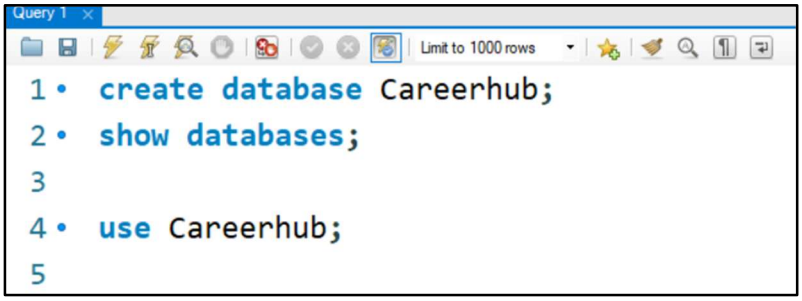
1. Provide a SQL script that initializes the database for the Job Board scenario "CareerHub".

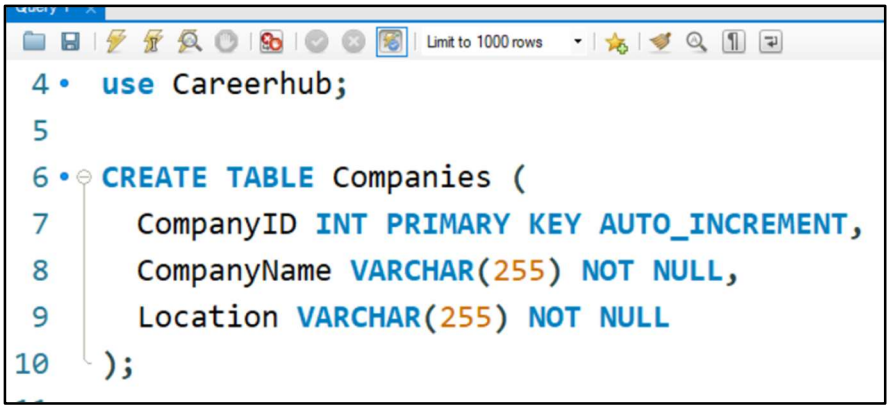


```sql
create database Careerhub;
show databases;

use Careerhub;
```

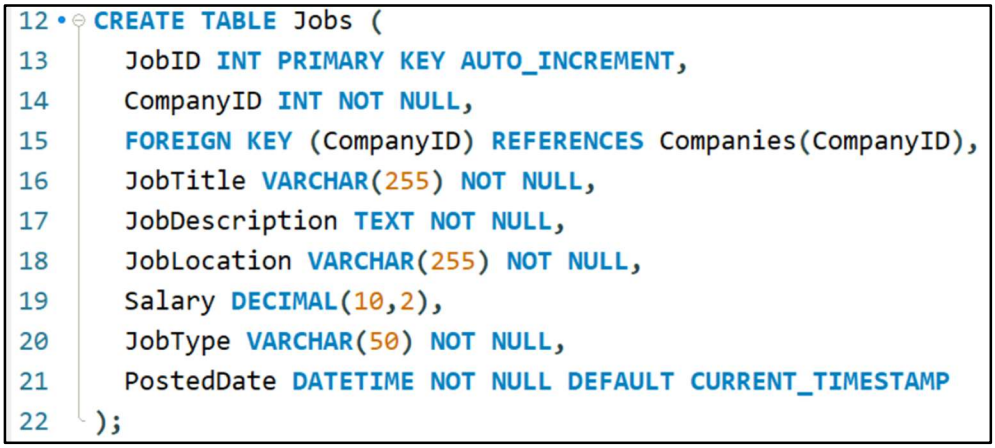
2. Create tables for Companies, Jobs, Applicants and Applications.

3. Define appropriate primary keys, foreign keys, and constraints.



```sql
use Careerhub;

CREATE TABLE Companies (
    CompanyID INT PRIMARY KEY AUTO_INCREMENT,
    CompanyName VARCHAR(255) NOT NULL,
    Location VARCHAR(255) NOT NULL
);
```



```sql
CREATE TABLE Jobs (
    JobID INT PRIMARY KEY AUTO_INCREMENT,
    CompanyID INT NOT NULL,
    FOREIGN KEY (CompanyID) REFERENCES Companies(CompanyID),
    JobTitle VARCHAR(255) NOT NULL,
    JobDescription TEXT NOT NULL,
    JobLocation VARCHAR(255) NOT NULL,
    Salary DECIMAL(10,2),
    JobType VARCHAR(50) NOT NULL,
    PostedDate DATETIME NOT NULL DEFAULT CURRENT_TIMESTAMP
);
```

```sql
CREATE TABLE Applicants (
    ApplicantID INT PRIMARY KEY AUTO_INCREMENT,
    FirstName VARCHAR(255) NOT NULL,
    LastName VARCHAR(255) NOT NULL,
    Email VARCHAR(255) NOT NULL UNIQUE,
    Phone VARCHAR(20),
    Resume TEXT
);
```

```sql
CREATE TABLE Applications (
    ApplicationID INT PRIMARY KEY AUTO_INCREMENT,
    JobID INT NOT NULL,
    ApplicantID INT NOT NULL,
    FOREIGN KEY (JobID) REFERENCES Jobs(JobID),
    FOREIGN KEY (ApplicantID) REFERENCES Applicants(ApplicantID),
    ApplicationDate DATETIME NOT NULL DEFAULT CURRENT_TIMESTAMP,
    CoverLetter TEXT
);
```

