INFO 6210 Quiz 1 **Name:_____**
Spring 2016 19 February 2016 **Team Name:_____**

1. Define the followings:
   a. Strong and Weak Entity
   b. Candidate Key
   c. Cardinality Constraints
   d. Transitive dependency
   e. 3.5 NF
   f. Super/Subtype
   g. Denormalization
2. The attributes that can be arranged into hierarchy are called

A) Composite B) Atomic C) Derived D) Simple E) None of these

3. The kind of constraint which cannot let two entities to have similar values is classified as: (D)

A) Derived B) One of the kind constraint C) Composite value D) Uniqueness E) Multi valued constraint

4. The kind of entities without any key attributes are classified as

A) weak entity B) strong entity C) single entity D) foreign entity E) Your neighbor answer is wrong and the TAs are watching

5. E-R models are expressed using a single standardized set of universally accepted symbols.

A) True B) False

6. All weak entities must have a minimum cardinality of 1 on the entity on which it depends.
7. A) True B) False
8. Attributes may be_____attributes.

A) composite B) element C) multi-value D) both a and c E) both b and c

9. Supertype / subtype entities are said to have a(n) _____ relationship.

A) HAS-A B) IS-A C) recursive D) redundant E) All A-D F) None of these

10. If there is more than one key for relation schema in DBMS then each key in relation schema is classified as

A) prime key B) super key C) candidate key D) primary key E) foreign key

11. The property of normalization of relations which guarantees that functional dependencies are represented in separate relations after decomposition is classified as

A) Non-additive join B) independency reservation C) dependency preservation D) additive join E) simple join

12. A relation is in 1NF if it doesn't contain any _____?

A) Determinants B) Repeating groups C) Null values in primary key fields D) Functional dependencies E) Don’t know, I stay up too late cramming for this quiz

13. A table is in 2NF if the table is in 1NF and what other condition that needs to be met?
A) no functional dependencies B) no null values in primary key fields C) no repeating groups D) no attributes that are not functionally dependent on the relation's primary key E) functional dependencies exist everywhere

14. The term _____ is used to refer to a row.
A) Attribute B) Tuple C) Field D) Instance E) Cloud

15. A Boston Consulting Company has 10 departments and 200 employees and each employee only belongs to one department and there is at least one employee under each department. So the relationship between employees and department is:
A) Many-Many B) One-One C) Many-Many D) One-Many E) None of these

16. The derived attributes in entity relationship diagrams are denoted by
A) dotted triangle B) dotted rectangle C) dotted oval D)dotted square

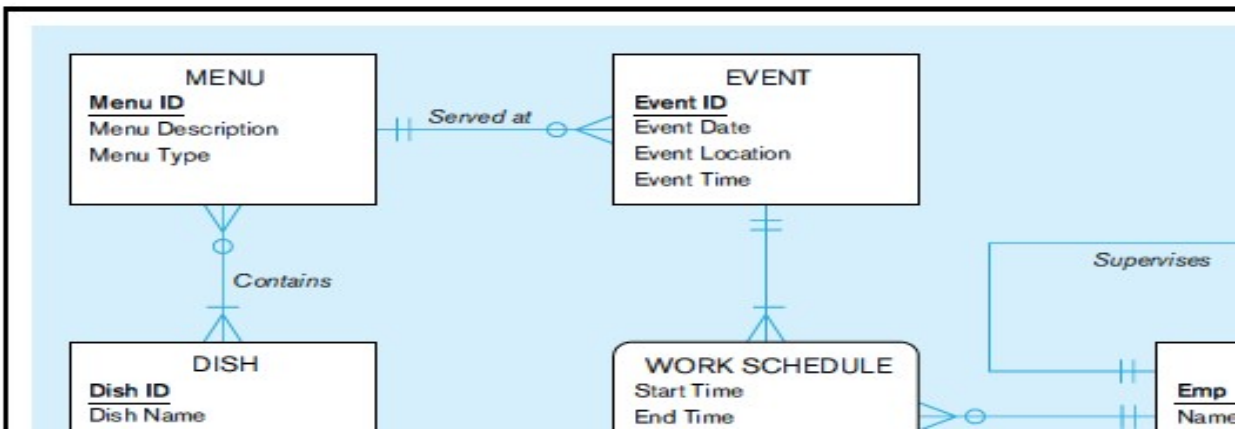
17. The weak entities are used in entity relationship diagrams and are denoted by
A) double rectangles B) double square C) double ovals D) double squares

