ITSE 2309
Distant Learning
LAB #3

Normalization and Creating Tables (50 Points)

(For this Lab -there are various programs that can be used -- there is MS Excel, where by drawing boxes and using the arrows /lines option the graphics can be accomplished - there is also MS Visio, if available and the faithful – pencil/pen/ruler and paper - (which may require the use of a scanner for submission)

1. Using the table description and business rules listed below answer or perform the following:

   a. Identify the Primary Key of the table as it is currently shown.
   b. Identify all of the functional dependencies.
   c. **Draw the dependency diagram** for the table(s)
      (Hint: 1NF see pages 197-198 in Database System text book)

2. Normalize the relation to 3rd Normal Form (3NF).
   a. List the normalized tables using the standard table notation
      (remember Chen and/or Crow's foot)

      - Tablename (Col1, Col2……Coln)
        Primary Key:
        Foreign Key:

   b. **Draw the dependency** diagrams for each of the tables.(Hint: you should have no less than four tables)
   c. Provide an E-R Diagram of the tables to be created

3. Using the CREATE TABLE command, create each of the normalized tables. Run a DESCRIBE command for each table.
   - Include the PRIMARY KEY constraint for each table.
   - Include the FOREIGN KEY constraint for each table to which it applies.
   - Include the NOT NULL constraint for Student Name and Instructor Name.
   - Include the CHECK constraint for the Grade to ensure it is one of the 5 acceptable values (A, B, C, D, or F).

4. Code INSERT commands to insert the data from the attached page into the tables you created in 2.
   - Run 'SELECT * FROM tablename;' commands to check the contents of your tables.

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5. Your submittal/output to hand in should include: (with no less than ten pages)

- Question 1, part a.: Primary Key columns
- Question 1, part b.: Dependency Diagram
- Question 2, Part a.: List of normalized table descriptions
- Question 2, Part b.: Dependency diagrams for the normalized tables
- Question 2, Part c.: E-R Diagram of the tables to be created(Chen and Crow's feet)
- Question 2 Part d.: UML Diagrams of the tables to be created

  (See pages 143,144,)
- Question 3: Print out of the CREATE TABLE commands & results.
- Question 3: Print out of the DESCRIBE table commands & resulting SQL message.
- Question 4: Print out of the INSERT commands & Resulting SQL message.
- Question 4: Print out of the SELECT * FROM tablename listing and SQL results.

STUDENT TABLE

Student ID	Student Name	Student Address	Student Major	Course ID	Course Title	Instructor ID	Instructor Name	Instructor Office	Stu_Crse Grade
268300458	Williams	208 Brooks	CIS	CIS 350	Database	301	Codd	B104	A
268300458	Williams	208 Brooks	CIS	CIS 465	Systems Anal	451	Parsons	B317	B
543291073	Baker	104 Philips	Acct	CIS 350	Database	301	Codd	B104	C
543291073	Baker	104 Philips	Acct	Acc 201	Fund of Acctg.	255	Miller	H310	B
543291073	Baker	104 Philips	Acct	Mkt 300	Into to Mktg	518	Bennett	B212	A
695381127	White	208 Brooks	Math	Mth 202	College algebra	622	Hilbert	M301	B
695381127	White	208 Brooks	Math	Acc 201	Fund of Acctg	255	Miller	H310	A

Business Rules:

(see page 239 in Database Systems Text Figure 7.1)

- Only one class is taught for each course ID.
- Students may take up to 4 courses.
- Each course may have a maximum of 25 students.
- Each course is taught by only one Instructor.
- Each student may have only one major.