Final Project Report

CARE: Job Portal for People with Special Needs

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1.1 INTRODUCTION:

What can the community do to help a person with a disability? Job searching is a challenging and, let's face it, highly boring activity. It is our responsibility as an empathic community to help and support every person, special needs or not. I'm enthusiastic about helping people with disabilities or other special needs, and I live by the concept that everyone deserves a fair shot at success. I know first-hand how frightening the job search process can be because I was a student myself. I've worked for a lot of non-profit organizations in the past, where I've taught math to kids with cerebral palsy or art to persons with disabilities. I really think that everyone should have a fair shot at having a prosperous career, and that is precisely why I am working on this initiative.

CARE has only one motto *"Focus on your abilities and not disabilities"*. Generally speaking, Employers utilize the interview process to ascertain whether a candidate is qualified for the position and whether they will be a good match for the business. But before getting to the interview stage, the most hectic work is searching for your perfect job. This means looking on all the right platforms that provide you a job tailor made for your needs. CARE is one application which will not only help filter all the jobs according to one's needs but also provide an easy, open and free access to all it's users.

My plan is to develop a platform for employment for individuals with disabilities. The gathering of data that covers all profiles would be the initial stage. The portal would eventually include all available positions and benefit both employers and job seekers. The user can easily build a profile by entering their data. Jobs will be sorted out on the platform according to requirements, location, qualifications, travel constraints, method of attendance, type of job, support needed, and contract. The portal will be user-friendly. The next stage would be to develop distinct platforms for providers and job seekers. Job providers would be very transparent about wants, job specifications, and salary expectations. Employers may directly submit applications from job seekers online.
The site was created for social causes, thus there are no additional fees. The users' privacy will be safeguarded by a privacy setting. The application's primary function must be the provision of reliable data and information, as well as the formulation of the acquired data in the cloud as a backup.

After the application has been submitted, CARE suggests the following steps to be followed:
-Focus on your abilities
-Practice mock interviews
-Be realistic about the positions that best suit your skills.

1.2 BUSINESS ANALYSIS:

The application could potentially have a billion users. These could include the following personas:

As a User/ Job Seeker I would consider the following:

- Look for jobs with my skillset, and according to my needs.
- View salary range for jobs.
- Get jobs in desired location.
- Recruit Talented and skilled workers
- Arrangements and compensations for special needs

As an Advertiser, I would want to consider the following:

- Target specific ads to specific users.
- Know metrics about certain locations.

As a CARE Administrator, I would consider the following:

- Perform regular maintenance checks on the application
- Check if all the data is updated (e.g. If a position has been filled, that position has been removed from open listing)
- Regularly check for bots
- Regularly check for fake jobs being posted

The business rules for my application include the following:

- Each applicant can submit one or many applications
- Each job can have one or many openings
- Each company can have one or many jobs
- No application can be submitted past the due date
- No applicant can submit an application for the same position twice
- The job, once filled, will no longer be available for applications

The data for the application will be stored on cloud, since it is a way more secure network as compared to other options.

1.3 TABLE DESIGN AND ANALYSIS:

My application in the database consists of a total of 6 tables, namely: Job_posting_activity, job_post, special_needs, job_type, job_post_skillset and job_location. These tables consists of three to eight entities each.

I created the 6 tables using the following code, where in I added the entities to the respective tables, assigned them the respective primary and foreign keys and thereby assigned them a data type.
For an example of how I created the tables, I have attached 2 screenshots below, one for the table named job_location_info and the other one for job_posting. I have also presented a screenshot of all the created tables in fig.1.3.3.

NOTE: For my particular project, I have not specifically specified the kind of special need, and have named it 1, 2 , 3, 4 instead, each number represents a different special need.

```
CREATE TABLE "job_location_info" (
    "job_location"  TEXT,
    "city"  TEXT,
    "state"   TEXT,
    "country"  TEXT,
    "zip_code" INTEGER,
    "job_post_id"   TEXT,
    "location_id"   INTEGER
);
```

