COMPSCI 366 Presentation

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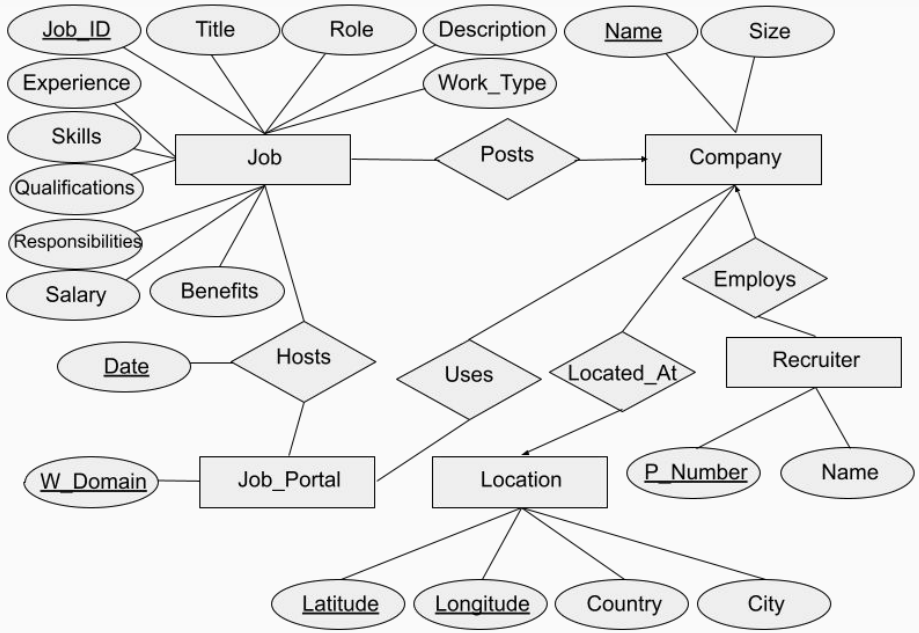
Overview Of Presentation

- **Application**
- **Implementation**
- **Demonstration**
- **Evaluation**
- **Conclusion**

Application Description

- **We chose to implement a program that allows users to search for a job listing based on search criteria**
- **It's important to have databases within the "Job Listing" domain, as a filter must be applied to narrow down job listings for the user and their requirements**
- **Users will also be able to log into the listing software, save job listing(s) from the "Job Listing" Domain**
    - **Example: Searching for a job on Indeed**

ER Diagram


Job_ID
Title
Role
Description
Name
Size
Experience
Work_Type
Skills
Job
Posts
Company
Qualifications
Responsibilities
Salary
Benefits
Employs
Date
Hosts
Uses
Located_At
Recruiter
W_Domain
Job_Portal
Location
P_Number
Name
Latitude
Longitude
Country
City

Relational Models

Job(Job_ID (Primary key): string, Title: string, Experience: string, Qualifications: string, Min_Salary: big int, Max_Salary: big int, Work_Type: string, Role: string, Description: string, Benefits: string, Skills: string, Responsibilities: string, Cname: string)

Job Portal(W_Domain (Primary key): string)

Company(Cname (Primary key): string, size: big int)

Location(Latitude (Primary key): double, Longitude (Primary key): double, Country: string, City: string, Cname: string)

Recruiter(R_Name: string, Phone_Number (Primary key): string, Cname: string)

Hosts(Job_ID: string, W_Domain: string, Date: date)

Uses(Cname: string, W_Domain: string)

3NF Confirmation

Job {Job_ID → Title, Experience, Qualifications, Salary, Work_Type, Role, Description, Benefits, Skills, Responsibilities, Company_Name}

Job_Portal { }

Company {Name → Size}

Location {Longitude, Latitude → Country, City, Company_Name}

Recruiter {Phone_Number → R_Name, Company_Name}

Hosts {Job_ID → Website_Domain, Date}

Uses { }

3NF is met, as the left side of any FD is a superkey, or the right side is part of any key

