CODING CHALLENGES (case study 2)

NAME: HEMASHRI S

TITLE: CAREERHUB, THE JOB BOARD

drop database if exists CareerHub;

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

CREATE DATABASE CareerHub;

USE CareerHub;

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

```
CREATE TABLE Companies (
```

CompanyID INT PRIMARY KEY,

CompanyName VARCHAR(200) NOT NULL,

Location VARCHAR(200) NOT NULL

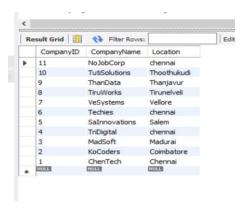
);

INSERT INTO Companies (CompanyID, CompanyName, Location) VALUES

- (1, 'ChenTech', 'Chennai'),
- (2, 'KoCoders', 'Coimbatore'),
- (3, 'MadSoft', 'Madurai'),

- (4, 'TriDigital', 'chennai'),
- (5, 'SaInnovations', 'Salem'),
- (6, 'Techies', 'chennai'),
- (7, 'VeSystems', 'Vellore'),
- (8, 'TiruWorks', 'Tirunelveli'),
- (9, 'ThanData', 'Thanjavur'),
- (10, 'TutiSolutions', 'Thoothukudi');

select * from companies;



CREATE TABLE Jobs (

JobID INT PRIMARY KEY,

CompanyID INT NOT NULL,

JobTitle VARCHAR(255) NOT NULL,

JobDescription TEXT,

JobLocation VARCHAR(255) NOT NULL,

Salary DECIMAL(10, 2) check (salary >=0),

JobType VARCHAR(100) CHECK (JOBTYPE IN ('Full-Time', 'Part-Time', 'Contract')),

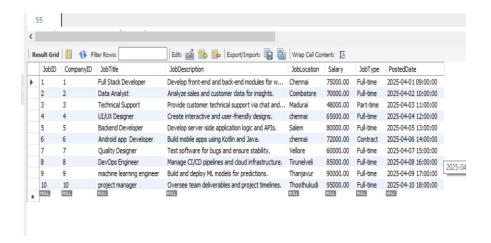
PostedDate DATETIME not null,

INSERT INTO Jobs (JobID, CompanyID, JobTitle, JobDescription, JobLocation, Salary, JobType, PostedDate) VALUES

- (1, 1, 'Full Stack Developer', 'Develop front-end and back-end modules for web apps.', 'Chennai', 75000.00, 'Full-time', '2025-04-01 09:00:00'),
- (2, 2, 'Data Analyst', 'Analyze sales and customer data for insights.', 'Coimbatore', 70000.00, 'Full-time', '2025-04-02 10:00:00'),
- (3, 3, 'Technical Support', 'Provide customer technical support via chat and call.', 'Madurai', 48000.00, 'Part-time', '2025-04-03 11:00:00'),
- (4, 4, 'UI/UX Designer', 'Create interactive and user-friendly designs.', 'chennai', 65000.00, 'Full-time', '2025-04-04 12:00:00'),
- (5, 5, 'Backend Developer', 'Develop server-side application logic and APIs.', 'Salem', 80000.00, 'Full-time', '2025-04-05 13:00:00'),
- (6, 6, 'Android app Developer', 'Build mobile apps using Kotlin and Java.', 'chennai', 72000.00, 'Contract', '2025-04-06 14:00:00'),
- (7, 7, 'Quality Designer', 'Test software for bugs and ensure stability.', 'Vellore', 60000.00, 'Full-time', '2025-04-07 15:00:00'),
- (8, 8, 'DevOps Engineer', 'Manage CI/CD pipelines and cloud infrastructure.', 'Tirunelveli', 85000.00, 'Full-time', '2025-04-08 16:00:00'),
- (9, 9, 'machine learning engineer', 'Build and deploy ML models for predictions.', 'Thanjavur', 90000.00, 'Full-time', '2025-04-09 17:00:00'),
- (10, 10, 'project manager', 'Oversee team deliverables and project timelines.', 'Thoothukudi', 95000.00, 'Full-time', '2025-04-10 18:00:00');

select * from jobs;

