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CIS 344 – Database Design and Programing  
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Part 5

1. What is a Database and (provide 3 examples)?  
A database is an organized collection of data used to model some type of organization or organizational process. Some examples of a database are a Photo album, a Soccer team and class notes.

2. What is a RDBMS and what types of RDBMS exist?   
RDBMS stands for Relational Database Management System. An RDMS is a software application program you use to create, maintain, modify and manipulate relational databases. Data in a relational database is stored in relations which are perceived by the user as tables.  
The types of RDMS that exist are Oracle Database, MySQL and Microsoft SQL Server.

3. What is a Primary Key (provide an example)?  
A Primary Key is like a social security number that uniquely identifies a record in a table. The data in that column cannot be duplicated. Another example of a primary key is a cars vin number.

4. What is a Foreign key?  
A Foreign key represents important data the is the primary key to a different table. Since a primary key cannot be duplicated it is referred to as a foreign key in a different table that is using it.   
Example:An order record without an associated customer. If you don’t know who placed the order, you can’t process it and you can’t invoice it.

5. What is a super Key?  
A Super key is a set of attributes of a relation variable attributes of a relation variable for which it holds that in all relations assigned to that variable, there are no two distinct tuples that have the same values for the attributes in this set.

6. What types of relationships exist in a database and provide an example for each?   
If a record in a given table can be associated in some way within a record in another table, the table is said to have a relationship between them.

The relationship manner in which the relationship is established depends on the type of relationship.

There are 3 types of relationships that can exist between them (Exist between a pair of tables)  
One to One (1:1), One to Many (1: N), Many to Many (M: N)

7. How can you tell if there is a relationship between two or more tables?   
There is a relationship between two tables if one table has a foreign key which is a primary key in another table.

8. What is Database Normalization. What types of abnormalities exist if we do not normalize the database?  
Database Normalization is the process of decomposing large tables into smaller ones in order to stop the use of repeated data and to avoid problems with inserting, updating or deleting data.

Update Abnormality:Data that is inconsistent which results from data being repeated and a partial update

Delete Abnormality:The deletion anomaly is the unintended loss of data due to deletion of other data.

Insert abnormality:An Insert Anomaly occurs when certain attributes cannot be inserted(Added) into the database without the presence of other attributes (Primary key data is missing).

9. What is an attribute and what is a tuple?  
An attribute is fields or columns in a table.  
Tuples are records or rows that holds the data

10. What is a field?  
A field is the structure that stores data. You can retrieve the data in these fields and present it as information in almost any configuration. Every field in a properly designed database contains one and only one value and its name identifies the type of value it holds. An example of a field is First name, Last name, Address, City, State, Zip code.

11. What is the purpose of Join or inner join?  
The purpose of JOIN is to use the data from two different tables and join them together into a single result set.  
INNER JOIN is used when the rows from the two tables in the join are included in the result table only if their related columns match.

12. What is the purpose of a view?  
The purpose of a view is to enable you to see information in a database from different perspectives. The only information about a view that is stored in the database is its structure.

13. What is an Index?An index provides an efficient way of accessing the rows in a table based on the values in one or more columns.

14. What is the purpose of a Query?   
The purpose of a query is for a user to retrieve information from the database that the user can easily read. The query is created by using the select statement.

15. What is a Stored Procedure?   
A stored procedure is a collection of SQL statements that are stored in the database. A stored procedure can contain business logic, which is one of the key aspects that distinguishes stored procedures from views.

16. What is the difference between NoSQL and SQL and list 2 types of SQL and NoSQL Databases?  
NoSQL are non-relational database, which means they do not have tables to relate to on another.  
Two examples of a NOSQL Databases are MongoDB and CouchDB.  
SQL is a relational database where tables can have relationships. Two examples of SQL databases are MySQL and Oracle.