Functions in oracle:

> To Perform Task & Must Return Value.
> Oracle Supports Two Types Functions. Those Are

1) Pre-Define / Built in Functions (Use in Sql & Pl/Sql)
2) User Define Functions (Use in Pl/Sql)

1) Pre-Define Functions:

> These Are Again Classified into Two Categories.

A) Single Row Functions (Scalar Functions)
B) Multiple Row Functions (Grouping Functions)

Single Row Functions:

> These Functions Are Returns A Single Row (Or) A Single Value.

> Numeric Functions
> String Functions
> Date Functions
> Conversion Functions

How To Call a Function:

Syntax:

Select <Fname>(Values) From Dual;

What Is Dual:

> Pre-Define Table In Oracle.
> Having Single Column & Single Row
> Is Called As Dummy Table In Oracle.
> Testing Functions (Pre-Define & User Define) Functionalities.

To View Strc.Of Dual Table:

Sql> Desc Dual;

To View Data Of Dual Table:

Sql> Select * From Dual;

Numeric Functions:
----
1) Abs():
> Converts (-Ve) Value Into (+Ve) Value.

Syntax:

Abs(Number)

Ex:
Sql> Select Abs(-12) From Dual; --------> 12
Sql> Select Ename,Sal,Comm,Abs(Comm-Sal) From Emp;

2) Ceil():
> Returns A Value Which Is Greater Than Or Equal To Given Value.

Syntax:

Ceil(Number)

Ex:
Sql> Select Ceil(9.0) From Dual;------9
Sql> Select Ceil(9.3) From Dual;-------10

3) Floor():

Syntax:
Floor(Number)

Ex:
Sql> Select Floor(9.0) From Dual;------9
Sql> Select Floor(9.8) From Dual;------9

4) Mod():
Returns Remainder Value.

Syntax:
Mod(M,N)

Ex:
Sql> Select Mod(10,2) From Dual;-------0

5) Power():
The Power Of Given Expression

Syntax:
Power(M,N)

Ex:
Sql> Select Power(2,3) From Dual;----------8

Round():
> Nearest Value Given Expression.

Syntax:
Round(Number,[Decimal Places])

Ex:
Sql> Select Round(5.50) From Dual;------6
Sql> Select Round(32.456,2) From Dual;------32.46

Trunc:

> Returns A Value Which Will Specified Number Of Decimal Places.

Syntax:
Trunc(Number,Decimal Places)

Ex:
Sql> Select Trunc(5.50) From Dual;---------5
Sql> Select Trunc(32.456,2) From Dual;----32.45

String Functions:

Length():

> Length Of Given String.

Syntax:
Length(String)

Ex:
Sql> Select Length('Hello') From Dual;----------5
Sql> Select Length('Good Morning') From Dual;--------12

Sql> Select Ename,Length(Ename) From Emp;
Sql> Select * From Emp Where Length(Ename)=4;

Lower():

To Convert Upper Case Char's Into Lower Case Char's.

Syntax:
Lower(String)

Ex:
Sql> Select Lower('Hello') From Dual;
Sql> Update Emp Set Ename=Lower(Ename) Where Job='Clerk';

Upper():

Syntax:
Upper(String)

Ex:
Sql> Select Lower('Hello') From Dual;

Initcap():

To Convert First Char. Is Capital.

Syntax:
Initcap(String)

Ex:
Sql> Select Initcap('Hello') From Dual;
Sql> Select Initcap('Good Morning') From Dual;

Ltirm():

To Remove Unwanted Spaces (Or) Unwanted Characters From Left Side
Of Given String.

Syntax:
Ltrim(String1[,String2])

Ex:
Sql> Select Ltrim(' Sai') From Dual;
Sql> Select Ltrim('Xxxxxxsai','X') From Dual;
Sql> Select Ltrim('123SAI','123') From Dual;

Rtrim():

To Remove Unwanted Spaces (Or) Unwanted Characters From Right Side
Of Given String.

Syntax:
Rtrim(String1[,String2])

Ex:
Sql> Select Rtrim('Saixxxxxxx','X') From Dual;

Trim():

To Remove Unwanted Spaces (Or) Unwanted Characters From Both Sides
Of Given String.

Syntax:

Trim('Trimming Char' From 'String')

Ex:
Sql> Select Trim('X' From 'Xxxxxxsaixxxx') From Dual;

Lpad():

To Fill A String With Specific Char. On Left Side Of Given String.

Syntax:

Lpad(String1,Length,String2)

Ex:
Sql> Select Lpad('Hello',10,'@') From Dual;
@@@@@Hello

Rpad():

To Fill A String With Specific Char. On Right Side Of Given String.

Syntax:

Rpad(String1,Length,String2)

Ex:
Sql> Select Rpad('Hello',10,'@') From Dual;
Hello@@@@@

Concat():

Adding Two String Expressions.

Syntax:

Concat(String1,String2)

Ex:
Sql> Select Concat('Good','Bye') From Dual;

Replace():

To Replace One String With Another String.

