# REII414 Semester test 1 flash cards

**SU1**

1)Define a Primary Key

1) An attribute that *uniquely* defines each row

2)Define a foreign Key

2) An attribute whose value matches the primary key of a related table

3)Define entity integrity

3) The property of a relational table that guarantees that each entity has a unique value in a primary key and that there are no null values in the primary key.

4)Define referential integirty

4) A condition by which a dependent tables foreign key must have either a null entry or a matching entry in the related table. Even though an attribute may not have a corresponding attribute, it is impossible to have an invalid entry.

5)Define an ERD

5) Refers to the entity relationship diagram resulting from the application of extended entity relationship concepts that provide additional semantic content zrein the ER model.

6)List the types, and uses for the different crow's feet in the abovementioned diagram

6)
- Zero or many
- One or many
- ONe and only one
- Zero or one ]i

7)Define a derived attribute

7) an attribute whose value is calculated (derived) from other attribute

8)Briefly differentiate between data and information

8) Data are raw facts, information is the result of processing data to reveal its meaning

9)State the 3 ways in which a business might manage its data

9)
- A Manual (paper) file system
- A computerized file system
- A database system

10)State 3 problems with computerized file systems

10)
- Structural and data dependence
- Data redundancy
- Lack of design and data-modeling skills

11)list 9 roles of the DBMS

11)
- Data dictionary management
- Data Storage management
- Data transformation and presentation
- Security Management
- Multiuser access control
- Backup and recovery management
- Data integrity management
- Database access languages and application programming interface
- Database communication interfaces

12)define structural dependence

12) Access to a file is dependent on its structure,

13)define structural independence

13) When access to a file is not affected by changes in its structure

14)define data dependence

14) When access to a file is dependent on its data, for example an appication that relies on the datatype in a file to be an integer.

15)define data independence

15) When it is possible to change the data in a file without affecting access by an application

16)describe the difference between the logical and physical data format

16) The logical data format is the format in which a human reads the data, whereas the physical data format defines the way a computer works with the data

17)state 5 components of the database system environment

17)
- Hardware
- Software
- People
- Procedures
- Data

**SU2**

1)Define an entity

1) something to which data will be attributed, usually corresponds to a table

2)Define a feature

2) An attribute of an entity

3)list 8 Characteristics of a relational table

3)
- A table is perceived as a two-dimensional structure composed of rows and columns.
- Each table row (tuple) represents a single entity occurrence within the entity set.
- Each table column represents an attribute, and each column has a distinct name.
- Each row/column intersection represents a single data value.
- All values in a column must conform to the same data format
- Each column has a specific range of values known as the attribute domain.
- The order of the rows and columns is immaterial to the DBMS.
- Each table must have an attribute or a combination of attributes that uniquely identifies each row.

4)define the concept of a key

4) An entity identifier based on the concept of functional dependence

5)define a Superkey

5) an attribute (or combination of attributes) that uniquely identifies each entity in a table

6)define a Primary key

6) a candidate key selected as a unique entity identifier

7)define a Secondary key

7) a key that is used strictly for data retrieval purposes. For example, a customer is not likely to know his or her customer number (primary key), but the combination of last name, first name, middle initial, and telephone number is likely to make a match to the appropriate table row

8)define a Foreign key

8) an attribute (or combination of attributes) in one table whose values must match the primary key in another table or whose values must be null.

9)define a Candidate key

9) a minimal superkey, that is, one that does not contain a subset of attributes that is itself a superkey

10)list 6 desirable attributes of a primary key

10)
- Stable : does not change over time
- Minimal: Fewest attributes necessary
- Factless: no hidden information
- Definitive: Value always exists
- Accessible: Available when data created
- Unique: Absolutely no duplicates

11) briefly define Data integrity

11) In a relational database, refers to a condition in which the data in the database is in compliance with all entity and referential integrity constraints.

12) Define entity integrity

12) The property of a relational table that guarantees that each entity has a unique value in a primary key and that there are no null values in the primary key.

13) Define referential integrity

13) A condition by which a dependent tables foreign key must have either a null entry or a matching entry in the related table.

14) Briefly describe the data dictionary

14) provides a detailed description of all tables found within the user/designer-created database.IN other words, the database dictionary contains metadata

15) what would a minimal example of a data dictionary contain

15) at least all of the attribute names and characteristics for each table in the system

## SU3

1) Define a Functional dependency

1) Attribute A determines attribute B (that is, B is functionally dependent on A) if all of the rows in the table that agree in value for attribute A also agree in value for attribute B

2) Define a Partial dependency

2) A dependency that exists when the determinant is only part of the primary key [if (A,B) $\rightarrow$ (C,D) and B $\rightarrow$ C Where (A,B) is the PK]

3) Define a transitive dependency

3) Dependencies such that X $\rightarrow$ Y and Y $\rightarrow$ Z form a transitive dependency.In general, transitive dependencies are dependencies between non-primary attributes

4) list the 5 normal forms

4)
- First Normal Form (1NF)
- Second Normal Form (2NF)
- Third Normal Form (3NF)
- Boyce-Codd normal form(BCNF)
- Fourth Normal Form (4NF) ]i

5) give the requirements for 1NF

5) Table format, no repeating groups, and PK identified

6) give the requirements for 2NF

6) 1NF and no partial dependencies

7) give the requirements for 3NF

7) 2NF and no transitive dependencies

8) give the requirements for BCNF

8) Every determinant is a candidate key (special case of 3NF)

9)give the requirements for 4NF

9) 3NF and no independent multivalued dependencies

## SQL queries

1)Briefly describe select syntax

1) SELECT <fields> FROM<tables> WHERE<conditions>

2)Briefly describe update syntax

2) UPDATE<table> SET <field = new> WHERE <condition>

3)state the SQL function for returning the average

3) AVG()

4)state the SQL function for returning the number of rows

4) COUNT()

5)state the SQL function for returning the first value

5) FIRST()

6)state the SQL function for returning the last value

6) LAST()

7)state the SQL function for returning the largest value

7) MAX()

8)state the SQL function for returning the Smallest value

8) MIN()

9)state the SQL function for returning the sum

9) SUM()

10)state the SQL function for returning a numeric field to specific number of decimals

10) ROUND()

## Exam: missing info

1)What is the difference between a row level trigger and a table level trigger

1) A trigger is code that ex executed in response to certain events, usually when data changes. Row level triggers are executed when data in a given row changes, whereas table level triggers execute when data in a given table changes.

2)How Does SQL injection work

2) Web applications are manipulated in order to execute malicious queries, for example by typing in ' 1 = 1 into a search box

3)Give an example of a redundant relationship in ERD

3) ANS

4)How would one execute a right join if the system can only execute left joins

4) execute a left join, but swap the tables