);



CREATE TABLE Applicants (

ApplicantID INT PRIMARY KEY,

FirstName VARCHAR(100) not null,

LastName VARCHAR(100)not null,

Email VARCHAR(255) unique not null,

Phone VARCHAR(20),

Resume TEXT

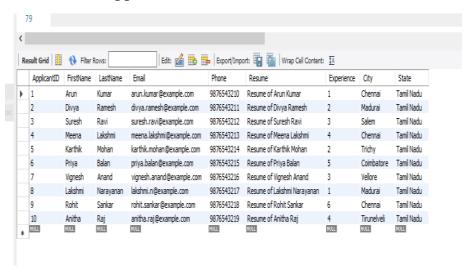
);

INSERT INTO Applicants (ApplicantID, FirstName, LastName, Email, Phone, Resume) VALUES

- (1, 'Arun', 'Kumar', 'arun.kumar@example.com', '9876543210', 'Resume of Arun Kumar'),
- (2, 'Divya', 'Ramesh', 'divya.ramesh@example.com', '9876543211', 'Resume of Divya Ramesh'),
- (3, 'Suresh', 'Ravi', 'suresh.ravi@example.com', '9876543212', 'Resume of Suresh Ravi'),

- (4, 'Meena', 'Lakshmi', 'meena.lakshmi@example.com', '9876543213', 'Resume of Meena Lakshmi'),
- (5, 'Karthik', 'Mohan', 'karthik.mohan@example.com', '9876543214', 'Resume of Karthik Mohan'),
- (6, 'Priya', 'Balan', 'priya.balan@example.com', '9876543215', 'Resume of Priya Balan'),
- (7, 'Vignesh', 'Anand', 'vignesh.anand@example.com', '9876543216', 'Resume of Vignesh Anand'),
- (8, 'Lakshmi', 'Narayanan', 'lakshmi.n@example.com', '9876543217', 'Resume of Lakshmi Narayanan'),
- (9, 'Rohit', 'Sankar', 'rohit.sankar@example.com', '9876543218', 'Resume of Rohit Sankar'),
- (10, 'Anitha', 'Raj', 'anitha.raj@example.com', '9876543219', 'Resume of Anitha Raj');

select * from applicants;



CREATE TABLE Applications (

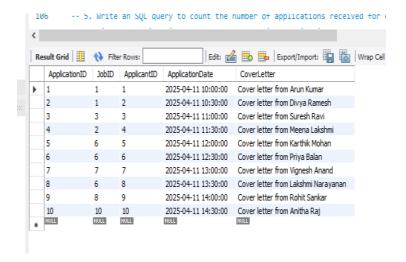
ApplicationID INT PRIMARY KEY,

JobID INT not null,

```
ApplicantID INT not null,
ApplicationDate DATETIME not null,
CoverLetter TEXT,
FOREIGN KEY (JobID) REFERENCES Jobs(JobID) on delete cascade,
FOREIGN KEY (ApplicantID) REFERENCES Applicants(ApplicantID)
);
INSERT INTO Applications (ApplicationID, JobID, ApplicantID,
ApplicationDate, CoverLetter) VALUES
(1, 1, 1, '2025-04-11 10:00:00', 'Cover letter from Arun Kumar'),
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```
(1, 1, 1, '2025-04-11 10:00:00', 'Cover letter from Arun Kumar'), (2, 1, 2, '2025-04-11 10:30:00', 'Cover letter from Divya Ramesh'), (3, 3, 3, '2025-04-11 11:00:00', 'Cover letter from Suresh Ravi'), (4, 2, 4, '2025-04-11 11:30:00', 'Cover letter from Meena Lakshmi'), (5, 6, 5, '2025-04-11 12:00:00', 'Cover letter from Karthik Mohan'), (6, 6, 6, '2025-04-11 12:30:00', 'Cover letter from Priya Balan'), (7, 7, 7, '2025-04-11 13:00:00', 'Cover letter from Vignesh Anand'), (8, 6, 8, '2025-04-11 13:30:00', 'Cover letter from Lakshmi Narayanan'), (9, 8, 9, '2025-04-11 14:00:00', 'Cover letter from Rohit Sankar'), (10, 10, '2025-04-11 14:30:00', 'Cover letter from Anitha Raj');
```

select * from applications;



