***NAME : Himanshu Dixit***

***ENROLL NO. : 21103262***

***BATCH : B11***

***Database System and Web [15B11CI312]***

***Tutorial Sheet***

***Week 7***

*student (sid, sname, sex, age, year, gpa)*

*dept (dname, numphds)*

*prof (pname, dname)*

*course (dname, cno, cname)*

*major (dname, sid)*

*section (dname, cno, sectno, pname)*

*enroll (sid, dname, cno, sectno, grade)*

*Write the following queries in SQL:*

***Q1.*** *Print the names of professors who work in departments that have fewer than 50 PhD students.*

***Solution :***

*SELECT pname*

*FROM Prof p, Dept d*

*WHERE numphds < 50 and p.dname=d.dname;*

***Q2.*** *Print the names of the students with the lowest GPA.*

***Solution :***

*Select S.sname, S.gpa*

*FROM Student S*

*Where S.gpa = (select Min(G.gpa) FROM Student G );*

***Q3.*** *For each Computer Sciences class, print the class number, section number, and the average gpa of the students enrolled in the class.*

***Solution :***

*Select e.cno, e.sno, s.avg(gpa)*

*From student s, enroll e, course c*

*Where s.sid=e.sid and e.dname=c.dname and c.cname=’computer science’ group by c.cname.*

***Q4.*** *Print the names and section numbers of all classes with more than six students enrolled in them.*

***Solution :***

*Select c.cname,e.sectno*

*From course c, enroll e*

*Where totalstu=(select count(sid) from enroll group by cno)>6*

*And c.cno=e.cno*

***Q5.*** *Print the name(s) and sid(s) of the student(s) enrolled in the most classes.*

***Solution :***

*SELECT S.SNAME ,*

*SELECT sid,sname from student*

*WHERE sid=(SELECT sid from student WHERE sid=(SELECT sid from enroll group by sid having count(sid)=(SELECT max(count(sid)) from enroll group by sid)));*

***Q6.*** *Print the names of departments that have one or more majors who are under 18 years old.*

***Solution :***

*a) Solution*

*SELECT dname*

*FROM major*

*WHERE sid IN (SELECT sid*

*FROM student*

*WHERE age < 18);*

*b) Solution*

*select distinct m.dname*

*from major m, student s*

*where m.sid = s.sid and s.age < 18;*

***Q7.*** *Print the names and majors of students who are taking one of the College Geometry courses.*

***Solution :***

*SELECT s.sname, m.dname*

*FROM student s, major m, enroll e, course c*

*WHERE s.sid = m.sid and e.sid = m.sid and e.cno = c.cno*

*and c.cname LIKE "%College%Geometry%";*

***Q8.*** *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.*

***Solution :***

*SELECT \**

*FROM dept d*

*WHERE NOT EXISTS (SELECT m.sid*

*FROM major m, enroll e*

*WHERE m.sid = e.sid AND m.dname = d.dname*

*AND e.dname = 'College Geometry');*

***Q9.*** *Print the names of students who are taking both a Computer Sciences course and a Mathematics course.*

***Solution :***

*select student.sname from student,course,course a*

*where student.sid=course.sid*

*and course.cname='Computer science'*

*and a.cname='Mathematical science';*

***Q10.*** *Print the age difference between the oldest and the youngest Computer sciences major.*

***Solution :***

*select max(student.age)-min(student.age)*

*from student,major*

*where student.sid=major.sid and major.dname='Computer science';*

***Q11.*** *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.*

***Solution :***

*select distinct M.dname*

*from Major M, Student S*

*where M.sid = S.sid and S.gpa < 1.0 and (select temp.dname, temp.average*

*from (select M.dname, avg(S.gpa) as average*

*Where Major M, Student S*

*group by M.dname, average) temp);*

***Q12.*** *Print the ids, names and GPAs of the students who are currently taking all the Civil Engineering courses.*

***Solution :***

*select S.sname, S.sid, E.dname*

*from Student S, Enroll E*

*where S.sid = E.Sid and E.dname = 'Civil Engineering';*