

Case Study: Career Hub

```
-- initializing database
create database if not exists careerHub;

use careerHub;

-- creating tables:

-- 2. Create tables for Companies, Jobs, Applicants and Applications.
create table if not exists companies(
    companyId int not null unique primary key,
    companyName varchar(255),
    location varchar(255)
);

create table if not exists jobs(
    jobId int not null unique primary key,
    companyId int,
    jobTitle varchar(255),
    jobDescription varchar(1255),
    jobLocation varchar(255),
    salary decimal,
    jobType varchar(255),
    postedDate datetime
);

create table if not exists applicants (
    applicantId int not null unique primary key,
    firstName varchar(255),
    lastName varchar(255),
    email varchar(255),
    phone varchar(10),
    city varchar(30),
    state varchar(30), -- modified the table to add 3 more columns city state and experience to make
    ensure some queries to work
    experience int,
    resume text
);

create table if not exists applications (
    applicationId int not null unique primary key,
    jobId int,
    applicantId int,
    applicationDate datetime,
    coverLetter text
);

-- 3. Define appropriate primary keys, foreign keys, and constraints.
alter table jobs add foreign key (companyId) references companies(companyId);
alter table applications add foreign key (jobId) references jobs(jobId);
alter table applications add foreign key (applicantId) references applicants(applicantId);
```

136	12:54:19	create database if not exists careerHub	1 row(s) affected	0.016 sec
137	12:54:19	use careerHub	0 row(s) affected	0.000 sec
138	12:54:19	create table if not exists companies(companyId int not null unique primary key, companyName varchar(255), location varchar(255))	0 row(s) affected	0.000 sec
139	12:54:19	create table if not exists jobs(jobId int not null unique primary key, companyId int, jobTitle varchar(255), jobDescription varchar(1255), jobLoc...	0 row(s) affected	0.015 sec
140	12:54:19	create table if not exists applicants (applicantId int not null unique primary key, firstName varchar(255), lastName varchar(255), email varchar(25...	0 row(s) affected	0.016 sec
141	12:54:19	create table if not exists applications (applicantId int not null unique primary key, jobId int, applicationDate datetime, coverLe...	0 row(s) affected	0.016 sec
142	12:54:19	alter table jobs add foreign key (companyId) references companies(companyId)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.031 sec
143	12:54:19	alter table applications add foreign key (jobId) references jobs(jobId)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.015 sec
144	12:54:19	alter table applications add foreign key (applicantId) references applicants(applicantId)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.032 sec

Inserting data to the tables:

```

use careerHub;

select * from companies;

-- Inserting data into the Companies table
INSERT INTO companies (companyId, companyName, location) VALUES
(1, 'ABC Corporation', 'Chennai'),
(2, 'XYZ Solutions', 'Coimbatore'),
(3, 'PQR Enterprises', 'Madurai'),
(4, 'LMN Technologies', 'Tiruchirappalli'),
(5, 'EFG Innovations', 'Salem'),
(6, 'RST Services', 'Tirunelveli'),
(7, 'UVW Solutions', 'Vellore'),
(8, 'IJK Industries', 'Erode'),
(9, 'OPQ Corporation', 'Thanjavur'),
(10, 'MNO Enterprises', 'Kanyakumari');

-- Inserting data into the Jobs table
INSERT INTO jobs (jobId, companyId, jobTitle, jobDescription, jobLocation, salary, jobType,
postedDate) VALUES
(101, 1, 'Software Engineer', 'Developing software applications', 'Chennai', 100000, 'Full-time', '2024-
04-16 09:00:00'),
(102, 2, 'Data Analyst', 'Analyzing data sets', 'Coimbatore', 80000, 'Full-time', '2024-04-16 10:00:00'),
(103, 3, 'Marketing Manager', 'Marketing strategy development', 'Madurai', 120000, 'Full-time', '2024-
04-16 11:00:00'),
(104, 4, 'Web Developer', 'Building websites and web applications', 'Tiruchirappalli', 90000, 'Full-time',
'2024-04-16 09:00:00'),
(105, 5, 'Data Scientist', 'Analyzing and interpreting complex data sets', 'Salem', 110000, 'Full-time',
'2024-04-16 10:00:00'),
(106, 6, 'Business Analyst', 'Analyzing business processes and requirements', 'Tirunelveli', 85000, 'Full-
time', '2024-04-16 11:00:00'),
(107, 7, 'UX/UI Designer', 'Designing user interfaces for digital products', 'Vellore', 95000, 'Full-time',
'2024-04-16 09:00:00'),
(108, 8, 'Network Engineer', 'Designing and implementing computer networks', 'Erode', 105000, 'Full-
time', '2024-04-16 10:00:00'),
(109, 9, 'Content Writer', 'Creating content for websites and marketing materials', 'Thanjavur', 75000,
'Full-time', '2024-04-16 11:00:00'),
(110, 10, 'Sales Executive', 'Promoting and selling products or services', 'Kanyakumari', 80000, 'Full-
time', '2024-04-16 09:00:00'),
(111, 10, 'Python Developer', 'Entry level Python developer', 'Chennai', 80000, 'Full-time', '2024-04-16
06:00:00');

-- Inserting data into the Applicants table
INSERT INTO applicants (applicantId, firstName, lastName, email, phone, city, state, experience,
resume) VALUES

