

Coding Challenge: CareerHub, The Job Board

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

Create database CareerHub;

Use careerHub;

```
mysql> create database CareerHub;  
Query OK, 1 row affected (0.10 sec)
```

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

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

```
CREATE TABLE Companies (  
    CompanyID INT PRIMARY KEY,  
    CompanyName VARCHAR(255),  
    Location VARCHAR(255)  
);
```

```
mysql> CREATE TABLE Companies (  
    ->     CompanyID INT PRIMARY KEY,  
    ->     CompanyName VARCHAR(255),  
    ->     Location VARCHAR(255)  
    -> );  
Query OK, 0 rows affected (0.09 sec)
```

```
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)
);

```

```

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 (0.07 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    |       |
+-----+-----+-----+-----+-----+-----+

```

```

CREATE TABLE Applicants (
    ApplicantID INT PRIMARY KEY,
    FirstName VARCHAR(100),
    LastName VARCHAR(100),
    Email VARCHAR(255),
    Phone VARCHAR(20),
    Resume TEXT
);

```

```
mysql> CREATE TABLE Applicants (
->     ApplicantID INT PRIMARY KEY,
->     FirstName VARCHAR(100),
->     LastName VARCHAR(100),
->     Email VARCHAR(255),
->     Phone VARCHAR(20),
->     Resume TEXT
-> );
```

Query OK, 0 rows affected (0.03 sec)

```
mysql> desc Applicants;
```

Field	Type	Null	Key	Default	Extra
ApplicantID	int	NO	PRI	NULL	
FirstName	varchar(100)	YES		NULL	
LastName	varchar(100)	YES		NULL	
Email	varchar(255)	YES		NULL	
Phone	varchar(20)	YES		NULL	
Resume	text	YES		NULL	

```
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) );
```

```
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 (0.10 sec)

Inserting Data:

Companies:

```
mysql> select * from companies;
```

CompanyID	CompanyName	Location
1	Hexaware	Chennai
2	Wipro	Hyderabad
3	Tcs	Pune
4	Lnt	Mumbai
5	Prolifics	Hyderabad
6	Amadues	Bangalore
7	Effectronics	Chennai
8	Infosys	Delhi
9	TechMahindhra	Vizag
10	Ananth	Bhopal

10 rows in set (0.00 sec)

Jobs:

```
mysql> select * from jobs;
```

JobID	CompanyID	JobTitle	JobDescription	JobLocation	Salary	JobType	PostedDate
1	1	Software Engineer	We are looking for a skilled software engineer...	Chennai	90000.00	Full-time	2024-04-18 10:50:15
2	2	Data Scientist	Tech Innovations Ltd. seeks a talented data scientist	Hyderabad	80000.00	Full-time	2024-04-18 10:50:15
3	3	Marketing Manager	Global Solutions Inc. is hiring a marketing manager	Pune	80000.00	Full-time	2024-04-18 10:50:15
4	4	Environmental Scientist	Eco Friendly Enterprises is seeking an environmental scientist	Mumbai	80000.00	Full-time	2024-04-18 10:50:15
5	5	UX Designer	InnovateX is looking for a creative UX designer	Hyderabad	100000.00	Full-time	2024-04-18 10:50:15
6	6	Sales Representative	Amadues is hiring a sales representative	Bangalore	80000.00	Part-time	2024-04-18 10:50:15
7	7	Software Developer	Effectronics seeks a talented software developer	Chennai	95000.00	Part-time	2024-04-18 10:50:15
8	8	Network Engineer	Infosys is seeking a skilled network engineer	Delhi	80000.00	Full-time	2024-04-18 10:54:19
9	9	Software Tester	TechMahindhra is hiring a software tester	vizag	85000.00	Full-time	2024-04-18 10:54:19
10	10	Web Developer	Ananth is looking for a talented web developer	Bhopal	90000.00	Full-time	2024-04-18 10:54:19

10 rows in set (0.00 sec)

Applicants:

```
mysql> select * from applicants;
```

ApplicantID	FirstName	LastName	Email	Phone	Resume	Experienceinyears	city	state
1	Sudheer	Kumar	sudheer.kumar@example.com	+1122334455	Sudheer Kumar Resume	1	Chennai	Tamil Nadu
2	Naveen	Reddy	naveen.reddy@example.com	+9988776655	Naveen Reddy Resume	4	Hyderabad	Telangana
3	Dhanunjai	Raj	dhanunjai.raj@example.com	+7766554433	Dhanunjai Raj Resume	2	Pune	Maharashtra
4	Anil	Singh	anil.singh@example.com	+1122334455	Anil Singh Resume	6	Mumbai	Maharashtra
5	Akhil	Patel	akhil.patel@example.com	+9988776655	Akhil Patel Resume	2	Bangalore	Karnataka
6	Prasad	Sharma	prasad.sharma@example.com	+7766554433	Prasad Sharma Resume	4	Delhi	Delhi
7	Rishi	Gupta	rishi.gupta@example.com	+1122334455	Rishi Gupta Resume	0	Vizag	Andhra Pradesh
8	Sam	Khan	sam.khan@example.com	+9988776655	Sam Khan Resume	1	Bhopal	Madhya Pradesh
9	Rajesh	Yadav	rajesh.yadav@example.com	+7766554433	Rajesh Yadav Resume	3	Chennai	Tamil Nadu
10	Shivani	Choudhary	shivani.choudhary@example.com	+9122334455	Shivani Choudhary Resume	5	Hyderabad	Telangana

10 rows in set (0.00 sec)

Applications:

```
mysql> select * from applications;
```

ApplicationID	JobID	ApplicantID	ApplicationDate	CoverLetter
1	1	1	2024-04-18 11:17:28	Cover letter for Software Engineer
2	2	2	2024-04-18 11:17:28	Cover letter for Data Scientist
3	3	3	2024-04-18 11:17:28	Cover letter for Marketing Manager
4	4	4	2024-04-18 11:17:28	Cover letter for Environmental Scientist
5	5	5	2024-04-18 11:17:28	Cover letter for UX Designer
6	6	6	2024-04-18 11:17:28	Cover letter for Sales Representative
7	7	7	2024-04-18 11:17:28	Cover letter for Software Developer
8	8	8	2024-04-18 11:17:28	Cover letter for Network Engineer
9	9	9	2024-04-18 11:17:28	Cover letter for Software Tester
10	10	10	2024-04-18 11:17:28	Cover letter for Web Developer

10 rows in set (0.00 sec)

4. Ensure the script handles potential errors, such as if the database or tables already exist.

```
mysql> CREATE DATABASE IF NOT EXISTS careerhub;
Query OK, 1 row affected, 1 warning (0.00 sec)
```

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.

```
SELECT J.JobTitle, COUNT(A.ApplicationID) AS ApplicationCount
FROM Jobs J
LEFT JOIN Applications A ON J.JobID = A.JobID
GROUP BY J.JobTitle;
```

```
mysql> SELECT J.JobTitle, COUNT(A.ApplicationID) AS ApplicationCount
-> FROM Jobs J
-> LEFT JOIN Applications A ON J.JobID = A.JobID
-> GROUP BY J.JobTitle;
```

JobTitle	ApplicationCount
Software Engineer	1
Data Scientist	1
Marketing Manager	1
Environmental Scientist	1
UX Designer	1
Sales Representative	1
Software Developer	1
Network Engineer	1
Software Tester	1
Web Developer	1

10 rows in set (0.02 sec)

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.

Set @min =80000;

Set @max=95000;

SELECT J.JobTitle, C.CompanyName, C.Location, J.Salary

FROM Jobs J

INNER JOIN Companies C ON J.CompanyID = C.CompanyID

WHERE J.Salary BETWEEN @Min AND @Max;

```
mysql> set @min=80000;
Query OK, 0 rows affected (0.01 sec)

mysql> set @max=95000;
Query OK, 0 rows affected (0.00 sec)

mysql> SELECT J.JobTitle, C.CompanyName, C.Location, J.Salary
      -> FROM Jobs J
      -> INNER JOIN Companies C ON J.CompanyID = C.CompanyID
      -> WHERE J.Salary BETWEEN @Min AND @Max;
```

JobTitle	CompanyName	Location	Salary
Software Engineer	Hexaware	Chennai	90000.00
Marketing Manager	Tcs	Pune	80000.00
Environmental Scientist	Lnt	Mumbai	95000.00
Sales Representative	Amadues	Bangalore	85000.00
Software Developer	Effectronics	Chennai	95000.00
Network Engineer	Infosys	Delhi	95000.00
Software Tester	TechMahindhra	Vizag	85000.00
Web Developer	Ananth	Bhopal	90000.00

```
8 rows in set (0.01 sec)
```

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.

Set @applicantid=

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 = @ApplicantID;