Fig.1.3.1: creating the job_location_info table

```
CREATE TABLE "job_posting" (
    "job_post_id"   INTEGER DEFAULT 'NOT NULL',
    "job_title"  TEXT DEFAULT 'NOT NULL',
    "job_description"   TEXT,
    "company_name"   TEXT DEFAULT 'NOT NULL',
    "job_type_id"   INTEGER DEFAULT 'NOT NULL',
    "location_id"   INTEGER,
    "apply_by"   TEXT,
    PRIMARY KEY("job_post_id")
);
```

Fig.1.3.2: creating the job_posting table

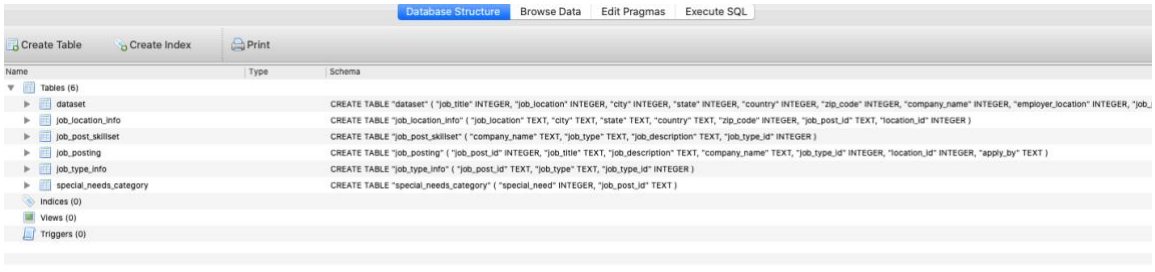


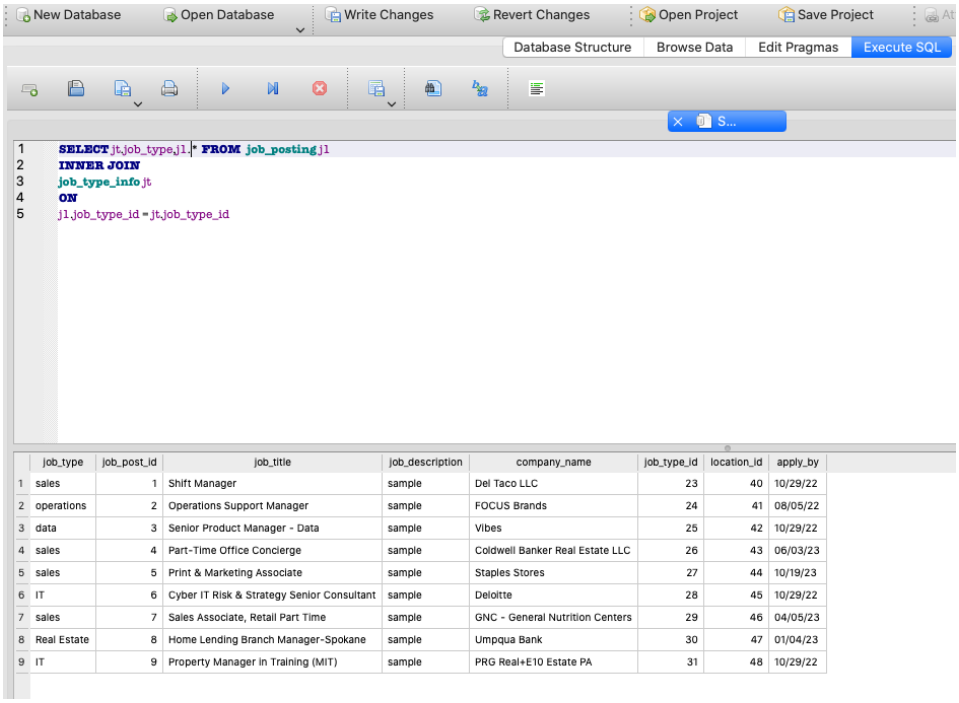
Fig.1.3.3: list of all the finally created tables

I have presented my ERD used for the project attached below:

Fig1.3.4: ERD for CARE database system

1.4 DATABASE IMPLEMENTATION:

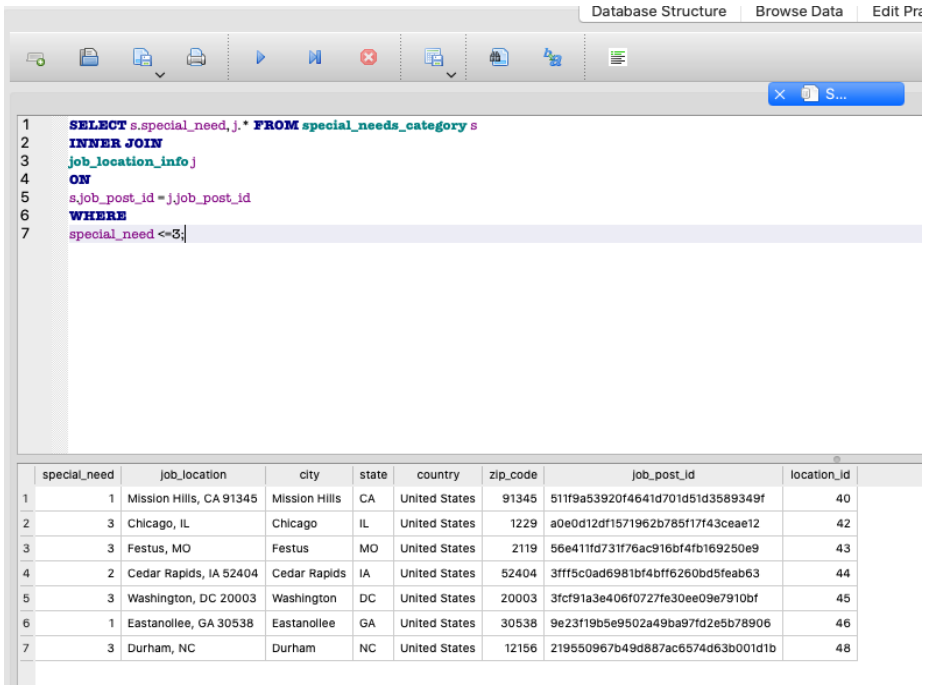
- Query to join the job_posting table with the job_type info table. Through this table the user can easily filter out to see the jobs according to their job types needed



	job_type	job_post_id	job_title	job_description	company_name	job_type_id	location_id	apply_by
1	sales	1	Shift Manager	sample	Del Taco LLC	23	40	10/29/22
2	operations	2	Operations Support Manager	sample	FOCUS Brands	24	41	08/05/22
3	data	3	Senior Product Manager - Data	sample	Vibes	25	42	10/29/22
4	sales	4	Part-Time Office Concierge	sample	Coldwell Banker Real Estate LLC	26	43	06/03/23
5	sales	5	Print & Marketing Associate	sample	Staples Stores	27	44	10/19/23
6	IT	6	Cyber IT Risk & Strategy Senior Consultant	sample	Deloitte	28	45	10/29/22
7	sales	7	Sales Associate, Retail Part Time	sample	GNC - General Nutrition Centers	29	46	04/05/23
8	Real Estate	8	Home Lending Branch Manager-Spokane	sample	Umpqua Bank	30	47	01/04/23
9	IT	9	Property Manager in Training (MIT)	sample	PRG Real+E10 Estate PA	31	48	10/29/22

Fig.1.4.1 Join query example 1

- Query to join special_needs_category table with the job_location_info table using the job_post_id, for special needs category 3



	special_need	job_location	city	state	country	zip_code	job_post_id	location_id
1	1	Mission Hills, CA 91345	Mission Hills	CA	United States	91345	511f9a53920f4641d701d51d3589349f	40
2	3	Chicago, IL	Chicago	IL	United States	1229	a0e0d12df1571962b785f17f43ceae12	42
3	3	Festus, MO	Festus	MO	United States	2119	56e411fd731f76ac916bf4fb169250e9	43
4	2	Cedar Rapids, IA 52404	Cedar Rapids	IA	United States	52404	3fff5c0ad6981bf4bff6260bd5feab63	44
5	3	Washington, DC 20003	Washington	DC	United States	20003	3fcf91a3e406f0727fe30ee09e7910bf	45
6	1	Eastanollee, GA 30538	Eastanollee	GA	United States	30538	9e23f19b5e9502a49ba97fd2e5b78906	46
7	3	Durham, NC	Durham	NC	United States	12156	219550967b49d887ac6574d63b001d1b	48

Fig.1.4.2 Join query example 2

- Using a sub clause query instead of the JOIN query to join the job_type_info table with the job_post_skillset to filter out the column containing sales values in particular.