```

```
(201, 'Aravind', 'Kumar', 'aravind.kumar@example.com', '9876543201', 'Chennai', 'Tamil Nadu', 3,
'Aravind_Kumar_Resume.pdf'),
(202, 'Priya', 'Raj', 'priya.raj@example.com', '9876543202', 'Chennai', 'Tamil Nadu', 2,
'Priya_Raj_Resume.pdf'),
(203, 'Manoj', 'Sharma', 'manoj.sharma@example.com', '9876543203', 'Chennai', 'Tamil Nadu', 3,
'Manoj_Sharma_Resume.pdf'),
(204, 'Deepika', 'Nair', 'deepika.nair@example.com', '9876543204', 'Chennai', 'Tamil Nadu', 3,
'Deepika_Nair_Resume.pdf'),
(205, 'Suresh', 'Venkat', 'suresh.venkat@example.com', '9876543205', 'Chennai', 'Tamil Nadu', 1,
'Suresh_Venkat_Resume.pdf'),
(206, 'Lavanya', 'Chandran', 'lavanya.chandran@example.com', '9876543206', 'Chennai', 'Tamil Nadu',
0, 'Lavanya_Chandran_Resume.pdf'),
(207, 'Rajesh', 'Sundar', 'rajesh.sundar@example.com', '9876543207', 'Chennai', 'Tamil Nadu', 0,
'Rajesh_Sundar_Resume.pdf'),
(208, 'Anusha', 'Srinivasan', 'anusha.srinivasan@example.com', '9876543208', 'Chennai', 'Tamil Nadu',
2, 'Anusha_Srinivasan_Resume.pdf'),
(209, 'Ganesh', 'Krishnan', 'ganesh.krishnan@example.com', '9876543209', 'Chennai', 'Tamil Nadu', 2,
'Ganesh_Krishnan_Resume.pdf'),
(210, 'Divya', 'Ravi', 'divya.ravi@example.com', '9876543210', 'Chennai', 'Tamil Nadu', 3,
'Divya_Ravi_Resume.pdf');
```

-- Insert data into Applications table

```
INSERT INTO applications (applicationId, jobId, applicantId, applicationDate, coverLetter) VALUES
(301, 101, 201, '2024-04-16 12:00:00', 'Dear Hiring Manager, I am excited to apply for the Software
Engineer position...'),
(302, 102, 202, '2024-04-16 13:00:00', 'Dear Hiring Manager, I am writing to express my interest in the
Data Analyst role...'),
(303, 103, 203, '2024-04-16 14:00:00', 'Dear Hiring Manager, I am confident that my skills and
experience make me a great fit for the Marketing Manager position...'),
(304, 104, 204, '2024-04-16 15:00:00', 'Dear Hiring Manager, I am interested in the Web Developer
role and eager to contribute my expertise...'),
(305, 105, 205, '2024-04-16 16:00:00', 'Dear Hiring Manager, I am passionate about data analysis and
excited to apply for the Data Scientist position...'),
(306, 106, 206, '2024-04-16 17:00:00', 'Dear Hiring Manager, I am applying for the Business Analyst
role and confident in my ability to analyze and interpret data...'),
(307, 107, 207, '2024-04-16 18:00:00', 'Dear Hiring Manager, I am a creative UX/UI Designer with a
strong portfolio and excited to join your team...'),
(308, 108, 208, '2024-04-16 19:00:00', 'Dear Hiring Manager, I am interested in the Network Engineer
position and eager to apply my networking skills...'),
(309, 109, 209, '2024-04-16 20:00:00', 'Dear Hiring Manager, I am a skilled Content Writer with
experience in creating engaging content...'),
(310, 110, 210, '2024-04-16 21:00:00', 'Dear Hiring Manager, I am enthusiastic about sales and eager
to apply for the Sales Executive role...');
```

