**Databases and SQL**

**Mid Term Exam**

Part 1: **Multiple-choice questions / Short Answer**

Read the questions and all the answers carefully. There should be only one correct answer for each question unless otherwise indicated. If you feel that you need to explain your answer feel free to do that. For this part of the exam you may **NOT** use your books.

1. Which of the following items is not a part of System development life cycle?
   1. Analysis of the system
   2. Marketing for the system
   3. Logical design
   4. Implementation
2. As an accounting system analyst which one of the following options you would **NOT** do in order to identify requirement of the system.
   1. Take an accounting course
   2. Interview an accountant
   3. Send a questionnaire to an accountant
   4. Show up in a an accounting firm and experience a typical day in accounting firm
3. Choose two traps that should be avoided when creating a database.
   1. Chasm traps
   2. Loophole traps
   3. Fan traps
   4. SNMP traps
4. When you have **a list of records** that are logically related to each other you have a
   1. Table
   2. Database
   3. Record list
   4. Record set
5. Which one of the following choices is **not** a benefit when you use a data base rather than a flat file
   1. Network support
   2. Faster search
   3. Better Performance
   4. Easy to use
6. Using a name field as a primary key for a table (Choose all that apply)
   1. Is recommended because that’s all the information that you have
   2. Is recommended because it is the most unique type of data
   3. Is not recommended because it can be duplicated
   4. Is not recommended because there are various ways of typing a name
7. A composite key is a key that is built based
   1. On a number field
   2. On a combination of fields
   3. On a Character field
   4. On any field
8. Explain about Junction Table.

A junction table maps two or more tables together by referencing their PK. It resolves many to many relationship between entities. An example would be table Students and Classes. There is a relation of many-to-many between students and classes because a student can be assigned (related) to many classes and a class is composed by many students.

1. Which one of the following items is **not** a factor to choose a specific RDBMS
   1. Operating system that you are using
   2. Performance
   3. Number of fields that you have
   4. Price of the database
2. Which one of the following codes you will use for coding all states in US and provinces in Canada if you were supposed to do it by numbers only
   1. Two digit integer number
   2. AutoNumber
   3. Two digit real number with one digit decimal point
   4. Three digit real number with two digit decimal point
3. Which field datatype is “Short Text” ?
   1. Stores up to 255
   2. Stores up to 65,000
4. If you have two entities, one for student information and the other for sport teams that they can be a member of, what is your multiplicity? (any students can join mor than one sports team)
   1. One to one
   2. One to many
   3. Many to many
   4. Many to one
5. If you have an entity for students and another one for courses what is your multiplicity? (any students can take more than one course)
   1. One to one
   2. Many to one
   3. One to many
   4. Many to many

Part 2 **TRUE/FALSE questions**

In this section you are given a statement. This statement may always be true or false or it can be either true or false under different conditions. Only Answering true or false will not grant you any credit. You should justify your answer with a brief explanation. For this part of the exam you may **NOT** use your books

1. In order to create a requirement specification document for a hospital management software you need to interview every single employee in the hospital
   1. True. You need to understand users need and the best approach is to ask information.
2. Having multiple information in one field is recommended
   1. False. It is recommended to have one single information in one field (atomic value).
3. Entities and the fields of table are different names for the same thing
   1. False. Field contains a single piece of data in a table. Entity could be described as a table in a database or a concept model for storing information.
4. Update anomalies could only occur when electricity is disconnected from the database server
   1. False. If you have redundant data in a table you may have a problem if you don’t update it properly.
5. When you have a chasm trap you can still resolve every non primary key field with the primary key.
   1. False. The result is aggregated.

Part 3  **Design**

1. You are recently hired at a bookstore, which is, specializes in scientific books. They are not using computerized system yet. Since you have computer background they have put you in charge for designing the system. The whole process of Purchasing, returning and sales should be computerized. Only computer books are returnable to the whole sales and you are charged for 5% restocking in 30 days period after purchasing date. After 30 days you may not return the books. All other science books are final sales. Your company accepts credit and debit cards as well as cash for books. For each book the minimum number of available books in stock should be 5, meaning that you may only purchase if you have less than five books in stock.

You are supposed to do the followings

Create the ER(entity relationship) model for the system

Design the database for the system with MS Access(Use form for data entry)

Normalize the database with 1NF, 2NF and 3NF. You don’t need to show the each process though.

I didn’t create a Stock table because I would need to create a field quantity that represents a sum of quantities from other tables. So every time I sell, buy or return I need to update that field. I prefer to check quantity by doing join and sum them when needed so I don’t need to worry about correcting stock table for anything that happens, deleting, updating, inserting.

Good luck