

CSCI 4125/5125
Data Models and Database Systems
Fall 2021
Course Project
Phase 2: E-R Mapping (9/20)

Due: Thursday, 9/30 @ 11:59pm

Reading: Silberschatz Chapters 6 and 2

Submission Guidelines:

1. This assignment is worth 100 points for all students.
2. All answers in the form of images or screenshots must be readable. Any additional files must be clearly referenced and labeled.
3. It is your responsibility to make sure all files are readable and submitted on time.

Submission:

- Part A requires you to answer a total of 2 short answer questions worth 10 points total.
- Part B requires you to submit a relational schema (containing primary keys and foreign keys) worth 40 points.
- Part C requires you to submit a csv file for every relation in Part B containing valid records. This is worth 30 points.
- Part D requires you to submit a single screenshot of a successfully ran change password command in SQL Developer worth 20 points.

Part A. Short Answer (10 points)

Answer the two questions given the following database schema and relational database instance containing three relations:

ITEM (ID, Name, Size)

ID is the primary key for ITEM.

PURCHASE (CustomerID, ItemID, PurchaseDate)

CustomerID, ItemID, and PurchaseDate is the (composite) primary key for PURCHASE.

CustomerID is a foreign key that references CUSTOMER.ID.

ItemID is a foreign key that references ITEM.ID.

CUSTOMER (ID, Name, Address)

ID is the primary key for CUSTOMER.

ITEM records:

- (1, Monster Truck, 12)
- (2, Jet Pack, 8)
- (3, Flux Capacitor, 20)
- (4, Royale with Cheese, 5)
- (5, Bat Mobile, 22)

PURCHASE records:

- (2, 3, 1/1/2018)
- (3, 3, 1/1/2018)
- (1, 4, 5/30/2016)
- (1, 4, 9/5/2018)
- (3, 1, 12/31/2017)
- (3, 5, 6/1/2016)

CUSTOMER records:

- (1, Dr. Jones, Chicago)
- (2, Doc Brown, Los Angeles)
- (3, Dr. Venkman, New York)

1. For each table, construct a new tuple that does not violate any constraints. Make sure that you consider the existing values.

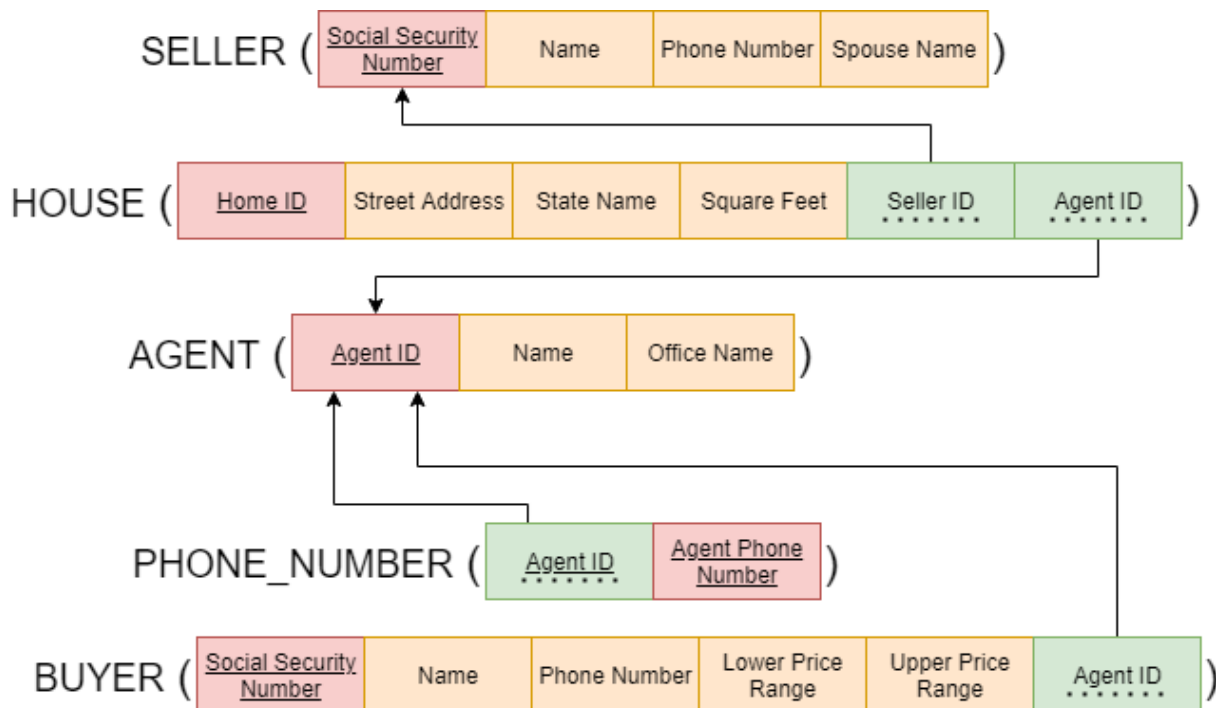
- ITEM records: (6, Kryptonite Arrow, 3)
- PURCHASE records: (4, 6, 8/20/2019)
- CUSTOMER records: (4, Oliver Queen, Star City)

2. Which records can be removed from ITEM without violating any constraints?

In the original dataset, item number 2 - the Jet Pack - is the only record that could be removed from the ITEM set alone since every other item is referenced in the PURCHASE table and thus could no longer exist in that table if that item is removed given the constraints that the Item ID is required and that the PURCHASE record/s could not be deleted.

Part B. E-R Mapping (40 pts)

Your task is to generate a complete logical schema for your E-R diagram from Phase 1 of the project. You may submit a drawing using your favorite software (e.g., PowerPoint, Visio) or a written representation (like the one in Part A of the assignment). Remember that all primary keys are to be underlined with a solid line (or clearly stated), all foreign keys use a dotted underline (or clearly stated), and foreign keys must point to the primary key they reference.



Part C. Build a Small Dataset (30 pts)

For each relation you created in Part B, create a csv file. Each csv file must contain at least five records. Records should have unique primary key values and foreign keys must match a primary key value. Each line must only contain one record. In later project phases, you will read these csv files using Java to build SQL insert statements.

Phase 2 - Dataset

Also attached as files in Moodle.

Part D. SQL Developer Connection (20 points)

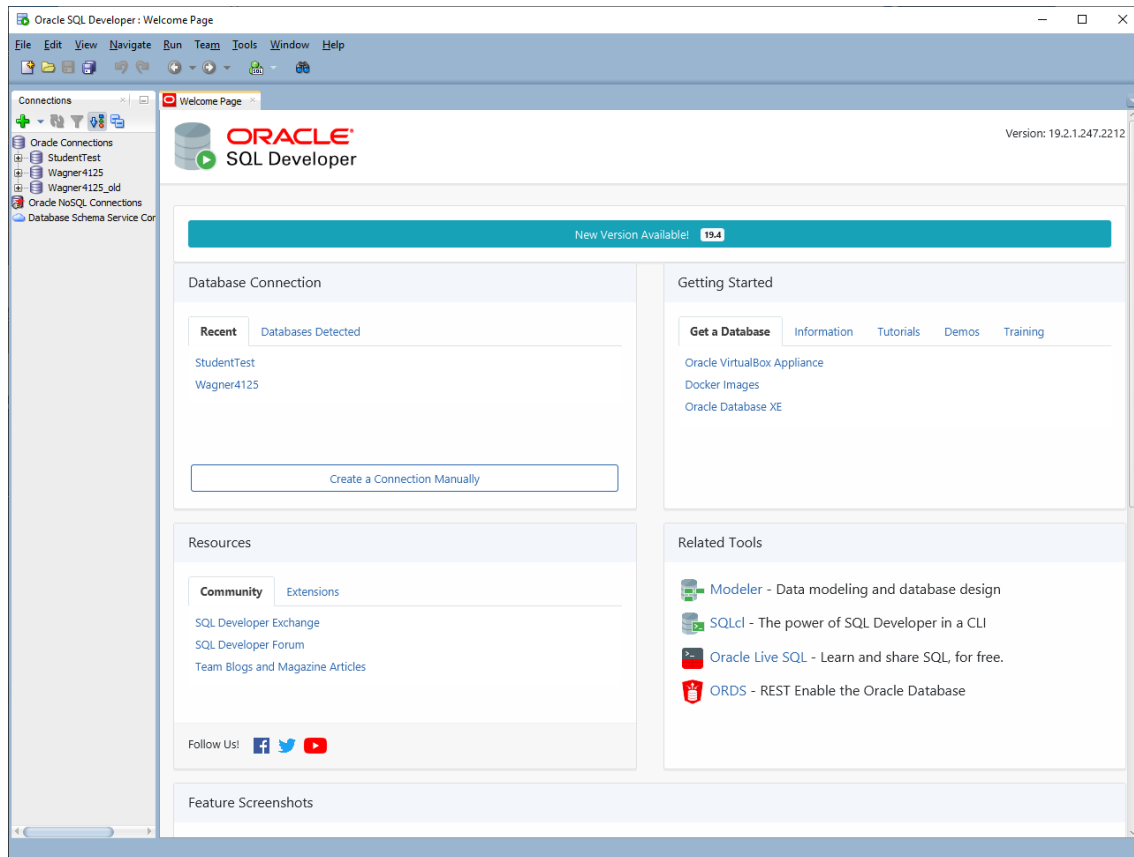
In Phase 3 of the project, you will execute SQL DDL to build your tables and SQL DML to populate your tables and execute queries. This task has you setup your database connection to perform Phase 3. We will use a popular IDE supported by Oracle to connect to our database.