5. Write an SQL query to count the number of applications received for each job listing in the "Jobs" table. Display the job title and the corresponding application count. Ensure that it lists all jobs, even if they have no applications.

```sql
SELECT j.JobTitle, COUNT(a.ApplicationID) AS ApplicationCount
FROM Jobs j
LEFT JOIN Applications a ON j.JobID = a.JobID
GROUP BY j.JobTitle
ORDER BY j.JobTitle;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

JobTitle	ApplicationCount
Content Writer	1
Data Scientist	1
Design Engineer	1
Graphic Designer	1
Human Resources Manager	1
Marketing Manager	1
Product Manager	1
Sales Representative	1
Software Developer	1
Software Engineer	1

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

```
SELECT j.JobTitle, c.CompanyName, j.JobLocation, j.Salary
FROM Jobs j
INNER JOIN Companies c ON j.CompanyID = c.CompanyID
WHERE j.Salary >= 50000.00 AND j.Salary <= 100000.00
ORDER BY j.JobTitle;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

JobTitle	CompanyName	JobLocation	Salary
Content Writer	Netflix	Los Gatos, CA	60000.00
Graphic Designer	Adobe	San Jose, CA	50000.00
Human Resources Manager	Meta Platforms	Menlo Park, CA	80000.00
Marketing Manager	Apple	Cupertino, CA	100000.00
Sales Representative	Salesforce	San Francisco, CA	70000.00
Software Developer	Nvidia	Santa Clara, CA	90000.00

7. Write an SQL query that retrieves the job application history for a specific applicant. Allow a parameter for the ApplicantID, and return a result set with the job titles, company names, and application dates for all the jobs the applicant has applied to.

```
SELECT j.JobTitle, c.CompanyName, ap.ApplicationDate
FROM Applicants a
INNER JOIN Applications ap ON a.ApplicantID = ap.ApplicantID
INNER JOIN Jobs j ON ap.JobID = j.JobID
INNER JOIN Companies c ON j.CompanyID = c.CompanyID
WHERE a.ApplicantID = 7
ORDER BY ap.ApplicationDate;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

JobTitle	CompanyName	ApplicationDate
Content Writer	Netflix	2023-10-29 00:00:00

8. Create an SQL query that calculates and displays the average salary offered by all companies for job listings in the "Jobs" table. Ensure that the query filters out jobs with a salary of zero.

```
SELECT AVG(Salary) AS AverageSalary
FROM Jobs
WHERE Salary > 0;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

AverageSalary
96000.000000

9. Write an SQL query to identify the company that has posted the most job listings. Display the company name along with the count of job listings they have posted. Handle ties if multiple companies have the same maximum count.

```sql
SELECT c.CompanyName, COUNT(*) AS JobCount
FROM Jobs j
INNER JOIN Companies c ON j.CompanyID = c.CompanyID
GROUP BY c.CompanyName
HAVING JobCount = (
    SELECT MAX(JobCount)
    FROM (
        SELECT c.CompanyName, COUNT(*) AS JobCount
        FROM Jobs j
        INNER JOIN Companies c ON j.CompanyID = c.CompanyID
        GROUP BY c.CompanyName
    ) AS Subquery
);
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

CompanyName	JobCount
Google	1
Amazon	1
Microsoft	1
Apple	1
Meta Platforms	1
Tesla	1
Netflix	1
Nvidia	1
Salesforce	1
Adobe	1

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

```sql
SELECT a.ApplicantID, a.FirstName, a.LastName, j.JobTitle, c.CompanyName
FROM Applicants a
INNER JOIN Applications ap ON a.ApplicantID = ap.ApplicantID
INNER JOIN Jobs j ON ap.JobID = j.JobID
INNER JOIN Companies c ON j.CompanyID = c.CompanyID
WHERE c.Location = 'Los Gatos, CA'
AND (
    -- Calculate and compare applicant experience here
    -- e.g., (YEAR(CURDATE()) - YEAR(a.StartDate)) >= 3
    -- or based on a dedicated experience field
    a.Experience >= 3
)
ORDER BY a.LastName;
```

11. Retrieve a list of distinct job titles with salaries between $60,000 and $80,000.

