Advanced Databases

This project is to be completed in Oracle Database 19c Express.

## Part I. Description of the model

In *Homer Consulting* each employee is assigned to (employed by) a specific department. One of the employees from a department manages the department. Some employees (especially in larger departments) supervise other employees in their department. Thus, one employee may have a supervisor and may also supervise other employees as well. The CEO supervises the top-level employee of each department.

The company runs projects for external clients. Information on both current clients (those that have had projects done in the past) as well as potential clients (those who have not requested projects yet) is kept. For billing purposes, each project is contained within one department. Therefore, most (but not necessarily all) of employees assigned to a project come from one department. Administration department does not run any projects. For each project start date and the total cost is recorded. The total cost of a project can only be estimated (and recorded) after the project is completed. For an ongoing project, the total cost will have a NULL value.

Each project has several employees working on (assigned to) the project. Newly hired employees are not assigned to any project for the first few months and may be trained internally or by attending a formal workshop. Each assignment is recorded on month-by-month base. Within each month the date employee was assigned to that project, and the end date of the assignment in that month (not necessarily the last day of the month) is recorded. In addition, the total number of hours spent by the employee on the project in that month is kept. If an employee worked on a project for two months, then two records would be created, one record for each month. Number of hours used within each month is known and recorded after the monthly assignment is completed. For an assignment in a current month, both the end date and hours spent are NULL.

Homer Consulting maintains a list of desired skills. For each desired skill, code and description is kept. Not all of these skills might be represented among the employees. Whenever an employee acquires a skill, through some form of training (i.e. completing a course at a college, completing a technical training program, or a workshop), approved by the company, the date when it was acquired and a comment regarding the training is recorded. Each employee may take the same training more that once since some of the skills might need to be updated or renewed.

ER Diagram:
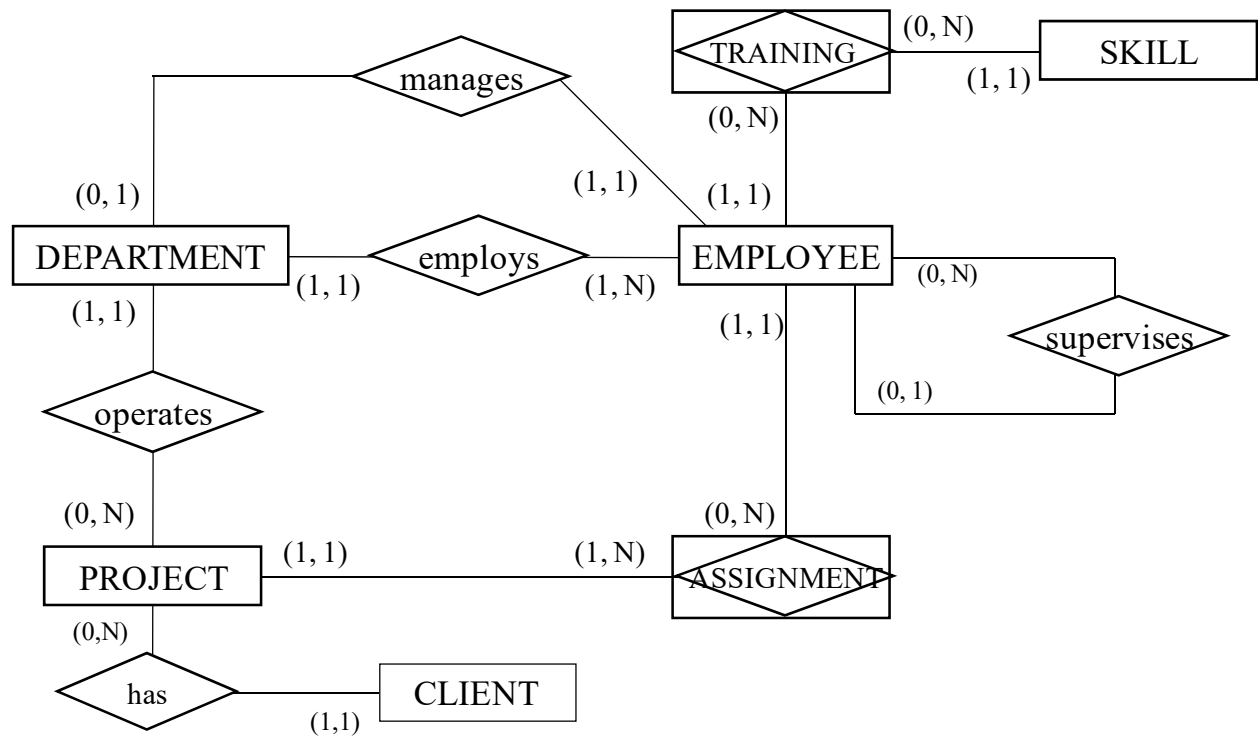
Schema:

SKILL (<u>Code</u>, Description)

TRAINING (<u>Train_Num</u>, Code$^@$, Emp_Num$^@$, Date_Acquired, Name, Comments)

DEPARTMENT (<u>Dept_Code</u>, Name, Location, Phone, Manager_ID$^@$)

EMPLOYEE (<u>Emp_Num</u>, Emp_Last, Emp_First, DOB, Hire_Date, Super_ID$^@$, Dept_Code$^@$)

CLIENT (<u>Client_ID</u>, Name, Street, City, State, Zip_Code, Industry, Web_Address, Phone, Contact_Name)

PROJECT (<u>Proj_Number</u>, Name, Start_Date, Total_Cost, Dept_Code$^@$, Client_ID$^@$)

ASSIGNMENT (<u>Assign_Num</u>, Proj_Number$^@$, Emp_Num$^@$, Date_Assigned, Date_Ended, Hours_Used)