Relational Models Continued

1. **Job Id:** A unique identifier for each job posting.
2. **Experience:** The required or preferred years of experience for the job.
3. **Qualifications:** The educational qualifications needed for the job.
4. **Salary Range:** The range of salaries or compensation offered for the position.
5. **Location:** The city or area where the job is located.
6. **Country:** The country where the job is located.
7. **Latitude:** The latitude coordinate of the job location.
8. **Longitude:** The longitude coordinate of the job location.
9. **Work Type:** The type of employment (e.g., full-time, part-time, contract).
10. **Company Size:** The approximate size or scale of the hiring company.
11. **Job Posting Date:** The date when the job posting was made public.
12. **Preference:** Special preferences or requirements for applicants (e.g., Only Male or Only Female, or Both)
13. **Contact Person:** The name of the contact person or recruiter for the job.
14. **Contact:** Contact information for job inquiries.
15. **Job Title:** The job title or position being advertised.
16. **Role:** The role or category of the job (e.g., software developer, marketing manager).
17. **Job Portal:** The platform or website where the job was posted.
18. **Job Description:** A detailed description of the job responsibilities and requirements.
19. **Benefits:** Information about benefits offered with the job (e.g., health insurance, retirement plan
20. **Skills:** The skills or qualifications required for the job.
21. **Responsibilities:** Specific responsibilities and duties associated with the job.
22. **Company Name:** The name of the hiring company.
23. **Company Profile:** A brief overview of the company's background and mission.

Excluding Preference and Job Posting Date, as they are slightly irrelevant for our implementation

Dataset Information

Dataset chosen: Job Dataset

- **Size: 1.74 GB**
- **# Of Columns: 23**
- **# Of Rows: 1.6 Million +**
- **Dataset provides a wide coverage of Job Information, Location, Benefits and Responsibilities**

Tools Used:

- C++
- Qt Design Studio
- MYSQL/MARIADB
- Qt Compiler

Table Sizes

Job - 1,047,398 Tuples

Company - 888 Tuples

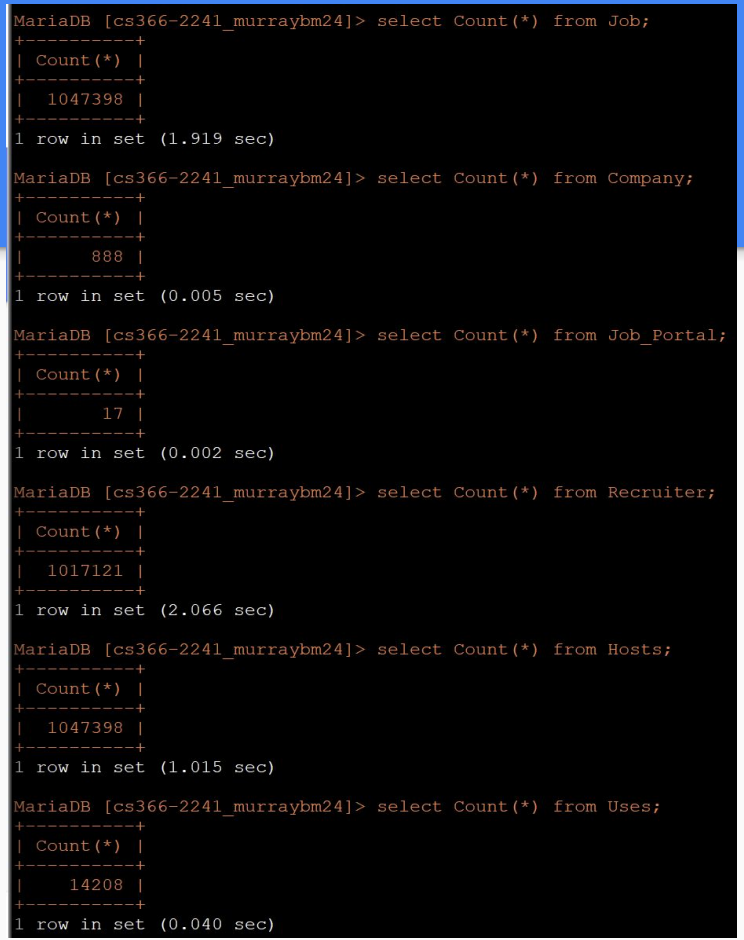
Job_Portal - 17 Tuples

Location - 888 Tuples

Recruiter - 1,017,121 Tuples

Hosts - 1,047,398 Tuples

Uses - 14,208 Tuples



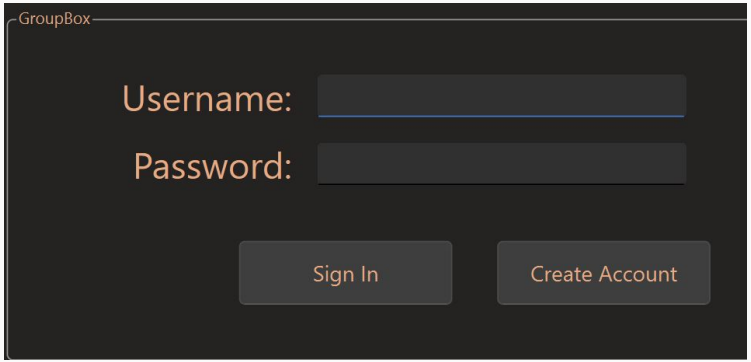
Queries

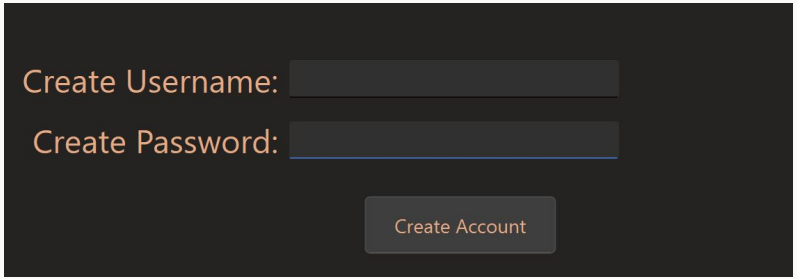
Number of Queries: ~26

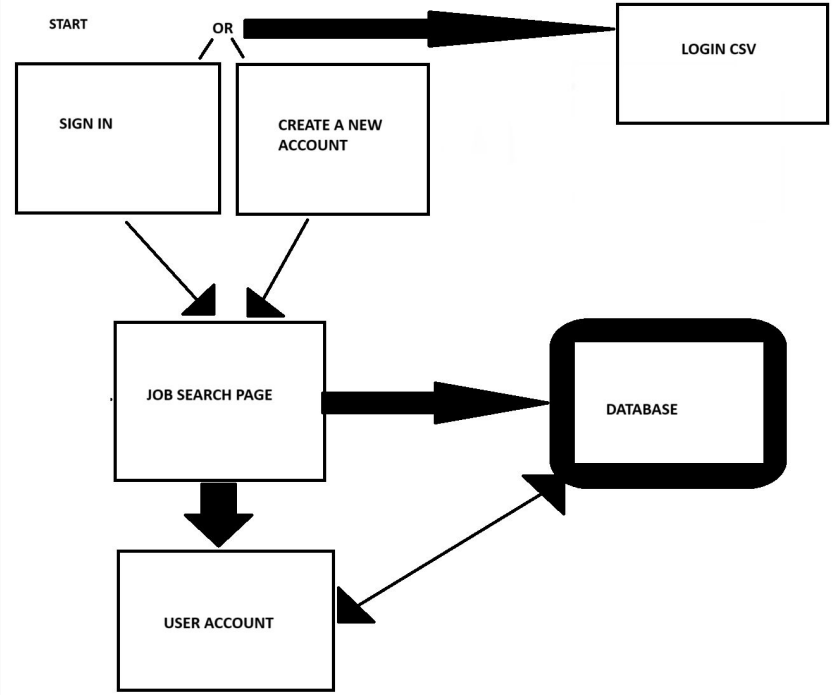
Number of Stored Procedures: 3

delimiter $$ drop procedure if exists getJob_byTitle; create procedure getJob_byTitle(IN JobTitle varchar(255)) begin Select * from Job where Job_Title like CONCAT('%', JobTitle, '%'); end $$	Search job listings by the title
"Select * from Job j where Job_Title like '%" + userinput + "%' AND j.C_Name = (select c.C_name from Company where c.C_size =" + size +");"	Search job listings by title and company size
"Select * from Job j where j.Qualifications like "+ userinputqualifications +" AND j.C_name IN ((select L.C_name from Location L where l.distance <= "+ userdistance +"));"	Search jobs listings by distance and qualifications
"Select * from Job where C_name like '%"+ usercname + "%';"	Search job listings by company name
"Select C_name from Company where c_size >= "+ usersize +";"	Search company by size
"Select * from Job j where min_salary = "+ usermin_sal +" AND j.JobID IN (select h.JobID from hosts h where w_domain like '%"+ domain +"%');"	Search by website domain and min salary
"Select * from Job j where j.Job_Title like '%"+ userjobtitle +"%' AND j.C_name IN (select r.C_name from Recruiter r where r.R_name like '%"+ userinput +"%') ;	Search job title by recruiter name
"Select * from Job j where j.min_sal >= "+ usermin +" AND j.max_sal >= "+ usermax +" AND j.C_name IN (select l.C_name from Location l where l.city like %"+ user_city +"%);	Search job by city and min and max salary
"Select * from Job j where j.C_name IN (select l.C_name from Location l where l.city like %"+ usercity +"% AND l.country like %"+ usercountry +"%)";	Search jobs by city and country

