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### **Experiment No. 3**

**Aim:** Consider the problem definition in practical 1. Write and execute SQL functions- aggregate, numeric, date, string, and conversion for the following queries:

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

⇒ **select d.name, avg(i.salary) as AVG\_SAL from instructor i join department d on i.dept\_id = d.dept\_id where d.name = 'Computer Science' group by d.name;**

- b) Find the average salary in each department.

⇒ **select d.dept\_id, d.name, avg(i.salary) as AVG\_SAL from instructor i join department d on i.dept\_id = d.dept\_id group by d.dept\_id, d.name;**

- c) What is the total salary of all teachers earning more than 30K?

⇒ **select sum(salary) as total\_sal from instructor where salary > 30000;**

- d) List the number of students enrolled in each course

⇒ **select C.course\_id, C.title, COUNT(E.student\_id) as enrolled\_students from course C left join section S on C.course\_id = S.course\_id left join enrollment E on S.section\_id = E.section\_id group by C.course\_id, C.title order by C.course\_id;**

- e) Find the names of all departments whose building name include the substring “Symbio”.

⇒ **select name from department where lower(building) LIKE '%symbio%';**

- f) Find the names of the departments whose names contain the string “sci” as a substring, regardless the case.

- g) Display the length of the name of all the students.

⇒ **select name, length(name) AS name\_length FROM student;**

- h) Retrieve total number of instructors.

⇒ **select count(\*) AS total\_instructors FROM instructor;**

- i) Add hiredate column in the instructor table. Insert 4 rows in the table. Display the names of instructor who are working for the past 5 years.

⇒ **alter table instructor add hiredate date;**  
⇒ **UPDATE instructor SET hiredate = DATE '2021-01-30' WHERE instructor\_id = 1;**  
⇒ **UPDATE instructor SET hiredate = DATE '2020-04-13' WHERE instructor\_id = 2;**  
⇒ **UPDATE instructor SET hiredate = DATE '2019-07-21' WHERE instructor\_id = 3;**  
⇒ **UPDATE instructor SET hiredate = DATE '2018-11-05' WHERE instructor\_id = 4;**  
⇒ **UPDATE instructor SET hiredate = DATE '2022-02-14' WHERE instructor\_id = 5;**  
⇒ **UPDATE instructor SET hiredate = DATE '2020-09-30' WHERE instructor\_id = 6;**  
⇒ **UPDATE instructor SET hiredate = DATE '2017-06-18' WHERE instructor\_id = 7;**  
⇒ **select \* from instructor where hiredate < add\_months(sysdate, -60);**

- j) Display the list of instructor who have joined after 1<sup>st</sup> Jan 2021 or before 30<sup>th</sup> Jun 2021.

⇒ **SELECT \* FROM Instructor where hiredate BETWEEN DATE '2021-01-01' and date '2019-12-31';**

- k) Display name of those instructors who are going to retire 01-Jan-24. If the maximum job is period is 3 years.

- ⇒ **select \* FROM Instructor WHERE HireDate <= date '2021-01-01';**
- ⇒ **select \* from instructor where hiredate = add\_months(sysdate, -60) and hiredate < date '2026-01-01';**
  
- l) Display those instructors whose salary contains at least 4 digits and salary above 75000.
  
- ⇒ **select name, salary from instructor where salary >= 1000 and salary > 75000;**
  
- m) Print a list of instructors displaying ‘Less Salary’ if less than 60000 if exactly 60000 display as ‘Exact Salary’ and if greater than 60000 display ‘More Salary’.
  
- ⇒ **select name, case when salary < 60000 then 'less salary' when salary > 60000 then 'More salary' end as salary\_category from instructor;**
  
- n) Display names of all the instructors concatenated with their department names.
  
- ⇒ **select i.name || ' => ' || d.name from instructor i join department d on i.dept\_id=d.dept\_id;**
  
- o) Retrieve distinct number of instructors.
  
- ⇒ **select d.name, count(i.name) from instructor i join department d on i.dept\_id = d.dept\_id group by d.name;**
  
- p) Find the names of all instructors whose salary is greater than at least one instructor in the Biology department.
  
  
- ⇒ **SELECT \* FROM instructor WHERE salary > ANY (SELECT salary FROM instructor I JOIN department d ON i.dept\_id = d.dept\_id WHERE d.name = 'Biology');**