DEPARTMENT OF COMPUTER SYSTEMS ENGINEERING
MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO
Database Management Systems (4th Semester) 18CS
Lab Experiment 5

Roll No: **Date of Conduct:**

Submission Date: **Grade Obtained:**

Problem Recognition (0.3)	Completeness & accuracy (0.4)	Timeliness (0.3)	Score (1.0)

Objective: **To use Single row functions in SQL queries.**

Tools: MySql, Oracle.

Introduction:

Single Row functions - Single row functions are the one who work on single row and return one output per row. For example, length and case conversion functions are single row functions.

Single row functions

Single row functions can be character functions, numeric functions, date functions, and conversion functions. Note that these functions are used to manipulate data items. These functions require one or more input arguments and operate on each row, thereby returning one output value for each row. Argument can be a column, literal or an expression. Single row functions can be used in SELECT statement, WHERE and ORDER BY clause. Single row functions can be -

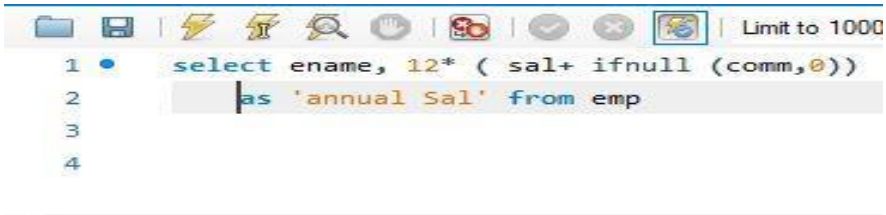
- **General functions** - Usually contains NULL handling functions. The functions under the category are NVL, NVL2, NULLIF, COALESCE, CASE, DECODE.
- **Case Conversion functions** - Accepts character input and returns a character value. Functions under the category are UPPER, LOWER and INITCAP.
    - UPPER function converts a string to upper case.
    - LOWER function converts a string to lower case.
    - INITCAP function converts only the initial alphabets of a string to upper case.

- **Character functions** - Accepts character input and returns number or character value. Functions under the category are CONCAT, LENGTH, SUBSTR, INSTR, LPAD, RPAD, TRIM and REPLACE.
    - CONCAT function concatenates two string values.
    - LENGTH function returns the length of the input string.
    - SUBSTR function returns a portion of a string from a given start point to an end point.
    - INSTR function returns numeric position of a character or a string in a given string.
    - LPAD and RPAD functions pad the given string Upto a specific length with a given character.
    - TRIM function trims the string input from the start or end.
    - REPLACE function replaces characters from the input string with a given character.
- **Date functions** - Date arithmetic operations return date or numeric values. Functions under the category are MONTHS_BETWEEN, ADD_MONTHS, NEXT_DAY, LAST_DAY, ROUND and TRUNC.
    - MONTHS_BETWEEN function returns the count of months between the two dates.
    - ADD_MONTHS function add 'n' number of months to an input date.
    - NEXT_DAY function returns the next day of the date specified.
    - LAST_DAY function returns last day of the month of the input date.
    - ROUND and TRUNC functions are used to round and truncates the date value.
- **Number functions** - Accepts numeric input and returns numeric values. Functions under the category are ROUND, TRUNC, and MOD.
    - ROUND and TRUNC functions are used to round and truncate the number value.
    - MOD is used to return the remainder of the division operation between two numbers.

Lab Task

1. Display the employee name and their annual salary including commission amount. If the Commission is null replace it with 0.

Task:



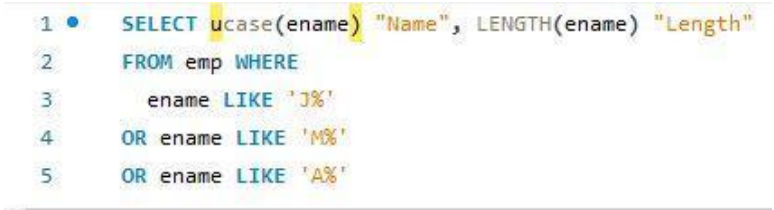
```
1  select ename, 12* ( sal+ ifnull (comm,0))
2      as 'annual Sal' from emp
3
4
```

Result Grid | Filter Rows: | Export:

ename	annual Sal
Raza	120000
Ali Ajmal	84000
Basit	156000
Ahmed	96000
Ali Jan	72000
KING	60132
TURNER	18000
SMITH	9600
ALLEN	22800
WARD	21000
JONES	35700
MARTIN	31800
BLAKE	28200
CLARK	29400
SCOTT	36000
JAMES	11400
FORD	36000

2. Display Employee's name with the first letter capitalized and all other letters lowercase and the length of their name, for all employees whose name starts with J, A, or M. Give each column appropriate names.

