

## Assignment 1

### Ch1 and Ch2 Questions

#### Part 1:

1. Match each of the following terms:

- A character or a group of characters (numeric or alphanumeric) that describes a specific characteristic.
- Raw facts from which the required information is derived.
- A collection of related records that contain information of interest to the end user.
- A logically connected set of one or more fields that describes a person, place, event, or thing.

2. What is data redundancy?

- ☐ The same data are stored unnecessarily at different places.
- ☐ Because data stored in different locations will probably not be updated consistently, the islands of information often contain different versions of the same data.
- ☐ Ponds of information in a centralized data location.
- ☐ Single point of storage of the same basic information.

3. What is data independence?

- ☐ Data storage characteristics do not affect data access
- ☐ Access to a file is dependent on its own structure
- ☐ Change file structure without affecting data access
- ☐ Data access changes when data storage characteristics change

4. What is a DBMS, and what are its functions?

- ☐ The DBMS stores the definitions of data and their relationships (metadata) in a data dictionary; any changes made are automatically recorded in the data dictionary.
- ☐ The DBMS creates the complex structures required for data storage.
- ☐ The DBMS cannot perform ad hoc queries.
- ☐ The DBMS transforms entered data to conform to the data structures.

5. What is structural independence?

- ☐ Changing file structure without affecting data access
- ☐ Access to a file is dependent on its own structure
- ☐ Data access changes when data storage characteristics change
- ☐ Data storage characteristics do not affect data access

6. Explain the difference between data and information.

- ☐ Information constitute the building blocks of data.
- ☐ Data are raw facts.
- ☐ Data is produced by processing information.
- ☐ Information is processed data to reveal the meaning behind the facts.

7. What is the role of a DBMS, and what are its advantages? What are its disadvantages?

- ☐ A database management system (DBMS) is a collection of programs that manages the database structure and controls access to the data stored in the database.
- ☐ Advantage: vendor dependence
- ☐ Advantage: improved decision making
- ☐ Disadvantage: increased end-user productivity
- ☐ Advantage: improved data access

8. List and describe the different (general) types of databases.

- ☐ Number of users
- ☐ Database site location (centralized vs. distributed)
- ☐ Database vendor
- ☐ Database use (operational/transactional vs. data warehouse)

9. What are the main components of a database system?

- ☐ Hardware
- ☐ Software
- ☐ People
- ☐ Procedure
- ☐ Data

10. What are metadata?

- ☐ Data about data
- ☐ Defines data characteristics such as the data type (e.g., character or numeric)
- ☐ Relationships that link the data
- ☐ Actual data values

11. Explain why database design is important.

- ☐ Good applications can't overcome bad database designs.
- ☐ The existence of a DBMS does not guarantee good data management, nor does it ensure that the database will be able to generate correct and timely information.
- ☐ Design does not refer to how the database structure will be used to store and manage end-user data.
- ☐ Ultimately, the end user and the designer decide what data will be stored in the database.

12. Discuss the importance of data modeling.

- ☐ A data model is a relatively simple representation, usually graphical, of a more complex real-world object event.
- ☐ It is important because different users need to view the data in the same way.
- ☐ The data model's main function is to help us understand the complexities of the real-world environment.
- ☐ A good data model is a communications device that helps eliminate (or at least substantially reduce) discrepancies between the database design's components and the real-world data environment.

13. What is a business rule, and what is its purpose in data modeling?

- ☐ A business rule is a brief, precise, and unambiguous description of a policy, procedure, or principle within a specific organization's environment.
- ☐ Business rules are not meant to establish entities, attributes, relationships, and constraints
- ☐ End users are a more reliable source in specifying business rules.
- ☐ To be effective, only specifically assigned persons in an organization should have access to its business rules.

14. How do you translate business rules into data model components?

- ☐ A noun in a business rule will translate into an entity in the model
- ☐ A noun in a business rule will translate into a relationship in the model
- ☐ A verb in a business rule will translate into an entity in the model
- ☐ A verb in a business rule will translate into an attribute in the model

15. Describe the basic features of the relational data model and discuss their importance to the end user and the designer.