Syntax:

Replace(String1,String2,String3)

Ex:
Sql> Select Replace('Hello','Ell','Xyz') From Dual;
Hxyzo

Sql> Select Replace('Hello','L','Abc') From Dual;
Heabcabco

Translate():

To Translate A Single Char With Another Single Char.

Syntax:

Translate(String1,String2,String3)

Ex:
Sql> Select Translate('Hello','Elo','Xyz') From Dual;
Hxyyz
Sol: E = X , L=Y , O=Z
Hello => Hxyyz

Ex:
Sql> Select Ename,Sal,Translate(Sal,'0123456789','$B@Gh*V#T%')
Salary From Emp;

Ename	Sal	Salary
Smith	800	T$$

Sol: 0=$,1=B,2=@,3=G,4=H,5=*,6=V,7=#,8=T,9=%.

Substr():

It Returns Req.Substring From Given String Expression.

Syntax:

Substr(String1,<Starting Position Of Char.>,<Length Of Char's>)

Ex:
Sql> Select Substr('Hello',2,3) From Dual;
Ell

Sql> Select Substr('Welcome',4,2) From Dual;
Co

Sql> Select Substr('Welcome',-6,3) From Dual;
Elc

Instr():

Returns Occurence Position Of A Char. In The Given String.

Syntax:

Instr(String1,String2,<Starting Position Of Char.>,<Occurence Position Of Char.>)

Ex:
Sql> Select Instr('Hello Welcome','O') From Dual;---------> 5
Sql> Select Instr('Hello Welcome','Z') From Dual;-----> 0
Sql> Select Instr('Hello Welcome','O',1,2) From Dual;-----11
Sql> Select Instr('Hello Welcome','E',5,2) From Dual;-------13
Sql> Select Instr('Hello Welcome','E',1,4) From Dual;--------8

Note:

Position Of Char's Always Fixed Either Count From Left To Right (Or) Right To Left.

Sol: Hello Welcome
12345 6 78910111213

Ex:
Sql> Select Instr('Hello Welcome','E',-1,3) From Dual;--------2
Sql> Select Instr('Hello Welcome','L',-4,3) From Dual;-------3
Sql> Select Instr('Hello Welcome','L',-6,3) From Dual;----------0

Date Functions:
----
1) Sysdate:

> Current Date Information Of The System.

Ex:
Sql> Select Sysdate From Dual;
Sql> Select Sysdate+10 From Dual;
Sql> Select Sysdate-10 From Dual;

Add_Months():

> Adding No.Of Months To The Date.

Syntax:

Add_Months(Date,<No.Of Months>)

Ex:
Sql> Select Add_Months(Sysdate,3) From Dual;
Sql> Select Add_Months(Sysdate,-3) From Dual;

Last_Day():

> Returns The Last Day Of The Month.

Syntax:

Last_Day(Date)

Ex:
Sql> Select Last_Day(Sysdate) From Dual;

Next_Day():

> Returns The Next Specified Day From The Given Date.

Syntax:

Next_Day(Date,'<Day Name>')

Ex:
Sql> Select Next_Day(Sysdate,'Sunday') From Dual;

Months_Between():

> Returns No.Of Months Between Two Date Expressions.

Syntax:

Months_Between(Date1,Date2)

Ex:
Sql> Select Months_Between('05-Jan-81','05-Jan-80') From Dual;----- 12
Sql> Select Months_Between('05-Jan-80','05-Jan-81') From Dual;----- -12

Note: Here, Date1 Is Always Greater Than Date2 Otherwise Oracle Returns Nagative Value.

Conversion Functions:
----
1. To_Char()
2. To_Date()

To_Char():

> Date Type To Char Type To Display Date In Different Fromat.

Syntax:
To_Char(Date,[<Format>])

Year Formats:

Yyyy - 2020
Yy - 20
Year - Twenty Twenty
Cc - Centuary 21
Ad / Bc - Ad Yaer / Bc Year

Ex:
Sql> Select To_Char(Sysdate,'Yyyy Yy Year Cc Ad') From Dual;

To_Char(Sysdate,'Yyyyyyyearccad')

2020 20 Twenty Twenty 21 Ad

Q: To Display Employee Who Are Joined In Year 1982
By Using To_Char() Function ?

Sol:
Sql> Select * From Emp Where To_Char(Hiredate,'Yyyy')=1982;

Q: To Display Employee Who Are Joined In Year 1980,1982,1987
By Using To_Char() Function ?

Sol:
Sql> Select * From Emp Where To_Char(Hiredate,'Yyyy')
In(1980,1982,1987);

Month Format:

Mm   - Month Number
Mon - First Three Char From Month Spelling
Month   - Full Name Of Month

Ex:
Sql> Select To_Char(Sysdate,'Mm Mon Month') From Dual;

To_Char(Sysdate,
----
08 Aug August

Sql> Select To_Char(Sysdate,'Mm Mon Month') From Dual;

To_Char(Sysdate,
----
08 Aug August

Q: To Display Employee Who Are Joined In Feb,May,Dec Months
By Using To_Char() ?