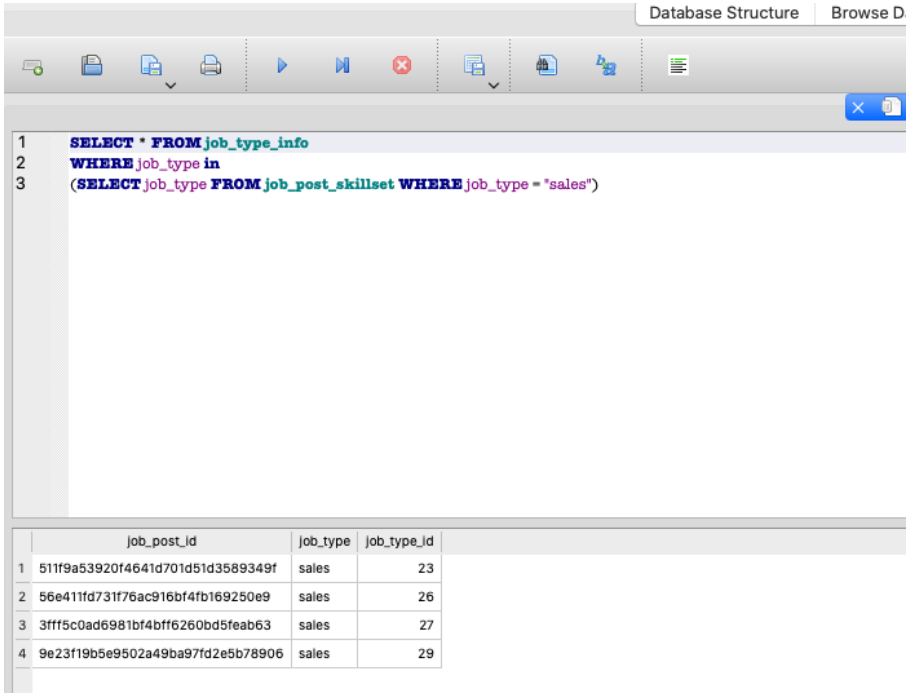


Fig. 1.4.3.sub clause query

- Updating a value in the given table:

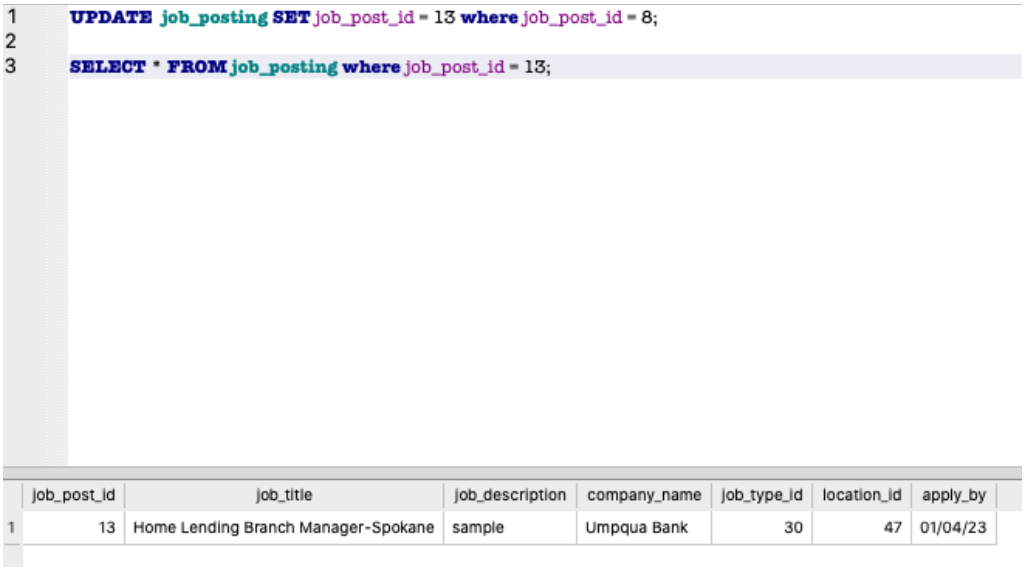


Fig. 1.4.3.update query example1

1.5 ANALYTICS, REPORTS AND METRICS:

The application will help connect people with special needs to a job that if fit for them. From a prototype database created, it is clear that all the business rules are being followed. Eventually, through a larger

data, an even better analysis could be created such as finding a trend in market for jobs for people with cerebral palsy, or analysing the market through posted jobs per year for a particular need.

