**1. Display average salary given by each department.**

select department.dept\_name, avg(instructor.salary) from instructor join department on instructor.dept\_name=department.dept\_name group by dept\_name;

**2. Display the name of students and their corresponding course IDs.**

select student.name,takes.course\_id from takes join student on takes.id=student.id;

**3. Display number of courses taken by each student.**

select student.name,count(takes.course\_id) from takes join student on takes.id=student.id group by student.name order by student.name;

### 4. Get the prerequisites courses for courses in the Spring semester.

select section.semester,section.course\_id,prereq.prereq\_id from section join prereq on prereq.course\_id=section.course\_id where semester="Spring";

### 5. Display the instructor name who teaches student with highest 5 credits.

select student.name, instructor.name, tot\_cred from student join advisor on student.id=advisor.s\_id join instructor on instructor.id=advisor.i\_id order by tot\_cred desc limit 5;

### 6. Which semester and department offers maximum number of courses.

select dept\_name,semester,count(course\_id) from instructor join teaches on instructor.id=teaches.id group by dept\_name,semester order by count(course\_id) desc limit 1 ;

### 7. Display course and department whose time starts at 8.

select distinct start\_hr,course\_id from section join time\_slot on time\_slot.time\_slot\_id=section.time\_slot\_id where start\_hr=8;

### 8. Display the salary of instructors from Watson building.

select name,dept\_name,salary from section join teaches on section.course\_id=teaches.course\_id join instructor on instructor.id=teaches.id where building='Watson';

**9. Show the title of courses available on Monday.**

select title from course join section on section.course\_id=course.course\_id join time\_slot on time\_slot.time\_slot\_id=section.time\_slot\_id where day='M';

### 10. Find the number of courses that start at 8 and end at 8.

select start\_hr,end\_hr,count(course\_id) from time\_slot join section on time\_slot.time\_slot\_id=section.time\_slot\_id where start\_hr=8 and end\_hr=8;

### 11. Find instructors having salary more than 90000.

select name from instructor where salary>90000;

### 12. Find student records taking courses before 2018.

select student.id,name,semester,takes.course\_id,year from student join takes on takes.id=student.id where year<2018;

### 13. Find student records taking courses in the fall semester and coming under first section.

select \* from student join takes on student.id=takes.id where sec\_id=1 and semester='Fall';

### 14. Find student records taking courses in the fall semester and coming under second section.

select \* from student join takes on student.id=takes.id where sec\_id=2 and semester='Fall';

**15. Find student records taking courses in the summer semester, coming under first section in the year 2017.**

select \* from student join takes on student.id=takes.id where sec\_id=1 and semester='Summer' and year =2017;

**16. Find student records taking courses in the fall semester and having A grade.**

select \* from student join takes on student.id=takes.id where grade='A' and semester='Fall' ;

### 17. Find student records taking courses in the summer semester and having A grade.

select \* from student join takes on student.id=takes.id where grade='A' and

semester='summer' ;

**18. Display section details with B time slot, room number 514 and in the Painter building.**

select distinct time\_slot.time\_slot\_id,building,year,sec\_id,course\_id,room\_number from time\_slot join section on time\_slot.time\_slot\_id=section.time\_slot\_id where room\_number=514 and time\_slot.time\_slot\_id="b" and building="painter";

**19. Find all course titles which have a string "Intro.".**

select title from course where title like 'Intro%';

**20. Find the titles of courses in the Computer Science department that have 3 credits.**

select title from course where credits=3 and dept\_name='Comp. Sci.';

### 21. Find IDs and titles of all the courses which were taught by an instructor named Einstein. Make sure there are no duplicates in the result.

select course.course\_id,title from course join teaches on teaches.course\_id=course.course\_id join instructor on instructor.id=teaches.id where name='Einstein'

### 22. Find all course IDs which start with CS

select course\_id from course where course\_id like 'CS%';

**23. For each department, find the maximum salary of instructors in that department.**

select dept\_name,max(salary) from instructor group by dept\_name;

**24. Find the enrollment (number of students) of each section that was offered in Fall 2017.**

select sec\_id,count(id),semester,year from takes where semester='Fall' and year=2017 group by sec\_id;

### 25. Increase(update) the salary of each instructor by 10% if their current salary is between 0 and 90000.

update instructor set salary = salary \* 1.1 where salary between 0 and 90000;

### 26. Find the names of instructors from Biology department having salary more than 50000.

### select name,salary from instructor where dept\_name='Biology' and salary>50000;

**27. Find the IDs and titles of all courses taken by a student named Shankar.**

select distinct name,c.course\_id,title from student s join takes t on s.id=t.id join course c on c.course\_id=t.course\_id where name='Shankar';

