INDIANA UNIVERSITY
BLOOMINGTON

DSCI-D 532 Applied Database Technologies

Job Quest Log

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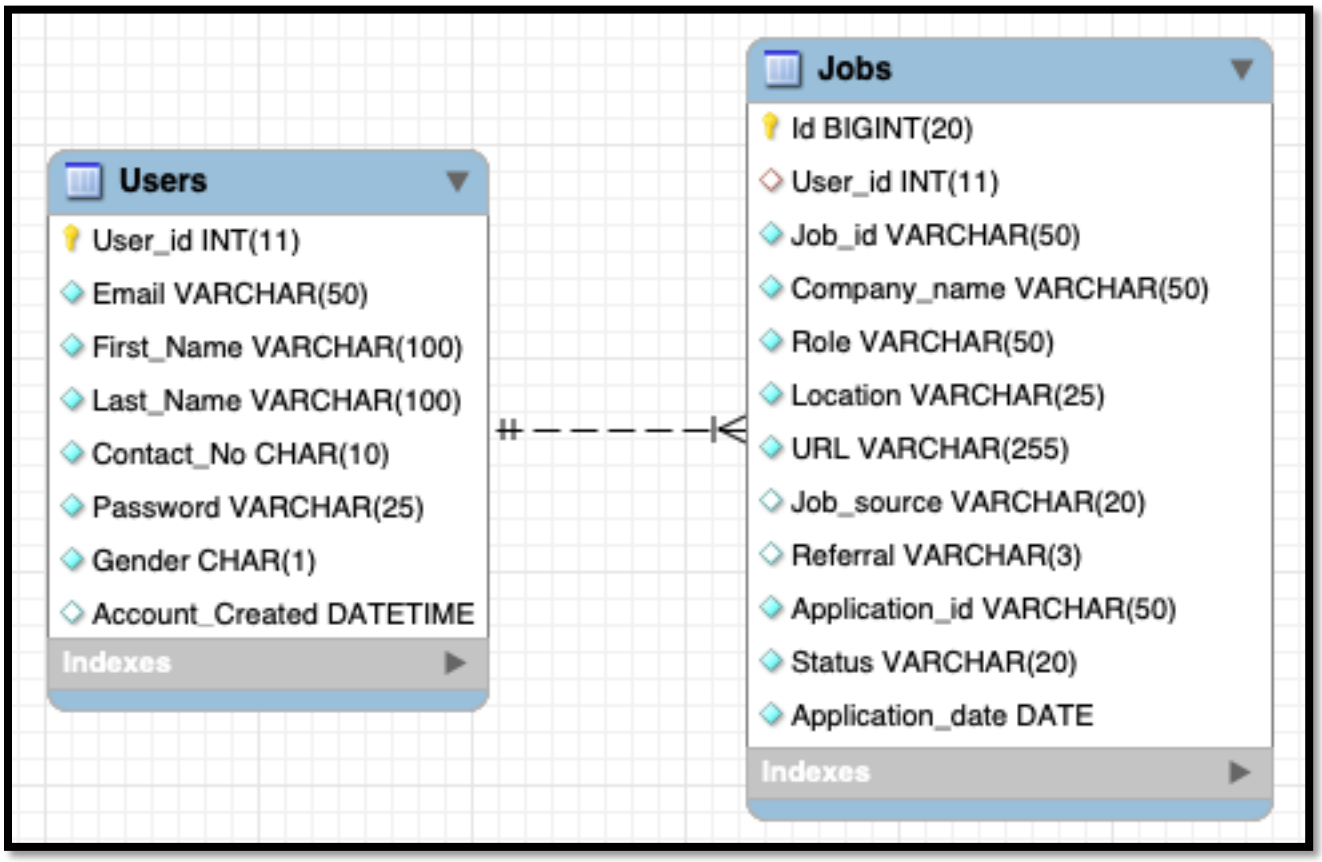
1. Conceptual Diagram/Schema for Database

1.1. Diagram



1.2. Explanation

The image shows a database schema with two tables: Users and Jobs. There's a one-to-many relationship between Users and Jobs, indicated by the dashed line, which suggests that a single user can be associated with multiple job applications. This relationship is established through the User_id field, which is common to both tables.

In practical terms, this means the Jobs table references the Users table to link each job application to a specific user. The Jobs table contains additional details about each job application, such as the job ID, company name, and application status.

2. Database

2.1. Tables

The database for this project is going to be user generated, and consists of the of two (2) tables –

1. **'Users'** Table – to keep track of the user demographic data. This table will have the following columns –
   i. **'User_id' –** This column will keep track of the unique userid created by the user at the time of account creation.
   ii. **'Email' –** This column will keep track of the unique emails used by the users at the time of account creation.
   iii. **'First_name' –** This Column will store the user's First Name associated with the account.
   iv. **'Last_name' –** This Column will store the user's Last Name associated with the account.
   v. **'Password' –** This Column will store the user password associated with the account.
   vi. **'Gender' -** It indicates the gender of the column.
   vii. **'Account_created' –** This Column will store the Date & Time of the account creation for every user.
   viii. **'Contact_No' -** The mobile number of the user given by user at time of signup.

2. **'Jobs'** Table – to keep track of the variety of job positions applied to by the user.
   i. **'Id' –** It is the primary key of this table.
   ii. **'Job_id'** - Stores a unique or non-unique identifier assigned to each job posting, allowing for the aggregation of multiple records associated with the same job. This facilitates tracking different stages or applications of the same job posting over time.
   iii. **'User_id'** - the id of the user.
   iv. **'Company_name' –** The name of the company or organization name to which user has applied.
   v. **'Role' –** The position in the company that user has applied. Ex- Data Scientist, Data Analyst etc.
   vi. **'Location' –** This column will store the location of the position, eg – Miami, Remote, etc.
   vii. **'URL' –** This column will store the web URL for the job position, providing easy access and retrieval for the job post for a user.

viii. **'Job_source' –** A column to keep track of the portals used for applications (eg – LinkedIn, Indeed, etc.). This column is for the users analytical purposes to determine which portal has the highest count of applications.
ix. **'Referral' -** It is used to indicate if the person has applied using referral.
x. **'Application_id' -** A unique identifier, either generated by the application system or manually assigned, for tracking specific job applications. This is crucial for managing and following up on applications through various stages of the hiring process.
xi. **'Status' –** This column will store the status of the job application, which can be updated as and when a user receives any updates regarding the application. It contains integer value to indicate the phase like submitted, rejected, interview, offer.
xii. **'Application_date' –** This is the date on which the user has applied. User mentions this date.

2.2. Data types, keys and Constraints

The following constraints have been added to the selected columns for the above tables. The constraints might be updated later if required –

Users Table:

Column name	Data Type/key/Constraints
User_id	INT – Autoincremented value, Primary key – It serves as a primary key of this table
Email	VARCHAR (50), UNIQUE, NOT NULL Constraints to ensure there are no multiple accounts for the same user
First_name	VARCHAR (100), NOTNULL
Last_name	VARCHAR (100), NOTNULL
Password	VARCHAR (25), NOTNULL, Front End constraint - to verify length is more than 8 characters.
Gender	CHAR (1), NOTNULL
Account_created	DATE, It stores current_date at time of the account creation.
Contact_NO	VARCHAR (10) NOTNULL, CHECK length of contact number is 10.

Jobs Table:

Column name	Data Type
Id	INT – Primary Key, Autoincremented value
User_id	INT – FOREIGN KEY – Users (User_id)
Job_id	VARCHAR (50), NOT NULL
Company_name	VARCHAR (50), NOT NULL
Role	VARCHAR (50) NOT NULL
Location	VARCHAR (25), NOT NULL
URL	VARCHAR (255)
Job_source	VARCHAR (20), NOT NULL
Referral	VARCHAR (3), Default value is NO, i.e not applied by referral
Application_id	VARCHAR (50), UNIQUE, NOT NULL
Status	VARCHAR (20), NOT NULL
Application_date	DATE, NOT NULL

3. Code

The following code script for table creation, views, along with the constraints can also be found at the - GitHub repository (JobQuest Queries.sql), which has been set up to upload all the project-related documentation.

