Coding Challenge 2: CareerHub, The Job Board

Provide a SQL script that initializes the database for the Job Board scenario "CareerHub"

```
mysql> CREATE DATABASE CareerHub;
Query OK, 1 row affected (0.01 sec)

mysql> show databases;
+--------------------------+
| Database                 |
+--------------------------+
| bookingsystem            |
| careerhub                |
| couriermanagementsystem  |
| hmbank                   |
| information_schema       |
| mysql                    |
| performance_schema       |
| petpals                  |
| sakila                   |
| sisdb                    |
| subquery                 |
| sys                      |
| techshop                 |
| ticketbookingsystem      |
| world                    |
+--------------------------+
15 rows in set (0.00 sec)

mysql> use CareerHub;
Database changed
mysql>
```

Create tables for Companies, Jobs, Applicants and Applications. Define appropriate primary keys, foreign keys, and constraints.

```
mysql> CREATE TABLE Companies (
    ->     CompanyId INT PRIMARY KEY,
    ->     CompanyName VARCHAR(255),
    ->     Location VARCHAR(255)
    -> );
Query OK, 0 rows affected (0.03 sec)

mysql> desc Companies;
+-------------+--------------+------+-----+---------+-------+
| Field       | Type         | Null | Key | Default | Extra |
+-------------+--------------+------+-----+---------+-------+
| CompanyId   | int          | NO   | PRI | NULL    |       |
| CompanyName | varchar(255) | YES  |     | NULL    |       |
| Location    | varchar(255) | YES  |     | NULL    |       |
+-------------+--------------+------+-----+---------+-------+
3 rows in set (0.01 sec)

mysql>
```

```
mysql> CREATE TABLE Jobs (
    ->     JobId INT PRIMARY KEY,
    ->     CompanyId INT,
    ->     JobTitle VARCHAR(255),
    ->     JobDescription TEXT,
    ->     JobLocation VARCHAR(255),
    ->     Salary DECIMAL(10, 2),
    ->     JobType VARCHAR(50),
    ->     PostedDate DATETIME,
    ->     FOREIGN KEY (CompanyId) REFERENCES Companies(CompanyId)
    -> );
Query OK, 0 rows affected (0.04 sec)

mysql> desc Jobs;
+---------------+--------------+------+-----+---------+-------+
| Field         | Type         | Null | Key | Default | Extra |
+---------------+--------------+------+-----+---------+-------+
| JobId         | int          | NO   | PRI | NULL    |       |
| CompanyId     | int          | YES  | MUL | NULL    |       |
| JobTitle      | varchar(255) | YES  |     | NULL    |       |
| JobDescription | text        | YES  |     | NULL    |       |
| JobLocation   | varchar(255) | YES  |     | NULL    |       |
| Salary        | decimal(10,2) | YES |     | NULL    |       |
| JobType       | varchar(50)  | YES  |     | NULL    |       |
| PostedDate    | datetime     | YES  |     | NULL    |       |
+---------------+--------------+------+-----+---------+-------+
8 rows in set (0.00 sec)

mysql>
```

```
mysql> CREATE TABLE Applicants (
    ->     ApplicantId INT PRIMARY KEY,
    ->     FirstName VARCHAR(50),
    ->     LastName VARCHAR(50),
    ->     Email VARCHAR(255),
    ->     Phone VARCHAR(20),
    ->     Resume TEXT
    -> );
Query OK, 0 rows affected (0.02 sec)

mysql> desc Applicants;
+-------------+--------------+------+-----+---------+-------+
| Field       | Type         | Null | Key | Default | Extra |
+-------------+--------------+------+-----+---------+-------+
| ApplicantId | int          | NO   | PRI | NULL    |       |
| FirstName   | varchar(50)  | YES  |     | NULL    |       |
| LastName    | varchar(50)  | YES  |     | NULL    |       |
| Email       | varchar(255) | YES  |     | NULL    |       |
| Phone       | varchar(20)  | YES  |     | NULL    |       |
| Resume      | text         | YES  |     | NULL    |       |
+-------------+--------------+------+-----+---------+-------+
6 rows in set (0.00 sec)

mysql>
```

```
mysql> CREATE TABLE Applications (
    ->     ApplicationId INT PRIMARY KEY,
    ->     JobId INT,
    ->     ApplicantId INT,
    ->     ApplicationDate DATETIME,
    ->     CoverLetter TEXT,
    ->     FOREIGN KEY (JobId) REFERENCES Jobs(JobId),
    ->     FOREIGN KEY (ApplicantId) REFERENCES Applicants(ApplicantId)
    -> );
Query OK, 0 rows affected (0.15 sec)

mysql> desc Applicants;
+-------------+--------------+------+-----+---------+-------+
| Field       | Type         | Null | Key | Default | Extra |
+-------------+--------------+------+-----+---------+-------+
| ApplicantId | int          | NO   | PRI | NULL    |       |
| FirstName   | varchar(50)  | YES  |     | NULL    |       |
| LastName    | varchar(50)  | YES  |     | NULL    |       |
| Email       | varchar(255) | YES  |     | NULL    |       |
| Phone       | varchar(20)  | YES  |     | NULL    |       |
| Resume      | text         | YES  |     | NULL    |       |
+-------------+--------------+------+-----+---------+-------+
6 rows in set (0.00 sec)

mysql>
```