147	12:54:22	INSERT INTO companies (companyId, companyName, location) VALUES (1, 'ABC Corporation', 'Chennai'), (2, 'XYZ Solutions', 'Coimbatore'), (3, 'PQR ...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0	0.016 sec
148	12:54:22	INSERT INTO jobs (jobId, companyId, jobTitle, jobDescription, jobLocation, salary, jobType, postedDate) VALUES (101, 1, 'Software Engineer', 'Develo...	11 row(s) affected Records: 11 Duplicates: 0 Warnings: 0	0.000 sec
149	12:54:22	INSERT INTO applicants (applicantId, firstName, lastName, email, phone, city, state, experience, resume) VALUES (201, 'Aravind', 'Kumar', 'aravind.ku...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0	0.000 sec
150	12:54:22	INSERT INTO applications (applicationId, jobId, applicantId, applicationDate, coverLetter) VALUES (301, 101, 201, '2024-04-16 12:00:00', 'Dear Hing ...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0	0.000 sec

Tasks:

```
use careerHub;
```

```
/*
```

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.applicantId) as applicationCount
      from jobs left join applications
      on applications.jobId = jobs.jobId
 group by jobs.jobTitle;
```

	jobTitle	applicationCount
▶	Software Engineer	1
	Data Analyst	1
	Marketing Manager	1
	Web Developer	1
	Data Scientist	1
	Business Analyst	1
	UX/UI Designer	1
	Network Engineer	1
	Content Writer	1
	Sales Executive	1
	Python Developer	0

```
/*
```

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
      join companies c on j.companyId = c.companyId
 where j.salary between 80000 and 100000;
```

	jobTitle	companyName	jobLocation	salary
▶	Software Engineer	ABC Corporation	Chennai	100000
	Data Analyst	XYZ Solutions	Coimbatore	80000
	Web Developer	LMN Technologies	Tiruchirappalli	90000
	Business Analyst	RST Services	Tirunelveli	85000
	UX/UI Designer	UVW Solutions	Vellore	95000
	Sales Executive	MNO Enterprises	Kanyakumari	80000
	Python Developer	MNO Enterprises	Chennai	80000

/*

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, a.applicationDate
      from applications a join jobs j on a.jobId = j.jobId
    join companies c on j.companyId = c.companyId
   where a.applicantId = 203;
```

	jobTitle	companyName	applicationDate
▶	Marketing Manager	ABC Corporation	2024-04-16 14:00:00
	Marketing Manager	XYZ Solutions	2024-04-16 14:00:00
	Marketing Manager	PQR Enterprises	2024-04-16 14:00:00
	Marketing Manager	LMN Technologies	2024-04-16 14:00:00
	Marketing Manager	EFG Innovations	2024-04-16 14:00:00
	Marketing Manager	RST Services	2024-04-16 14:00:00
	Marketing Manager	UVW Solutions	2024-04-16 14:00:00
	Marketing Manager	IJK Industries	2024-04-16 14:00:00
	Marketing Manager	OPQ Corporation	2024-04-16 14:00:00
	Marketing Manager	MNO Enterprises	2024-04-16 14:00:00

/*

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;
```

	avarageSalary
▶	92727.2727

/*

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 , count(*) as jobCount from jobs j
      join companies c on j.companyId = c.companyId
group by companyName
order by jobCount desc
limit 1;
```

	companyName	jobCount
▶	MNO Enterprises	2

/*

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;
```

	jobTitle
▶	Data Analyst
	Content Writer
	Sales Executive
	Python Developer

/*

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

*/

```
select * from jobs where jobId not in (select distinct jobId from applications);
```

	jobId	companyId	jobTitle	jobDescription	jobLocation	salary	jobType	postedDate
▶	111	10	Python Developer	Entry level Python devel...	Chennai	80000	Full-time	2024-04-16 06:00:00
*								

