The objective of this lab is to:

- Practice Single row functions
  - Numeric
  - Character
  - NVL

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Instructions:

- Work on this lab individually. Discussion is not allowed.
- Evaluation of tasks will be conducted in lab.
- Anyone caught being indulged in the act of plagiarism would be awarded an "F" grade in this lab.
- Evaluation will be considered final and you cannot debate for the marks. So, focus on performing the tasks when the time is given to you.
- **Allowed time: 1 hour and 30 minutes**
- Best of Luck!

Note: You will be using following tables in your lab tasks.

- EMP (EMPNO, ENAME, JOB, SAL, HIREDATE, COMM, MGR, DEPTNO)
- DEPT (DEPTNO, DNAME, LOC)

Perform the following tasks

Task 01:   [20 Marks]

1. Write a query to display the no. of months an employee has worked from his hiring. Round off the no. of months.

   Solution:

   Select ename , round((sysdate - hiredate)/30) as "No of Months" from emp

ENAME	No of Months
SMITH	502
ALLEN	500

WARD	500
JONES	498
MARTIN	493
BLAKE	498
CLARK	496
SCOTT	478
KING	491

2. List the employees those who joined in 1980.
   Solution:
   Select ename, hiredate from emp
   where to_char(hiredate, 'YYYY') = '1980'

   OR

   Select ename, hiredate from emp
   where substr(hiredate, -4) = '1980'

ENAME	HIREDATE
SMITH	12/17/1980

3. List ename and Replace '**A**' With '*****' In All Employees' Name.
   Solution:
   Select replace(ename, 'A', '*') from emp

REPLACE(ENAME,'A','*')
SMITH
*LLEN
W*RD
JONES
M*RTIN

BL*KE
CL*RK
SCOTT
KING

4. List the employees with salary greater than 1600 but should not be a manager or president.
   Solution:
   Select * from emp where sal > 1600 and (lower(job) !='manager' or lower(job)!='president')

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7566	JONES	MANAGER	7839	04/02/1981	2975	-	20
7698	BLAKE	MANAGER	7839	05/01/1981	2850	-	30
7782	CLARK	MANAGER	7839	06/09/1981	2450	-	10
7788	SCOTT	ANALYST	7566	12/09/1982	3000	-	20
7839	KING	PRESIDENT	-	11/17/1981	5000	-	10
7902	FORD	ANALYST	7566	12/03/1981	3000	-	20

5. Show the output of employees who has some commission. The output should be like "ward Is a Salesman with 500 commision". **(Make sure the output exactly matches in terms of alphabets case letters)**
   Solution:
   Select lower(ename) || ' Is a '|| initcap(job) || ' with ' || comm || ' commision' as Description from emp
   where comm is not null

DESCRIPTION
allen Is a Salesman with 300 commision
ward Is a Salesman with 500 commision

martin Is a Salesman with 1400 commision
turner Is a Salesman with 0 commision

6. List the employees whose name starts with **"J"** and end with **"S".**
   Solution:
   Select * from emp
   where ename Like 'J%S'

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7566	JONES	MANAGER	7839	04/02/1981	2975	-	20
7900	JAMES	CLERK	7698	12/03/1981	950	-	30

7. List all the employees hired in leap years
   Solution:
   Select ename, hiredate from emp
   where (MOD(to_number(substr(hiredate,-4)),4) = 0 and
   MOD(to_number(substr(hiredate,-4)),100) <> 0)
   or MOD(to_number(substr(hiredate,-4)),400) = 0;

ENAME	HIREDATE
SMITH	12/17/1980

8. Display first 2 and last 2 letters of employees' name within a single column named "**formatted name**".
   Solution:
   Select concat(substr(ename,0,2), substr(ename, -2)) as "formatted name" from emp

formatted name
SMTH
ALEN
WARD
JOES

MAIN
BLKE
CLRK
SCTT
KING
TUER

9. Display the emp-code for all the employees consisting of first three letters of their job followed by hyphen followed by last 2 digits of the empno.
   Solution:
   Select ename, concat(substr(job,1,3), concat('-',substr(empno,-2))) as "emp-code" from emp

ENAME	emp-code
SMITH	CLE-69
ALLEN	SAL-99
WARD	SAL-21
JONES	MAN-66
MARTIN	SAL-54
BLAKE	MAN-98
CLARK	MAN-82
SCOTT	ANA-88
KING	PRE-39
TURNER	SAL-44