Insert 10 sample values in each of the above table

```
mysql> INSERT INTO Companies (CompanyId, CompanyName, Location)
    -> VALUES
    -> (1, 'CompanyA', 'LocationA'),
    -> (2, 'CompanyB', 'LocationB'),
    -> (3, 'CompanyC', 'LocationC'),
    -> (4, 'CompanyD', 'LocationD'),
    -> (5, 'CompanyE', 'LocationE'),
    -> (6, 'CompanyF', 'LocationF'),
    -> (7, 'CompanyG', 'LocationG'),
    -> (8, 'CompanyH', 'LocationH'),
    -> (9, 'CompanyI', 'LocationI'),
    -> (10, 'CompanyJ', 'LocationJ');
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> select * from Companies;
+-----------+-------------+-----------+
| CompanyId | CompanyName | Location  |
+-----------+-------------+-----------+
|         1 | CompanyA    | LocationA |
|         2 | CompanyB    | LocationB |
|         3 | CompanyC    | LocationC |
|         4 | CompanyD    | LocationD |
|         5 | CompanyE    | LocationE |
|         6 | CompanyF    | LocationF |
|         7 | CompanyG    | LocationG |
|         8 | CompanyH    | LocationH |
|         9 | CompanyI    | LocationI |
|        10 | CompanyJ    | LocationJ |
+-----------+-------------+-----------+
10 rows in set (0.00 sec)

mysql>
```

```
mysql> INSERT INTO Jobs (JobId, CompanyId, JobTitle, JobDescription, JobLocation, Salary, JobType, PostedDate)
    -> VALUES
    -> (1, 1, 'Software Developer', 'Design and implement software solutions.', 'CityA', 90000.00, 'Full-time', '2023-01-15 08:30:00'),
    -> (2, 2, 'Data Scientist', 'Analyze and model complex datasets.', 'CityB', 95000.00, 'Full-time', '2023-01-16 09:45:00'),
    -> (3, 3, 'Marketing Coordinator', 'Execute marketing campaigns and initiatives.', 'CityC', 70000.00, 'Part-time', '2023-01-17 11:00:00'),
    -> (4, 4, 'Project Manager', 'Oversee project development and delivery.', 'CityD', 110000.00, 'Full-time', '2023-01-18 12:15:00'),
    -> (5, 5, 'Financial Analyst', 'Conduct financial planning and analysis.', 'CityE', 85000.00, 'Contract', '2023-01-19 13:30:00'),
    -> (6, 6, 'Graphic Designer', 'Create visual content for marketing materials.', 'CityF', 75000.00, 'Full-time', '2023-01-20 14:45:00'),
    -> (7, 7, 'Customer Support Specialist', 'Assist customers with product inquiries.', 'CityG', 55000.00, 'Part-time', '2023-01-21 16:00:00'),
    -> (8, 8, 'Human Resources Coordinator', 'Support HR processes and employee relations.', 'CityH', 68000.00, 'Full-time', '2023-01-22 17:15:00'),
    -> (9, 9, 'Sales Representative', 'Promote and sell company products.', 'CityI', 80000.00, 'Full-time', '2023-01-23 18:30:00'),
    -> (10, 10, 'IT Support Specialist', 'Provide technical support to end-users.', 'CityJ', 70000.00, 'Contract', '2023-01-24 19:45:00');
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> select * from Jobs;
+-------+-----------+--------------------------+-----------------------------------------+-------------+-----------+-----------+---------------------+
| JobId | CompanyId | JobTitle                 | JobDescription                          | JobLocation | Salary    | JobType   | PostedDate          |
+-------+-----------+--------------------------+-----------------------------------------+-------------+-----------+-----------+---------------------+
|     1 |         1 | Software Developer       | Design and implement software solutions.| CityA       |  90000.00 | Full-time | 2023-01-15 08:30:00 |
|     2 |         2 | Data Scientist           | Analyze and model complex datasets.     | CityB       |  95000.00 | Full-time | 2023-01-16 09:45:00 |
|     3 |         3 | Marketing Coordinator    | Execute marketing campaigns and initiatives. | CityC  |  70000.00 | Part-time | 2023-01-17 11:00:00 |
|     4 |         4 | Project Manager          | Oversee project development and delivery.| CityD       | 110000.00 | Full-time | 2023-01-18 12:15:00 |
|     5 |         5 | Financial Analyst        | Conduct financial planning and analysis.| CityE       |  85000.00 | Contract  | 2023-01-19 13:30:00 |
|     6 |         6 | Graphic Designer         | Create visual content for marketing materials. | CityF |  75000.00 | Full-time | 2023-01-20 14:45:00 |
|     7 |         7 | Customer Support Specialist | Assist customers with product inquiries. | CityG |  55000.00 | Part-time | 2023-01-21 16:00:00 |
|     8 |         8 | Human Resources Coordinator | Support HR processes and employee relations. | CityH |  68000.00 | Full-time | 2023-01-22 17:15:00 |
|     9 |         9 | Sales Representative     | Promote and sell company products.      | CityI       |  80000.00 | Full-time | 2023-01-23 18:30:00 |
|    10 |        10 | IT Support Specialist    | Provide technical support to end-users. | CityJ       |  70000.00 | Contract  | 2023-01-24 19:45:00 |
+-------+-----------+--------------------------+-----------------------------------------+-------------+-----------+-----------+---------------------+
10 rows in set (0.00 sec)

mysql>
```

```
mysql> ^C
mysql> INSERT INTO Applicants (ApplicantId, FirstName, LastName, Email, Phone, Resume)
    -> VALUES
    -> (1, 'John', 'Doe', 'john.doe@email.com', '555-1234', 'Link_to_John_Doe_Resume.pdf'),
    -> (2, 'Jane', 'Smith', 'jane.smith@email.com', '555-5678', 'Link_to_Jane_Smith_Resume.pdf'),
    -> (3, 'Michael', 'Johnson', 'michael.johnson@email.com', '555-9876', 'Link_to_Michael_Johnson_Resume.pdf'),
    -> (4, 'Emily', 'Williams', 'emily.williams@email.com', '555-4321', 'Link_to_Emily_Williams_Resume.pdf'),
    -> (5, 'Daniel', 'Brown', 'daniel.brown@email.com', '555-8765', 'Link_to_Daniel_Brown_Resume.pdf'),
    -> (6, 'Olivia', 'Jones', 'olivia.jones@email.com', '555-2345', 'Link_to_Olivia_Jones_Resume.pdf'),
    -> (7, 'William', 'Davis', 'william.davis@email.com', '555-7654', 'Link_to_William_Davis_Resume.pdf'),
    -> (8, 'Sophia', 'Martinez', 'sophia.martinez@email.com', '555-3456', 'Link_to_Sophia_Martinez_Resume.pdf'),
    -> (9, 'Alexander', 'Garcia', 'alexander.garcia@email.com', '555-6543', 'Link_to_Alexander_Garcia_Resume.pdf'),
    -> (10, 'Emma', 'Rodriguez', 'emma.rodriguez@email.com', '555-8765', 'Link_to_Emma_Rodriguez_Resume.pdf');
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> select * from Applicants;
+-------------+-----------+-----------+----------------------------+----------+-------------------------------------+
| ApplicantId | FirstName | LastName  | Email                      | Phone    | Resume                              |
+-------------+-----------+-----------+----------------------------+----------+-------------------------------------+
|           1 | John      | Doe       | john.doe@email.com         | 555-1234 | Link_to_John_Doe_Resume.pdf         |
|           2 | Jane      | Smith     | jane.smith@email.com       | 555-5678 | Link_to_Jane_Smith_Resume.pdf       |
|           3 | Michael   | Johnson   | michael.johnson@email.com  | 555-9876 | Link_to_Michael_Johnson_Resume.pdf  |
|           4 | Emily     | Williams  | emily.williams@email.com   | 555-4321 | Link_to_Emily_Williams_Resume.pdf   |
|           5 | Daniel    | Brown     | daniel.brown@email.com     | 555-8765 | Link_to_Daniel_Brown_Resume.pdf     |
|           6 | Olivia    | Jones     | olivia.jones@email.com     | 555-2345 | Link_to_Olivia_Jones_Resume.pdf     |
|           7 | William   | Davis     | william.davis@email.com    | 555-7654 | Link_to_William_Davis_Resume.pdf    |
|           8 | Sophia    | Martinez  | sophia.martinez@email.com  | 555-3456 | Link_to_Sophia_Martinez_Resume.pdf  |
|           9 | Alexander | Garcia    | alexander.garcia@email.com | 555-6543 | Link_to_Alexander_Garcia_Resume.pdf |
|          10 | Emma      | Rodriguez | emma.rodriguez@email.com   | 555-8765 | Link_to_Emma_Rodriguez_Resume.pdf   |
+-------------+-----------+-----------+----------------------------+----------+-------------------------------------+
10 rows in set (0.00 sec)

mysql>
```

```
mysql> INSERT INTO Applications (ApplicationId, JobId, ApplicantId, ApplicationDate, CoverLetter)
    -> VALUES
    -> (1, 1, 1, '2023-02-01 09:15:00', 'I am excited about the Software Developer position and believe my skills align well with the requirements.'),
    -> (2, 2, 2, '2023-02-02 10:30:00', 'I am interested in the Data Scientist role and have experience in analyzing complex datasets.'),
    -> (3, 3, 3, '2023-02-03 11:45:00', 'I am applying for the Marketing Coordinator position and have successfully executed marketing campaigns in the past.'),
    -> (4, 4, 4, '2023-02-04 12:00:00', 'I am enthusiastic about the Project Manager role and have a strong track record in overseeing project development.'),
    -> (5, 5, 5, '2023-02-05 13:15:00', 'I am applying for the Financial Analyst position and possess strong analytical and planning skills.'),
    -> (6, 6, 6, '2023-02-06 14:30:00', 'I am interested in the Graphic Designer position and have a portfolio showcasing my visual design skills.'),
    -> (7, 7, 7, '2023-02-07 15:45:00', 'I am applying for the Customer Support Specialist role and have experience in assisting customers with product inquiries.'),
    -> (8, 8, 8, '2023-02-08 17:00:00', 'I am excited about the Human Resources Coordinator position and have supported various HR processes.'),
    -> (9, 9, 9, '2023-02-09 18:15:00', 'I am applying for the Sales Representative role and have a successful history of promoting and selling products.'),
    -> (10, 10, 10, '2023-02-10 19:30:00', 'I am interested in the IT Support Specialist position and have provided technical support to end-users in my previous role.');
Query OK, 10 rows affected (0.07 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> select * from Applications;
+---------------+-------+-------------+---------------------+-----------------------------------------------------------------------------------------------------------------------------+
| ApplicationId | JobId | ApplicantId | ApplicationDate     | CoverLetter                                                                                                                 |
                                      |
+---------------+-------+-------------+---------------------+-----------------------------------------------------------------------------------------------------------------------------+
|             1 |     1 |           1 | 2023-02-01 09:15:00 | I am excited about the Software Developer position and believe my skills align well with the requirements.                  |
|             2 |     2 |           2 | 2023-02-02 10:30:00 | I am interested in the Data Scientist role and have experience in analyzing complex datasets.                               |
|             3 |     3 |           3 | 2023-02-03 11:45:00 | I am applying for the Marketing Coordinator position and have successfully executed marketing campaigns in the past.        |
|             4 |     4 |           4 | 2023-02-04 12:00:00 | I am enthusiastic about the Project Manager role and have a strong track record in overseeing project development.          |
|             5 |     5 |           5 | 2023-02-05 13:15:00 | I am applying for the Financial Analyst position and possess strong analytical and planning skills.                         |
|             6 |     6 |           6 | 2023-02-06 14:30:00 | I am interested in the Graphic Designer position and have a portfolio showcasing my visual design skills.                   |
|             7 |     7 |           7 | 2023-02-07 15:45:00 | I am applying for the Customer Support Specialist role and have experience in assisting customers with product inquiries.   |
|             8 |     8 |           8 | 2023-02-08 17:00:00 | I am excited about the Human Resources Coordinator position and have supported various HR processes.                        |
|             9 |     9 |           9 | 2023-02-09 18:15:00 | I am applying for the Sales Representative role and have a successful history of promoting and selling products.            |
|            10 |    10 |          10 | 2023-02-10 19:30:00 | I am interested in the IT Support Specialist position and have provided technical support to end-users in my previous role. |
+---------------+-------+-------------+---------------------+-----------------------------------------------------------------------------------------------------------------------------+
10 rows in set (0.00 sec)

mysql>
```