```
mysql> set @Applicantid=8;
Query OK, 0 rows affected (0.00 sec)

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 = @applicantid;
+-----+-----+-----+
| jobtitle          | companyname | applicationdate |
+-----+-----+-----+
| Network Engineer | Infosys    | 2024-04-18 11:17:28 |
+-----+-----+-----+
1 row in set (0.00 sec)
```

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;

```
mysql> SELECT AVG(Salary) AS AverageSalary
-> FROM Jobs
-> WHERE Salary > 0;
+-----+
| AverageSalary |
+-----+
| 92500.000000 |
+-----+
1 row in set (0.00 sec)
```

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.

SELECT C.CompanyName, COUNT(J.JobID) AS JobCount

FROM Companies C

JOIN Jobs J ON C.CompanyID = J.CompanyID

GROUP BY C.CompanyName

ORDER BY JobCount DESC

LIMIT 1;

```
mysql> select c.companyname, count(j.jobid) as JobCount
-> from companies c
-> join jobs j on c.companyid = j.companyid
-> group by c.companyname
-> order by JobCount desc
-> limit 1;
+-----+-----+
| companyname | JobCount |
+-----+-----+
| Hexaware    |         1 |
+-----+-----+
```

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

select concat(firstname,' ',lastname) as ApplicantName,experienceinyears

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 = 'Hyderabad' and a.experienceinyears >= 3;

```
mysql> select concat(firstname,' ',lastname) as ApplicantName,experienceinyears
-> 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 = 'Hyderabad' and a.experienceinyears >= 3;
+-----+-----+
| ApplicantName | experienceinyears |
+-----+-----+
| Naveen Reddy  |         4         |
+-----+-----+
1 row in set (0.00 sec)
```

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

SELECT JobTitle

FROM Jobs

WHERE Salary BETWEEN 60000 AND 80000;


```
mysql> select distinct jobtitle
-> from jobs
-> where salary between 60000 and 80000;
```

jobtitle
Data Scientist
Marketing Manager
Environmental Scientist
Sales Representative
Network Engineer

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

```
SELECT A.FirstName, A.LastName,
```

```
(SELECT CompanyName FROM Companies WHERE CompanyID = J.CompanyID) AS
CompanyName,J.JobTitle
```

```
FROM Applicants A
```

```
JOIN Applications AP ON A.ApplicantID = AP.ApplicantID
```

```
JOIN Jobs J ON AP.JobID = J.JobID;
```

```
mysql> SELECT A.FirstName,A.LastName,
-> (SELECT CompanyName FROM Companies WHERE CompanyID = J.CompanyID) AS CompanyName,
-> J.JobTitle
-> From applicants a
-> Join applications ap ON a.applicantid = ap.Applicantid
-> Join jobs J ON ap.jobid = J.jobid;
```

FirstName	LastName	CompanyName	JobTitle
Sudheer	Kumar	Hexaware	Software Engineer
Naveen	Reddy	Wipro	Data Scientist
Dhanunjai	Raj	Tcs	Marketing Manager
Anil	Singh	Lnt	Environmental Scientist
Akhil	Patel	Prolifics	UX Designer
Prasad	Sharma	Amadues	Sales Representative
Rishi	Gupta	Effectronics	Software Developer
Sam	Khan	Infosys	Network Engineer
Rajesh	Yadav	TechMahindhra	Software Tester
Shivani	Choudhary	Ananth	Web Developer

```
10 rows in set (0.01 sec)
```

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

```
SELECT C.CompanyName, COUNT(J.JobID) AS JobCount
```

```
FROM Companies C
```

LEFT JOIN Jobs J ON C.CompanyID = J.CompanyID

GROUP BY C.CompanyName;

```
mysql> select c.companyname, count(j.jobid) as jobcount
-> from companies c
-> join jobs j on c.companyid = j.companyid
-> group by c.companyname;
```

companyname	jobcount
Hexaware	1
Wipro	1
Tcs	1
Lint	1
Prolifics	1
Amadues	1
Effectronics	1
Infosys	1
TechMahindhra	1
Ananth	1

10 rows in set (0.00 sec)

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

SELECT A.FirstName, A.LastName, 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;

