**CSCI 4125/5125 Course Project**

**Data Models and Database Systems**

**Fall 2023**

**Course Project**

**Phase 7: Intermediate SQL**

**Due: Sunday, 10/22 @ 11:59pm**

**Reading:** Silberschatz Chapters 3.5, 3.7, 4.1, 4.2, 17

**Submission Guidelines:**

1. This assignment is worth 100 points for all students.

2. It is your responsibility to make sure all files are readable and submitted on time.

**Submission:**

- Task 1 requires you to submit a single .sql file and a single .txt file worth 48 points.

- Task 2 requires you to submit a file of your choice (e.g., Word, PDF) containing the short answer questions worth 12 points.

**Task 1. Intermediate Retrieval Queries (48 points, 6 points each)**

Write a SQL query for each of the following problems. Unless values are specified in the problem, do not hardcode values in queries. In other words, your query should still answer the problem if the data changes.

**Submit**: your answers in a single .sql file and the outputs from each of your queries in a .txt file.

-- 1. Retrieve the names of all products which have sold a total quantity greater than 30.

-- 2. Retrieve the names of all customers who were referred by someone who was referred by the customer with ID C15. Ex. Return CustomerA who was referred by CustomerB where CustomerB was referred by customer C15

-- 3. Find the customer name's that have ordered the least expensive product

-- 4. Find the avg review rating for each product that has received a review (do no include products that have not received a review).

-- 5. List the total cost for each order (quantity \* price for all products for each order ID) where the order cost is greater than 1000. Note: shipping cost was also a derived attribute - we will discuss how to build a function that can add that into the cost when we get to PL/SQL in Ch 5.

-- 6. List customers that have spent more than $1000 on orders

-- 7. Find the total number of orders placed by customers who were referred by Margot Robbie.

--8. This problem requires (no points if you don't) you to use the regular expression function REGEXP\_LIKE that we discussed in class.

-- Find all customer names where both the first name and last name begin with a vowel

**Task 2. Transactions & Serialization (12 points, 6 points each)**

Consider the three transactions T1, T2, and T3, and the schedules S1 and S2 given below. Draw the serializability (precedence) graphs for S1 and S2, and state whether each schedule is serializable or not. If a schedule is serializable, write down the equivalent serial schedule(s). You can submit a file of your choice (e.g., Word, PDF). You can draw your graphs using a program of your choice or pen & paper.

T1: R1(X), R1(Z), W1(X)

T2: R2(Z), R2(Y), W2(Z), W2(Y)

T3: R3(X), R3(Y), W3(Y)

S1: R1(X), R2(Z), R1(Z), R3(X), R3(Y), W1(X), W3(Y), R2(Y), W2(Z), W2(Y)

S2: R1(X), R2(Z), R3(X), R1(Z), R2(Y), R3(Y), W1(X), W2(Z), W3(Y), W2(Y)