Write sql query to count number of applications received for each job listing in jobs table. display job title and corresponding application count.

```
mysql> SELECT
    ->     J.JobId,
    ->     J.JobTitle,
    ->     COUNT(A.ApplicationId) AS ApplicationCount
    -> FROM
    ->     Jobs J
    -> LEFT JOIN
    ->     Applications A ON J.JobId = A.JobId
    -> GROUP BY
    ->     J.JobId, J.JobTitle;
+-------+-----------------------------+------------------+
| JobId | JobTitle                    | ApplicationCount |
+-------+-----------------------------+------------------+
|     1 | Software Developer          |                1 |
|     2 | Data Scientist              |                1 |
|     3 | Marketing Coordinator       |                1 |
|     4 | Project Manager             |                1 |
|     5 | Financial Analyst           |                1 |
|     6 | Graphic Designer            |                1 |
|     7 | Customer Support Specialist |                1 |
|     8 | Human Resources Coordinator |                1 |
|     9 | Sales Representative        |                1 |
|    10 | IT Support Specialist       |                1 |
+-------+-----------------------------+------------------+
10 rows in set (0.00 sec)

mysql>
```

Develop SQL query that retrieves job listings from jobs table within a specified salary range. Allow parameters for minimum and maximum salary values. Display job title, company name, location and salary for each matching job.

```
mysql> SELECT
    ->     J.JobTitle,
    ->     C.CompanyName,
    ->     J.JobLocation,
    ->     J.Salary
    -> FROM
    ->     Jobs J
    -> JOIN
    ->     Companies C ON J.CompanyId = C.CompanyId
    -> WHERE
    ->     J.Salary BETWEEN 40000.00 AND 90000.00;
+-----------------------------+-------------+-------------+----------+
| JobTitle                    | CompanyName | JobLocation | Salary   |
+-----------------------------+-------------+-------------+----------+
| Software Developer          | CompanyA    | CityA       | 90000.00 |
| Marketing Coordinator       | CompanyC    | CityC       | 70000.00 |
| Financial Analyst           | CompanyE    | CityE       | 85000.00 |
| Graphic Designer            | CompanyF    | CityF       | 75000.00 |
| Customer Support Specialist | CompanyG    | CityG       | 55000.00 |
| Human Resources Coordinator | CompanyH    | CityH       | 68000.00 |
| Sales Representative        | CompanyI    | CityI       | 80000.00 |
| IT Support Specialist       | CompanyJ    | CityJ       | 70000.00 |
+-----------------------------+-------------+-------------+----------+
8 rows in set (0.00 sec)

mysql>
```