```
mysql> SELECT A.FirstName, A.LastName, 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;
```

FirstName	LastName	CompanyName	JobTitle
Sudheer	Kumar	Hexaware	Software Engineer
Naveen	Reddy	Wipro	Data Scientist
Dhanunjai	Raj	Tcs	Marketing Manager
Anil	Singh	Lint	Environmental Scientist
Akhil	Patel	Prolifics	UX Designer
Prasad	Sharma	Amadues	Sales Representative
Rishi	Gupta	Effectronics	Software Developer
Sam	Khan	Infosys	Network Engineer
Rajesh	Yadav	TechMahindhra	Software Tester
Shivani	Choudhary	Ananth	Web Developer

10 rows in set (0.00 sec)

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

```
SELECT C.CompanyName
```

```
FROM Companies C
```

```
JOIN Jobs J ON C.CompanyID = J.CompanyID
```

```
WHERE J.Salary > ( SELECT AVG(Salary) FROM Jobs
```

```
);
```

```
mysql> select c.companyname
-> from companies c
-> join jobs j on c.companyid=j.companyid
-> where j.salary>(select avg(salary) from jobs);
```

companyname
Hexaware
Prolifics
Effectronics
Ananth

```
4 rows in set (0.00 sec)
```

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

```
SELECT CONCAT(FirstName, ' ', LastName) AS FullName,
```

```
CONCAT(City, ' ', State) AS CityAndState
```

```
FROM Applicants;
```

```
mysql> select concat(firstname, ' ', lastname) as Applicantname,
-> concat(city, ' ', state) as CityandState
-> from Applicants;
```

Applicantname	CityandState
Sudheer Kumar	Chennai, Tamil Nadu
Naveen Reddy	Hyderabad, Telangana
Dhanunjai Raj	Pune, Maharashtra
Anil Singh	Mumbai, Maharashtra
Akhil Patel	Bangalore, Karnataka
Prasad Sharma	Delhi, Delhi
Rishi Gupta	Vizag, Andhra Pradesh
Sam Khan	Bhopal, Madhya Pradesh
Rajesh Yadav	Chennai, Tamil Nadu
Shivani Choudhary	Hyderabad, Telangana

```
10 rows in set (0.00 sec)
```

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

```
SELECT *
```

```
FROM Jobs
```

```
WHERE JobTitle LIKE '%Developer%' OR JobTitle LIKE '%Engineer%';
```

```
mysql> SELECT *
-> FROM Jobs
-> WHERE JobTitle LIKE '%Developer%' OR JobTitle LIKE '%Engineer%';
```

JobID	CompanyID	JobTitle	JobDescription	JobLocation	Salary	JobType	PostedDate
1	1	Software Engineer	We are looking for a skilled software engineer...	Chennai	90000.00	Full-time	2024-04-18 10:50:15
7	7	Software Developer	Effectronics seeks a talented software developer	Chennai	95000.00	Part-time	2024-04-18 10:50:15
8	8	Network Engineer	Infosys is seeking a skilled network engineer	Delhi	80000.00	Full-time	2024-04-18 10:54:19
10	10	Web Developer	Ananth is looking for a talented web developer	Bhopal	90000.00	Full-time	2024-04-18 10:54:19

4 rows in set (0.00 sec)

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

```
SELECT A.FirstName, A.LastName, 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;
```

```
mysql> SELECT A.FirstName, A.LastName, 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;
```

FirstName	LastName	CompanyName	JobTitle
Sudheer	Kumar	Hexaware	Software Engineer
Naveen	Reddy	Wipro	Data Scientist
Dhanunjai	Raj	Tcs	Marketing Manager
Anil	Singh	Lnt	Environmental Scientist
Akhil	Patel	Prolifics	UX Designer
Prasad	Sharma	Amadues	Sales Representative
Rishi	Gupta	Effectronics	Software Developer
Sam	Khan	Infosys	Network Engineer
Rajesh	Yadav	TechMahindhra	Software Tester
Shivani	Choudhary	Ananth	Web Developer

10 rows in set (0.00 sec)

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

```
SELECT A.FirstName, A.LastName, C.CompanyName
```

```
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 a.City = 'Chennai' AND A.ExperienceInYears > 2;

```
mysql> select a.firstname,a.lastname,c.companyname
-> from applicants a
-> join applications ap on a.applicantid=ap.applicationid
-> join jobs j on ap.jobid=j.jobid
-> join companies c on j.companyid=c.companyid
-> where a.city='Chennai' AND a.experienceinyears>2;
+-----+-----+-----+
| firstname | lastname | companyname |
+-----+-----+-----+
| Rajesh    | Yadav    | TechMahindhra |
+-----+-----+-----+
1 row in set (0.00 sec)
```