```sql
-- TYB10


-- Find the average salary of instructors in the Computer Science department.--

SELECT AVG(salary) AS average_salary

FROM instructor

WHERE department_name = 'Computer Science';


-- Find the total number of instructors who teach a course in the Spring 2010 semester.

SELECT COUNT(DISTINCT instructor_id) AS total_instructors

FROM teaches

WHERE (sem = 2 AND year = 2010);


--  Find the number of tuples in the course relation.--

SELECT COUNT(*) AS number_of_tuples

FROM course;


--  Find the average salary in each department.--

SELECT department_name, AVG(salary) AS average_salary

FROM instructor

GROUP BY department_name;


-- Find the average salary of those departments where the average salary is more than $42,000.--

SELECT department_name, AVG(salary) AS average_salary

FROM instructor

GROUP BY department_name

HAVING AVG(salary) > 42000;


-- Find total all salary amounts.--

SELECT SUM(salary) AS total_salary

FROM instructor;
```

```sql
-- Find the departments that have the highest average salary--

SELECT department_name, AVG(salary) AS average_salary

FROM instructor

GROUP BY department_name

HAVING AVG(salary) = (

    SELECT MAX(avg_salary)

    FROM (

        SELECT AVG(salary) AS avg_salary

        FROM instructor

        GROUP BY department_name

    ) AS department_salaries

);
```

-- Create a view that lists all course sections offered by the Physics department in the Fall 2009 semester with the building and room number of each section.

```sql
CREATE VIEW physics_course_sections_fall_2009 AS

SELECT C.title AS course_title, S.sec_id, S.sem, S.year, S.building, S.room_no

FROM course C

JOIN section S ON C.course_id = S.course_id

WHERE C.department_name = 'Physics' AND S.sem = 1 AND S.year = 2009;
```

-- Create an index on instructor with i_id as search key.--

```sql
CREATE INDEX instructor_id_index ON instructor (instructor_id);
```