Write sql query that retrieves job application history for a specific applicant. Allow parameter for ApplicantId and return a result set with job titles,company name and application dates for all jobs the applicant has applied to.

```
mysql> SELECT
    ->     J.JobTitle,
    ->     C.CompanyName,
    ->     A.ApplicationDate
    -> FROM
    ->     Applications A
    -> JOIN
    ->     Jobs J ON A.JobId = J.JobId
    -> JOIN
    ->     Companies C ON J.CompanyId = C.CompanyId
    -> WHERE
    ->     A.ApplicantId = 6
    -> ORDER BY
    ->     A.ApplicationDate DESC;
+------------------+-------------+---------------------+
| JobTitle         | CompanyName | ApplicationDate     |
+------------------+-------------+---------------------+
| Graphic Designer | CompanyF    | 2023-02-06 14:30:00 |
+------------------+-------------+---------------------+
1 row in set (0.00 sec)

mysql>
```

Create SQL query that calculates and displays average salary offered by all companies for job listings in Jobs table

```
mysql> SELECT
    ->     AVG(Salary) AS AverageSalary
    -> FROM
    ->     Jobs;
+---------------+
| AverageSalary |
+---------------+
|  79800.000000 |
+---------------+
1 row in set (0.00 sec)

mysql>
```

Write sql query to identify the company that has posted most job listings. Display company name along with count of job listings they have posted.

```
mysql> SELECT
    ->     C.CompanyName,
    ->     COUNT(J.JobId) AS JobCount
    -> FROM
    ->     Companies C
    -> JOIN
    ->     Jobs J ON C.CompanyId = J.CompanyId
    -> GROUP BY
    ->     C.CompanyId, C.CompanyName
    -> ORDER BY
    ->     JobCount DESC
    -> LIMIT 1;
+-------------+----------+
| CompanyName | JobCount |
+-------------+----------+
| CompanyA    |        1 |
+-------------+----------+
1 row in set (0.00 sec)

mysql>
```

Find applicants who have applied for positions in companies located in 'CityX' and have at least 3 years of experience

```
mysql> SELECT
    ->     A.ApplicantId,
    ->     A.FirstName,
    ->     A.LastName,
    ->     A.Email,
    ->     A.Phone,
    ->     A.Resume
    -> FROM
    ->     Applicants A
    -> JOIN
    ->     Applications AP ON A.ApplicantId = AP.ApplicantId
    -> JOIN
    ->     Jobs J ON AP.JobId = J.JobId
    -> JOIN
    ->     Companies C ON J.CompanyId = C.CompanyId
    -> WHERE
    ->     C.Location = 'CityF';
Empty set (0.00 sec)

mysql>
```

Retrieve list of distinct job titles with salaries between 60000 and 80000.

```
mysql> SELECT DISTINCT
    ->     JobTitle,
    ->     Salary
    -> FROM
    ->     Jobs
    -> WHERE
    ->     Salary BETWEEN 60000 AND 80000;
+----------------------------+----------+
| JobTitle                   | Salary   |
+----------------------------+----------+
| Marketing Coordinator      | 70000.00 |
| Graphic Designer           | 75000.00 |
| Human Resources Coordinator | 68000.00 |
| Sales Representative       | 80000.00 |
| IT Support Specialist      | 70000.00 |
+----------------------------+----------+
5 rows in set (0.00 sec)

mysql>
```

Find jobs that have not received any applications.

```
mysql> SELECT
    ->     J.JobId,
    ->     J.JobTitle,
    ->     J.JobDescription,
    ->     J.JobLocation,
    ->     J.Salary,
    ->     J.JobType,
    ->     J.PostedDate
    -> FROM
    ->     Jobs J
    -> LEFT JOIN
    ->     Applications A ON J.JobId = A.JobId
    -> WHERE
    ->     A.ApplicationId IS NULL;
Empty set (0.00 sec)

mysql>
```

Retrieve list of job applicants along with companies they have applied to and positions they have applied for.

```
mysql> SELECT
    ->     A.ApplicantId,
    ->     A.FirstName,
    ->     A.LastName,
    ->     A.Email,
    ->     A.Phone,
    ->     C.CompanyName,
    ->     J.JobTitle
    -> FROM
    ->     Applicants A
    -> JOIN
    ->     Applications AP ON A.ApplicantId = AP.ApplicantId
    -> JOIN
    ->     Jobs J ON AP.JobId = J.JobId
    -> JOIN
    ->     Companies C ON J.CompanyId = C.CompanyId;
+-------------+-----------+-----------+--------------------------+----------+-------------+----------------------------+
| ApplicantId | FirstName | LastName  | Email                    | Phone    | CompanyName | JobTitle                   |
+-------------+-----------+-----------+--------------------------+----------+-------------+----------------------------+
|           1 | John      | Doe       | john.doe@email.com       | 555-1234 | CompanyA    | Software Developer         |
|           2 | Jane      | Smith     | jane.smith@email.com     | 555-5678 | CompanyB    | Data Scientist             |
|           3 | Michael   | Johnson   | michael.johnson@email.com| 555-9876 | CompanyC    | Marketing Coordinator      |
|           4 | Emily     | Williams  | emily.williams@email.com | 555-4321 | CompanyD    | Project Manager            |
|           5 | Daniel    | Brown     | daniel.brown@email.com   | 555-8765 | CompanyE    | Financial Analyst          |
|           6 | Olivia    | Jones     | olivia.jones@email.com   | 555-2345 | CompanyF    | Graphic Designer           |
|           7 | William   | Davis     | william.davis@email.com  | 555-7654 | CompanyG    | Customer Support Specialist|
|           8 | Sophia    | Martinez  | sophia.martinez@email.com| 555-3456 | CompanyH    | Human Resources Coordinator|
|           9 | Alexander | Garcia    | alexander.garcia@email.com| 555-6543| CompanyI    | Sales Representative       |
|          10 | Emma      | Rodriguez | emma.rodriguez@email.com | 555-8765 | CompanyJ    | IT Support Specialist      |
+-------------+-----------+-----------+--------------------------+----------+-------------+----------------------------+
10 rows in set (0.00 sec)

mysql>
```

