CEGEP VANIER COLLEGE

Department of Computer Science

420-231-VA Database – Sec. 01 & 02

Teacher: Nagat Drawel

Team Project

Title: Atlantic Employment Corporation (AEC)

Project Due: Sunday, December 12, 2021

Instructions

1. In this project, you and your group are required to develop a miniature database system, described below, and evaluate a number of queries and transactions against the database.
2. Team members will collectively work on the projects, and each student in the team will receive a grade based on their contribution to the projects and on the overall quality of the projects.
3. Work should be divided equally among team members in whatever manner the team determines to be fair.
4. Each team will have a short presentation of their database design (10 min) that may be followed by a short question session. The presentations will take place **December** 13

Project Description

The Atlantic Employment Corporation (AEC) provides a wide variety of jobs for temporary workers in companies during peak periods (such as Christmas season). AEC would like you and your team to design database that will manage the business operations. The requirements of data to be modelled are listed below and AEC's management wants to be able to:

- Track information about the candidates who are willing to work includes their numbers, names, SSN, phone number, email, home address (# number, city, province, and postal code).
- If the candidate has worked before, that candidate has a specific job history. Each time the candidate works, one additional job history record is created. There is no job history exists if the candidate has never worked.
- Each candidate has earned several qualifications. Each qualification may be earned by more than one candidate.
- AEC has a list of companies that request temporary employees. AEC keeps basic contact information for each company (company name, address info, phone, and contact person). Each company has made at least one request for a temporary employee.
- Each time a company requests a temporary employee, AEC makes an entry in the Openings folder. That folder contains an opening number, a company name requesting

the employee, required qualifications, a starting date, an anticipated ending date, and hourly pay. Each company may list one or more job openings

- Each opening requires only one specific or main qualification, and any given qualification may fit many openings.
- When a candidate matches the qualification and is given the job, an entry is made in the Placement Record folder. That folder contains an opening number, a candidate number, the total hours worked, and all related information for the placement. In addition, an entry is made in the job history for the candidate.
- An opening can be filled by many candidates, and a candidate can fill many openings.

The description is not very specific; it only gives a general idea of what is required. There is no any attribute(s) for some of the entities which is necessary to express the queries and/or transactions mentioned below, you need to add it to the schema and use it in your implementation. In this case, you are free to make any reasonable assumptions that will help you to develop your ERD diagram.

Starting from this general description, do the following initial steps in your database design process:

1. Create an ER diagram to represent the conceptual database schema for the above scenario.
2. In the diagram, mark the various constraints (the primary keys and the foreign keys of the relations, cardinalities of the relationships, and participation constraints).
3. Translate your ER diagram into a relational schema in the form of SQL DDLs. Choose appropriate data types for each attribute and include primary key and foreign key constraints, Check and Not Null constraints.
4. Normalize the relations to 3NF.
5. Populate every relation with "sufficient" representative rows.

Required Queries

Formulate and evaluate the following SQL queries against an instance of your database:

1. List all the qualifications for a specific candidate
2. Get details of all job openings for a given company lists.
3. Get details of all current and past job openings.
4. Get the number of candidates that are without any job history
5. When the job is assigned (i.e., an entry is made in the Placement table), create a trigger named trg_updatestatus to update the opening_available column in the openings table to "NOT AVAILABLE."

What you should submit

You should submit a report (PDF file) that includes the Crow's Foot ERD, database schemas, Normalization steps, SQL declarations of the relations, relation instances, and the SQL scripts for the queries and transactions, and your query results. In addition to the PDF file, submit a text file (named with project.sql) containing all the DDL(s) that is needed for the creation of the database. This DDL file should be executable as a script using the SQL Server DBMS.

Distribution of marks:

Topic	%
Conceptual DB Design (ER)	20%
ER to Relations Conversion	15%
Normalization	10%
Queries Functionality	20%
Sample Test Data	5%
Script File	5%
Report Organization & Content	5%
Individual Contribution	20%
Total	100%