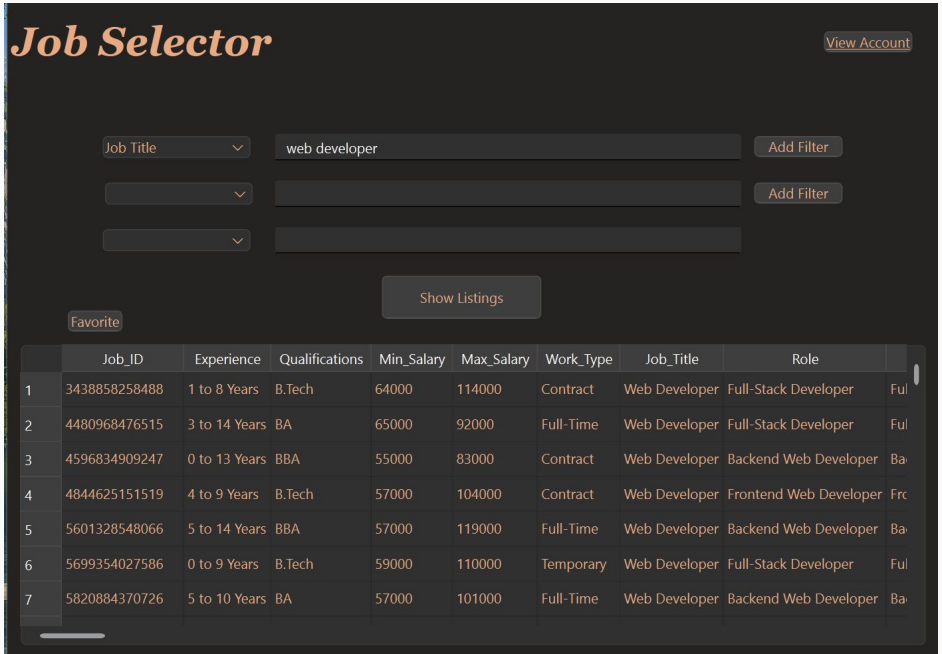
Implementation



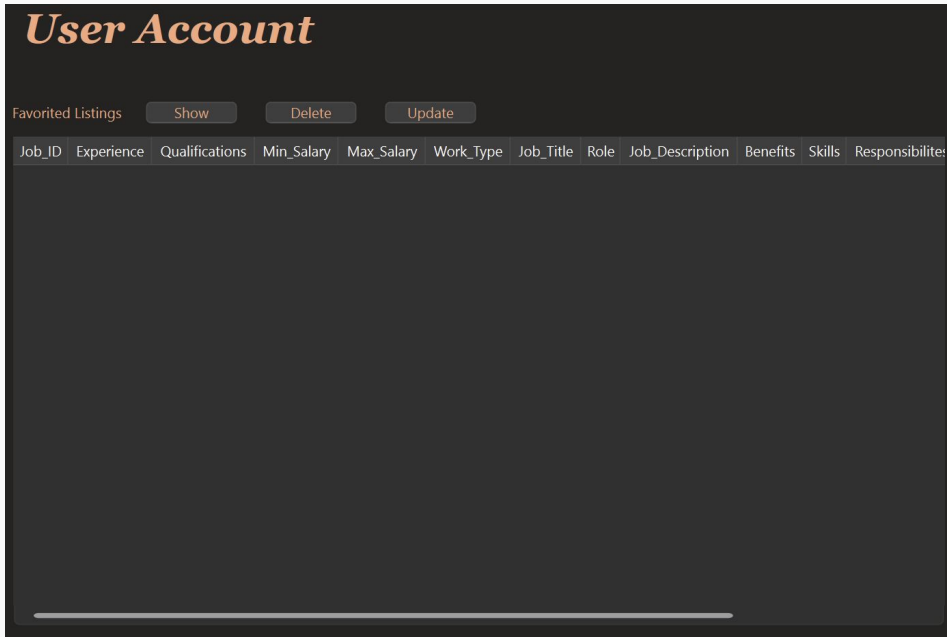




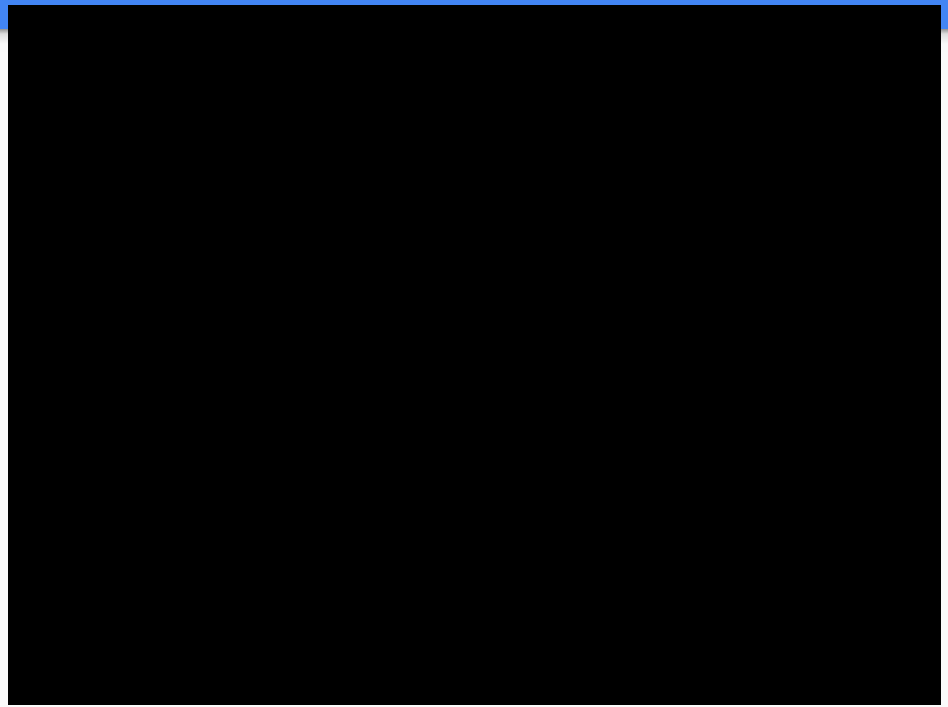
Implementation



	Job_ID	Experience	Qualifications	Min_Salary	Max_Salary	Work_Type	Job_Title	Role	
1	3438858258488	1 to 8 Years	B.Tech	64000	114000	Contract	Web Developer	Full-Stack Developer	Ful
2	4480968476515	3 to 14 Years	BA	65000	92000	Full-Time	Web Developer	Full-Stack Developer	Ful
3	4596834909247	0 to 13 Years	BBA	55000	83000	Contract	Web Developer	Backend Web Developer	Ba
4	4844625151519	4 to 9 Years	B.Tech	57000	104000	Contract	Web Developer	Frontend Web Developer	Fro
5	5601328548066	5 to 14 Years	BBA	57000	119000	Full-Time	Web Developer	Backend Web Developer	Ba
6	5699354027586	0 to 9 Years	B.Tech	59000	110000	Temporary	Web Developer	Full-Stack Developer	Ful
7	5820884370726	5 to 10 Years	BA	57000	101000	Full-Time	Web Developer	Backend Web Developer	Ba



Demonstration



Evaluation

At the time of this presentation, the following functionalities are present:

- **User login/account creation**
- **Search the database using filters**
- **Favorite job listings (inserting into table)**
- **Update comments on favorited listings in user account**
- **Delete listings from favorites table in user account**

Evaluation

As it stands, or database is functional but we would have liked to implement:

- **Better performance for sql queries - searching takes 1 minute +**
- **Implementation of a company option: can upload jobs to the database.**
- **Addition of a range filter**

Conclusion

Lessons Learned:

- **Importance of teamwork communication in a group setting**
- **Importance of database connection to the software implemented**
- **Importance of learning new things to get the desired result**

Roadblocks We Ran Into:

- **Company location and its relation to longitude and latitude Query**
- **Restructure and cleaning of CSV files**
- **Splicing of information lists with alternate symbols**
- **Getting the program to work on other computers**