Database Systems

1. **What database models do you know?**

* Hierarchical database model
* Network model
* Relational model
* Entity–relationship model
* [Enhanced entity–relationship model](http://en.wikipedia.org/wiki/Enhanced_entity%E2%80%93relationship_model)
* Object model
* Document model
* [Entity–attribute–value model](http://en.wikipedia.org/wiki/Entity%E2%80%93attribute%E2%80%93value_model)
* Star schema

1. **Which are the main functions performed by a Relational Database Management System (RDBMS)?**

* CREATE
* READ
* UPDATE
* DELETE

1. **Define what is "table" in database terms.**

* A table is a collection of related data held in a structured format within a database. It consists of fields (columns), and rows.

1. **Explain the difference between a primary and a foreign key.**

* Primary key is unique integer or unique string. Primary key will not allow Null values and Duplicate values
* Foreign keywill allow "Null values" and "Duplicte values" and it **refers** to a *primary key* in anoter table.

1. **Explain the different kinds of relationships between tables in relational databases.**

* One-to-many
* Many-to-many
* One-to-one

1. **When is a certain database schema normalized? What are the advantages of normalized databases?**

* Normalization of the relational schema removes repeating data

1. **What are database integrity constraints and when are they used?**

* [*Entity integrity*](http://en.wikipedia.org/wiki/Entity_integrity) concerns the concept of a [primary key](http://en.wikipedia.org/wiki/Primary_key). Entity integrity is an integrity rule which states that every table must have a primary key and that the column or columns chosen to be the primary key should be unique and not null.
* [*Referential integrity*](http://en.wikipedia.org/wiki/Referential_integrity) concerns the concept of a [foreign key](http://en.wikipedia.org/wiki/Foreign_key). The referential integrity rule states that any foreign-key value can only be in one of two states. The usual state of affairs is that the foreign-key value refers to a primary key value of some table in the database. Occasionally, and this will depend on the rules of the data owner, a foreign-key value can be [null](http://en.wikipedia.org/wiki/Null_%28SQL%29). In this case we are explicitly saying that either there is no relationship between the objects represented in the database or that this relationship is unknown.
* *Domain integrity* specifies that all columns in a relational database must be declared upon a defined domain. The primary unit of data in the relational data model is the data item. Such data items are said to be non-decomposable or atomic. A domain is a set of values of the same type. Domains are therefore pools of values from which actual values appearing in the columns of a table are drawn.
* *User-defined integrity* refers to a set of rules specified by a user, which do not belong to the entity, domain and referential integrity categories.

1. **Point out the pros and cons of using indexes in a database.**

The pros are:

* Low overhead (locks, speed) in sliding large amounts of data into separate table for truncation (our primary concern)
* Increased performance.

The cons are:

* Dealing with foreign keys to the table when sliding the partitions around.
* Additional data required in indexes (and queries) to have aligned indexes
* Other limitations associated with aligned indexes? (comments please)

1. **What's the main purpose of the SQL language?**

SQL popular programming language designed for creating, modifying, retrieving and manipulating data from Relational database management system. Standardized of ANSI / ISO.

1. **What are transactions used for? Give an example.**

 START TRANSACTION - Start transaction.

 COMMIT – Write all changes.

 ROLLBACK – Cancel all changes.

1. **What is a NoSQL database ?**

* Redis
* Mongo-DB
* Couch-DB
* Cassandra

1. **Explain the classical non-relational data models.**

* Data stored as documents
* Single entity (document) is a single record
* Documents do not have a fixed structure
* Using JSON string

1. **Give few examples of NoSQL databases and their pros and cons.**

* Less overhead
* Less work
* Less downtime
* Faster results