Task:



```
1  SELECT ucase(ename) "Name", LENGTH(ename) "Length"
2  FROM emp WHERE
3    ename LIKE 'J%'
4  OR ename LIKE 'M%'
5  OR ename LIKE 'A%'
```

Result Grid | Filter Rows: | Export: | Wrap Cell Co

Name	Length
ALI AJMAL	9
AHMED	5
ALI JAN	7
ALLEN	5
JONES	5
MARTIN	6
JAMES	5

3. Display the name, hiredate, and day of the week on which the employee started. Label the Column First Day.

Task:

```
1 •  select ename ,hiredate, dayname(hiredate)as first_day from emp
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

ename	hiredate	first_day
Raza	1981-02-02	Monday
Ali Ajmal	1981-05-03	Sunday
Basit	1981-09-13	Sunday
Ahmed	2000-09-12	Tuesday
Ali Jan	2001-02-11	Sunday
KING	2000-01-11	Tuesday
TURNER	2001-02-11	Sunday
SMITH	2001-02-17	Saturday
ALLEN	2001-02-01	Thursday
WARD	2001-09-10	Monday
JONES	2001-12-11	Tuesday
MARTIN	2001-02-19	Monday
BLAKE	2001-02-11	Sunday
CLARK	2001-03-08	Thursday
SCOTT	2001-01-11	Thursday
JAMES	2002-04-11	Thursday
FORD	2003-02-11	Tuesday

4. For each employee, display the employee name and calculate the number of months between today and the date the employee was hired. Label the column MONTHS_WORKED. Order the result by the number of months employed. Round the number of months up to the closest whole number.

Task:

```
1 •  SELECT ename, ROUND(DATEDIFF (SYSDATE(), hiredate))
2        MONTHS_WORKED FROM emp
3    ORDER BY DATEDIFF(SYSDATE(), hiredate)
4
```

Result Grid | Filter Rows: | Export: | Wrap Cell Con

ename	MONTHS_WORKED
FORD	6393
JAMES	6699
JONES	6820
WARD	6912
CLARK	7098
MARTIN	7115
SMITH	7117
Ali Jan	7123
TURNER	7123
BLAKE	7123
ALLEN	7133
SCOTT	7154
Ahmed	7275
KING	7520
Basit	14214
Ali Ajmal	14347
Raza	14437

5. Display the Employee number, name, salary, and salary increase by 15% expressed as a whole number. Label the column New Salary.

Task:

```
1 •  SELECT empno, ename, sal,
2    ROUND (sal * 1.15, 0) "New Salary"
3    FROM emp
4
```

Result Grid | Filter Rows: | Export:

empno	ename	sal	New Salary
1	Raza	10000	11500
2	Ali Ajmal	7000	8050
3	Basit	13000	14950
4	Ahmed	8000	9200
5	Ali Jan	6000	6900
7339	KING	5000	5750
7344	TURNER	1500	1725
7369	SMITH	800	920
7499	ALLEN	1600	1840
7521	WARD	1250	1438
7566	JONES	2975	3421
7654	MARTIN	1250	1438
7693	BLAKE	2350	2703
7732	CLARK	2450	2818
7788	SCOTT	3000	3450
7900	JAMES	950	1093
7902	FORD	3000	3450

6. Display the employee name, hiredate, and salary review date, which is the first Monday after six months of service. Label the column REVIEW. Format the dates to appear in the format similar to "Sunday, the seventh of September, 1981".

Task:

```
1  select ename,hiredate,DATE_FORMAT(DATE_ADD(DATE_ADD(hiredate,interval 6 month),
2  INTERVAL (9 - IF(DAYOFWEEK(DATE_ADD(hiredate,interval 6 month))=1,8,
3  DAYOFWEEK(DATE_ADD(hiredate,interval 6 month))))DAY),'%W, the %D of %D of %M,%Y') AS 'REVIEW'
4
5  FROM employee;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

ename	hiredate	REVIEW
hania	1981-06-29	Monday, the 4th of 4th of January,1982
Lawizal	2021-09-08	Monday, the 14th of 14th of March,2022
Alia	1981-06-29	Monday, the 4th of 4th of January,1982
Maha	1981-04-19	Monday, the 26th of 26th of October,1981
Mahajabeen	1981-02-09	Monday, the 10th of 10th of August,1981
Lalital	2021-09-08	Monday, the 14th of 14th of March,2022
Aisha	1981-09-08	Monday, the 15th of 15th of March,1982
laleeta	1981-05-21	Monday, the 23rd of 23rd of November,1981
Javeria	1982-05-29	Monday, the 6th of 6th of December,1982

Result Grid | Form Editor | Field Types