Assignment#1
MSIT 630 Database Systems (Summer, 2019)
Total: 60 points
Due: 5/26/2019 11:59PM

1. Explain the concept of physical data independence and its importance in database systems (**4 points**)

2. Explain what problems are caused by the design of the following table. (**4 points**)

customer_id	customer_name	customer_street	customer_city	account_number
192-83-7465	Johnson	12 Alma St.	Palo Alto	A-101
192-83-7465	Johnson	12 Alma St.	Palo Alto	A-201
677-89-9011	Hayes	3 Main St.	Harrison	A-102
182-73-6091	Turner	123 Putnam St.	Stamford	A-305
321-12-3123	Jones	100 Main St.	Harrison	A-217
336-66-9999	Lindsay	175 Park Ave.	Pittsfield	A-222
019-28-3746	Smith	72 North St.	Rye	A-201

The Customer table

3. List four significant differences between a file-processing system and a DBMS. (**4 points**)

4. Describe the differences in meaning between the terms *relation* and *relation schema*. (**4 points**)

5. List two reasons why null values might be introduced into the database. (**4 points**)

6. Write the following queries in SQL, using the university schema, execute your SQL statement on the sample database and show me the query results. (Appendix A, page 1287) (**20 points, 4 points each**)
a. Find the titles of courses in the Comp. Sci department that have 4 credits.
b. Find the name(s) of the instructor(s) who DON'T earn the lowest salary in Physics department.
c. Find the enrollment of each section (number of students enrolled) that was offered in Fall 2009.
d. Find the minimum enrollment, across all sections offered in Fall 2009.
e. Find the course ID and section ID of the sections that had the minimum enrollment in Fall 2009.

7. Write the following queries in SQL, using the university schema, execute your SQL statement on the sample database and show me the query results (Appendix A, page 1287) (**20 points, 4 points each**)
a. Find the names of all students who have taken at least two courses offered by Comp. Sci. department; make sure there are no duplicate names in the result. Note that student in other departments can take courses from Comp. Sci. as well.
b. Find the IDs and names of all students who have not taken any course offering in 2009.
c. For each department, find the name and salary of the instructor who earns the minimum salary in that department. You may assume that every department has at least one instructor.

d. Find the highest, across all departments, of the per-department minimum salary computed by the preceding query (part 7.c).

e. Find the course titles of all prerequisite courses of "CS-319".