Step 1. Download SQL Developer

Download the relevant SQL Developer for your platform at this [link](#). To download SQL Developer, you may need to create an account using whatever email and password you like (note: this account is not related to the account you will use to connect to the database). Also, notice that SQL Developer requires you to have JDK 8 or 11 installed.

Step 2. Run SQL Developer

Unzip your download and run the application, sqldeveloper.exe. Your application should look like the screenshot below:



Step 3. Create a connection.

In the upper left-hand side of the application, there is a green plus symbol. Click this to create a new database connection. Fill in the following fields:

- **Name:** Name your connection “[Your UNO username]4125/5125”.
- **Username:** Use your UNO username.
- **Password:** Use “NewOrleans123” (you will change this later).
- **Save Password:** You can check this if you want to, but you will need to update this if you change your password.
- **Hostname:** dbserver.cs.uno.edu
- **Port:** 1521
- **SID:** check the “ServiceName” field below this field. We won’t use the SID field.
- **ServiceName:** ORCL
- Click the “Test” box at the bottom. If everything is correct, the “Status” and the lower left-hand corner should say “Success”.
- Click the “Save” box at the bottom to save your connection.
- Click the “Connect” box.

New / Select Database Connection

Connection Name	Connection Details
StudentTest	student1@//dbse...
Wagner4125	jwagner@//dbser...
Wagner4125_old	jwagner4@//dbs...

Name: Color

Database Type:

User Info Proxy User

Authentication Type:

Username: Role:

Password: ☐ Save Password

Connection Type:

Details Advanced

Hostname:

Port:

☐ SID

☒ Service name:

Status: Success

Step 4. Change your password.

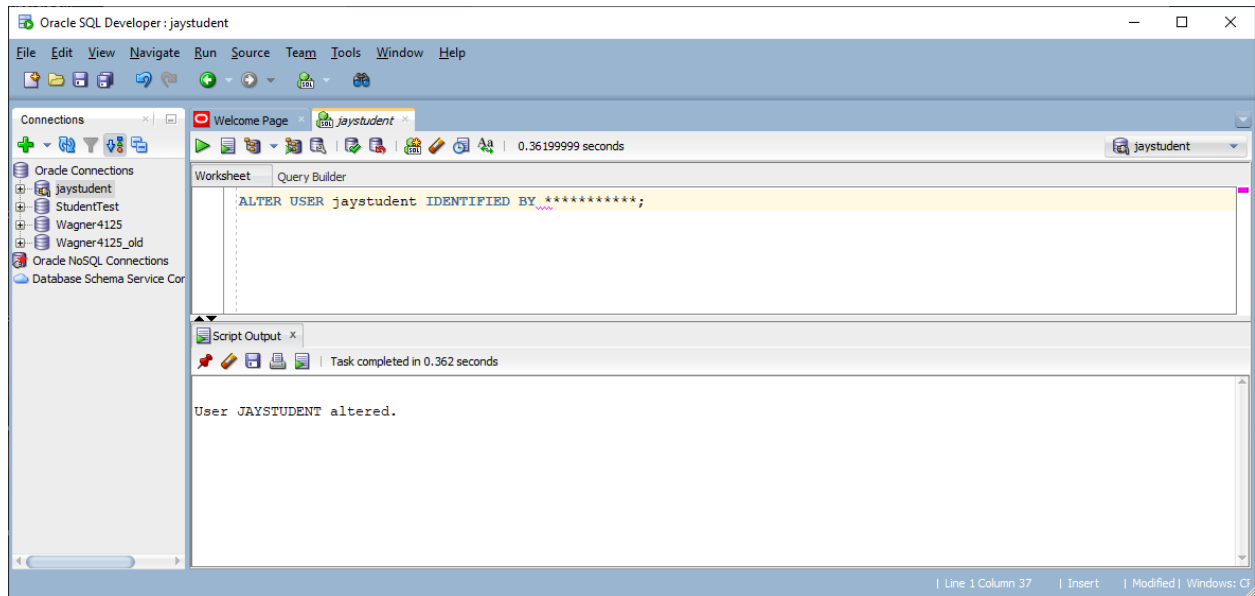
Click on your connection on the left-hand side of SQL Developer. This should open up a blank script in the center of SQL Developer.

