Spring 2022 CPSC 332-02 – File Structures and Databases

Project Description

Instructor: Hokseng Hun

[Version 2022.03.16]

Important Date:

1. Project Part A – Due on Monday, March 28, 2022, 5:00pm
2. Project Part B – Due on Monday, May 16, 2022, 5:00pm

Project submission should be made via Canvas. Each student should work on the project in groups of 4-6, and submit a final report, a demo and presentation for the project. Each student of the group will be asked to submit a review of their group members, where each member will assign the percentage of contribution towards the project for their group members. Logically, an equal contribution from each member is expected. Any student who receives a review lower than 25 % from their group members may receive a lower grade than other members.

Note: Project submissions made through email will not be accepted. Only submissions made on Canvas shall receive grades.

Maximum Marks: 60 points

The project comprises 2 main parts, including extra credit options – for additional functionality or extra credit part.

Database Application Project:

You are a freelance software development team that will be receiving a project request from a client about Job Posting application.

The client will bring you a set of business requirements that his or her company would like you to use to implement the application that they want. The client will be strict in ensuring that their requirements are met, so please take note on meeting those requirements as a priority. The project you will be commissions for will involve the following:

- Building an ER Diagram based on the provided requirements
- Building a Relational Model based on you ER Diagram

- Normalize your database to 3NF
- Building the Physical Model inside your environment.
- Populating your database with sample data.
- Create a demo application to showcase your database design in PHP and MySQL

Client Business Requirements:

Your customer is called My Job, an American worldwide employment website for job listing. Your team will design a database for their job listing website. The database is used for job posting, storing user information, and searching jobs.

1. Anyone can search any jobs by title and/or location. Location can be city and state, or zip code.
2. All users must sign up with a unique email and a very strong password before posting or applying any jobs.
3. Password is at least 8 characters long and must have at least one upper case, one lower case, one number, and one special character.
4. User needs to also provide first name, last name, email, and phone number.
5. User can sign up multiple times but cannot use the same email address.
6. Anyone can sign up as employee and/or employer.
7. Only employer can post a job announcement, so to become an employer, a user needs to provide extra information: Company name, Company Email, Company Phone number, Company address, and Role in Hiring Process. Company Address is optional.
8. Employer role in the hiring process includes Owner, CEO, Assistant or Manager, Human Resources Generalist, Hiring Manager, Recruiter, or Other.
9. Employer can keep track all their job postings and view all the candidates who already applied.
10. Employer can review the applicants and update the status: Applied, Rejected, Interviewed, or accepted.
11. Employer can apply for other jobs and track their application status as well.
12. All job postings must include:
    a. Job Title
    b. Job Description
    c. Address
    d. Qualifications
    e. Responsibilities
    f. Education (No Education Required, High School Degree, Associate's Degree, Bachelor's Degree, Master's Degree, or Doctoral Degree)
    g. Job Type (Full-Time, Part-Time, Contract, Temporary, or Internship)
    h. Contact Details
    i. Experience Level (entry level, mid-level, or senor level)
    j. Salary Range ($35,000+, $40,000+, $50,000+, $70,000+, or $100,000+)
    k. Benefits (Health Insurance, Vision Insurance, Dental Insurance, Life Insurance, Pension, and 401(k))
    l. Date Posted

m. Deadline

13. Employee can keep track all the jobs they already applied and check their application status: status: Applied, Rejected, Interviewed, or accepted.
14. All tables must have a timestamp, so we know when the record is inserted.

Additional Submission Requirements for the Project

1. Provide a SQL script to create a database called "myjob" in MySQL server. Make sure that your script can create the database and all the tables without an issue.
2. Create a VIEW which has first names, last names, and email of all employees who apply more than one jobs.
3. Create a VIEW which shows the employers (first name, last name, and email) who post more than 3 jobs.
4. Create a view which shows all users that have both roles (employee and employer)

Extra credit:

Provide additional functionalities and make your website look professional. You can use any free or opensource CSS templates that are available on internet. **[5 points]**

Submission 1 – Project Part A [20 points]:

Submit your ER Diagram and your Relational Model (one per group.) Make sure the following are shown:

- Tables
- Primary keys
- Foreign keys: Specifically write foreign keys in a separate table or show through schema diagram
- Relationships

Submission 2 – Project Part B [30 points]:

Submit your development files, presentation, and final report (one per group.) For your development files, include a SQL Script of your populated database that you created in your environment.