- ☐ Weak and inflexible query language.
- ☐ A relational database is a single data repository that provides both structural and data independence.
- ☐ How the data are physically stored in the database is of great concern to the user.
- ☐ Designers find it easier to deal with conceptual data representation (i.e., an ERD).
- ☐ End users find it easier to visualize their data as a collection of data organized as a matrix.

16. Explain how the entity relationship (ER) model helped produce a more structured relational database design environment.

- ☐ An entity relationship model, also known as an ERM, helps identify the database's main entities and their relationships
- ☐ An entity relationship model, also known as an ERM, helps identify the database's data and its structure
- ☐ An entity relationship model, also known as an ERD, helps identify the database's metadata and its associated applications
- ☐ An entity relationship model, also known as an ERM, helps identify the database's main attributes and their relationships

17. Use the scenario described by "A customer can make many payments, but each payment is made by only one customer" as the basis for creating the tables using SQL.

**Note:** The exercise has been modified to require SQL, \*not\* an ERD. Also, name table "**customers**" so that it doesn't conflict with the customer table in the premiere database!

**\*Save the file as A1\_SQL\_Solutions.sql, and then upload it here.**

**Note: no credit will be given if tables and data are not created in your MySQL database on the CCI server.**

18. Why is an object said to have greater semantic content than an entity?

- ☐ Object contains, in addition to data, also the description of the operations that may be performed by the object.
- ☐ Object contains, in addition to the class, also the description of the data that may be performed by the object.
- ☐ Object contains, in addition to the class, also the description of the properties that may be performed by the object.
- ☐ Object contains, in addition to properties, also the description of the data that may be performed by the object.

19. Describe the basic characteristics of a NoSQL database.

- ☐ Handle limited amounts of data.
- ☐ Not based on the traditional relational database model.
- ☐ Highly scalable and fault tolerant.
- ☐ SimpleDB(Google) is an example.

20. A relationship describes an association among entities. What are three types of relationships?

- ☐ One-to-one (1:1 or 1..1)
- ☐ Zero-to-zero(0:0 or 0..0)
- ☐ Many-to-many (M:N or \*..\*)
- ☐ One-to-many (1:M or 1..\*)
- ☐ All-for-one (~:1 or ~..1)
- ☐ Ten-to-twenty (10:20 or 10..20)

21. Match each example with one of the relationships types.

- A STUDENT has only one STUDENT ID#
- A PAINTER paints many PAINTINGs
- A STUDENT will take several CLASSES and CLASSES will enroll several STUDENTS at a time.

22. Write the business rule(s) that governs the relationship between AGENT and CUSTOMER (Chapter 2 Problem 1, also figure 2.1).

- ☐ One agent can have many customers.
- ☐ Each customer has only one agent.
- ☐ There is a 1:1 relationship between AGENT and CUSTOMER.
- ☐ There is a 1:M relationship between AGENT and CUSTOMER.
- ☐ One customer can have many agents.
- ☐ Each agent has only one customer.
- ☐ There is a M:N relationship between AGENT and CUSTOMER.

**23. Given the business rule(s) in Chapter 2, Problem 1:**

- one agent may serve many customers
- one customer must be served by only one agent

**Create a basic Crow's Foot ERD.**

\*Use **File > Export > Export as PNG** to first export your ERD as a .png image file, and then upload it. (Do not upload the whole model—that is, don't upload the .mwb file!)

**Part 2:**

**SQL Statements for A1**

**MySQL Workbench and SSH Login Procedures:**

- [FSU CCI MySQL Workbench Login.pdf](#)
- Video: [http://qcitr.com/vids/MySQL\\_Workbench\\_Login.mp4](http://qcitr.com/vids/MySQL_Workbench_Login.mp4)
- [FSU CCI MySQL SSH Login PC PuTTY.pdf](#)
- [FSU CCI MySQL SSH Login MAC.pdf](#)

**Windows PuTTY Helper Videos:**

- [http://qcitr.com/vids/PuTTY\\_Configuration.mp4](http://qcitr.com/vids/PuTTY_Configuration.mp4)
- [http://qcitr.com/vids/PuTTY\\_PSFTP.mp4](http://qcitr.com/vids/PuTTY_PSFTP.mp4)

(\*Be sure\* to review the "SQL Statements" tutorial in Database Resources, and the **database** at the bottom of the page. It is **\*highly\*** recommended that you check your answers by uploading the necessary tables and data, use **premiere.sql** and see instructions found w/in the "Assignments" area of our course available w/in FSU's Learning Management System.)

The following SQL exercises use **premiere.sql**:

24. To list all the contents (rows or records) of the PART table, you would use \_\_\_\_.

- SELECT \* FROM PART;
- LIST \* FROM PART;
- DISPLAY \* FROM PART;
- SELECT ALL FROM PART;

25.

```
select customer_number as cus_num
from customer
where customer_number=256;
```

Here, **cus\_num** is

- an alias, that is, an alternate name given to a column or table.
- a data type used for reporting purposes
- an original table column name
- an added table attribute

26. The query used to list the part number, part description, and part price from the PART table in ascending order by part price is \_\_\_\_.

- SELECT PART\_NUMBER, PART\_DESCRIPTION, UNIT\_PRICE FROM PART ORDER BY UNIT\_PRICE;
- SELECT PART\_NUMBER, PART\_DESCRIPTION, PART\_PRICE FROM PART ORDER BY PART\_PRICE;
- SELECT PART\_NUMBER, PART\_DESCRIPTION, UNIT\_PRICE FROM PART ORDER BY UNIT\_PRICE ASCENDING;
- SELECT PART\_NUMBER, PART\_DESCRIPTION, PART\_PRICE FROM PART ORDER BY PART\_PRICE ASCENDING;

27. When you issue the following command: `DELETE FROM ORDERS;`

- ☐ no rows will be deleted (an incorrect command)
- ☐ only the first row will be deleted
- ☐ only the last row will be deleted
- ☐ all rows will be deleted

28.

```
UPDATE customer  
SET first='Beth', slsrep_number=12  
WHERE customer_number=256;
```

The above command

- ☐ will modify all records in the customer table
- ☐ will modify the first name and sale's rep number for customer number 256
- ☐ will only update one attribute value
- ☐ will update all records in the customer table

29. Which statement(s) is/are correct for adding two records to the customer table:

- ☐

```
INSERT INTO customer

(customer_number, last, first, street, city, state, zip_code, balance, credit_limit,
slsrep_number)

VALUES

('999', 'Jane','Doe', '456 Elm Ave.', 'Panama City', 'FL', '32445', 700.00, 900.00, '
12');

('888','Baby','Doe','789 Forest Ct.','Tallahassee','FL','32305',800.00,9500.00,'03');
```
- ☐

```
INSERT INTO customer

(customer_number, last, first, street, city, state, zip_code, balance, credit_limit,
slsrep_number)

VALUES

('999','Jane','Doe','456 Elm Ave.','Panama City','FL','32445',700.00,900.00,'12'),

('888','Baby','Doe','789 Forest Ct.','Tallahassee','FL','32305',800.00,9500.00,'03');
```
- ☐

```
INSERT INTO customer

VALUES

('999','Jane','Doe','456 Elm Ave.','Panama City','FL','32445',700.00,900.00,'12'),

('888','Baby','Doe','789 Forest Ct.','Tallahassee','FL','32305',800.00,9500.00,'03');
```
- ☐

```
INSERT INTO customer

VALUES

('999','Jane','Doe','456 Elm Ave.','Panama City','FL','32445',700.00,900.00,'12');

('888','Baby','Doe','789 Forest Ct.','Tallahassee','FL','32305',800.00,9500.00,'03');
```

30. A table (i.e., **both**, its data and structure) can be deleted from the database by using the \_\_\_\_ command.

- ☐ DROP TABLE mytable;
- ☐ DELETE FROM mytable;
- ☐ MODIFY TABLE mytable;
- ☐ ERASE TABLE mytable;