Type in the following command. Note the semicolon at the end and do not use the brackets:

```
ALTER USER [your username] IDENTIFIED BY [your new password];
```

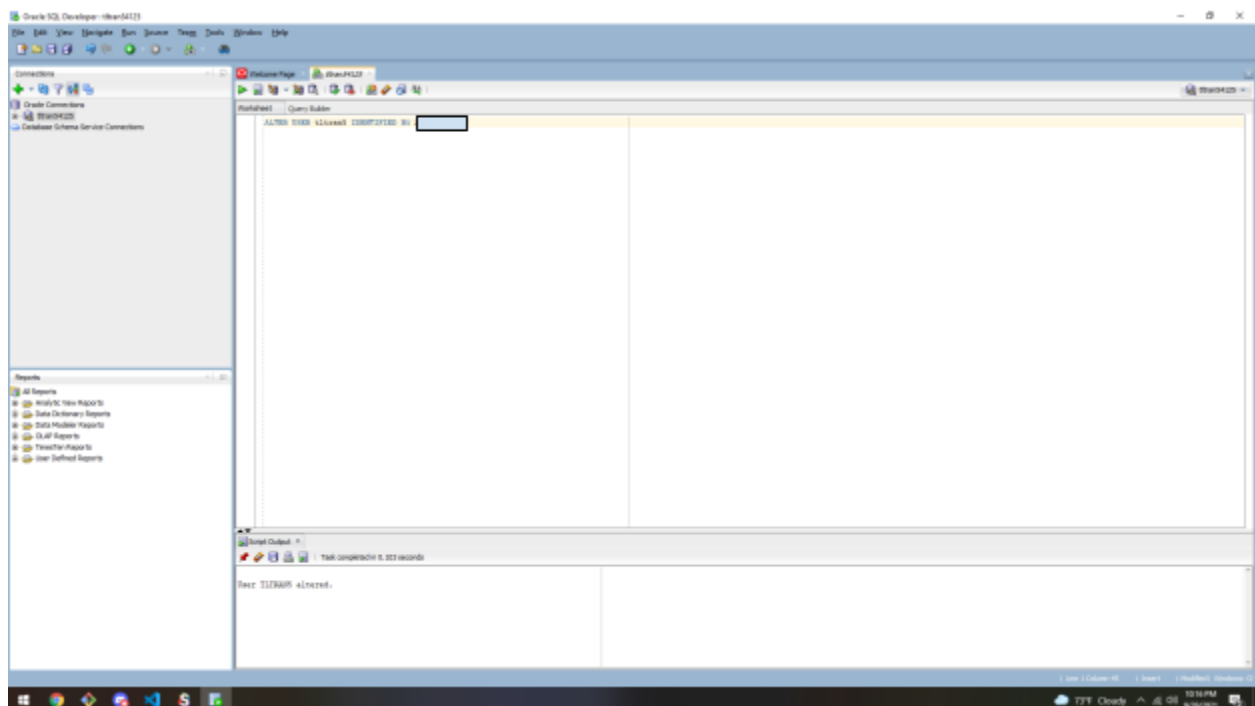
Click the green arrow directly above the script window to run the command.