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

Jobs.JobTitle,

COUNT(Applications.ApplicationID) AS ApplicationCount

FROM

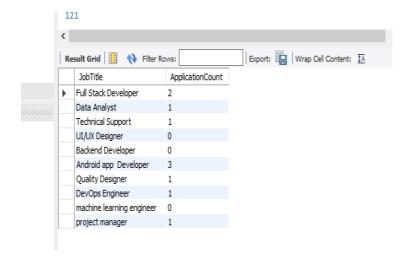
Jobs

LEFT JOIN

Applications ON Jobs.JobID = Applications.JobID

GROUP BY

Jobs.JobTitle;



- -- 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.

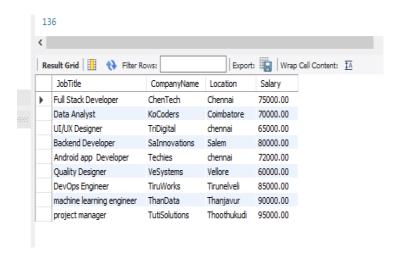
Jobs.JobTitle, Companies.CompanyName, Companies.Location, Jobs.Salary FROM Jobs JOIN

 $Companies\ ON\ Jobs. CompanyID = Companies. CompanyID$

WHERE

SELECT

Jobs.Salary BETWEEN 50000 AND 100000;



- -- 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

Jobs.JobTitle,

Companies.CompanyName,

Applications. Application Date

FROM

Applications

JOIN

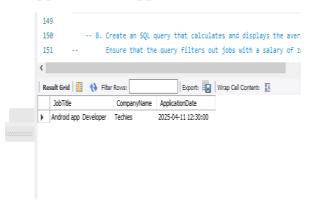
Jobs ON Applications.JobID = Jobs.JobID

JOIN

Companies ON Jobs.CompanyID = Companies.CompanyID

WHERE

Applications. Applicant ID = 6;



- -- 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;



- -- 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 CompanyName, JobCount
FROM (
  SELECT C.CompanyName, COUNT(J.JobID) AS JobCount
  FROM Companies C
  JOIN Jobs J ON C.CompanyID = J.CompanyID
  GROUP BY C.CompanyName
) AS JobCounts
WHERE JobCount = (
  SELECT MAX(CountPerCompany)
  FROM (
    SELECT COUNT(JobID) AS CountPerCompany
    FROM Jobs
    GROUP BY CompanyID
  ) AS CompanyJobCounts
);
   178
  Result Grid
                Filter Rows:
      CompanyName
                  JobCount
     ChenTech
     KoCoders
     MadSoft
     TriDigital
     SaInnovations
     Techies
     VeSystems
                  1
     TiruWorks
     ThanData
     TutiSolutions 1
```

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

ALTER TABLE Applicants

ADD Experience INT;

