INFO 6210 Final Exam Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Spring 2020 Due Date: 19 April 2020 NLT 06:00pm**

This final exam is an open book and open notes exam. You may consult and discuss idea(s) with your teammates and classmates for (1)-(3), but your SQL coding and final submission must be your own work. Problems (4)–(10) must be done individually. Any finding of duplicated work or an attempt to copy your classmate work will not be tolerated and an automatic zero point will be given to those that are found copying and those that let the other individual copy their work (intentionally or unintentionally).

Each student will be selecting one of the following focus topics and implement the following step (1)-(3) shown below. No two students of the same team shall select the same topic and no student shall select topic that is similar to their team project: (You may also select any other topic that is not this list as long as you follow the same guidelines)

*Healthcare Smart Manufacturing IOT Production System Big Data General Science Business App & Processes Smart Grid Blood donation Class Enrollment App Inventory Mgmt System Online Retail App Transportation Systems Hospital Mgmt System Supply Chain Mgmt or other interesting topics.*

**Submission: For each set below, you must submit SQL-script, and power point slide showing the codes, explanation of the codes, and result with screen snapshots. Also, reference you sources in case you got information from the web, and/or books. Create a folder inside your team Dropbox folder with your “lastname.Final” (if you have not already created), upload all the files to that dropbox location and send me an email confirming your upload and I will retrieve your files for grading. Due Date for this exam is listed above. Good luck!**

1) Create 4-6 Tables each with 25-50 records for the following demonstration. (You may use website that generate random data sample as needed)

2) Create a simple ER diagram showing mapping and relationship of these tables.

3) For each of the following topics, create a SQL-script (in MySQL or MS SQL) and a power point slide (1- 5 slides for each of the set below) explaining what the code does and its outcome. (Hint: Imagine you are a TA for INFO6210 and you are conducting a code demo for a new set of INFO6210 students, these would be what you provide to the students and demonstrate during class)

Set 1: Create DB, creates tables, create sample records/values/tuples, USE, and Drop DB

Set 2: Use DB, create tables with table options (NULL, Key, etc.), data types, insert, index and set

Set 3: Select – From – Where – Group By – Having - Order By – Limit

Set 4: Select 10 functions in SQL statement of your choice (including but not limited to Comparison, control flow, cast, string, numeric, date/time manipulation, calculation, conversion, aggregate functions, etc.)

Set 5: Perform JOIN operation including INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL JOIN, CROSS JOIN operations and display the sample result using SELECT statement

Set 6: Perform Queries and Sub-queries operations and display the result using SELECT statement

Set 7: Create four different users (Admin, Tester, Developer and User) with different privilege settings and display access differentiation among four users. Use GRANT and REVOKE command to give/remove additional access/rights to DB.

Set 8: Create two examples of STORED PROCEDURE and display the results.

Set 9: Perform COMMIT and ROLLBACK operations with SAVEPOINT/ROLLBACK TO SAVEPOINT. Include the use of LOCK/UNLOCK Table operations. Display result of each operation.

Set 10: Perform Triggers operations using INSERT, UPDATE, DELETE and display result

Set 11: Perform three examples of VIEW operation (1) Simple, 2) and 3) with increasing Complexities) Create a backup plan of your choice, state your assumptions/constraints and explain your reasoning. Print your selection on a sample monthly calendar (say 30 day) with FB for Full Backup and IB for Incremental Backup

In the following section, you will be creating sample exam questions with correct solution in MS Word document. You will be evaluate based on the quality of question and correct, clear + easy to understand solution

4) Create 10 True or False questions with solution from any topic covered in this class

5) Create 10 multiple choice questions including solution covering queries, subqueries, trigger, store procedures, math functions, backup, privilege and any other topics covered in the class.

6) Create 3 questions including solution and associated diagrams that cover normalization from 1NF, 2NF, 3NF and BCNF

7) Create 2 questions including solution and associated diagrams that cover ERD and EERD concepts

8) Create 5 questions including solution and code covering the SQL coding skills and concept

9) Write a team evaluation (for each of your team members—2-3 sentences for each team member) including who do you think is the most valuable team member and why; Who did what according to your own observations? Rank everyone on your team including yourself (1 is the best, 2 is 2nd best, etc.) and why they are ranked in that order (no equal contribution will be an acceptable answer); what works best for your team and what did not? Rank all the team in class including your team.

10) If you are given an opportunity to be a paid TA or non-paid/volunteer in Fall 2020/Spring 2021, would you be interested (Do include if you are interested in volunteer vs paid position?) If you are interested, what skillsets and quality would make you a successful TA or a part of the team?