Your final report will outline the process of taking the requirements and showing the design process of the database. The recommended outline is as follows:

Title (Application Name, Project Team Name, Class, Date, Team Members)

Introduction

Database Design Process

- Requirements
- ER Diagram
- Relational Model
- Physical Model

Application Design

- Overview
- SQL Queries
- Final Product

Summary

Presentations [10 points]:

You will not need to present your demo or presentation. However, please submit it so that your demo is in working order and your presentation demonstrates the different functions required in your application.

Extra credit:

In the requirements, there will be some opportunities for extra credit. Review closely and see if you want to implement them into your product.

Schema-ers
Josh Lollis (Team lead)
Corey New
Gabriel Warkenin
Jason Zhu
Kendrick Ngo
Shivam Sudame

<< eSalaryRange >>
$35,000+
$40,000+
$50,000+
$70,000+
$100,000+
Enumerated
SalaryRange Attr.
Range
TimeStamp
SalaryRangeID
SalaryRange
ExperienceRequired Attr.
TimeStamp
Title
ExpReqID
SalaryRange Attr.
ExperienceRequired
0,n
JobExpReq
1,1
SalaryRange
0,n
1,1
<< eBenefits >>
Health Insurance
Vision Insurance
Dental Insurance
Life Insurance
Pension
401(k)
Enumerated
Benefits
Benefits Attr.
Title
TimeStamp
BenefitID
JobPost Attr.
TimeStamp
Deadline
DatePosted
Responsiblities
Qualifications
Description
Title
JobPostID
0,n
BenefitsOffered
<< eJobType >>
Full-Time
Part-Time
Contract
Temporary
Internship
Enumerated
JobType
JobType Attr.
Title
TimeStamp
JobTypeID
ZipCode Attr.
TimeStamp
State
City
ZipCode
ZipCode
AddressCSZ
JobPost
0,n
JobPostType
1,1
0,1
JobAddress
1,1
1,n
JobEducation
0,n
EducationLevels
<< eEduLevel >>
No Education Required
High School Degree
Associate's Degree
Bachelor's Degree
Master's Degree
Doctoral Degree
Enumerated
EduLevels Attr
Title
TimeStamp
EducationID
<< eAddressType >>
Enumerated
Address Attr.
TimeStamp
Street
Type
addressID
Address
0,1
CompanyAddress
1,1
0,n
EmployerPosts
1,1
ContactDetails
0,n
AppliedPosts
0,n
0,n
SavedPosts
0,n
0,n
EmployeeEducation
1,1
<< eAppStatus >>
Applied
Rejected
Interviewed
Accepted
Enum
AppStatus Attr.
Title
TimeStamp
AppStatusID
AppStatus
Employer
Employer Attr.
TimeStamp
CompanyEmail
CompanyPhone
CompanyName
CompanyId
Employee
Employee Attr.
TimeStamp
EmployeeID
1, N
This relationship requires a role
Manages
0, 1
UserAccount
0,1
EmployeeID
1,1
1,1
<< eRole >>
Owner
CEO
Assistant or Manager
Human Resources Generalist
Hiring Manager
Recruiter
or Other
Enumerated
Roles
Roles Attr.
TimeStamp
RoleName
RoleID
UserAccount Attr.
TimeStamp
Phone
LastName
FirstName
PWD
AccntEmail

Relational Diagram

ER diagram: https://drive.google.com/file/d/1QVMAls2GzPfUIq3ho2XMfxxpL8fEt_MM/view?usp=sharing

Gabriel Warkentin
Josh Lollis
Corey New
Jacob
Shivam Sudame
Kendrick Ngo