```
UPDATE Applicants SET Experience = 1 WHERE ApplicantID = 1;
UPDATE Applicants SET Experience = 2 WHERE ApplicantID = 2;
UPDATE Applicants SET Experience = 3 WHERE ApplicantID = 3;
UPDATE Applicants SET Experience = 4 WHERE ApplicantID = 4;
UPDATE Applicants SET Experience = 2 WHERE ApplicantID = 5;
UPDATE Applicants SET Experience = 5 WHERE ApplicantID = 6;
UPDATE Applicants SET Experience = 3 WHERE ApplicantID = 7;
UPDATE Applicants SET Experience = 1 WHERE ApplicantID = 8;
UPDATE Applicants SET Experience = 6 WHERE ApplicantID = 9;
UPDATE Applicants SET Experience = 4 WHERE ApplicantID = 10;
SELECT DISTINCT
Applicants.ApplicantID,
Applicants.FirstName,
Applicants.LastName
```

FROM

Applications

JOIN

Jobs ON Applications.JobID = Jobs.JobID

JOIN

Companies ON Jobs.CompanyID = Companies.CompanyID

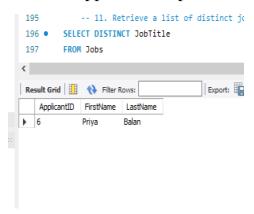
JOIN

Applicants ON Applications. ApplicantID = Applicants. ApplicantID

WHERE

Companies.Location = 'Chennai'

AND Applicants.Experience >= 3;

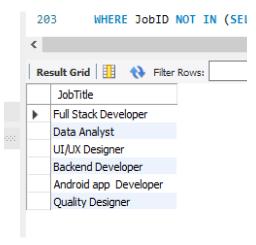


-- 11. Retrieve a list of distinct job titles with salaries between \$60,000 and \$80,000.

SELECT DISTINCT JobTitle

FROM Jobs

WHERE Salary BETWEEN 60000 AND 80000;

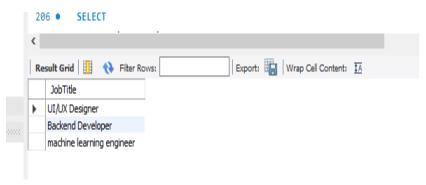


-- 12. Find the jobs that have not received any applications.

SELECT JobTitle

FROM Jobs

WHERE JobID NOT IN (SELECT DISTINCT JobID FROM Applications);



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

SELECT

Applicants.FirstName,

Applicants.LastName,

Companies.CompanyName,

Jobs.JobTitle

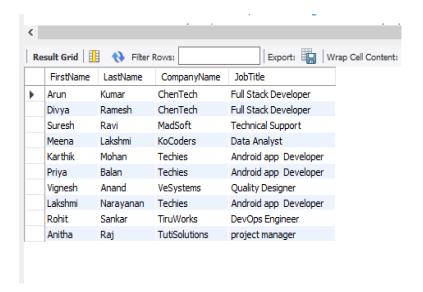
FROM

Applications

JOIN Jobs ON Applications.JobID = Jobs.JobID

JOIN Companies ON Jobs.CompanyID = Companies.CompanyID

JOIN Applicants ON Applications. ApplicantID = Applicants. ApplicantID;



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

INSERT INTO Companies (CompanyID, CompanyName, location) VALUES (11, 'NoJobCorp', 'chennai');

SELECT

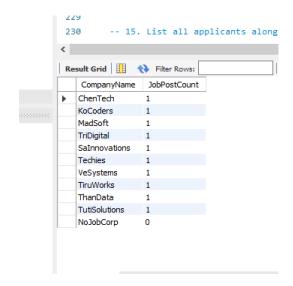
Companies.CompanyName,

 $COUNT(Jobs.JobID) \ AS \ JobPostCount$

FROM

Companies

LEFT JOIN Jobs ON Companies.CompanyID = Jobs.CompanyID GROUP BY Companies.CompanyName;



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

SELECT

Applicants.FirstName,

Applicants.LastName,

Companies.CompanyName,

Jobs.JobTitle

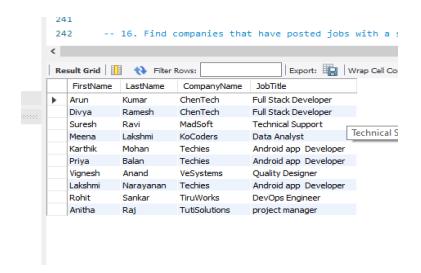
FROM

Applicants

LEFT JOIN Applications ON Applicants. ApplicantID = Applications. ApplicantID

