DBMS

CH-B:-

Q.) Write relational algebra formula to find only name of students from Ambala?

1st step :- $\sigma_{CITY} = $ "Ambala" (STUDENT)

2nd step :- $\Pi_{NAME} (\sigma_{CITY} = $ "Ambala" (STUDENT)) ⎤ 1st method

& Second 2nd Method :-

1st Step :- $\Pi_{NAME, CITY} $ (STUDENT)

2nd step :- $\sigma_{CITY} = $ "AM Ambala" ($\Pi_{NAME, CITY}$ (STUDENT))

3rd step :- $\Pi_{NAME} (\sigma_{CITY} = $ "Ambala" ($\Pi_{NAME, CITY}$ (STUDENT)))

Intro. to SQL :-

- A standard language used in most DBMS.
- SQL stands for Structured Query Language.
- It keeps involving & growing
- Vendors have the tendency to add "unique" features.
- Pronounced as "s-q-l" or "sequel".
- SQL became a standard of the American National Standards Institute (ANSI) in 1986 & of the International Organization for Standardization (ISO) in 1987

What SQL can do?

- It can execute queries against a DB
- " " retrieve data from a "
- " " insert records in a "
- " " update " " " "
- " " delete " from a "
- " " create stored procedures in a DB
- " " " views in a DB
- " " set permissions on tables, procedures & views.

DDL & DML :-

DDL :- Data Definition Language define the schema of the DB

DML :- Data Manipulation Language provides commands to manipulate the DB (query, insert, update, delete)

SQL is based on relational algebra, but not entirely indentical :-

Relations ⟷ Tables
Tuples ⟷ Rows
Attribute ⟷ Columns

➤ Basic DDL Commands in SQL :- ~~TD~~ TRUNCATE & RENAME too

i) CREATE :- to define new tables (to define relation schemas)
ii) DROP :- to delete table definitions (to delete relation schemas)
iii) ALTER :- to change the " " of existing tables (to change relation schema)

➤ Platforms of this Course :- i) MySQL
- Open Source, free S/w
- Available on Windows & Linux
- Easily installed on your own PC.
ii) Oracle Live SQL (Online)

i) CREATE Table :- Used to create table in RDB

CREATE TABLE table_name (column1 datatype, column2 datatype);
eg :-
CREATE TABLE Student (Roll_no Int, Name varchar (50), Class varchar (4));
↑ no space   ↑ no space

ii) ALTER Table :- Used to add, delete, or modify columns in a existing table. This statement is also used to add & drop various constraints on an existing table.

• To add column in a table :-
ALTER TABLE table_name ADD column_name datatype;
↓ no space
• ~~DROP~~ Drop column :-
ALTER TABLE table_name DROP COLUMN column_name;

➤ Views in a DB :-

• In SQL, a view is a virtual table based on the result set of an SQL statement.
• A view contains rows & columns, just like a real table. The fields in a view are fields from one or more real tables in DB
• You can add SQL functon WHERE, & JOIN statements to a view & present the data as if the data were coming from one single table

CREATE VIEW Syntax :-

CREATE VIEW view_name AS SELECT column1, column2... FROM table_name WHERE condition;

e.g. i) Create a view that shows all customers from Brazil :-
     CREATE VIEW [Brazil Customers] AS SELECT CustomerName, Contact FROM Customers WHERE Country = "Brazil";

ii) Create a view that selects every product in the "Products" table with a Price higher than the avg price:-
     CREATE VIEW [Products Above Average Price] AS SELECT Product_Name, Price FROM Products WHERE Price > (SELECT AVG(Price) FROM Products);

Sequence :-

In Oracle, we can create an auto number field by using sequences. A sequence is an object in Oracle that is used to generate a number sequence. This can be useful when we a need to create a unique number to act as a primary key.

Syntax :- CREATE SEQUENCE sequence_name START WITH value INCREMENT BY value;

e.g :- CREATE SEQUENCE abc START WITH 100 INCREMENT BY 1;

This statement can also be dropped & can also be used in various tables

Drop Sequence :-
     DROP SEQUENCE sequence_name

Select Statement :- Used to select data from a DB
The data returned is stored in a result table, called result-set.

SELECT expressions FROM tables [WHERE conditions] [ORDER BY expression [ASC|DESC]];

OR
     SELECT column1, column2,... FROM table_name;

OR
     SELECT * FROM table_name; (shows all values)