Project 1 Part 1 (50 pts) (Due 11:59PM Saturday, October 7, 2023):

1. Download MySQL DBMS and install it in your local computer. You can download MySQL from http://dev.mysql.com/downloads/mysql/
2. Construct the database instance (structure and data) given in Figure 1 of this document. When creating the tables, your definitions must support key constraints and referential integrity constraints. You need to infer primary and foreign keys from the schema.
3. Show that you have created the tables properly (correct data types and constraints).
4. Show that you have inserted the data properly.

Important: You are not allowed to use any GUI tools (e.g., MySQL Workbench) to do this project. You are required to do it using native SQL in command line.

Notes:

1. MySQL uses tables to store data about relation schemas in system catalog schema called "information_schema". For example, two of those tables in system catalog are **TABLE_CONSTRAINTS** and **KEY_COLUMN_USAGE**. Try to retrieve content from these tables to see how constraints are stored in MySQL.
2. MySQL might wipe out tables for unexpected reasons. Keep a file containing the SQL statements so that you can recreate the database easily later if that ever happens.

Deliverables: Submit a PDF report document that includes the following:

1. The file name should be in the following format. Lname and Fname are your Last name and First name, respectively. "**CSE4701Fall2023_Project1_P1_LnameFname.pdf**"
2. Write your **full name** and **project number** at the top of the document.
3. To show that all the tables are created properly, include **screenshots** from:
   a. DESCRIBE each table to show that attributes have proper data types.
   b. SELECT appropriate rows and columns from system catalog tables (TABLE_CONSTRAINTS & KEY_COLUMN_USAGE) to show that primary keys and foreign keys are properly set.
4. To show that you have inserted data successfully into the tables:
   a. SELECT all rows from each of the tables and take **screenshots**.

(Help docs available in subsequent pages)

Figure 1: Company Database

EMPLOYEE

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno
John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000	333445555	5
Franklin	T	Wong	333445555	1955-12-08	638 Voss, Houston, TX	M	40000	888665555	5
Alicia	J	Zelaya	999887777	1968-01-19	3321 Castle, Spring, TX	F	25000	987654321	4
Jennifer	S	Wallace	987654321	1941-06-20	291 Berry, Bellaire, TX	F	43000	888665555	4
Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	M	38000	333445555	5
Joyce	A	English	453453453	1972-07-31	5631 Rice, Houston, TX	F	25000	333445555	5
Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas, Houston, TX	M	25000	987654321	4
James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000	NULL	1

DEPARTMENT

Dname	Dnumber	Mgr_ssn	Mgr_start_date
Research	5	333445555	1988-05-22
Administration	4	987654321	1995-01-01
Headquarters	1	888665555	1981-06-19

DEPT_LOCATIONS

Dnumber	Dlocation
1	Houston
4	Stafford
5	Bellaire
5	Sugarland
5	Houston

WORKS_ON

Essn	Pno	Hours
123456789	1	32.5
123456789	2	7.5
666884444	3	40.0
453453453	1	20.0
453453453	2	20.0
333445555	2	10.0
333445555	3	10.0
333445555	10	10.0
333445555	20	10.0
999887777	30	30.0
999887777	10	10.0
987987987	10	35.0
987987987	30	5.0
987654321	30	20.0
987654321	20	15.0
888665555	20	NULL

PROJECT

Pname	Pnumber	Plocation	Dnum
ProductX	1	Bellaire	5
ProductY	2	Sugarland	5
ProductZ	3	Houston	5
Computerization	10	Stafford	4
Reorganization	20	Houston	1
Newbenefits	30	Stafford	4

DEPENDENT

Essn	Dependent_name	Sex	Bdate	Relationship
333445555	Alice	F	1986-04-05	Daughter
333445555	Theodore	M	1983-10-25	Son
333445555	Joy	F	1958-05-03	Spouse
987654321	Abner	M	1942-02-28	Spouse
123456789	Michael	M	1988-01-04	Son
123456789	Alice	F	1988-12-30	Daughter
123456789	Elizabeth	F	1967-05-05	Spouse

Help Docs

MySQL Installation

Q. Which version of MySQL Server should I be installing for this project.

A. Using the latest version of MySQL is advised. Go to this URL. https://dev.mysql.com/downloads/mysql/ and pick your operating system. Download the latest installer for your operating system and install it. The installation instruction for different operating system would be different. You can find many tutorials over the internet on how to install MySQL Server for your operating system.

For MAC OS installations, these links are helpful.

Installing MySQL on macOS Using Native Packages
https://dev.mysql.com/doc/refman/5.6/en/macos-installation-pkg.html

Installing a MySQL Launch Daemon
https://dev.mysql.com/doc/refman/5.6/en/macos-installation-launchd.html

Mac OS install and open mysql using terminal
https://stackoverflow.com/questions/14235362/mac-install-and-open-mysql-using-terminal

MySQL Client Terminal

Q. What MySQL client should I be using? What are the commands?

A. After you have successfully installed MySQL Server on your computer, a CLI (command line interface) client should also come with it. Please open the CLI and start typing MySQL commands in there.

For Windows User, go to: Start Menu >> MySQL >> MySQL Server >> Command Line Client
For Mac OS, start your terminal window and type the following command
/usr/local/mysql/bin/mysql -uroot -p

After you enter the root password, you will be given MySQL prompt "mysql>". You can start typing SQL here.

Here are the basic commands:

> SHOW DATABASES;	→ show all the databases in the server.
> USE <database_name>;	→ start using specified database.
> SHOW TABLES;	→ show tables inside the selected database.
> DESCRIBE <table_name>;	→ show information on a specified table
> SELECT * FROM <table_name>;	→ show all attributes of all tuples in a table.