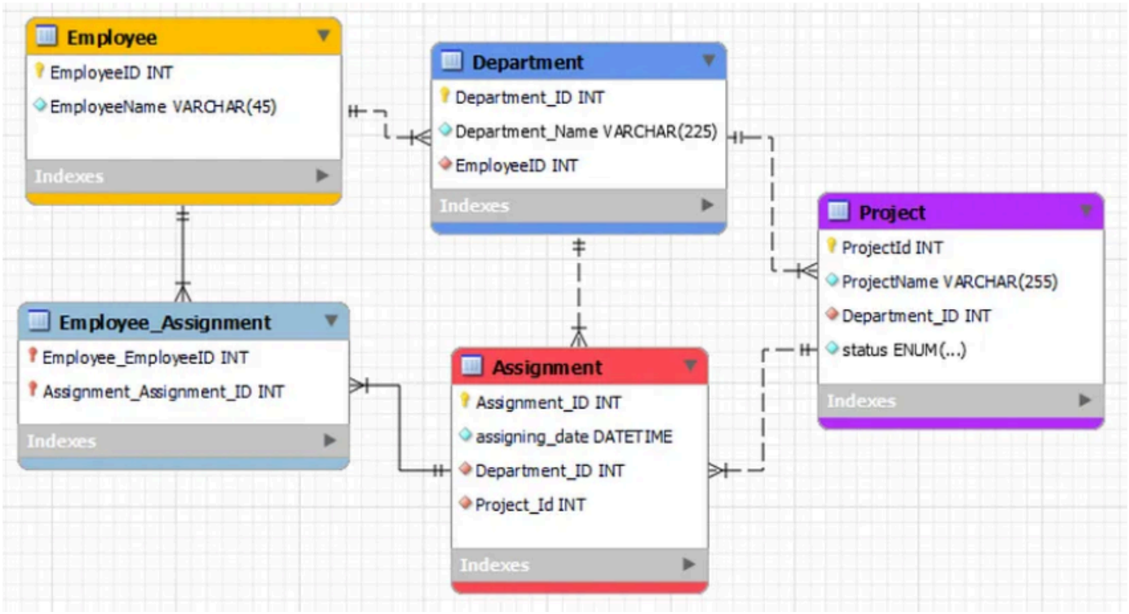
Submission form: https://forms.gle/VpZCYoGBgg45XGZ46

Question 1: (9 marks)

Using the following table descriptions and relationships, Build an Entity-Relationship (ER) diagram that correctly represents the given schema.



Tables and Columns:

- **Employee:**
    - `EmployeeID` (INT): Unique identifier for each employee.
    - `EmployeeName` (VARCHAR(45)): Name of the employee.
- **Department:**
    - `Department_ID` (INT): Unique identifier for each department.
    - `Department_Name` (VARCHAR(225)): Name of the department.
    - `EmployeeID` (INT): Foreign key referencing `EmployeeID` in the `Employee` table.
- **Project:**
    - `ProjectId` (INT): Unique identifier for each project.
    - `ProjectName` (VARCHAR(255)): Name of the project.
    - `Department_ID` (INT): Foreign key referencing `Department_ID` in the `Department` table.

    - `status` (ENUM): Status of the project (`active`, `inactive`).
- **Assignment:**
    - `Assignment_ID` (INT): Unique identifier for each assignment.
    - `assigning_date` (DATETIME): Date and time when the assignment was made.
    - `Department_ID` (INT): Foreign key referencing `Department_ID` in the `Department` table.
    - `Project_Id` (INT): Foreign key referencing `ProjectId` in the `Project` table.
- **Employee_Assignment:**
    - `Employee_EmployeeID` (INT): Foreign key referencing `EmployeeID` in the `Employee` table.
    - `Assignment_Assignment_ID` (INT): Foreign key referencing `Assignment_ID` in the `Assignment` table.

Relationships:

- An employee can belong to multiple departments.
- A department can have multiple projects.
- An assignment is linked to a specific department and project.
- Employees can be assigned to multiple assignments, and an assignment can have multiple employees.

Answer the following questions

1. Insert a new employee named "Alice Johnson" with an `EmployeeID` of 3. Write the SQL command to insert this new employee.
2. Insert a new assignment with `Assignment_ID` of 3, assigning date '2024-07-23', for the 'HR' department and the 'Project Alpha' project. Write the SQL command to insert this new assignment.
3. Add a new column `Email` of type `VARCHAR(100)` to the `Employee` table. Write the SQL command to alter the `Employee` table.
4. Change the data type of the `Department_Name` column in the `Department` table from `VARCHAR(225) to VARCHAR(255)`. Write the SQL command to alter the `Department` table.
5. Increase the salary of all employees who work in the 'IT' department by 10%. Assume there is a `salary` column in the `Employee` table. Write the SQL command to perform this update.

Dataset for below questions (11 marks)

```sql
CREATE TABLE employees (
    id INT AUTO_INCREMENT PRIMARY KEY,
    name VARCHAR(50),
    department VARCHAR(50),
    salary INT,
    hire_date DATE
);
```

```sql
INSERT INTO employees (name, department, salary, hire_date) VALUES
('Alice', 'Sales', 60000, '2019-06-15'),
('Bob', 'HR', 45000, '2021-03-12'),
('Charlie', 'Engineering', 72000, '2018-01-10'),
('David', 'Marketing', 50000, '2020-07-20'),
('Eve', 'Sales', 55000, '2018-09-30'),
('Frank', 'HR', 35000, '2020-02-25'),
('Grace', 'Design', 65000, '2017-11-05'),
('Hank', 'Engineering', 68000, '2020-08-22'),
('Ivy', 'Design', 70000, '2021-05-18'),
('Jack', 'Finance', 80000, '2016-12-01'),
('Kate', 'Sales', 50000, '2019-10-10'),
('Leo', 'IT', 75000, '2019-01-15'),
('Mia', 'Sales', 62000, '2022-01-01'),
('Nina', 'HR', 40000, '2023-06-10'),
('Oscar', 'Marketing', 58000, '2021-07-15'),
('Paul', 'Engineering', 90000, '2017-03-18'),
('Quinn', 'Design', 75000, '2019-04-25'),
('Rita', 'IT', 60000, '2021-10-20'),
('Sam', 'HR', 62000, '2022-11-30'),
('Tina', 'Finance', 42000, '2018-08-18');
```

Question 2: Given the following table `employees` with columns `id`, `name`, `department`, `salary`, and `hire_date`, write a query to retrieve all employees who are either in the 'Sales' department with a salary greater than 50000 or in the 'HR' department hired after January 1, 2020.

Question 3: What is the output of the following query?

```
SELECT name, salary
FROM employees
WHERE salary > 50000
AND (department = 'Sales' OR department = 'HR')
ORDER BY department DESC, salary ASC;
```

Question 4: Write a query to retrieve all employees with salaries between 40000 and 60000, excluding those in the 'Marketing' department, and order the result by `hire_date` descending and `salary` ascending.

Question 5: Write a query to find employees who are either not in the 'Finance' department or have a salary less than 30000, and then order the results first by `department` in ascending order and then by `name` in descending order.

Question 6: Write a query to retrieve employees whose name starts with 'A', have been hired after January 1, 2015, and order the results by their name in ascending order.

Question 7: Write a query to find employees who are in either the 'Engineering' department with a salary less than 70000 or the 'Design' department with a salary greater than 60000, and order the results by salary descending.

Question 8: What will be the result of the following query if the `employees` table has columns `name`, `salary`, and `hire_date`?

Question 9: Given the following table `projects` with columns `project_id`, `project_name`, `start_date`, and `end_date`, write a query to retrieve all projects that started before January 1, 2022, or ended after December 31, 2022, and order the result by `project_name` in descending order.

Question 10: Write a query to find employees with a `name` ending with 'son', not in the 'IT' department, and order the results first by `salary` in descending order and then by `hire_date` in ascending order.

Question 11: Write a query to retrieve employees who were hired in the year 2021 and have a salary greater than the average salary of all employees, and order the results by `name` in ascending order.

END