If your command properly runs, you should get a message in the script output: "User [your username] altered."



Submit: A screenshot (like mine) that shows that your command properly ran. Note: you can obfuscate or erase your new password in the script if you would like. Your screenshot must use the “Print Screen” command. DO NOT submit a picture of your computer using your phone.

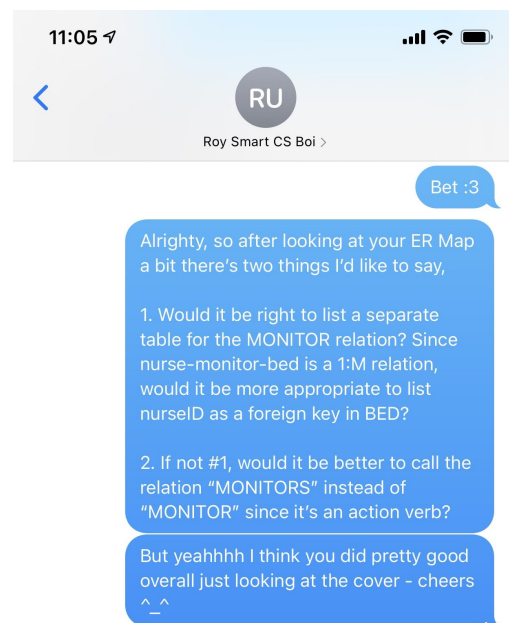
Done! (password hidden)



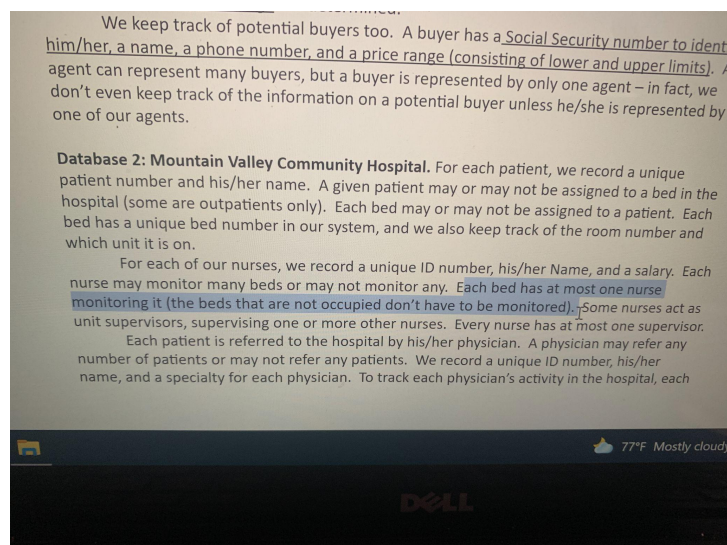
Extra Credit

This week, Roy and I mostly discussed through text messages due to our mutual, conflicting schedules as text of course allows for offline communication. Anyways, Roy and I totaled about 55 texts related to Phase 2 of the assignment.

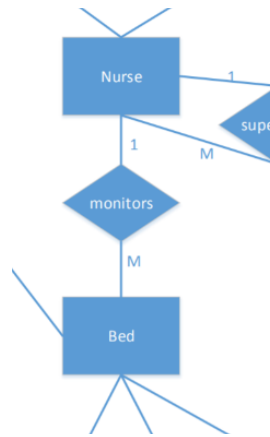
One portion of the conversation that I'd like to highlight is when I thought I found a problem in the NURSE-MONITORS-BED relationship of Roy's ER Map.



First of all, Roy pointed out how my #2 assessment was wrong since a table must be a noun, which I humbly learned! But, in regards to point #1, my assessment was based in part on the fact that the document for Phase I of the project stated what I believe to be that this relationship had full participation on the side of BED-MONITOR.



However, Roy's ER Map and assessment was based on the phase 1 diagram solution that shows that this relationship is actually not a full participation on either side.



We were at a stand still on which answer is actually correct, but Roy's going to leave his ER Map alone for now, and we anxiously await the ER Map diagram for the correct answer! And just like I said at the end of my extra credit assessment for phase 1 of the project, overall I think Roy has been a nice and wholesome partner, and I think he deserves the maximum amount of extra credit possible. I do truly hope that my mind remains unchanged as time passes and we go further into the unknown together!