Retrieve list of companies along with count of jobs they have posted,even if they have not received any applications

```
mysql> SELECT
    ->     C.CompanyId,
    ->     C.CompanyName,
    ->     COUNT(J.JobId) AS PostedJobsCount
    -> FROM
    ->     Companies C
    -> LEFT JOIN
    ->     Jobs J ON C.CompanyId = J.CompanyId
    -> GROUP BY
    ->     C.CompanyId, C.CompanyName;
+-----------+-------------+-----------------+
| CompanyId | CompanyName | PostedJobsCount |
+-----------+-------------+-----------------+
|         1 | CompanyA    |               1 |
|         2 | CompanyB    |               1 |
|         3 | CompanyC    |               1 |
|         4 | CompanyD    |               1 |
|         5 | CompanyE    |               1 |
|         6 | CompanyF    |               1 |
|         7 | CompanyG    |               1 |
|         8 | CompanyH    |               1 |
|         9 | CompanyI    |               1 |
|        10 | CompanyJ    |               1 |
+-----------+-------------+-----------------+
10 rows in set (0.00 sec)

mysql>
```

List all applicants along with companies and positions they have applied for,including those who have not applied

```
mysql> SELECT
    ->     A.ApplicantId,
    ->     A.FirstName,
    ->     A.LastName,
    ->     A.Email,
    ->     A.Phone,
    ->     C.CompanyName,
    ->     J.JobTitle
    -> FROM
    ->     Applicants A
    -> LEFT JOIN
    ->     Applications AP ON A.ApplicantId = AP.ApplicantId
    -> LEFT JOIN
    ->     Jobs J ON AP.JobId = J.JobId
    -> LEFT JOIN
    ->     Companies C ON J.CompanyId = C.CompanyId;
+-------------+-----------+-----------+---------------------------+----------+-------------+---------------------------+
| ApplicantId | FirstName | LastName  | Email                     | Phone    | CompanyName | JobTitle                  |
+-------------+-----------+-----------+---------------------------+----------+-------------+---------------------------+
|           1 | John      | Doe       | john.doe@email.com        | 555-1234 | CompanyA    | Software Developer        |
|           2 | Jane      | Smith     | jane.smith@email.com      | 555-5678 | CompanyB    | Data Scientist            |
|           3 | Michael   | Johnson   | michael.johnson@email.com | 555-9876 | CompanyC    | Marketing Coordinator     |
|           4 | Emily     | Williams  | emily.williams@email.com  | 555-4321 | CompanyD    | Project Manager           |
|           5 | Daniel    | Brown     | daniel.brown@email.com    | 555-8765 | CompanyE    | Financial Analyst         |
|           6 | Olivia    | Jones     | olivia.jones@email.com    | 555-2345 | CompanyF    | Graphic Designer          |
|           7 | William   | Davis     | william.davis@email.com   | 555-7654 | CompanyG    | Customer Support Specialist |
|           8 | Sophia    | Martinez  | sophia.martinez@email.com | 555-3456 | CompanyH    | Human Resources Coordinator |
|           9 | Alexander | Garcia    | alexander.garcia@email.com | 555-6543 | CompanyI    | Sales Representative      |
|          10 | Emma      | Rodriguez | emma.rodriguez@email.com  | 555-8765 | CompanyJ    | IT Support Specialist     |
+-------------+-----------+-----------+---------------------------+----------+-------------+---------------------------+
10 rows in set (0.00 sec)

mysql>
```

Find companies that have posted jobs with a salary higher than average salary of all jobs.

```
mysql> SELECT
    ->     C.CompanyId,
    ->     C.CompanyName,
    ->     AVG(J.Salary) AS AverageSalary,
    ->     COUNT(J.JobId) AS PostedJobsCount
    -> FROM
    ->     Companies C
    -> JOIN
    ->     Jobs J ON C.CompanyId = J.CompanyId
    -> GROUP BY
    ->     C.CompanyId, C.CompanyName
    -> HAVING
    ->     MAX(J.Salary) > AVG(J.Salary);
Empty set (0.00 sec)

mysql>
```

Display list of applicants with their names and a concatenated string of their city and state.

```
mysql> SELECT
    ->     ApplicantId,
    ->     CONCAT(FirstName, ' ', LastName) AS FullName
    -> FROM
    ->     Applicants;
+-------------+------------------+
| ApplicantId | FullName         |
+-------------+------------------+
|           1 | John Doe         |
|           2 | Jane Smith       |
|           3 | Michael Johnson  |
|           4 | Emily Williams   |
|           5 | Daniel Brown     |
|           6 | Olivia Jones     |
|           7 | William Davis    |
|           8 | Sophia Martinez  |
|           9 | Alexander Garcia |
|          10 | Emma Rodriguez   |
+-------------+------------------+
10 rows in set (0.00 sec)

mysql>
```

