# CSC 355 Database Systems 501
## Assignment 3 (1/22)

**Due 11:59:00pm, Wednesday 1/29.**

**Reading:** The posted Lecture 4, 5, and 6 Slides, and Ullman/Widom Sections 6.1-6.2 and 6.4. [Next week: Ullman/Widom Sections 6.2-6.3.]

Your task in this assignment is to write a set of SQL queries (I will supply the tables).

Download the script file store501.sql from the submissions dropbox and run it in SQLDeveloper to build the tables you will be querying:

CUSTOMER(ID, Name, City, Zip)

ITEM(ID, Title, Type, Price)

PURCHASE(PID, CID, IID, PDate, ISBN, Quantity)

In addition to the primary keys underlined above, CID in PURCHASE is a foreign key referencing ID in CUSTOMER, and IID in PURCHASE is a foreign key referencing ID in ITEM. In SQLDeveloper, look at the Columns, Data, and Constraints for each of the three tables before continuing, to be sure that they have been constructed correctly. You might also want to draw the foreign keys and reference arrows into the set of relation schemas given above to be sure that you understand the links among the tables.

For each of the following query problems, follow the steps we discussed in class: interpret the problem, predict the output by solving it by hand on the needed table(s), write a query to solve the problem, and test the query. (Most of these of the query problems can be solved with information from just one of the given tables, but a couple will require joins, which we will cover in the next lecture.)

In a separate .sql file (do not modify store501.sql), write a script that contains just the following ten SQL queries (in this order):

**1.** Give an alphabetical list of all cities that have at least one customer in them.

**2.** List the tiles and prices of all DVDs, from the least expensive to the most expensive.

**3.** Give the title, type, and price for all items that cost less than fifteen dollars, listed from the highest-priced item to the lowest-priced item.

**4.** Give an alphabetical list of titles of all items that contain the word ‘West’ anywhere in the title.

**5.** List, in ascending order, the ID of every customer who placed at least one order during 2019.

**6.** For each customer who has made at least one purchase, give the ID of the customer and the date of their most recent purchase.

**7.** For each different type of item, give the type, and the price of the least expensive item of that type.

**8.** For each date on which at least one purchase was made, give the date and how many purchases were made on that date, from date the most purchases were made to the date the fewest purchases were made.

**9.** Give the purchase ID and purchase date for all purchases made by customers named 'Reed', ordered by the purchase ID. (You will need more than one table to do this; start by finding the inner join of CUSTOMER and PURCHASE.)

**10.** For each purchase, give the purchase ID and the total cost of that purchase (quantity times the price of the purchased item), ordered from the highest total cost to the lowest. (Again, you will need more than one table to do this; start by finding the inner join of PURCHASE and ITEM.)

You may write and test these queries individually in SQLDeveloper, but once you have them working, you should put them all together into a single script file and be sure that the queries can be run all together in this form. Run the script file containing your queries to verify that your results are correct.

Include a comment before each query in your script file to label the queries 1 through 10 (e.g., the comment '-- 1' on a line before the first query, the comment '-- 2' on a line before the second query, et cetera). Also include a comment at the top of your script file giving your name, the course number and section, the assignment number, and the date of submission, e.g.:

> *YourName*
> CSC 355 Section 501
> Assignment 3
> *SubmissionDate*, 2020

Submit two files to the Assignment 3 dropbox: (1) the .sql file containing your queries and (2) a .doc or .txt file showing the output when you run your script file. Do not submit store501.sql or include any code from it or output generated by it in your submission -- your submitted files should contain only your queries and the requested comments, and the output generated by your queries.

**Remarks:**

1. It is always your responsibility to make sure that the files you have uploaded are readable and in the correct locations. I recommend that you download your file after submitting it to be sure that is has been uploaded correctly.

2. As is the case for every assignment, all work must be completed individually – no collaboration between students or sharing of answers between students is permitted. Do not post this assignment to any website in search of answers, and do not consult posted answers on any website while completing the assignment.

3. For scratch work, a copy of the database instance created by store501.sql is given below.

CUSTOMER:

| ID | NAME | CITY | ZIP |
|---|---|---|---|
| 100 | Reed | New York | 10017 |
| 212 | Franklin | Philadelphia | 19109 |
| 333 | Becker | Los Angeles | 90033 |
| 481 | Reed | Chicago | 60613 |
| 590 | Jordan | Chicago | 60606 |
| 677 | Jordan | Los Angeles | 92617 |

ITEM:

| ID | TITLE | TYPE | PRICE |
|---|---|---|---|
| 00 | Time Trap | Book | 18.99 |
| 01 | Altered Beast | CD | 12.99 |
| 02 | Wild Wild West | CD | 21.99 |
| 03 | The Dark Knight | DVD | 16.99 |
| 04 | One November Night | CD | 13.99 |
| 05 | A Brief History of Time | Book | 24.99 |
| 06 | West of Hollywood | DVD | 11.99 |
| 07 | The Skeleton Twins | DVD | 21.99 |
| 08 | How the West Was Won | Book | 24.99 |
| 09 | The Golden Gate | Book | 12.99 |

PURCHASE:

| PID | CID | IID | PDATE | QUANTITY |
|---|---|---|---|---|
| 0001 | 677 | 02 | 20-MAR-18 | 2 |
| 0002 | 590 | 08 | 15-JUN-18 | 3 |
| 0003 | 100 | 02 | 01-JUL-19 | 1 |
| 0004 | 212 | 05 | 01-JUL-19 | 1 |
| 0005 | 212 | 01 | 15-NOV-19 | 1 |
| 0006 | 481 | 03 | 15-NOV-19 | 3 |
| 0007 | 677 | 03 | 15-NOV-19 | 1 |
| 0008 | 100 | 07 | 01-JAN-20 | 1 |
| 0009 | 100 | 00 | 22-JAN-20 | 2 |
| 0010 | 333 | 04 | 22-JAN-20 | 1 |