SQL Basic

What is SQL?

SQL is Structured Query Language, which is a computer language for storing, manipulating and retrieving data stored in a relational database.

SQL is the standard language for Relational Database System. All the Relational Database Management Systems (RDMS) like MySQL, MS Access, Oracle, Sybase, Informix, Postgres and SQL Server use SQL as their standard database language.

SQL Process

When you are executing an SQL command for any RDBMS, the system determines the best way to carry out your request and SQL engine figures out how to interpret the task. There are various components included in this process.

SQL Commands

**DDL - Data Definition Language**

|  |  |
| --- | --- |
| **Command** | **Description** |
| CREATE | Creates a new table, a view of a table, or other object in the database. |
| ALTER | Modifies an existing database object, such as a table |
| DROP | Deletes an entire table, a view of a table or other objects in the database. |

**DML - Data Manipulation Language**

|  |  |
| --- | --- |
| **Command** | **Description** |
| SELECT | Retrieves certain records from one or more tables. |
| INSERT | Creates a record. |
| UPDATE | Modifies records. |
| DELETE | Deletes records. |

**DCL - Data Control Language**

|  |  |
| --- | --- |
| **Command** | **Description** |
| GRANT | Gives a privilege to user. |
| EVOKE | Takes back privileges granted from user. |

SQL – RDBMS Concept

RDBMS stands for **R**elational **D**atabase **M**anagement **S**ystem. RDBMS is the basis for SQL, and for all modern database systems like MS SQL Server, IBM DB2, Oracle, MySQL, and Microsoft Access.

SQL – Constraint

Following are some of the most commonly used constraints available in SQL:

* NOT NULL Constraint: Ensures that a column cannot have a NULL value.
* DEFAULT Constraint: Provides a default value for a column when none is specified.
* UNIQUE Constraint: Ensures that all the values in a column are different
* PRIMARY Key: Uniquely identifies each row/record in a database table
* FOREIGN Key: Uniquely identifies a row/record in any another database table.
* CHECK Constraint: The CHECK constraint ensures that all values in a column satisfy certain conditions.
* INDEX: Used to create and retrieve data from the database very quickly.

DATA INTEGRITY

* The following categories of data integrity exist with each RDBMS:
* Entity Integrity: There are no duplicate rows in a table.
* Domain Integrity: Enforces valid entries for a given column by restricting the type, the format, or the range of values.
* Referential integrity: Rows cannot be deleted, which are used by other records.
* User-Defined Integrity: Enforces some specific business rules that do not fall into entity, domain or referential integrity.

DATABASE NORMALIZATION

Database normalization is the process of efficiently organizing data in a database. There are two reasons of this normalization process:

* Eliminating redundant data. For example, storing the same data in more than one table.
* Ensuring data dependencies make sense.

It is your choice to take it further and go to the fourth normal form, fifth normal form and so on, but in general, the third normal form is more than enough.

* First Normal Form (1NF)
* Second Normal Form (2NF)
* Third Normal Form (3NF)

SQL – Syntax

* **SQL SELECT Statement**
* **SQL DISTINCT Clause**
* **SQL WHERE Clause**
* **SQL AND/OR Clause**
* **SQL IN Clause**
* **SQL BETWEEN Clause**
* **SQL ORDER BY Clause**
* **SQL GROUP BY Clause**
* **SQL COUNT Clause**
* **SQL HAVING Clause**
* **SQL CREATE TABLE Statement**
* **SQL DROP TABLE Statement**
* **SQL CREATE INDEX Statement**
* **SQL DROP INDEX Statement**
* **SQL DESC Statement**
* **SQL TRUNCATE TABLE Statement**
* **SQL ALTER TABLE Statement**
* **SQL ALTER TABLE Statement**
* **SQL INSERT INTO Statement**
* **SQL UPDATE Statement**
* **SQL DELETE Statement**
* **SQL CREATE DATABASE Statement**
* **SQL DROP DATABASE Statement**
* **SQL USE Statement**
* **SQL COMMIT Statement**
* **SQL ROLLBACK Statement**

SQL – JOIN

The SQL **Joins** clause is used to combine records from two or more tables in a database. A JOIN is a means for combining fields from two tables by using values common to each

There are different types of joins available in SQL:

* INNER JOIN: returns rows when there is a match in both tables.
* LEFT JOIN: returns all rows from the left table, even if there are no matches in the right table.
* RIGHT JOIN: returns all rows from the right table, even if there are no matches in the left table.
* FULL JOIN: returns rows when there is a match in one of the tables.
* SELF JOIN: is used to join a table to itself as if the table were two tables, temporarily renaming at least one table in the SQL statement.
* CARTESIAN JOIN: returns the Cartesian product of the sets of records from the two or more joined tables.

Difficulty :

1. Create file .sql