Problem 1:

a. Write a description for the attached ER diagram:

- Companies hire Employees, each employee has a unique SSN & a name composed of a first & last name.
- Each company has unique name, address & have multiple phone numbers.
- Every employee modeled in the database is a project manager, a civil engineer, or a worker. No employee can take on more than one of these roles.
- A worker has a skill, a civil engineer has a salary & project manager has years of experience.
- Workers are supervised by supervisor who is also a worker.
- Workers work on projects.
- Civil Engineers design complexes, the database keep track of the design maps.
- Project manager manage a project, each project is managed by a project manager where plan of manage is recorded.
- Companies build projects & complexes. Each complex is uniquely identified by its (name & city). Complex also has multi-valued field Utility Services.
- Complex has offices, each office is in a complex & each office is uniquely identified by its Number, complex name & complex city. Each office also has manager & a phone number associated to it.
- Each project has unique project id, start date & end date of project.
- Investors invest in projects & the amount invested is recorded in database. Each investor has unique SSN & name.
- Each consultant has unique consultant name & website associated to it.
- Consultants consult projects invested by investors.

b. Convert attached ER diagram to Relational database:

Employee (SSN, FirstName, LastName)

ProjectManager (ProjectManagerSSN, YearsOfExperience)

CivilEngineer (CivilEngineerSSN, Salary)

Worker (WorkerSSN, Skill)

Consultant (ConsultantName, website)

Inverstor (SSN, Name)

Complex (ComplexName, City)

ComplexUtilityServices (ComplexName, City, UtilityServices)

Office (ComplexName, City, Number, Manager, PhoneNumber)

Company (CompanyName, Address)

CompanyPhoneNumber (CompanyName, PhoneNumber)

Hire (CompanyName, SSN)

WorkOn (WorkerSSN, ProjectID)

Supervisedby (WorkerSSN, SupervisorSSN)

Design (CivilEngineerSSN, ComplexName, City, map)

ProjectManage (ProjectID, startdate, enddate, ProjectManagerSSN, Plan)

Build (CompanyName, ProjectID, ComplexName, City)

Invest (SSN, ProjectID, amount)

Consult (ConsultantName, SSN, ProjectID)

c. Draw a Schema Diagram for the relational database: