National University of Sciences & Technology
School of Electrical Engineering and Computer Science
Department of Computing

CS220: Database Systems (3+1): BS CS- 6C Fall 2017

Assignment 3: SQL Views Practice	
CLO 2: Formulate SQL queries to retrieve information from a relational database.	
Maximum Marks: 10	Instructor: Dr. Amanullah Yasin
Announcement Date: 27th November 2017	Due Date : 1st December 2017, 10

Instructions:

Practice SQL views and submit a PDF document including the SQL queries to answer tasks given at the end of the assignment as well as snapshot (your personal PC's screen, full desktop images, not cropped) of their outcome when executed over MySQL using the Workbench.

Plagiarism in assignment will lead to zero marks. Clearly mention your name & registration number on the assignment. Use filename as "YourName_ID_SQLViews.pdf"

Description of Views in SQL

```
CREATE
[OR REPLACE]
[ALGORITHM = {UNDEFINED | MERGE | TEMPTABLE}]
[DEFINER = { user | CURRENT_USER }]
[SQL SECURITY { DEFINER | INVOKER }]
VIEW view_name [(column_list)]
AS select_statement
[WITH [CASCADED | LOCAL] CHECK OPTION]
```

The CREATE VIEW statement creates a new view, or replaces an existing view if the OR REPLACE clause is given. If the view does not exist, CREATE OR REPLACE VIEW is the same as CREATE VIEW. If the view does exist, CREATE OR REPLACE VIEW is the same as ALTER VIEW. Further details of the Syntax can be explored on MYSQL website.

A view belongs to a database. By default, a new view is created in the default database. To create the view explicitly in a given database, `use db_name.view_name` syntax to qualify the view name with the database name:

```
CREATE VIEW test.v AS SELECT * FROM t;
```

Unqualified table or view names in the SELECT statement are also interpreted with respect to the default database. A view can refer to tables or views in other databases by qualifying the table or view name with the appropriate database name.

Within a database, base tables and views share the same namespace, so a base table and a view cannot have the same name.

Columns retrieved by the SELECT statement can be simple references to table columns, or expressions that use functions, constant values, operators, and so forth.

A view must have unique column names with no duplicates, just like a base table. By default, the names of the columns retrieved by the SELECT statement are used for the view column names. To define explicit names for the view columns, specify the optional column_list clause as a list of comma-separated identifiers. The number of names in column_list must be the same as the number of columns retrieved by the SELECT statement.

TASKS:

Given the following database schema:

Student (snum: integer, sname: char(30), major: char(25), level: char(2), age: integer)

Faculty (fid: integer, fname: char(30), deptid: integer)

Class (cname: char(40), meets_at: char(20), room: char(10), fid: integer | fid REFS Faculty.fid)

Enrolled (snum: integer, cname: char(40) | snum REFS student.snum, cname REFS class.name)

Write SQL expressions for each of the following create view queries and then use the view in other queries for executing them:

1. Create a view named “CSstudents” that retrieve all students whose major is “Computer Science”.
    a. Retrieve age of the oldest student whose major is “Compter Science”.
    b. Find the name and age of the oldest student whose major = “Computer Science”
    c. Find the names, majors and ages of all juniors (Level = JR) who are enrolled in a class taught by Ivana Teach in “Computer Science” major.
    d. Find the names of faculty members and their departments, classes and room number which they teaching in “Computer Science” major..

2. Define a view “ElderStudents” that retrieve oldest students in each major.
    a. Find the names of classes and their rooms where elder students are studying.
    b. Find name of major and age of student who includes the eldest student.

3. Define a view “EnrolledStudents” that retrieve students who are enrolled for a class.

4. Find the names of all students who are enrolled in two classes that meet at the same time.

5. Redefine the above query with “EnrolledStudents”.