190905513 CSE IV 'A' MOHAMMAD DANISH EQBAL

LAB 4

Lab Exercises:

Q1) Find the number of students in each course
select course_id, count(distinct ID) from takes group by course_id;

Q2) Find those departments where the average number of students are greater than 10.

select dept_name, count(distinct ID) from student group by dept_name having count(distinct ID)>10;

Q3) Find the total number of courses in each department.

select dept_name,count(distinct course_id) from course group by dept_name;

Q4) Find the names and average salaries of all departments whose average salary is greater than 42000.

select dept_name,avg(salary) from instructor group by dept_name having avg(salary)>42000;

Q5) Find the enrolment of each section that was offered in Spring 2009.

Select sec_id,count(distinct ID) from (takes natural join section) where semester='Spring' and year=2009 group by sec_id;

Q6) List all the courses with prerequisite courses, then display course id in increasing order.

select course_id,prereq_id from prereq order by course_id asc;

Q7) Display the details of instructors sorting the salary in decreasing order.

select name,salary from instructor order by salary desc;

Q8) Find the maximum total salary across the departments.

select max(total_sal) from(select sum(salary) total_sal from instructor group by dept_name);

Q9) Find the average instructors' salaries of those departments where the average salary is greater than 42000.

select dept_name, avg_sal from(select dept_name,avg(salary) avg_sal from instructor group by dept_name) where avg_sal>42000;

Q10) Find the sections that had the maximum enrolment in Spring 2010

```
SELECT sec_id, total_student FROM (SELECT COUNT(distinct id) as total_student, sec_id
FROM takes WHERE semester = 'Spring' AND year = 2010
  2  GROUP BY sec_id)where total_student = (select max(total_student) from
  3  (SELECT COUNT(distinct id) as total_student, sec_id FROM takes WHERE semester =
'Spring' AND year = 2010 GROUP BY sec_id));
```

Q11) Find the names of all instructors who teach all students that belong to 'CSE' department.

```
select instructor.name from (select distinct instructor.name from
instructor,teaches,takes,student where instructor.ID=teaches.ID and student.ID=takes.ID and
teaches.course_id=takes.course_id and student.dept_name ='Comp. Sci.');
```

Q12) Find the average salary of those department where the average salary is greater than 50000 and total number of instructors in the department are more than 5.

```
select dept_name, avg_sal from(select dept_name,count(distinct ID) emp_count,avg(salary)
avg_sal from instructor group by dept_name) where avg_sal>50000 and emp_count>5;
```

Q13) Find all departments with the maximum budget.

```
with max_budget(val) as(select max(budget) from department)
  2  select dept_name,budget from department,max_budget where
department.budget=max_budget.val;
```

Q14) Find all departments where the total salary is greater than the average of the total salary at all departments.

```
with total_sal(dept_name,total) as(select dept_name,sum(salary) from instructor group by
dept_name),avg_dept_sal(value) as(select avg(total) from total_sal)
  2  select dept_name from total_sal,avg_dept_sal where total_sal.total>avg_dept_sal.value;
```

Q15) Find the sections that had the maximum enrolment in Fall 2009

```
with total_enrolment(value) as(select count(distinct ID) from takes group by
sec_id,semester,year having semester='Fall' and year =2009)
  2  select max(value) from total_enrolment;
```

Q16) Select the names of those departments where the total credits earned by all the students is greater than the total credits earned by all the students in the Finance Department

```
with tot_credits(dept_name,total_credits) as (select dept_name,sum(tot_cred) from student
group by dept_name)
  2  ,finance_total(credits) as (select sum(tot_cred) from student where dept_name='Finance')
  3  select dept_name,total_credits from tot_credits,finance_total where
tot_credits.total_credits>finance_total.credits;
```

Q17) Delete all the instructors of Finance department.

```
delete from instructor where dep_name=’Finance’;
```

Q18) Delete all courses in CSE department.

```
delete from course where dept_name='Comp. Sci.';
```

Q19) Transfer all the students from CSE department to IT department.

```
update student set dept_name ='IT' where dept_name = 'Comp. Sci';
```

Q20) Increase salaries of instructors whose salary is over $100,000 by 3%, and all others receive a 5% raise

```
update instructor set salary=salary*1.03 where salary>100000;

update instructor set salary=salary*1.05 where salary<=100000;
```

Q21) Add all instructors to the student relation with tot_creds set to 0.

```
Insert into student select ID,name,dept_name,0 from instructor;
```

Q22) Delete all instructors whose salary is less than the average salary of instructors.

```
Delete from instructor where salary < (Select avg(salary) from instructor);

m instructor where salary < (Select avg(salary) from instructor);
```