

Assignment A2

Chapter3:

Ch3Q1: Why are entity integrity and referential integrity important in a database?

- a. Referential integrity ensures that each row is uniquely identified by the primary key.
- b. Referential integrity means that, if the foreign key contains a value, that value refers to an existing valid tuple (row) in another relation.
- c. Entity integrity means that, if the foreign key contains a value, that value refers to an existing valid tuple (row) in another relation.
- d. Entity integrity ensures that each row is uniquely identified by the primary key.

Ch3Q2: A ____ key is defined as a key that is used strictly for data retrieval purposes.

- a. lookup b. foreign c. candidate d. secondary

Ch3Q3: Briefly describe a candidate key:

Ch3Q4: Briefly explain why a data dictionary is necessary, and what should be included in a data dictionary."

Ch3Q5: A CUSTOMER table's primary key is CUS_CODE. The CUSTOMER primary key column has no null entries, and all entries are unique. This is an example of ____ integrity.

- a. entity b. referential c. complete c. null

Ch3Q6: ____ combines all rows from two tables, excluding duplicate rows.

- a. INTERSECT b. UNION c. DIFFERENCE d. SELECT

Ch3Q7: ____ yields only the rows that appear in both tables.

- a. INTERSECT b. UNION c. DIFFERENCE d. SELECT

Ch3Q8: A(n) ____ join links tables by selecting only the rows with common values in their common attribute(s).

- a. equal b. unique c. foreign d. natural

Ch3Q9: In an outer join, the matched pairs would be retained and any unmatched values in the other table would be left ____.

- a. in another table b. null c. out of the results d. with matching values from the original table

Ch3Q10: A ____ contains at least all of the attribute names and characteristics for each table in the system.

- a. data dictionary b. relational schema c. logical schema d. join

Ch3Q11: The ____ is actually a system-created database whose tables store the user/designer-created database characteristics and contents. (BTW, in MySQL that database is named "information_schema.")

- a. meta dictionary b. schema c. data dictionary d. system catalog

Ch3Q12: In a database context, a(n) ____ indicates the use of different names to describe the same attribute.

- a. entity b. duplicate c. synonym d. homonym

Ch3Q13: ____ relational type is the "relational model ideal."
a. 1:1 b. 1:M c. M:1 d. M:N

Ch3Q14: Since it is used to link the tables that originally were related in a M:N relationship, the composite entity structure includes—as foreign keys—at least the ____ keys of the tables that are to be linked.

a. composite b. super c. primary d. unique

Ch3Q15: When you define a table's primary key, the DBMS automatically creates a(n) ____ index on the primary key column(s) you declared.

a. key b. incomplete c. unique d. primary

Chapter4:

Ch4Q1: A ____ should be a derived attribute.

a. person's name b. person's age c. person's social security number d. person's phone number

Ch4Q2: In the ERD, cardinality is indicated using the ____ notation.

a. (max, min) b. (min, max) c. [min ... max] d. {min|max}

Ch4Q3: Another word for existence-independent is ____.

a. weak b. alone c. unary d. strong

Ch4Q4: When the PK of one entity does not contain the PK of a related entity, the relationship is ____.

a. missing b. weak c. strong d. neutral

Ch4Q5: A ____ entity has a primary key that is partially or totally derived from the parent entity in the relationship.

a. strong b. weak c. existence-independent d. relationship

Ch4Q6: The term "____" is used to label any condition in which one or more optional relationships exist.

a. participation b. optionality c. cardinality d. connectivity

Ch4Q7: The existence of a(n) ____ relationship indicates that the minimum cardinality is at least 1 for the mandatory entity.

a. mandatory b. optional c. multivalued d. single-valued

Ch4Q8: The Crow's foot symbol with two parallel lines indicates ____ cardinality.

a. (0,N) b. (1,N) c. (1,1) d. (0,1)

Ch4Q9: If an employee within an EMPLOYEE entity has a relationship with itself, that relationship is known as a ____ relationship.

a. self b. self-referring c. looping d. recursive

Ch4Q10: A(n) ____ entity is composed of the primary keys of each of the entities to be connected.

a. associative b. recursive c. unary d. binary

FSU's Human Resource Department issued a request for proposal (RFP) for a prototype database that models a small preliminary set of business rules. Based upon the database design from the following business rules, **FSU's HR Dept.** will award the project to the appropriate design team.

Business Rules:

- a. A person is the most general class in HR record-keeping. Apart from the "regular" attributes (see **Note** below), "person" should include social security number, gender and date of birth. A person must be an employee, an alumnus, or student, and can be any of the three at the same time.
- b. An employee works for the university, and should include title, salary, start and end dates. An employee can be a faculty member, staff member, or some other position, but can only be one of them.
- c. A student attends classes, and should include major, and start and end dates. A student must be either an undergrad or graduate, but not both (at the same time).
- d. An alumnus has graduated, and must include the following data: degree(s), which include type(s) and area(s), e.g., Associate of Science (A.S.) - Mathematics, and date(s).
- e. A faculty member is an employee, as is a staff member. The former includes rank, the latter includes position.
- f. Likewise, a graduate and undergraduate are both students. Both include test (i.e., GRE, GMAT, LSAT, SAT, ACT, etc.) and score; while the latter also includes standing (i.e., freshman, sophomore, etc.)

Note: ***Always*** refer to the Assignment Guidelines (see Notes) for "regular" attributes that ***must*** be included.

Deliverables

1. ERD (MUST Forward-Engineer, otherwise *no* credit**):**

- Include at least 100 "unique" records in person table; min. 10 records for immediate subtypes, and min. 5 records for remaining subtypes.
- **Must match** data types

Generate Data: <http://www.generatedata.com>

2. Data Dictionary (See textbook, also match the color of the ERD entities):

3. SQL Statements for A2 (Using data from *your*** ERD)**

Must include query result sets!

Joins *must*** include all 4 types of Inner Joins (See Table 8.1)**

For each SELECT statement

- i. List all faculty members' first and last names, full addresses, salaries, and hire dates.
- ii. List the first 10 alumni's names, genders, date of births, degree types, areas, and dates.
- iii. List the last 20 undergraduate names, majors, tests, scores, and standings.
- iv. Remove the first 10 staff members; after which, display the remaining staff members' names and positions.
- v. Increase one graduate student's test score (only one score) by 10%. Display the before and after values to verify that it was updated.
- vi. Add two new alumni, using only one SQL statement (***both***, including, ***and*** **NOT** including attributes). Then, verify that two records have been added.

Helper videos: (Note: use MySQL Workbench connection parameters shown in **A1 video**--***not*** those shown here.)

1. http://www.qcitr.com/vids/Creating_ERDs.mp4
2. http://www.qcitr.com/vids/Generate_Data.mp4
3. http://www.qcitr.com/vids/LIS3784_A2.mp4