed appears.

Answers to Question 4 f):

```
$info=mysqli_query($link, "SELECT location FROM person, photo, person_photo WHERE
personName='Ahmed' and personID=peID and photoID=phID");

while($row = mysqli_fetch_array($info))
    echo $row['location']."<br>";
```

MYSQL/PHP 1. Connect to MySQL

```
```php
$link = mysqli_connect("host", "username", "password");
```

### 2. Close Connection

```
php
mysqli_close($link);
```

### 3. Execute a Query

```
php
mysqli_query($link, "SQL_COMMAND_HERE");
```

### 4. Create Database

```
php
mysqli_query($link, "CREATE DATABASE dbname;");
```

### 5. Select Database

```
php
mysqli_select_db($link, "dbname");
```

### 6. Create Table

```
php
mysqli_query($link, "
CREATE TABLE table_name (
 column1 datatype,
 column2 datatype,);");
```

### 7. Insert Data

```
php
mysqli_query($link, "
INSERT INTO table_name
VALUES ('value1', 'value2', ...);");
```

### 8. Get Data (SELECT)

```
php
$info = mysqli_query($link, "
SELECT column1, column2
FROM table_name
WHERE condition
ORDER BY column;");
```

### 9. Fetch Results

```
php
while($record = mysqli_fetch_array($info)) {
 echo $record['column1'] . " " . $record['column2'];
}
```

### 10. Update Data

```
php
mysqli_query($link, "
UPDATE table_name
SET column = 'new_value'
WHERE column = 'old_value';");
```

### 11. Delete Data

```
php
mysqli_query($link, "
DELETE FROM table_name
WHERE column = 'value';");
```

### 12. From HTML Form to PHP to MySQL

```
html
<form action="script.php" method="post">
 <input type="text" name="username">
 <input type="submit">
</form>
...
```
```

```
```php
$name = $_POST["username"];
mysqli_query($link, "
INSERT INTO users VALUES ('$name');");
```

## 7. Functions

### Declaration

```
php
function greet($name) {
 return "Hello, $name!";
}
echo greet("Kitten");
```

### 8. Arrays

#### Indexed Array

```
```php
$colors = array("red", "green", "blue");
...

```

Associative Array

```
```php
$person = array("name" => "Kitten", "age" => 21);
...

```

#### foreach Loop

```
```php
foreach ($colors as $color) {
    echo $color;
}

```

```
foreach ($person as $key => $value) {
    echo "$key: $value";
}
...

```

9. File Handling

Open File

```
```php
$file = fopen("data.txt", "r");
...

```

#### Read File

```
```php
$content = fread($file, filesize("data.txt"));
...

```

Close File