LEFT JOIN Jobs ON Applications.JobID = Jobs.JobID

LEFT JOIN Companies ON Jobs.CompanyID = Companies.CompanyID;



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

SELECT DISTINCT

Companies.CompanyName

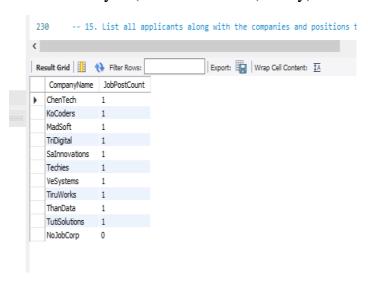
FROM

Jobs

JOIN Companies ON Jobs.CompanyID = Companies.CompanyID

WHERE

Jobs.Salary > (SELECT AVG(Salary) FROM Jobs);



- -- 17. Display a list of applicants with their names and a concatenated string of their city and state.
- -- Assuming "city" and "state" fields exist (but not in current schema), skipping implementation as schema lacks city/state fields.

ALTER TABLE Applicants

ADD City VARCHAR(100),

ADD State VARCHAR(100);

UPDATE Applicants SET City = 'Chennai', State = 'Tamil Nadu' WHERE ApplicantID = 1;

UPDATE Applicants SET City = 'Madurai', State = 'Tamil Nadu' WHERE ApplicantID = 2;

UPDATE Applicants SET City = 'Salem', State = 'Tamil Nadu' WHERE ApplicantID = 3;

UPDATE Applicants SET City = 'Chennai', State = 'Tamil Nadu' WHERE ApplicantID = 4;

UPDATE Applicants SET City = 'Trichy', State = 'Tamil Nadu' WHERE ApplicantID = 5;

UPDATE Applicants SET City = 'Coimbatore', State = 'Tamil Nadu' WHERE ApplicantID = 6;

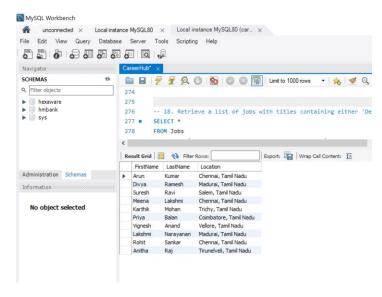
UPDATE Applicants SET City = 'Vellore', State = 'Tamil Nadu' WHERE ApplicantID = 7;

UPDATE Applicants SET City = 'Madurai', State = 'Tamil Nadu' WHERE ApplicantID = 8;

UPDATE Applicants SET City = 'Tirunelveli', State = 'Tamil Nadu' WHERE ApplicantID = 10;

UPDATE Applicants SET City = 'Chennai', State = 'Tamil Nadu' WHERE ApplicantID = 9;

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

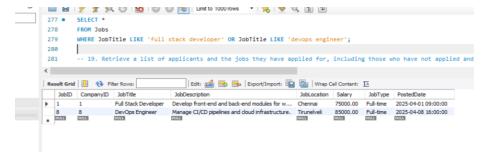


-- 18. Retrieve a list of jobs with titles containing either 'Developer' or 'Engineer'.

SELECT *

FROM Jobs

WHERE JobTitle LIKE 'full stack developer' OR JobTitle LIKE 'devops engineer';



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

SELECT

Applicants.FirstName,

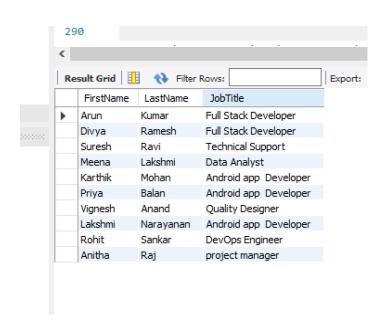
Applicants.LastName,

Jobs.JobTitle

FROM

Applicants

LEFT JOIN Applications ON Applicants.ApplicantID = Applications.ApplicantID LEFT JOIN Jobs ON Applications.JobID = Jobs.JobID;



- -- 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.
- -- Example: city = 'Chennai'

SELECT a.FirstName, a.LastName, a.Experience, c.CompanyName, c.Location FROM Applicants a

JOIN Companies c ON LOWER(c.Location) = 'chennai'

WHERE a. Experience > 2;