18. What does a following picture represent in an entity-relationship diagram? 
A) 1-M B) Zero-Many C) One-Optional D) 1-M

19. Describe the difference between disjoint and overlap rule

20. Write out the following ER relationship

FIGURE 4-38 EER diagram for university dining services



Menu-Event:

Menu-Dish

Event-Work Schedule

Staff-Staff

Staff-Work Schedule

21. Perform normalization process for 1NF, 2NF, 3NF; identify composite key, primary key, foreign key, all functional dependencies and anything else that you think you need to include in the explanation.

NUID	STD_Name	Camp_Loc	Major	Course_ID	Course_Title	Instructor	Class_Loc	Grade
1550	John_B	Boston	INFOSYS	122, 123	DBMS, WEB_DESIGN	Kenneth, McBek	126 Snell, 133 Eli	B, B+
1551	John_K	Boston	INFOSYS	123, 125	WEB_DESIGN, ADV_DBMS	McBek, Botan	133 Eli, 226 Snell	A, B+
1552	Bunny	DC	ENGR_MGMT	122, 144	DBMS, SUPPLY_CHAIN	Kenneth, Mozart	126 Snell, 166 Egert	B+, B+
1553	Ida	Seattle	TELECOM	125	ADV_DBMS	Botan	226 Snell	A-
1554	Pem	Seattle	INFOSYS	123	WEB_DESIGN	McBek	133 Eli	A-

22. Amy's Bikes is a new bike shop located in a suburb in Ontario, offering a wide range of bicycles and related accessories. Amy, the shop's owner, has been conducting her daily business mostly on paper. She records sales on preprinted forms, which contains the invoice number and date of the sale, the customer and the employee involved in the sale and the product being sold. Employee and customer information is maintained on sheets of paper. For each employee, this includes his/her social insurance number, first and last name, and home phone number. For each customer, Amy records the first, middle (if any) and last name, as well as at least one phone number and home address (consisting of street number and post code). To keep track of the product inventory, Amy uses a spreadsheet program to record the number, name, price and quantity of the products in stock. For each product, a range of services is offered. The spreadsheet program is also used to list the type (e.g., repair, exchange) and charge for each service. Multiple types of service may be offered to one product (e.g., repair and exchange for bikes) and a service may be offered to multiple products (e.g., repair for bikes and accessories) at different prices. Amy spends a lot of time maintaining this information. Recently, she has decided to use database to manage all this data. After a brief study of database design techniques,

A) Draw ER diagram for Amy including the cardinality

B) Using Amy's ER diagram that is drawn to answer the following questions:

B1) What are the entity and relationship set in the diagram

B2) Identify multi-value attributes in the diagram

B3) Identify the cardinality for Customer and explain its meaning

23. Draw an ER diagram for the following. Be sure to indicate the existence and cardinality for each relationship.

    1. A college runs many classes. Each class may be taught by several teachers, and a teacher may teach several classes. A particular class always uses the same room. Because classes may meet at different times or on different evenings, it is possible for different classes to use the same room.
    2. Each employee in an engineering company has at most one recognized skill, but a given skill may be possessed by several employees. An employee is able to operate a given machine-type (e.g., lathe, grinder) if he has one of several skills, but each skill is associated with the operation of only one machine type. Possession of a given skill (e.g., mechanic, electrician) allows an employee to maintain several machine-types, although maintenance of any given machine-type requires a specific skill (e.g., a lathe must be maintained by a mechanic).

24. What are different anomalies in database explain with example.

25. What are differences between a determinant, primary key, surrogate key and candidate key?

26. What are Functional dependencies? List all types and briefly describe each one.