**import mysql.connector**

**conn = mysql.connector.connect(**

**host='localhost',**

**user='root',**

**password='khaifhasan1331',**

**database='adbms'**

**)**

**cursor = conn.cursor()**

**# Create a view of instructors without their salary called faculty**

**instructors\_view\_without\_salary = """**

**CREATE VIEW faculty AS**

**SELECT ID, name, dept\_name**

**FROM instructor**

**"""**

**cursor.execute(instructors\_view\_without\_salary)**

**display\_instructor\_view = """**

**SELECT \***

**FROM faculty**

**"""**

**cursor.execute(display\_instructor\_view)**

**results = cursor.fetchall()**

**print("Question1:")**

**for row in results:**

**print(row)**

**print("\n")**

**# Create a view of department salary totals**

**department\_salary\_view = """**

**CREATE VIEW department\_salary\_totals AS SELECT dept\_name, SUM(salary) AS total\_salary FROM instructor GROUP BY dept\_name**

**"""**

**cursor.execute(department\_salary\_view)**

**display\_department\_view="""**

**SELECT \* FROM department\_salary\_totals;**

**"""**

**cursor.execute(display\_department\_view)**

**results = cursor.fetchall()**

**print("Question2:")**

**for row in results:**

**print(row)**

**print("\n")**

**# Create a role of student**

**role= """**

**CREATE ROLE 'student';**

**"""**

**cursor.execute(role)**

**# Give select privileges on the view faculty to the role student.**

**grant\_select = """**

**GRANT SELECT ON faculty TO student;**

**"""**

**cursor.execute(grant\_select)**

**# Create a new user and assign her the role of student.**

**new\_role = """**

**CREATE USER khaif@localhost IDENTIFIED BY '1234'**

**"""**

**cursor.execute(new\_role)**

**grant\_user = """**

**GRANT student TO khaif@localhost**

**"""**

**cursor.execute(grant\_user)**

**# Revoke privileges of the new user**

**revoke\_user = """**

**REVOKE student FROM khaif@localhost**

**"""**

**cursor.execute(revoke\_user)**

**# Remove the role of student.**

**remove\_role = """**

**DROP ROLE student**

**"""**

**cursor.execute(remove\_role)**

**# Give select privileges on the view faculty to the new user**

**select\_user = """**

**GRANT SELECT ON faculty TO khaif@localhost**

**"""**

**cursor.execute(select\_user)**

**# Create table teaches2 with same columns as teaches but with additional constraint that that semester is one of fall, winter, spring or summer.**

**new\_table= """**

**CREATE TABLE teaches2 (**

**ID INT NOT NULL,**

**course\_id VARCHAR(255) NOT NULL,**

**sec\_id INT NOT NULL,**

**semester VARCHAR(255) NOT NULL CHECK (semester IN ('Fall', 'Winter', 'Spring', 'Summer')),**

**year INT NOT NULL,**

**FOREIGN KEY (ID) REFERENCES instructor(ID)**

**)**

**"""**

**cursor.execute(new\_table)**

**# Create index ID column of teaches. Compare the difference in time to obtain query results with or without index.**

**create\_index = """**

**CREATE INDEX idx\_ID ON teaches (ID)**

**"""**

**cursor.execute(create\_index)**

**# Drop the index to free up the space.**

**drop\_index = """**

**DROP INDEX idx\_ID ON teaches**

**"""**

**cursor.execute(drop\_index)**