```
150
151 •  SELECT DISTINCT j.JobTitle
152    FROM Jobs j
153    WHERE j.Salary BETWEEN 60000.00 AND 80000.00
154    ORDER BY j.JobTitle;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

JobTitle
Content Writer
Human Resources Manager
Sales Representative

12. Find the jobs that have not received any applications.

```
156 •  SELECT j.JobTitle
157    FROM Jobs j
158    LEFT JOIN Applications a ON j.JobID = a.JobID
159    WHERE a.JobID IS NULL
160    ORDER BY j.JobTitle;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

JobTitle

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

```
161
162 •  SELECT a.FirstName, a.LastName, c.CompanyName, j.JobTitle
163    FROM Applicants a
164    INNER JOIN Applications ap ON a.ApplicantID = ap.ApplicantID
165    INNER JOIN Jobs j ON ap.JobID = j.JobID
166    INNER JOIN Companies c ON j.CompanyID = c.CompanyID
167    ORDER BY a.LastName, c.CompanyName, j.JobTitle;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

FirstName	LastName	CompanyName	JobTitle
Emily	Brown	Tesla	Design Engineer
Jane	Doe	Amazon	Data Scientist
John	Doe	Google	Software Engineer
Elizabeth	Johnson	Adobe	Graphic Designer
Sarah	Jones	Apple	Marketing Manager
Robert	Lewis	Salesforce	Sales Representative
Michael	Smith	Microsoft	Product Manager
Matthew	Taylor	Netflix	Content Writer
David	Williams	Meta Platforms	Human Resources Manager
Jennifer	Wilson	Nvidia	Software Developer

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

```
169 •  SELECT c.CompanyName, COUNT(j.JobID) AS JobCount
170    FROM Companies c
171    LEFT JOIN Jobs j ON c.CompanyID = j.CompanyID
172    GROUP BY c.CompanyName
173    ORDER BY JobCount DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

CompanyName	JobCount
Google	1
Amazon	1
Microsoft	1
Apple	1
Meta Platforms	1
Tesla	1
Netflix	1
Nvidia	1
Salesforce	1
Adobe	1

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

```
175 •  SELECT a.FirstName, a.LastName, c.CompanyName, j.JobTitle
176    FROM Applicants a
177    LEFT JOIN Applications ap ON a.ApplicantID = ap.ApplicantID
178    LEFT JOIN Jobs j ON ap.JobID = j.JobID
179    LEFT JOIN Companies c ON j.CompanyID = c.CompanyID
180    ORDER BY a.LastName, c.CompanyName, COALESCE(j.JobTitle, 'No Applications');
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

FirstName	LastName	CompanyName	JobTitle
Emily	Brown	Tesla	Design Engineer
Jane	Doe	Amazon	Data Scientist
John	Doe	Google	Software Engineer
Elizabeth	Johnson	Adobe	Graphic Designer
Sarah	Jones	Apple	Marketing Manager
Robert	Lewis	Salesforce	Sales Representative
Michael	Smith	Microsoft	Product Manager
Matthew	Taylor	Netflix	Content Writer
David	Williams	Meta Platforms	Human Resources Manager
Jennifer	Wilson	Nvidia	Software Developer

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

```sql
SELECT c.CompanyName
FROM Companies c
INNER JOIN Jobs j ON c.CompanyID = j.CompanyID
WHERE j.Salary > (
    SELECT AVG(Salary)
    FROM Jobs
);
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

CompanyName
Google
Amazon
Microsoft
Apple
Tesla

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

```sql
SELECT CONCAT(FirstName, ' ', LastName) AS FullName, CONCAT(City, ', ', State) AS Location
FROM Applicants;
```

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

```sql
SELECT JobTitle
FROM Jobs
WHERE JobTitle LIKE '%Developer%'
OR JobTitle LIKE '%Engineer%';
```

Result Grid | Filter Rows: | Export: | Wrap Cell C

JobTitle
Software Engineer
Design Engineer
Software Developer

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

```sql
SELECT a.FirstName, a.LastName, j.JobTitle, c.CompanyName
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
ORDER BY a.LastName, COALESCE(j.JobTitle, 'No Applications'), c.CompanyName;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

FirstName	LastName	JobTitle	CompanyName
Emily	Brown	Design Engineer	Tesla
Jane	Doe	Data Scientist	Amazon
John	Doe	Software Engineer	Google
Elizabeth	Johnson	Graphic Designer	Adobe
Sarah	Jones	Marketing Manager	Apple
Robert	Lewis	Sales Representative	Salesforce
Michael	Smith	Product Manager	Microsoft
Matthew	Taylor	Content Writer	Netflix
David	Williams	Human Resources Manager	Meta Platforms
Jennifer	Wilson	Software Developer	Nvidia

20. List all combinations of applicants and companies where the company is in a specific city and the applicant has more than 2 years of experience. For example: city-Chennai

```sql
SELECT a.FirstName, a.LastName, c.CompanyName
FROM Applicants a
INNER JOIN Applications ap ON a.ApplicantID = ap.ApplicantID
INNER JOIN Jobs j ON ap.JobID = j.JobID
INNER JOIN Companies c ON j.CompanyID = c.CompanyID
WHERE c.Location = 'Los Gatos, CA'
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

FirstName	LastName	CompanyName
Matthew	Taylor	Netflix