Metropolitan State University
ICS 311 —Database Management Systems

Homework #1

Question 1 (6 Points):

Given the table shown below, answer the following questions:

PROJECT_CODE	PROJECT_MANAGER	MANAGER_PHONE	MANAGER_ADDRESS	PROJECT_BID_PRICE
21-5Z	Holly B. Parker	904-338-3416	3334 Lee Rd., Gainesville, FL 37123	16833460.00
25-2D	Jane D. Grant	615-898-9909	218 Clark Blvd., Nashville, TN 36362	12500000.00
25-5A	George F. Dorts	615-227-1245	124 River Dr., Franklin, TN 29185	32512420.00
25-9T	Holly B. Parker	904-338-3416	3334 Lee Rd., Gainesville, FL 37123	21563234.00
27-4Q	George F. Dorts	615-227-1245	124 River Dr., Franklin, TN 29185	10314545.00
29-2D	Holly B. Parker	904-338-3416	3334 Lee Rd., Gainesville, FL 37123	25559999.00
31-7P	William K. Moor	904-445-2719	216 Morton Rd., Stetson, FL 30155	56850000.00

1. How many tuples does the table contain? How many attributes are there per tuple?
2. What problem would you encounter if you wanted to produce a listing by city? How would you solve this problem by altering the table structure?
3. What data redundancies can you detect in the table? Explain why data redundancy is undesired?
4. Give an example of an update anomaly that might occur in the above table.
5. Give an example of a delete anomaly that might occur in the above table.

Question 2 (2 Points): Explain in your own words the following concepts in the context of database management systems:

- Degrees of abstraction in database design.
- Database schema and database instance

Question 3 (2 Points): Suggest at least 3 tables that might be used to store information in a social-networking system such as Facebook. For each table, specify: table name, purpose of the table, and at least three attributes.

Question 4 (6 Points): List three applications (other than social-networking) you have used that most likely employed a database system to store data. For each application, specify: at least three tables that you think were used in the application and at least three attributes for each table. For each application, show a database instance with data of your choice.