Assignment 2 : DBMS

MIS No.: 612303083 (TY 1, ADS 3)

Q.1 Aggregates, Grouping and Ordering -

DQL - Solution queries:

- Code:

```
-- Find the number of instructors who have never taught any course. If the result
of your query is empty, add the appropriate data (and include corresponding insert
statements) to ensure the result is not empty.NOTE:  IN THE SUBMISSION  FILE,
PASTE  DATA INSERTED BELOW THIS STATEMENT AS A REMARK.
SELECT COUNT(DISTINCT instructor.ID) AS InstructorCount
FROM instructor, teaches
WHERE instructor.ID NOT IN (SELECT ID FROM teaches);
```

- Output:

Result Grid

InstructorCount
3

- Code:

```
-- Find the total capacity of every building in the university.
SELECT section.building, SUM(DISTINCT classroom.capacity) AS TotalCapacity
FROM section, classroom
WHERE section.building = classroom.building
GROUP BY section.building;
```

- Output:

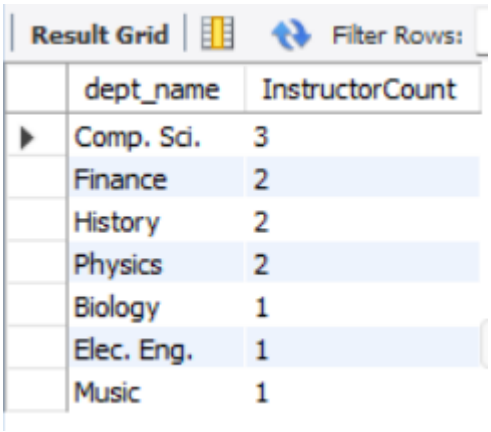
Result Grid Filter Row

building	TotalCapacity
Packard	500
Painter	10
Taylor	70
Watson	80

- Code:

```
-- Find all departments that have at least one instructor, and list the names of
the departments along with the number of instructors;   order the result in
descending order of number of instructors.
SELECT instructor.dept_name, COUNT(DISTINCT instructor.ID) AS InstructorCount
FROM instructor
GROUP BY dept_name
ORDER BY InstructorCount DESC;
```

- Output:



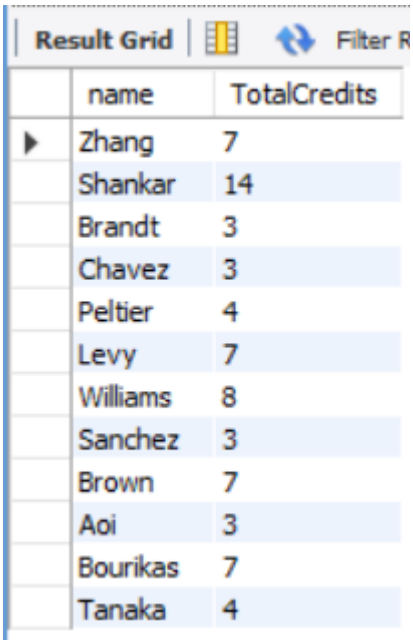
Result Grid | Filter Rows:

dept_name	InstructorCount
Comp. Sci.	3
Finance	2
History	2
Physics	2
Biology	1
Elec. Eng.	1
Music	1

- Code:

```
-- For each student, compute the total credits they have successfully completed,
i.e. total credits of courses they have taken, for which they have a non-null
grade other than 'F'. Do NOT use the tot_credits attribute of student.
SELECT student.name, SUM(course.credits) AS TotalCredits
FROM student, takes, course
WHERE student.ID = takes.ID AND takes.course_id = course.course_id AND takes.grade
<> 'F'
GROUP BY student.name;
```

- Output:



Result Grid | Filter R

name	TotalCredits
Zhang	7
Shankar	14
Brandt	3
Chavez	3
Peltier	4
Levy	7
Williams	8
Sanchez	3
Brown	7
Aoi	3
Bourikas	7
Tanaka	4

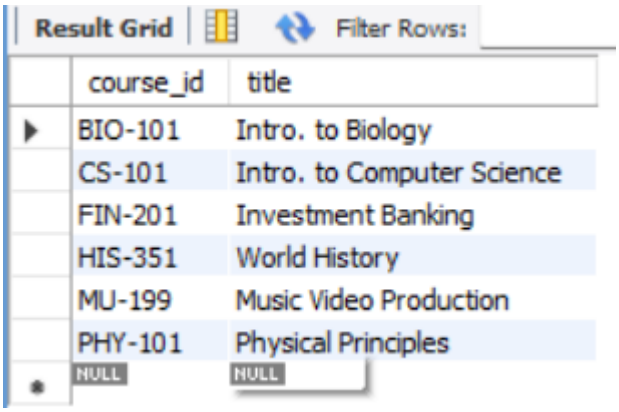
Q.2 Nested Subqueries -

DQL - Solution queries:

- Code:

```
-- Find the id and title of all courses which do not require any  prerequisites.
SELECT course_id, title
FROM course
WHERE course_id NOT IN (SELECT course_id from prereq);
```

- Output:



Result Grid | Filter Rows:

course_id	title
BIO-101	Intro. to Biology
CS-101	Intro. to Computer Science
FIN-201	Investment Banking
HIS-351	World History
MU-199	Music Video Production
PHY-101	Physical Principles
NULL	NULL

- Code:

```
-- Find the names of students who have not taken any biology dept. courses.
SELECT name
FROM student
WHERE ID NOT IN (
    SELECT takes.ID
    FROM takes, course
```

```
    WHERE takes.course_id = course.course_id AND course.dept_name = 'Biology'
);
```

- Output:

Result Grid

name
Zhang
Shankar
Brandt
Chavez
Peltier
Levy
Williams
Sanchez
Snow
Brown
Aoi
Bourikas