Database & Table creation (Along with Constraints):

```
-- Creating the 'JobQuest' Database
-- Authored -> Malhar Dhopate
CREATE SCHEMA IF NOT EXISTS JobQuest;

-- Creating Users Table
-- Authored -> Malhar Dhopate
CREATE TABLE IF NOT EXISTS Users (
User_id INTEGER PRIMARY KEY AUTO_INCREMENT,
Email VARCHAR(50) Unique NOT NULL,
First_Name VARCHAR(100) NOT NULL, Last_Name VARCHAR(100) NOT NULL,
Contact_No CHAR(10) UNIQUE NOT NULL,
Password VARCHAR(25) NOT NULL, Gender CHAR(1) NOT NULL,
Account_Created DATETIME DEFAULT CURRENT_TIMESTAMP);
```

```
-- Creating Jobs Table
-- Authored -> Malhar Dhopate
CREATE TABLE Jobs (
Id SERIAL PRIMARY KEY AUTO_INCREMENT,
User_id INTEGER,
Job_id VARCHAR(50) NOT NULL,
Company_name VARCHAR(50) NOT NULL,
Role VARCHAR(50) NOT NULL,
Location VARCHAR(25) NOT NULL,
URL VARCHAR(255) NOT NULL,
Job_source VARCHAR(20),
Referral VARCHAR(3) DEFAULT "NO",
Application_id VARCHAR(50) UNIQUE NOT NULL,
Status VARCHAR(20) NOT NULL,
Application_date DATE NOT NULL
);

-- Adding Foreign Keys to the Jobs Table
-- Authored -> Malhar Dhopate
ALTER TABLE Jobs ADD CONSTRAINT For_Key1
FOREIGN KEY (User_id) REFERENCES Users(User_id);
```

Insertion Query Syntax for Tables:

```
-- Insert into Users, upon Sign Up
-- Syntax -- Authored -> Shalini Kothuru
INSERT INTO Users (Email, First_name, Last_Name, Contact_No, Password, Gender)
VALUES (<user_id>, <email>, <first_name>, <last_name>, <contact_no>,
<password>, <gender>);

-- Inserting data into Jobs table
-- user_id will be retrieved based on login
-- Syntax -- Authored -> Shalini Kothuru
INSERT INTO Jobs (user_id, Job_id, Company_name, Role, Location, URL,
Job_source, Referral, Application_id, Status, Application_date) VALUES (<user_id>,
<job_id>, <Company_Name>, <Role>, <location>, <URL>, <Job_source>, <Referral>,
<Application_id>, <Status>, <Application_date>);
```

Update Query Syntax for Tables:

```
-- Update Query Syntax -
-- Updating the User Info
-- Syntax to Update everything except User_id & Email & Gender
-- Authored -> Adithya Singupati
UPDATE Users
SET First_Name = <first_name>, Last_Name = <last_name>, Contact_No =
<contact_no>, Password = <password>
where User_id = 1;

-- Syntax to update only the Application Status
-- Authored -> Adithya Singupati
UPDATE Jobs
SET status = <status> where User_id = <user_id> and Job_id = <job_id>;
```

Index Query User Emails:

```
-- Authored -> Shalini Kothuru
CREATE UNIQUE INDEX Email_index ON Users (Email);
```