### 28. For each department, find the total credit hours of courses in that department.

select dept\_name,sum(credits) as total\_credits from course group by dept\_name;

### 29. Find the number of courses having A grade in each building.

select building,count(t.course\_id),grade from takes t join section s on t.course\_id=s.course\_id where grade='A' group by building,grade ;

### 30. Display number of students in each department having total credits divisible by course credits.

select student.dept\_name,count(student.id) as no\_of\_students from student join course on student.dept\_name=course.dept\_name where tot\_cred%credits=0 group by student.dept\_name;

### 31. Display number of courses available in each building.

select building,count(course\_id) from department join course on department.dept\_name=course.dept\_name group by building order by count(course\_id);

### 32. Find number of instructors in each department having 'a' and 'e' in their name.

select dept\_name,count(id) from instructor where name like '%a%' and name like '%e%' group by dept\_name;

### 33. Display number of courses being taught in classroom having capacity more than 20.

select classroom.room\_number,count(course\_id) from classroom join section on classroom.room\_number=section.room\_number where capacity>20 group by room\_number;

**34. Update the budget of each department by Rs. 1000**

update department set budget=budget+1000

### 35. Find number of students in each room.

select classroom.room\_number,count(takes.id) from section join classroom on section.room\_number=classroom.room\_number join takes on section.course\_id=takes.course\_id group by room\_number;

### 36. Give the prerequisite course for each student.

select name,prereq\_id from student join takes on takes.id=student.id join prereq on prereq.course\_id=takes.course\_id;

**37. Display number of students attending classes on Wednesday.**

select count(name),day from student s join takes t on s.id=t.id join section se on se.course\_id= t.course\_id join time\_slot ts on ts.time\_slot\_id=se.time\_slot\_id where day='W';

### 38. Display number of students and instructors in each department

select dept\_name,count(id) from student group by dept\_name union all (select dept\_name,count(id) from instructor group by dept\_name )

**39. Display number of students in each semester and their sum of credits.**

select semester,count(student.id),sum(tot\_cred) from student join takes on student.id=takes.id group by semester;

### 40. Give number of instructors in each building.

select building,count(teaches.id) from section join teaches on section.course\_id=teaches.course\_id group by building

### 41. Display advisor IDs for instructors in Painter building.

select building,s\_id from section join teaches on section.course\_id=teaches.course\_id join instructor on instructor.id=teaches.id join advisor on advisor.i\_id=instructor.id where building="Painter";

### 42. Find total credits earned by students coming at 9am

select name,start\_hr,tot\_cred from time\_slot join section on time\_slot.time\_slot\_id=section.time\_slot\_id join takes on takes.course\_id=section.course\_id join student on student.id=takes.id where start\_hr=9;

### 43. Display student names ordered by room number

select name,room\_number from section join takes on takes.course\_id=

section.course\_id join student on student.id=takes.id order by room\_number;

### 44. Find the number of capacity left after occupying all the students.

select classroom.room\_number,capacity-count(takes.id) from classroom join section on classroom.room\_number=section.room\_number join takes on section.course\_id=takes.course\_id group by classroom.room\_number;

### 45. Find the duration for which each student has to attend each lecture.

select distinct name,takes.course\_id,end\_hr-start\_hr as duration\_hr,end\_min-start\_min as duration\_min from time\_slot join section on time\_slot.time\_slot\_id=section.time\_slot\_id join takes on takes.course\_id=section.course\_id join student on student.id=takes.id order by name;

**46. Create a timetable for the university.**

select day,building,room\_number,course\_id as duration\_hr,end\_min-start\_min as duration\_min from time\_slot join section on time\_slot.time\_slot\_id=section.time\_slot\_id ;

**47. Find the average salary that's distributed to teachers for each course and sort them in descending order**

select title,avg(salary) from course join teaches on course.course\_id=teaches.course\_id join instructor on teaches.id=instructor.id group by title order by avg(salary) desc;

### 48. Find the average duration of classes for each course id

with dummy as( select end\_min-start\_min as duration\_min,time\_slot\_id from time\_slot ) select section.course\_id,avg(duration\_min ) from dummy join section on dummy.time\_slot\_id=section.time\_slot\_id group by course\_id;

### 49 Get the name of the instructor with highest salary from each department.

select name,dept\_name,max(salary) from instructor group by dept\_name,name order by max(salary) desc;