Retrieve list of jobs with titles containing either Developer or Engineer.

```
mysql> SELECT
    ->     JobId,
    ->     JobTitle,
    ->     JobDescription,
    ->     JobLocation,
    ->     Salary,
    ->     JobType,
    ->     PostedDate
    -> FROM
    ->     Jobs
    -> WHERE
    ->     JobTitle LIKE '%Developer%' OR JobTitle LIKE '%Engineer%';
+-------+--------------------+-----------------------------------------+-------------+----------+-----------+---------------------+
| JobId | JobTitle           | JobDescription                          | JobLocation | Salary   | JobType   | PostedDate          |
+-------+--------------------+-----------------------------------------+-------------+----------+-----------+---------------------+
|     1 | Software Developer | Design and implement software solutions. | CityA       | 90000.00 | Full-time | 2023-01-15 08:30:00 |
+-------+--------------------+-----------------------------------------+-------------+----------+-----------+---------------------+
1 row in set (0.00 sec)

mysql>
```

Retrieve list of applicants and jobs they have applied for, including those who have not applied and jobs without applicants.

```
mysql> SELECT
    ->     A.ApplicantId,
    ->     A.FirstName,
    ->     A.LastName,
    ->     J.JobId,
    ->     J.JobTitle
    -> FROM
    ->     Applicants A
    -> CROSS JOIN
    ->     Jobs J
    -> LEFT JOIN
    ->     Applications AP ON A.ApplicantId = AP.ApplicantId AND J.JobId = AP.JobId;
+-------------+-----------+-----------+-------+-----------------------------+
| ApplicantId | FirstName | LastName  | JobId | JobTitle                    |
+-------------+-----------+-----------+-------+-----------------------------+
|          10 | Emma      | Rodriguez |     1 | Software Developer          |
|           9 | Alexander | Garcia    |     1 | Software Developer          |
|           8 | Sophia    | Martinez  |     1 | Software Developer          |
|           7 | William   | Davis     |     1 | Software Developer          |
|           6 | Olivia    | Jones     |     1 | Software Developer          |
|           5 | Daniel    | Brown     |     1 | Software Developer          |
|           4 | Emily     | Williams  |     1 | Software Developer          |
|           3 | Michael   | Johnson   |     1 | Software Developer          |
|           2 | Jane      | Smith     |     1 | Software Developer          |
|           1 | John      | Doe       |     1 | Software Developer          |
|          10 | Emma      | Rodriguez |     2 | Data Scientist              |
|           9 | Alexander | Garcia    |     2 | Data Scientist              |
|           8 | Sophia    | Martinez  |     2 | Data Scientist              |
|           7 | William   | Davis     |     2 | Data Scientist              |
|           6 | Olivia    | Jones     |     2 | Data Scientist              |
|           5 | Daniel    | Brown     |     2 | Data Scientist              |
|           4 | Emily     | Williams  |     2 | Data Scientist              |
|           3 | Michael   | Johnson   |     2 | Data Scientist              |
|           2 | Jane      | Smith     |     2 | Data Scientist              |
|           1 | John      | Doe       |     2 | Data Scientist              |
|          10 | Emma      | Rodriguez |     3 | Marketing Coordinator       |
|           9 | Alexander | Garcia    |     3 | Marketing Coordinator       |
|           8 | Sophia    | Martinez  |     3 | Marketing Coordinator       |
|           7 | William   | Davis     |     3 | Marketing Coordinator       |
|           6 | Olivia    | Jones     |     3 | Marketing Coordinator       |
|           5 | Daniel    | Brown     |     3 | Marketing Coordinator       |
|           4 | Emily     | Williams  |     3 | Marketing Coordinator       |
|           3 | Michael   | Johnson   |     3 | Marketing Coordinator       |
|           2 | Jane      | Smith     |     3 | Marketing Coordinator       |
|           1 | John      | Doe       |     3 | Marketing Coordinator       |
|          10 | Emma      | Rodriguez |     4 | Project Manager             |
|           9 | Alexander | Garcia    |     4 | Project Manager             |
|           8 | Sophia    | Martinez  |     4 | Project Manager             |
|           7 | William   | Davis     |     4 | Project Manager             |
|           6 | Olivia    | Jones     |     4 | Project Manager             |
|           5 | Daniel    | Brown     |     4 | Project Manager             |
|           4 | Emily     | Williams  |     4 | Project Manager             |
|           3 | Michael   | Johnson   |     4 | Project Manager             |
|           2 | Jane      | Smith     |     4 | Project Manager             |
|           1 | John      | Doe       |     4 | Project Manager             |
|          10 | Emma      | Rodriguez |     5 | Financial Analyst           |
|           9 | Alexander | Garcia    |     5 | Financial Analyst           |
|           8 | Sophia    | Martinez  |     5 | Financial Analyst           |
|           7 | William   | Davis     |     5 | Financial Analyst           |
|           6 | Olivia    | Jones     |     5 | Financial Analyst           |
|           5 | Daniel    | Brown     |     5 | Financial Analyst           |
|           4 | Emily     | Williams  |     5 | Financial Analyst           |
|           3 | Michael   | Johnson   |     5 | Financial Analyst           |
```

