Title : a. Design and Develop SQL DDL statements which demonstrate the use of SQL objects such as Table, View, Index, Sequence, Synonym, different constraints etc.

b. Write at least 10 SQL queries on the suitable database application using SQL DML statements.

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Design and Develop SQL DDL Statements:

1. Create Table with Constraints:

CREATE TABLE Students (

Roll\_No NUMBER(5) PRIMARY KEY,

Full\_Name VARCHAR2(100) NOT NULL,

Gender VARCHAR2(10) CHECK (Gender IN ('Male', 'Female')),

Department VARCHAR2(100),

Email VARCHAR2(100) UNIQUE );

1. Create View:

-- Create a view that shows student names and departments only

CREATE VIEW StudentDetails AS

SELECT Full\_Name, Department FROM Students;

1. Create Index:

-- Create an index on the Department column to optimize search queries by department

CREATE INDEX idx\_department ON Students(Department);

1. Create Sequence:

-- Create a sequence to automatically generate roll numbers for new students

CREATE SEQUENCE seq\_RollNo

START WITH 100

INCREMENT BY 1;

1. Create Synonym:

-- Create a synonym for the Students table CREATE SYNONYM Stud FOR Students;

b. 10 SQL DML Queries:

1. Insert data into Students table:

INSERT INTO Students (Roll\_No, Full\_Name, Gender, Department, Email)

VALUES (seq\_RollNo.NEXTVAL, 'Barry Allen', 'Male', 'Physics',

'dcflash@gmail.com');

1. Insert more data:

INSERT INTO Students (Roll\_No, Full\_Name, Gender, Department, Email)

VALUES (seq\_RollNo.NEXTVAL, 'Wanda Maximoff', 'Female', 'Psychology', 'mcwitch@gmail.com');

1. Update a student’s department:

UPDATE Students

SET Department = 'Cosmology' WHERE Full\_Name = 'Barry Allen';

1. Delete a student record:

DELETE FROM Students WHERE Roll\_No = 4;

1. Select all students in a specific department:

SELECT Full\_Name, Email

FROM Students

WHERE Department = 'Psychology';

1. Select all female students:

SELECT Full\_Name, Department

FROM Students

WHERE Gender = 'Female';

1. Find the number of students in each department:

SELECT Department, COUNT(\*) AS Total\_Students

FROM Students

GROUP BY Department;

1. Select students with a specific email domain:

SELECT Full\_Name, Email

FROM Students

WHERE Email LIKE '%gmail.com';

1. Select students by roll number range:

SELECT Full\_Name, Roll\_No

FROM Students

WHERE Roll\_No BETWEEN 1 AND 10;

1. Retrieve details from the StudentDetails view:

SELECT \* FROM StudentDetails;