1.6 SECURITY CONCERNS:

The application needs to be extremely secure. Security for this particular application must be kept in mind, because both, the job seekers and providers will be submitting private information like their house address, contact information SSN etc. Layers of security must be added to the network in order to make it absolutely secure. Hosts must make sure not to grant any unauthorized access to any third party or external entity without permission. Protecting all business data from attacks both internal and external, as well as from disruptions brought on by natural disasters, is the main objective of security.

1.7 ARCHITECTURE:

My initiative is focused on developing an employment site for those with disabilities. It is crucial to make use of semantic technologies in order to efficiently discover and match openings to the various job functions. I think that MVC design would be the most appropriate for my model. This implies:

1. Model: the backend, which powers front-end application's data warehouse & all its logics.
2. View: The data that the user requests to be seen on his or her screen is shown via the user interface.
3. Controller: the user's ability to alter the data they want to present through the user interface

Functional Categories:

After considering the above requirements, I came up with three broad functional categories:

1. Managing Users: User management refers to how the portal manages users, such as job seekers, HR personnel, and independent or consultancy recruiters. Individual HR representatives and independent or consulting recruiters are recognized as firms for the purposes of this paradigm, at least in terms of how they make use of the portal. Depending on their unique requirements, individual job seekers are categorized.

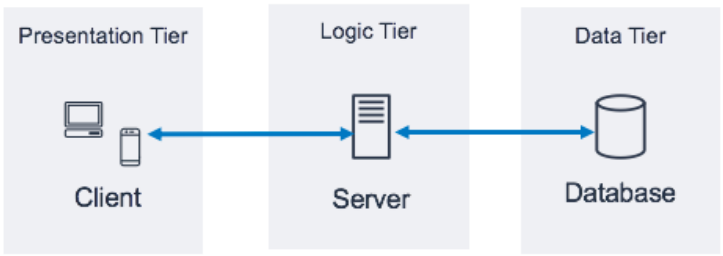
2. Building Profiles: The portal's profile-building capabilities for businesses and job seekers.

3. Job Posting and Job Search: How the portal facilitates posting, searching for, and submitting applications for employment.

Database Model, Hosting and Storage:

As for the database model and hosting:

I will be using a 3- tier architecture, that will help me make the system more organised, besides, it will help me save the data from the job seekers at different database tiers.



Storage:

I believe the storage will depend on the number of users to join the database, because once the real time application begins, the database will expand. But for the purpose of this project as a prototype, I believe 64TB would be enough for hosting and to get the application up and running initially.

1.8 PROJECT WRAP UP and FUTURE CONSIDERATIONS:

The project execution has been a roller coaster. Being absolutely new to databases, I have not only learned so much about database systems but also how to use a database language. Through the course, I learned how to create ERD's, a proper presentation of a business proposal, how to operate SQL and write queries etc. Through this project I also learned how to design a module from a business point of view. There are a few thing I would like to add to my database. Some of my future goals for this project have been listed below.

Online job boards today provide more than just a place to list and apply for employment. I have in mind the following goals for the future for this model:

1. A personal dashboard to keep a track of job applications

2. Real-time updates on applications

3. LinkedIn or other social media profile builders

4. Creating a separate database for job providers and linking it with this one. A separate dashboard will be made available for the job providers as well, where they can edit, add, delete or update job listings according to their needs. It will also give them the flexibility to manage the shortlisted candidates, manage the interviewing status like whether the candidate was selected or not.

1.9 REFERENCES:

1. *Helping Workers With Disabilities Find Employment,* (December, 2021), https://www.mass.gov/service-details/helping-workers-with-disabilities-find-employment Retrieved on October 29, 2022
2. Rohan, V. (September 5, 2022), *6 Exciting Cyber Security Project Ideas,* https://www.upgrad.com/blog/cyber-security-project-ideas-topics/ Retrieved on October 29, 2022