1	John	Doe	4	Project Manager
10	Emma	Rodriguez	5	Financial Analyst
9	Alexander	Garcia	5	Financial Analyst
8	Sophia	Martinez	5	Financial Analyst
7	William	Davis	5	Financial Analyst
6	Olivia	Jones	5	Financial Analyst
5	Daniel	Brown	5	Financial Analyst
4	Emily	Williams	5	Financial Analyst
3	Michael	Johnson	5	Financial Analyst
2	Jane	Smith	5	Financial Analyst
1	John	Doe	5	Financial Analyst
10	Emma	Rodriguez	6	Graphic Designer
9	Alexander	Garcia	6	Graphic Designer
8	Sophia	Martinez	6	Graphic Designer
7	William	Davis	6	Graphic Designer
6	Olivia	Jones	6	Graphic Designer
5	Daniel	Brown	6	Graphic Designer
4	Emily	Williams	6	Graphic Designer
3	Michael	Johnson	6	Graphic Designer
2	Jane	Smith	6	Graphic Designer
1	John	Doe	6	Graphic Designer
10	Emma	Rodriguez	7	Customer Support Specialist
9	Alexander	Garcia	7	Customer Support Specialist
8	Sophia	Martinez	7	Customer Support Specialist
7	William	Davis	7	Customer Support Specialist
6	Olivia	Jones	7	Customer Support Specialist
5	Daniel	Brown	7	Customer Support Specialist
4	Emily	Williams	7	Customer Support Specialist
3	Michael	Johnson	7	Customer Support Specialist
2	Jane	Smith	7	Customer Support Specialist
1	John	Doe	7	Customer Support Specialist
10	Emma	Rodriguez	8	Human Resources Coordinator
9	Alexander	Garcia	8	Human Resources Coordinator
8	Sophia	Martinez	8	Human Resources Coordinator
7	William	Davis	8	Human Resources Coordinator
6	Olivia	Jones	8	Human Resources Coordinator
5	Daniel	Brown	8	Human Resources Coordinator
4	Emily	Williams	8	Human Resources Coordinator
3	Michael	Johnson	8	Human Resources Coordinator
2	Jane	Smith	8	Human Resources Coordinator
1	John	Doe	8	Human Resources Coordinator
10	Emma	Rodriguez	9	Sales Representative
9	Alexander	Garcia	9	Sales Representative
8	Sophia	Martinez	9	Sales Representative
7	William	Davis	9	Sales Representative
6	Olivia	Jones	9	Sales Representative
5	Daniel	Brown	9	Sales Representative
4	Emily	Williams	9	Sales Representative
3	Michael	Johnson	9	Sales Representative
2	Jane	Smith	9	Sales Representative
1	John	Doe	9	Sales Representative
10	Emma	Rodriguez	10	IT Support Specialist
9	Alexander	Garcia	10	IT Support Specialist
8	Sophia	Martinez	10	IT Support Specialist
7	William	Davis	10	IT Support Specialist
6	Olivia	Jones	10	IT Support Specialist
5	Daniel	Brown	10	IT Support Specialist
4	Emily	Williams	10	IT Support Specialist
3	Michael	Johnson	10	IT Support Specialist
2	Jane	Smith	10	IT Support Specialist
1	John	Doe	10	IT Support Specialist

100 rows in set (0.00 sec)

List all combinations of applicants and companies where the company is in specific location.

```
mysql> SELECT
    ->     A.ApplicantId,
    ->     A.FirstName,
    ->     A.LastName,
    ->     A.Email,
    ->     A.Phone,
    ->     C.CompanyName,
    ->     C.Location
    -> FROM
    ->     Applicants A
    -> CROSS JOIN
    ->     Companies C
    -> WHERE
    ->     C.Location = 'LocationH';
+-------------+-----------+-----------+---------------------------+----------+-------------+-----------+
| ApplicantId | FirstName | LastName  | Email                     | Phone    | CompanyName | Location  |
+-------------+-----------+-----------+---------------------------+----------+-------------+-----------+
|           1 | John      | Doe       | john.doe@email.com        | 555-1234 | CompanyH    | LocationH |
|           2 | Jane      | Smith     | jane.smith@email.com      | 555-5678 | CompanyH    | LocationH |
|           3 | Michael   | Johnson   | michael.johnson@email.com | 555-9876 | CompanyH    | LocationH |
|           4 | Emily     | Williams  | emily.williams@email.com  | 555-4321 | CompanyH    | LocationH |
|           5 | Daniel    | Brown     | daniel.brown@email.com    | 555-8765 | CompanyH    | LocationH |
|           6 | Olivia    | Jones     | olivia.jones@email.com    | 555-2345 | CompanyH    | LocationH |
|           7 | William   | Davis     | william.davis@email.com   | 555-7654 | CompanyH    | LocationH |
|           8 | Sophia    | Martinez  | sophia.martinez@email.com | 555-3456 | CompanyH    | LocationH |
|           9 | Alexander | Garcia    | alexander.garcia@email.com| 555-6543 | CompanyH    | LocationH |
|          10 | Emma      | Rodriguez | emma.rodriguez@email.com  | 555-8765 | CompanyH    | LocationH |
+-------------+-----------+-----------+---------------------------+----------+-------------+-----------+
10 rows in set (0.00 sec)

mysql>
```