Queries for Creating Views:

```
-- A View to Display the User Profile
-- Authored -> Malhar Dhopate
CREATE VIEW UserProfile AS(
SELECT user_id, Email, First_Name || ' ' || Last_Name AS Full_Name, Gender
FROM users);

-- A View to display job application for a User
-- Authored -> Adithya Singupati
CREATE VIEW job_applications AS (
SELECT * FROM Jobs WHERE user_id = <user_id> -- This will be pulled from the
user's log in info
ORDER BY application_date DESC
);
```

```
-- A View to Display the Number of jobs user has applied to in the last month

-- Authored -> Shalini Kothuru
CREATE VIEW num_of_jobs_applied_monthly as (
SELECT COUNT(*) AS num_of_jobs_applied_monthly FROM Jobs
WHERE User_id = <user_id>  -- This will be pulled from the user's log in info
AND
Application_date >= DATE_SUB(CURRENT_DATE(), INTERVAL 1 MONTH));

-- A View to Display the Number of jobs user has applied to in the last week
-- Authored -> Shalini Kothuru
CREATE VIEW num_of_jobs_applied_weekly as (
SELECT COUNT(*) AS num_of_jobs_applied_weekly
FROM Jobs
WHERE User_id = <user_id> -- This will be pulled from the user's log in info
AND YEAR(Application_date) = YEAR(CURRENT_DATE())
AND WEEK(Application_date) = WEEK(CURRENT_DATE()));

-- Ratio of application status - This View Displays the number of applications for each Application Status
-- Authored -> Shalini Kothuru
CREATE VIEW pie_chart_ratio as (
SELECT Status, COUNT(*) AS count
FROM Jobs
WHERE User_id = <user_id> -- This will be pulled from the user's log in info
AND Status IN (SELECT DISTINCT Status FROM Jobs WHERE User_id = <user_id>)
GROUP BY Status);

-- Map visualization by number of jobs by locations - This View displays the count of applications for every location
-- Authored -> Adithya Singupati
CREATE VIEW map_location_wise as (
SELECT Location, COUNT(*) AS num_of_applications
FROM Jobs
WHERE User_id = <user_id> -- This will be pulled from the user's log in info
GROUP BY Location
);
```

```
-- Number of application by referrals - This View Displays the number of job applications done through each Referals.
-- Authored -> Adithya Singupati
CREATE VIEW applications_by_referrals as (
SELECT Referral, COUNT(*) AS num_of_applications
FROM Jobs
WHERE User_id = <user_id> -- This will be pulled from the user's log in info
AND Referral = 'YES'
GROUP BY Referral);

-- Number of application by job source - This view Displays the number of job applications by each Job Source.
-- Authored -> Malhar Dhopate
CREATE VIEW bar_applications_by_job_source as (
SELECT Job_source, COUNT(*) AS num_of_applications
FROM Jobs
WHERE User_id = <user_id> -- This will be pulled from the user's log in info
AND Job_source IS NOT NULL
GROUP BY Job_source);
```

4. Overall Contribution Summary

The following table will be updated as we progress towards finishing our project.

Name	Tasks	Contribution	Average Time Spent (Per Milestone)
ALL 3	• Conceptual design of Schema • Views to provide information to the user	ALL 3 of us have equally contributed to the schema design by connecting on Teams call. Each of us has written different queries to display information to users which are mentioned in SQL code.	4.5 hours

Adithya Singupati	• Schema Explanation • Determining data types • Update queries	In developing the database schema, I clarified entity relationships and chose appropriate data types for the `Users` and `Jobs` tables to ensure data integrity. I also wrote update queries to keep our database accurate, supporting our application tracking system's reliability.	4.5 hours
Malhar Dhopate	• Code reproducibility in MYSQL • Create table queries • user Table description • Error fixing while code reproducibility	Wrote code for Database and table creation, along with the constraints. Updated the code in the Word file (section 3). Assisted in Database Schema Creation (section 1). Assisted in the table schema description (section 2). Provided Ideas for View development.	5 hours
Shalini Kothuru	• Ideas for visualization in UI • jobs table description • Determining Constraints • Insert and Index queries	Provided ideas for visualizing/presenting different analytics for users through views in UI. Contributed to database schema. Designed different schemas and considered pros and cons of those schemas. Determined different constraints and keys for columns in table. Wrote queries for inserting data and index creation.	4.5 hours