**Session 7 SQL – Tasks**

* **Task 1 : List other data types**

**SMALLINT, BIGINT,REAL**

* **Task 2 : List other constraints**

**CHECH**

* **Task 3 : List other operators**

**AND OR NOT**

* **Task 4 : What is AS and example**

AS is an alias which gives an alternative name for a temporary time

SELECT AVG(column1) AS average\_value

FROM TableName;

* **Task 5 : What is the wildcard in SQL and example**

There are 2 wild cards which are the % and the –

The % in A% gives anything that starts with A

And the” – “in A- means that it can only give one character after the A like AS

* **Task 6 : What is a nested query**

A nested query, also known as a subquery, is a query that is embedded within another query

* **Task 7 : What are the relationships in a database**

In a relational database, relationships define the associations between tables. These relationships are established using keys, such as primary keys and foreign keys, to connect rows in one table with rows in another

Their types are

One to one (1:1)

One to many (1:M)

Many to many (N:M)

* **Task 8 : Create a school database and run some queries**

CREATE TABLE Students (

StudentID INT PRIMARY KEY,

FirstName VARCHAR(255),

LastName VARCHAR(255),

BirthDate DATE

);

CREATE TABLE Courses (

CourseID INT PRIMARY KEY,

CourseName VARCHAR(255)

);

CREATE TABLE Enrollments (

StudentID INT,

CourseID INT,

EnrollmentDate DATE,

PRIMARY KEY (StudentID, CourseID),

FOREIGN KEY (StudentID) REFERENCES Students(StudentID),

FOREIGN KEY (CourseID) REFERENCES Courses(CourseID)

);

INSERT INTO Students (StudentID, FirstName, LastName, BirthDate)

VALUES

(1, 'John', 'Doe', '2000-01-01'),

(2, 'Jane', 'Smith', '1999-05-15'),

(3, 'Bob', 'Johnson', '2001-07-20');

INSERT INTO Courses (CourseID, CourseName)

VALUES

(101, 'Mathematics'),

(102, 'History'),

(103, 'Science');

INSERT INTO Enrollments (StudentID, CourseID, EnrollmentDate)

VALUES

(1, 101, '2022-02-01'),

(1, 102, '2022-02-01'),

(2, 101, '2022-02-02'),

(3, 103, '2022-02-02');

* **Task 9 : What is INTERSECT in SQL and example**

INTERSECT operator is used to retrieve the common records from two result sets. It returns only those rows that appear in both result sets

CREATE TABLE TableA (

ID INT PRIMARY KEY,

Name VARCHAR(255)

);

CREATE TABLE TableB (

ID INT PRIMARY KEY,

Name VARCHAR(255)

);

INSERT INTO TableA (ID, Name)

VALUES

(1, 'John'),

(2, 'Jane'),

(3, 'Bob');

INSERT INTO TableB (ID, Name)

VALUES

(1, 'John'),

(3, 'Bob'),

(4, 'Alice');

* **Task 10 : The idea of triggers in SQL**

In SQL, a trigger is a set of instructions or a set of actions that are automatically executed ("triggered") in response to a certain event on a particular table or view. Triggers are used to enforce business rules, maintain data integrity, and automate complex database actions. They can be defined as executing before or after an event like INSERT, UPDATE, DELETE, or even at the statement level.

* **Task 11 : Search More About Database Normalization**

Database normalization is a technique in database design that helps organize data more efficiently, reducing redundancy and dependency. The main goals are to prevent data errors and make sure information is stored in a structured way. There are different levels of normalization, each with stricter rules for organizing data. These rules aim to eliminate common issues and improve the overall quality of the database. For a deeper understanding, explore more detailed resources on this topic.

And for example :

**First Normal Form (1NF)**

**Second Normal Form (2NF)**

**Third Normal Form (3NF)**

**Boyce-Codd Normal Form (BCNF)**