Parth Shukla
Lab 4
190905104

1) Find the number of students in each course.

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

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

Select dept_name,count(distinct ID) from (student natural join takes) group by dept_name having count(distinct id) > 10;

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

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

4) 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;

5) 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;

6) 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;

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

Select name,salary from instructor order by salary desc;

8) Find the maximum total salary across the departments.

Select max(total_salary) from (Select sum(salary) as total_salary from instructor group by dept_name);

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

Select dept_name, avg_salary from (Select dept_name, avg(salary) as avg_salary from instructor group by dept_name) where avg_salary>42000;

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

Select max(total_student) from (Select count(distinct ID) as total_student from takes group by sec_id, semester, year having semester='Spring' and year=2010);

11) Find the names of all instructors who teach allstudents that belong to ‘CSE’ department.

Select distinct t.Name from Instructor t, teaches s, takes m, student n where t.id=s.id and s.course_id=m.course_id and m.id = n.id and n.dept_name = 'Comp. Sci';

12) 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(salary) From instructor group by dept_name having avg(salary)>50000 and count(id)>5;

13) Find all departments with the maximum budget.

With max_budget(value) as (Select max(budget) from department) Select budget from department, max_budget where department.budget=max_budget.value;

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

WITH dept_total (dept_name,value) AS
(SELECT dept_name, SUM(salary) FROM instructor GROUP BY dept_name), dept_total_avg (value) AS (SELECT avg(value) FROM dept_total)
SELECT dept_name FROM dept_total, dept_total_avg WHERE dept_total.value>=dept_total_avg.value;

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

WITH r1 (sec_id,num_st) AS (
SELECT sec_id,count(id) FROM takes WHERE semester='Fall' AND year=2009 GROUP BY sec_id), r2(value) AS (SELECT MAX(num_st) FROM r1) SELECT sec_id,num_st FROM r1,r2 WHERE num_st>=value;

16) 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 total_credits(dept_name,value) as (Select dept_name,sum(credits) from takes natural join course group by dept_name) Select t.dept_name from total_credits t, total_credits s where t.value > s.value and s.dept_name='Finance';

17) Delete all the instructors of Finance department.

Delete from instructor where dept_name = 'Finance';

18) Deleteall courses in CSE department.

Delete from course where dept_name='Comp. Sci.';

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

Update student set dept_name ='IT' where dept_name = 'Comp. Sci';

20) 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*1.03 where salary<=100000;