/*

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 as firstName, applicants.lastName as lastName,  
       c.companyName as companyName, jobs.jobTitle as jobTitle  
  from applicants join applications on applicants.applicantId = applications.applicantId  
        join jobs on applications.jobId = jobs.jobId  
        join companies c on jobs.companyId = c.companyId;
```

	firstName	lastName	companyName	jobTitle
▶	Aravind	Kumar	ABC Corporation	Software Engineer
	Priya	Raj	XYZ Solutions	Data Analyst
	Manoj	Sharma	PQR Enterprises	Marketing Manager
	Deepika	Nair	LMN Technologies	Web Developer
	Suresh	Venkat	EFG Innovations	Data Scientist
	Lavanya	Chandran	RST Services	Business Analyst
	Rajesh	Sundar	UVW Solutions	UX/UI Designer
	Anusha	Srinivasan	IJK Industries	Network Engineer
	Ganesh	Krishnan	OPQ Corporation	Content Writer
	Divya	Ravi	MNO Enterprises	Sales Executive

/*

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  
        join jobs j on c.companyId = j.companyId  
  group by companyName  
  order by jobCount desc;
```

	companyName	jobCount
▶	MNO Enterprises	2
	ABC Corporation	1
	XYZ Solutions	1
	PQR Enterprises	1
	LMN Technologies	1
	EFG Innovations	1
	RST Services	1
	UVW Solutions	1
	IJK Industries	1
	OPQ Corporation	1

/*

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, companies.companyName, jobs.jobTitle from applicants a
      left join applications ap on a.applicantId = ap.applicantId
      left join jobs on ap.jobId = jobs.jobId
      left join companies on jobs.companyId = companies.companyId;
```

	firstName	lastName	companyName	jobTitle
▶	Aravind	Kumar	ABC Corporation	Software Engineer
	Priya	Raj	XYZ Solutions	Data Analyst
	Manoj	Sharma	PQR Enterprises	Marketing Manager
	Deepika	Nair	LMN Technologies	Web Developer
	Suresh	Venkat	EFG Innovations	Data Scientist
	Lavanya	Chandran	RST Services	Business Analyst
	Rajesh	Sundar	UVW Solutions	UX/UI Designer
	Anusha	Srinivasan	IJK Industries	Network Engineer
	Ganesh	Krishnan	OPQ Corporation	Content Writer
	Divya	Ravi	MNO Enterprises	Sales Executive

/*

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

*/

```
select c.companyName, jobs.salary from companies c join jobs on c.companyId = jobs.companyId
where jobs.salary > (
      select avg(salary) from jobs
);
```

	companyName	salary
▶	ABC Corporation	100000
	PQR Enterprises	120000
	EFG Innovations	110000
	UVW Solutions	95000
	IJK Industries	105000

/*

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 location from applicants;
```


	fullName	location
▶	Aravind Kumar	Chennai,Tamil Nadu
	Priya Raj	Chennai,Tamil Nadu
	Manoj Sharma	Chennai,Tamil Nadu
	Deepika Nair	Chennai,Tamil Nadu
	Suresh Venkat	Chennai,Tamil Nadu
	Lavanya Chandran	Chennai,Tamil Nadu
	Rajesh Sundar	Chennai,Tamil Nadu
	Anusha Srinivasan	Chennai,Tamil Nadu
	Ganesh Krishnan	Chennai,Tamil Nadu
	Divya Ravi	Chennai,Tamil Nadu

/*

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

*/

select * from jobs where jobTitle like '%Developer%' or jobTitle like '%Engineer%';

	jobId	companyId	jobTitle	jobDescription	jobLocation	salary	jobType	postedDate
▶	101	1	Software Engineer	Developing software ap...	Chennai	100000	Full-time	2024-04-16 09:00:00
	104	4	Web Developer	Building websites and w...	Tiruchirappalli	90000	Full-time	2024-04-16 09:00:00
	108	8	Network Engineer	Designing and implemen...	Erode	105000	Full-time	2024-04-16 10:00:00
	111	10	Python Developer	Entry level Python devel...	Chennai	80000	Full-time	2024-04-16 06:00:00

/*

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.applicantId, a.firstName, a.lastName, j.JobId, j.JobTitle from applicants a
left join applications ap on a.applicantId = ap.applicantId
left join jobs j on ap.jobId = j.jobId;

	applicantId	firstName	lastName	JobId	JobTitle
▶	201	Aravind	Kumar	101	Software Engineer
	202	Priya	Raj	102	Data Analyst
	203	Manoj	Sharma	103	Marketing Manager
	204	Deepika	Nair	104	Web Developer
	205	Suresh	Venkat	105	Data Scientist
	206	Lavanya	Chandran	106	Business Analyst
	207	Rajesh	Sundar	107	UX/UI Designer
	208	Anusha	Srinivasan	108	Network Engineer
	209	Ganesh	Krishnan	109	Content Writer
	210	Divya	Ravi	110	Sales Executive

/*

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.applicantId, a.firstName, a.lastName, c.companyId, 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 c.location = 'Madurai' and a.experience > 2;
```

	applicantId	firstName	lastName	companyId	companyName
▶	203	Manoj	Sharma	3	PQR Enterprises