Sol:
Sql> Select * From Emp Where To_Char(Hiredate,'Mm')
In(02,05,12);

Q: To Display Employee Who Are Joined In Feb 1981 By Using To_Char() ?

Sol:

```
Sql> Select * From Emp Where
To_Char(Hiredate,'Mmyyyy')='021981';
```

Day Formats:

```
------------------------
Ddd  - Day Of The Year.
Dd   - Day Of The Month.
D    - Day Of The Week
       Sun  - 1
       Mon  - 2
       Tue  - 3
       Wen  - 4
       Thu  - 5
       Fri  - 6
       Sat  - 7

Day  - Full Name Of The Day
Dy   - First Three Char's Of Day Spelling
```

Ex:Sql> Select To_Char(Sysdate,'Ddd Dd D Day Dy') From Dual;

```
To_Char(Sysdate,'Ddddd
-----------------------------------------
220 07 6 Friday    Fri
```

Q: To Display Employee Who Are Joined On "Friday" By Using To_Char() ?

Sol:

```
Sql> Select * From Emp Where To_Char(Hiredate,'Day')='Friday';
```

Q: To Display Employee On Which Day Employees Are Joined ?

Sol:

```
Sql> Select Ename||' '||'Joined On'||' '||To_Char(Hiredate,'Day')
From Emp;
```

Note:

In Oracle Whenever We Using To_Char() And Also Within To_Char() When We use Day / Month Format Then Oracle Server Internally Allocate Some Extra Memory For Day/Month Format Of Data.
To Overcome The Above Problem That Is To Remove Extra Memory Which Was Allocate By Oracle Server Then We Use A Pre-Define Specifier Is
Called "Fm" (Fill Mode).

Ex:
Select * From Emp Where To_Char(Hiredate,'Fmday')='Friday';

Quater Format:

Q - One Digit Quater Of The Year

1 - Jan - Mar
2 - Apr - Jun
3 - Jul - Sep
4 - Oct - Dec

Ex:
Sql> Select To_Char(Sysdate,'Q') From Dual;
T

3

Q : Who Are Joined In 2ND Quater Of 1981 ?

Sol:
Sql> Select * From Emp Where To_Char(Hiredate,'Yyyy')='1981' And To_Char(Hiredate,'Q')=2;

Week Format:

Ww - Week Of The Year
W - Week Of Month

Ex:
Sql> Select To_Char(Sysdate,'Ww W') From Dual;

To_C
----
32 2

Time Format:

Hh   - Hour Part
Hh24- 24 Hrs Fromat
Mi   - Minute Part
Ss   - Seconds Part
Am / Pm   - Am Tme (Or) Pm Time

Ex:
Sql> Select To_Char(Sysdate,'Hh:Mi:Ss Am') From Dual;

To_Char(Sys

12:04:21 Pm

To_Date():

To Convert Char Type To Oracle Date Format Type.

Syntax:
To_Date(String[,Fromat])

Ex:
Sql> Select To_Date('08/August/2020') From Dual;

To_Date('

08-Aug-20

Sql> Select To_Date('08-Aug-2020')+10 From Dual;

To_Date('

18-Aug-20

Multiple Row Functions:

These Functions Are Returns Either Group Of Values
(Or) A Single Value.

Sum():

> It Returns Sum Of A Specific Column Values.

Ex:
Sql> Select Sum(Sal) From Emp;
Sql> Select Sum(Sal) From Emp Where Job='Clerk';

Avg():

> It Returns Average Of A Specific Column Values.

Ex:
Sql> Select Avg(Sal) From Emp;
Sql> Select Avg(Sal) From Emp Where Deptno=10;

Min():

> It Returns Min.Value From Group Of Values.

Ex:
Sql> Select Min(Hiredate) From Emp;
Sql> Select Min(Hiredate) From Emp Where Job='Manager';
Sql> Select Min(Sal) From Emp;

Max():

> It Returns Max.Value From Group Of Values.

Ex:
Sql> Select Max(Sal) From Emp;

Count():

> It Returns No.Of Rows In A Tbale / No.Of Values In A Column
> Three Types,
I) Count(*)
Ii) Count(<Column Name>)
Iii) Count(Distinct <Column Name>)

Ex:

Test

Sno	Name
101	A
102	B
103	
104	C
105	A
106	C

Count(*):

> Counting All Rows (Duplicates & Nulls) In A Table.

Ex:

Sql> Select Count(*) From Test;

Count(*)
6

Count(<Column Name>):

> Counting All Values Including Duplicate Values But Not Null Values From A Column.

Ex:

Sql> Select Count(Name) From Test;

Count(Name)
5

Count(Distinct <Column Name>):

> Counting Unique Values From A Column.Here "Distinct" Keyword Is Eliminating Duplicate Values.

Ex:

Sql> Select Count(Distinct Name) From Test;-------→ 3