The homework is due on Oct.03 (Thursday). Each student must submit one copy of the homework and one copy of the spool file.

The following shows the file name format:

- Zno_FirstName_LastName_HW01.pdf
- Zno_FirstName_LastName_HW01_spool.txt

Example)
Z00000001_KwangSoo_Yang_HW01.pdf
Z00000001_KwangSoo_Yang_HW01_spool.txt

The pdf file should contain all answers for the Question Part and all SQLs for the Lab Part.

- No spool file: -50 points.
- Late submission: 1 day: -25 (Friday), 2 day -50 (Saturday)

Please do not use the zip file to upload the files. Upload two separate files.
INCORRECT homework submission is NOT acceptable. Be sure to double-check the assignment you are uploading and the file type before you submit it. You also need to DOWNLOAD these files and CHECK if all files are correct.

Question Part (50 points)

Question 1 (15 points)

We plan to construct a database for an online store.

- Each product has id and name.
- A product consists of multiple items.
- Each item has id, manufacturing date (i.e., MFG), and price.
- A customer has id and name.
- A customer is able to buy multiple items, and the date of each purchase is recorded.
- A customer can recommend a product and submit a rating for it.
- A customer can follow another customer, and we record these followings.

Draw an ER diagram for this application. Specify **key attributes** of each entity type and structural **constraints** on each relationship type. Note any unspecified requirements, and make appropriate assumptions to make the specification complete.

Question 2 (15 points)

Write DDL statements to create the tables for the ER diagram of Question1.

Question 3 (20 points). Given a relation R (A, B, C, D, E). Answer the following questions with the given set of FDs: (1) identify candidate keys and (2) state the strongest normal form that R satisfies (e.g., 1NF, 2NF, 3NF, or BCNF)

(a) FDs: AB → CDE, CD → AB
(b) FDs: A → B, B → C, C → D, D → E, E → A
(c) FDs: ABC → D, DE → A
(d) FDs: A → BE, A → C, BC → D
(e) FDs: AB → C, BC → D, CD → A

Lab Part (50 points)

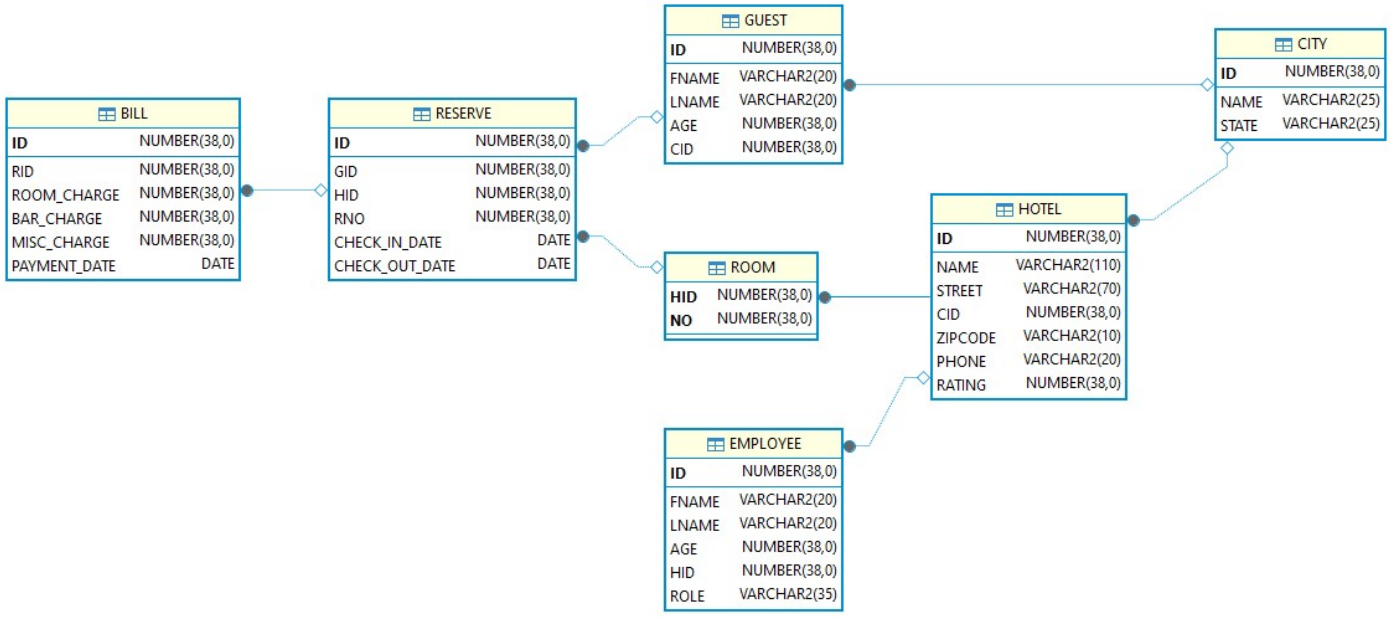
Preliminary

1) Login into the Linux machine (oraclelinux.eng.fau.edu)
2) Connect to database (e.g., sqlplus username/password)
3) ALTER SESSION SET CURRENT_SCHEMA = COP6731;
4) Please note that the schema name is defined as upper case characters
5) Execute the following SQL and identify all required tables.
   SELECT table_name from all_tables where owner = 'COP6731';
   Please note that the owner's name is defined as upper case characters
6) Change line size: SET LINESIZE 400

Use the “spool” command to create a log file for the output of SQL (e.g., SPOOL filename and SPOOL OFF)

Note: Submit both SQLs and SPOOL files (i.e., SQL statements and a SPOOLfile).

Consider the following relational schemas.



Write **SQL statements** for the following queries.

1) Retrieve the first names of guests who lived in the city of ‘Chicago’ and are older than 75.
2) Retrieve the names of hotels located in 'Coral Springs' where a guest named 'Theotis Dayton' had checked in.
3) Retrieve the first names of guests who checked in a room at the 'Hotel Wailea Maui' between '06-AUG-23' and '23-AUG-23'.
4) Retrieve the first names of guests who were charged more than 98 in miscellaneous fees after checking into a hotel on '16-FEB-23'.
5) Retrieve the first names of the guests who paid the bill on '10-MAR-23', for room number 2 at the 'Comfort Suites Hotel'.
6) Retrieve the first names of guests who checked into a room on '19-MAR-22' at a hotel located in the same city where the guest resides.
7) Retrieve the first names of guests who checked into the same room on different dates between '10-MAY-23' and '28-JUN-23'.

8) Retrieve the first names of guests who checked in no hotels between '06-JAN-20' and '23-AUG-24'.
9) Retrieve the first names of guests over the age of 83 who checked into every room at 'Fairfield Mission Viejo'.
10) Retrieve the names of hotels that have more than 23 rooms and more than 3 employees.