Database

Data - A data is any raw fact.
Ex- Ramesh, Varanasi, life, go, India, 30, 35,53000 etc.

* A data can be name of a person, place, behaviour etc.

Information

A meaningful data is known as information.

Ex- If we have below data -
lives, Agra, Ram, in,
Then, we can create information as below - Ram lives in Agra.

Database

* A database is a logical arrangement of data where we can perform store and fetch records in very efficient manner.

* Database uses various algorithm to arrange and fetch data.
* Database is a secure concept for data management.

Database Server

* A database server is a special kind of server where we can easily manage our database
* Database server provides features for backup and restore of database
* It provides a secure way to access database
* It provides various functionality to manage and use a database

Ex- MSSQL, Oracle, RDBMS, MySQL etc

MySQL is a (RDBMS)

* MySQL is an open source, free and relational database server
* MySQL is developed by Oracle in 1995.
* MySQL is good for small as well as large projects

Syntax to create a database -

```
create database <database_name>;
```

Ex- create database KSSDB;

Note - A database is a collection of various database objects like as tables, views, stored procedures, indexes, triggers etc

Creating Tables-

* Create command is used to create a database table.

Syntax- create table <table name> (column name1 datatype (size), column name2 datatype(size), ___);

Ex- create table Student (rno int, name varchar (50), fees float);

Adding (inserting) / saving records in table

* insert command is used to add a new record in table.
* We can use insert command in two basis-

@ To insert record in all columns of table.

Syntax-

insert into <tablename> values (column1 value, column2 value, ___ column N value);

Ex- insert into student values (1, 'Sonu Rai', 500);

Note- Single quotes is used to write character and string

(b) To insert record in specified columns of table:-

Syntax- insert into <table name> (Column name 1, column name 2, ___) values (value for column1, value for column 2, ___);

Ex- insert into student (name, fees) values ('Seema', 45

Primary key

* Primary key is a key constraint in database table
* Primary key is used to uniquely fetch items of a table.
* Value of primary key column must be unique
* We can create any type of (data type) column of a table as a primary key
* Int type of primary key column can be auto incremented (auto generated). → Create, Read, Update and delete
* To ~~implement~~ perform CRUD operations it is necessary to have a primary key in table.
* Creating primary key during table creation -

Syntax-

create table <table-name> (column name1 datatype (size) primary key, column name2 datatype (size), ...);

Ex:

create table friends (friendid int primary key, fname varchar(50), mobno varchar(13), address varchar(100));

Fetching / Accessing / Querying / Reading data from table -

* Select command is used to fetch/display the data from data base table.
* We can use select command in various way-

① To fetch all rows and all columns -
Syntax- Select * from <table name>;
Ex- Select * from friends;

② To fetch specific columns and all rows -
Syntax- Select columnname1, columnname2, ---
from <table name>;
Ex- Select name, mobno. from students;

③ To fetch all columns and specific rows -
Note- To filter the rows (records) in a table we have to use "where clause" with conditions
Syntax- select * from <table name> where columnname <condition>;
Ex- select * from friends where rno. = 2204;

④ To fetch specific columns and specific rows -
Syntax- select column_name1, column_name2, ---
from <table name> where condition
Ex- select rno, name from student where rno. = 1;

Modifying table Structure :-

* To modify/ change structure of a table we have to use alter command
* Syntax to add a new column-

alter table <tablename> add columnname datatype(size);

Ex-

alter table friends add gender varchar(10);

* Syntax to remove a column-

alter table friends drop column fees;

* Syntax to modify a column-

alter table tablename modify columnname Nkeo datatype (Nkeo size);

Ex-

alter table student modify rno int primary key;

Types of database commands;

Data base commands are devided in below categories-

1. DDL
2. DML
3. TCL
4. DCL
5. DQL

→ Data definition language

① DDL - This types of commands are used to create and manage database objects. It works on database structure
Ex- create, alter, drop, truncate.

② DML (Data manipulation language) - DML commands are used to ~~create~~ add and modify data in database objects. So we can insert new record and modify records in database.
Ex- insert, update, delete.

③ TCL (Transaction control language) :- TCL commands are used to manage transactions in database and its status
Ex- commit, rollback, savepoint.

④ DCL (Data control language) - DCL commands are used to control and manage data access from a database.
Ex- grant, revoke.

⑤ DQL (Data Query language) - DQL command is used to select/get/find/display data from database.
Ex- select.

Update Command-

* This command is used to modify data in a table.
* We can also specify condition with this command to modify specific data.

Syntax- Update <table name> set columnname = value, ~~set~~ columnname = value, where condition;

Ex- update student set name = 'Rahul Gupta' where rno = 5;

Delete Command

* Delete command is used to remove records from database table.
* We can remove one or more records by using delete commands.

Syntax- delete from <table name> where condition;

Ex- delete from student where rno = 5;

Truncate-

* This command is used to remove all the records from table and it also resets the indexors and auto increment fields of a table.

Syntax- truncate table <table name>;

Ex- truncate table student;

Drop Command-

* This command is used to remove a table from database and also used to remove a database
* Once table is removed then it can't be restored

Syntax- drop table <table name>;

Ex- drop table student;

* Display all records in ascending order of name
=> select * from employee order by name;

* Display all records in descending order of name
=> select * from employee order by name desc;

* display count of records (no. of records) in table
=> select count(*) from employee;

* display sum of salary of all employee.
=> select sum(salary) from employee;

* display average salary of each employee
=> select avg(salary) from employee;

* display details of employee having maximum salary
=> select * from Employee where salary=
(select max(salary) from employee);

* display details of employee salary more than 25000 and gender is female
=> select * from employee where salary >=25000 and gender = 'Female';

* display details of youngest employee
=> select * from employee where age = (select min(age) from employee)

* display name, age, mobile no. of oldest imployee
=> select name, age, mobileno from employee where age = (select max(age) from employee);

* remove records of employee having age > 50
=> delete from employee where age > 50;

* remove records of all female employees that are getting salary more than 30000
=> delete from employee where salary > 30000 and gender = 'Female';

=> delete from employee where salary > 30000 and gender = 'Female';

* truncate table employee.
=> truncate table employee;
* remove table employee;
=> drop table employee;

* display details of employee that names are started from A

⇒ name like 'A%';

* Select * from employee group by name having count(*) > 1

displays all records have employee's name same and records are more than 2

* people left join employee On id = emp_id;

bool type