10. List the lowest and second lowest salary using the 'Top clause'
    Solution:
    Select * from emp
    where rownum <=2
    order by sal asc

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	12/17/1980	800	-	20
7499	ALLEN	SALESMAN	7698	02/20/1981	1600	300	30

Task 02: [18 Marks]

1. Count the number of 'A's in the name of each employee.
   Solution:
   Select ename, length(ename) - length(replace(ename, 'A', '')) from emp

ENAME	LENGTH(ENAME)-LENGTH(REPLACE(ENAME,'A',''))
SMITH	0
ALLEN	1
WARD	1
JONES	0
MARTIN	1
BLAKE	1
CLARK	1
SCOTT	0
KING	0
TURNER	0

2. Display the name, empno and job of all employees who name has 2nd or 2nd last character is 'I'.
   Solution:
   Select ename, empno, job from emp where ename like '_I%' or ename like '%I_'

ENAME	EMPNO	JOB
MARTIN	7654	SALESMAN

KING	7839	PRESIDENT

3. Display the name, salary and job title of all employees who are not working under any employee or their commission value is null.
   Solution:
   Select ename, sal, job from emp where mgr is null or comm is null

ENAME	SAL	JOB
SMITH	800	CLERK
JONES	2975	MANAGER
BLAKE	2850	MANAGER
CLARK	2450	MANAGER
SCOTT	3000	ANALYST
KING	5000	PRESIDENT
ADAMS	1100	CLERK
JAMES	950	CLERK
FORD	3000	ANALYST

4. Display all the employees whose salary is three-digit number, ending with zero.
   Solution:
   Select * from emp
   where length(sal)=3 and substr(sal,-1) = 0

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	12/17/1980	800	-	20
7900	JAMES	CLERK	7698	12/03/1981	950	-	30

5. Display the total salary (salary + comm) of each employee. Make sure that total salary of any of employee is not null.
   Solution:
   Select ename, sal+ nvl(comm, 0) "total salary" from emp

OR

Select ename, nvl2(sal+comm, sal+comm, sal +0) "total salary" from emp

ENAME	total salary
SMITH	800
ALLEN	1900
WARD	1750
JONES	2975
MARTIN	2650
BLAKE	2850
CLARK	2450
SCOTT	3000
KING	5000
TURNER	1500
ADAMS	1100
JAMES	950
FORD	3000

6. List all the employees name those are having six characters in their Names and having salary between 1000 and 4500.
   Solution:
   Select ename, sal from emp where length(ename) =6 and sal between 1000 and 4500

ENAME	SAL
MARTIN	1250
TURNER	1500

7. Find the first and last two characters of enames.

Solution:

Select substr(ename,1,1) "First character" ,substr(ename,-2) as "last 2 Characters" from emp

First character	last 2 Characters
S	TH
A	EN
W	RD
J	ES
M	IN
B	KE
C	RK
S	TT
K	NG
T	ER

8. Display the output in the following format (you are not allowed to use concatenation operator `||`).

Name -> Salary
SMITH---->800

Solution:

Select concat(ename, concat('---->', sal)) as "Name---> Salary" from emp

Name---> Salary
SMITH---->800
ALLEN---->1600
WARD---->1250

JONES---->2975
MARTIN---->1250
BLAKE---->2850
CLARK---->2450
SCOTT---->3000
KING---->5000
TURNER---->1500
More than 10 rows available. Increase rows selector to view more

9. Get firstname of the student from the column std_name. (Table Name: **PUCIT**)
   Like: **if std_name is Muhammad Afaq Shuaib, output = Muhammad**

First Name
Muhammad
Hafiz

Solution:
Select substr(std_name, 0,instr(std_name,' ')) as "First Name" from pucit

First Name
Muhammad
Hafiz
Hafiz
Malik
Ali
Khawaja
Khan
Abu

Ch.

Muhammad

More than 10 rows available. Increase rows selector to view more row

Task 03: (Viva)   [2 Marks]

Example of some of viva questions:

Output of Queries

- Select concat('I love', 'Pakistan') from dual
- Select concat("I love", "Pakistan") from dual
- Select substr('Pakistan', 2) from dual
- Select substr('Pakistan', 2, 3) from dual
- Select substr('Pakistan', -4) from dual
- Select instr('pakistan', 'a') from dual
- Select instr('Today's Pakistan', 'a', 1,2) from dual
- Select replace('Afaq', 'a', '') from dual