

Department of Data Science, Bishop Heber College Tiruchirappalli
NoSQL Database Management Lab

Lab7. University Course Enrollment Data Analytics

In this lab, you will use the dataset that contains 7 course enrolment data files of a university (course.data, dept.data, enroll.data, major.data, prof.data, section.data and student.data) that are given to you.

Please open these files in MS Excel and look at the record values. Understand the relationships between each table.

Write SQL queries for the following statements, execute them and obtain results. Compare the query results by manually checking the records and ensure your SQL query gives you correct result as you expected.

Write SQL queries for the following problems

Question1. Print the names of professors who work in departments that have fewer than 50 PhD students.

Select d.dname, d.num-phd, p.pname from prof p, dept d where
d.num-phd < 50 order by num-phd;

Question 2. Print the names of the students with the lowest GPA.

Select sname, gpa from student where gpa = (select min(gpa)
from student);

Question3. For each Computer Sciences class, print the class number, section number, and the average gpa of the students enrolled in the class section.

Select e.cno, e.sect-no, avg(s.gpa) from enroll e, student s
where dname = 'computer sciences' and s.sid = e.sid group
by dname, cno, sect-no;

Question4. Print the names and section numbers of all sections with more than six students enrolled in them.

```
Select C.chame, C.cno, e.sec.no, count(e.sid) as  
Student-Count from course C left join enroll e on e.cno =  
C.cno group by C.chame, C.cno, e.sec-no having count(e.sid) >  
6;
```

Question5. Print the name(s) and sid(s) of the student(s) enrolled in the most sections.

```
Select sname, sid from student where sid in (select sid from  
enroll group by sid having count(*) >= all (select count(*)  
from enroll group by sid));
```

Question6. Print the names of departments that have one or more majors who are under 18 years old.

```
Select distinct m.dname from major m, student s where  
m.sid = s.sid and s.age < 18;
```

Question7. Print the names and majors of students who are taking one of the College Geometry courses.

```
Select m.sid, m.dname from major m inner join enroll e  
on e.sid = m.sid where e.cno in (461, 462);
```

Question8. For those departments that have no major taking a College Geometry course print the department name and the number of PhD students in the department.

```
Select dept.dname, dept.num_phds from dept where  
not exists (Select 1 from course where course.dname =  
dept.dname and course.cname like '% college geometry%');
```

Question9. Print the names of students who are taking both a Computer Sciences course and a Mathematics course.

```
Select s.sname from student s inner join enroll e on e.sid =  
s.sid where e.dname = 'computer sciences' and e.dname =  
'Mathematics';
```

Question10. Print the age difference between the oldest and the youngest Computer Sciences major.

```
Select max(s.age) - min(s.age) as "age dif" from students  
inner join major m on m.sid = s.sid where m.dname =  
'Computer Sciences';
```


Question11. For each department that has one or more majors with a GPA under 1.0, print the name of the department and the average GPA of its majors.

```
Select dname, cno, avg(grade) from enroll enroll group by  
dname, cno;
```

Question12. Print the ids, names and GPAs of the students who are currently taking all the Civil Engineering courses.

```
Select e.sid, s.sname, s.gpa from student s right outer  
Join enroll e on s.sid = e.sid where e.dname = 'Civil Engineering'  
order by gpa;
```