SYLLABUS OF UNIT-4

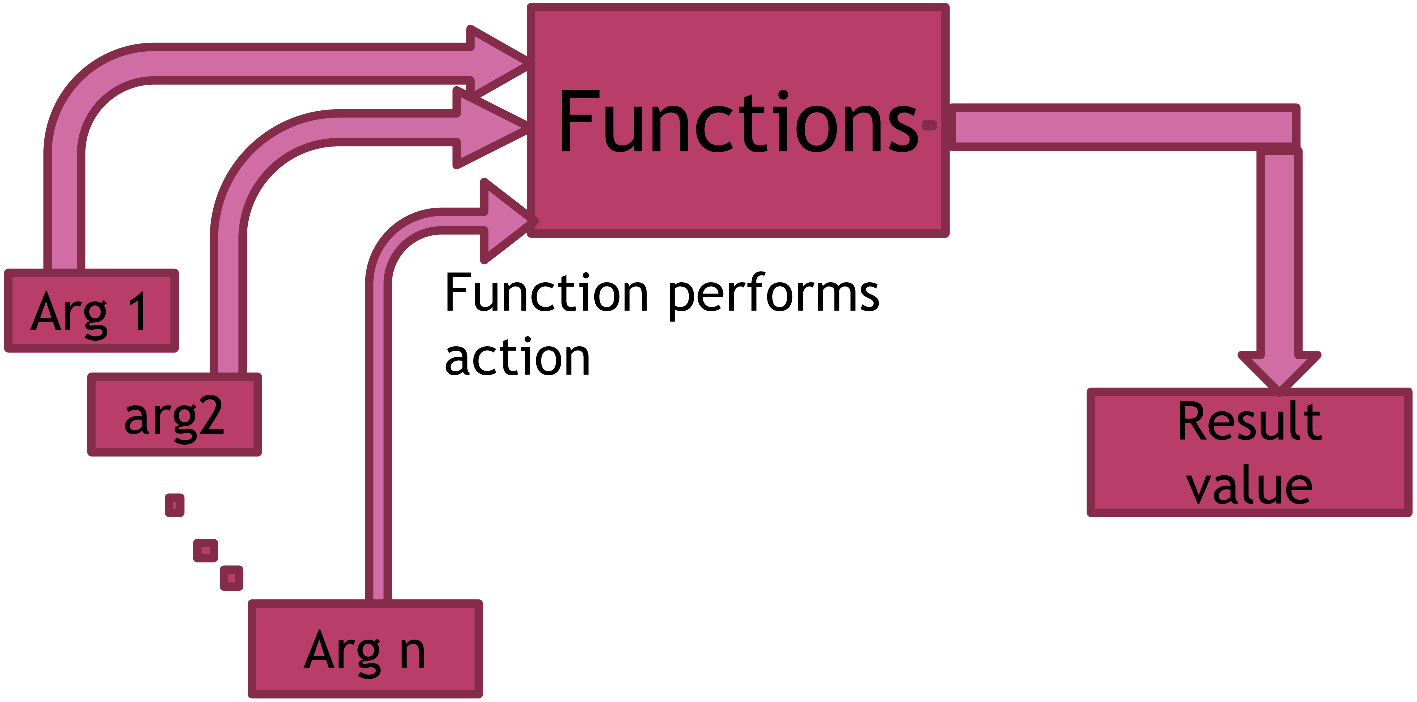
Functions:

- **Numeric Function:** ABS, MOD, FLOOR, CEIL,TRUNC,SQRT,SIGN,COS, LOG, EXP, LEAST, GREATEST.
- **Group Function:** SUM, AVG, MAX, MIN, COUNT.
- **Character Function:** LENGTH, LOWER, UPPER, INITCAP, INSTR, SUBSTR, LPAD, RPAD, LTRIM, RTRIM, DECODE, SOUNDEX.
- **Conversion Function :** To-Number, To-Char.

FUNCTIONS

- Functions are very powerful feature of SQL used to manipulate data items .
- SQL functions are built into oracle database and are operated for use in various appropriate SQL statements.
- If you call a SQL function with a null argument, then the SQL function automatically returns null.
- Functions are similar to operators in that they manipulate data items and return a result.

SQL FUNCTION



Functions

Arg 1

arg2

Arg n

Function performs action

Result value

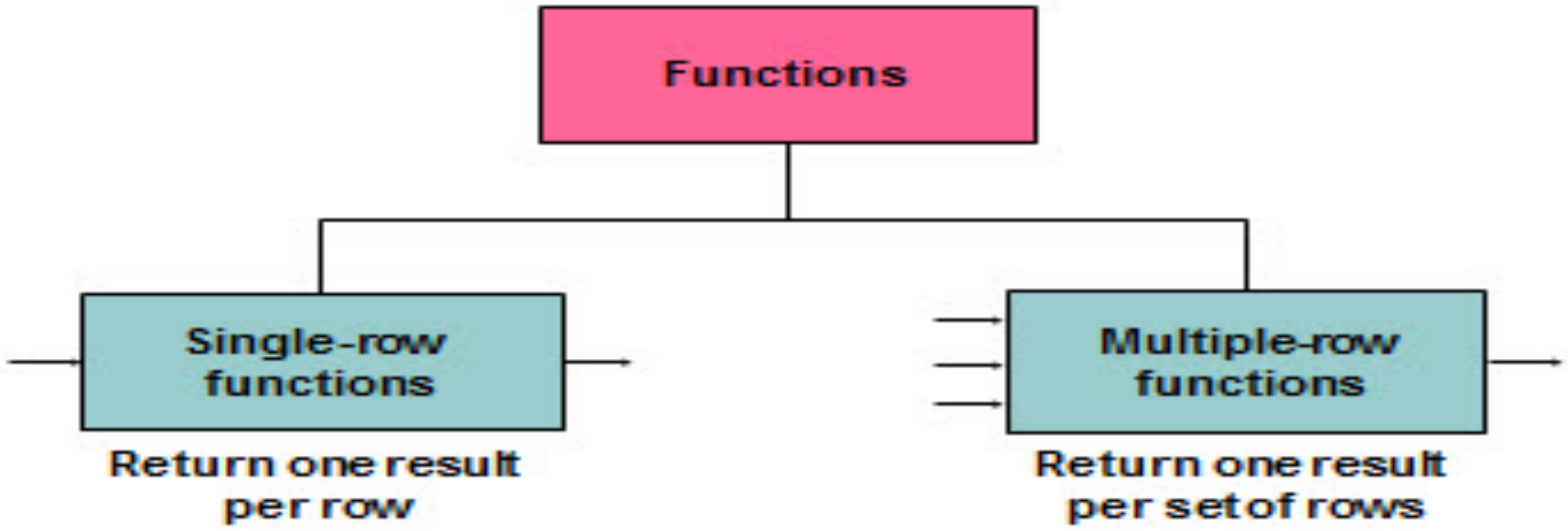
ADVANTAGES OF FUNCTION

- Function can be used to perform complex calculations on data.
- Functions can modify individual data items
- Function can very easily manipulate output for groups of rows. Function can manipulate character as well as numeric type of data.
- function can alter date formats for display

TYPES OF FUNCTION

- There are two types of function:
  - Single row functions
  - Multiple row functions

Two Types of SQL Functions



Functions

Single-row functions

Return one result per row

Multiple-row functions

Return one result per set of rows

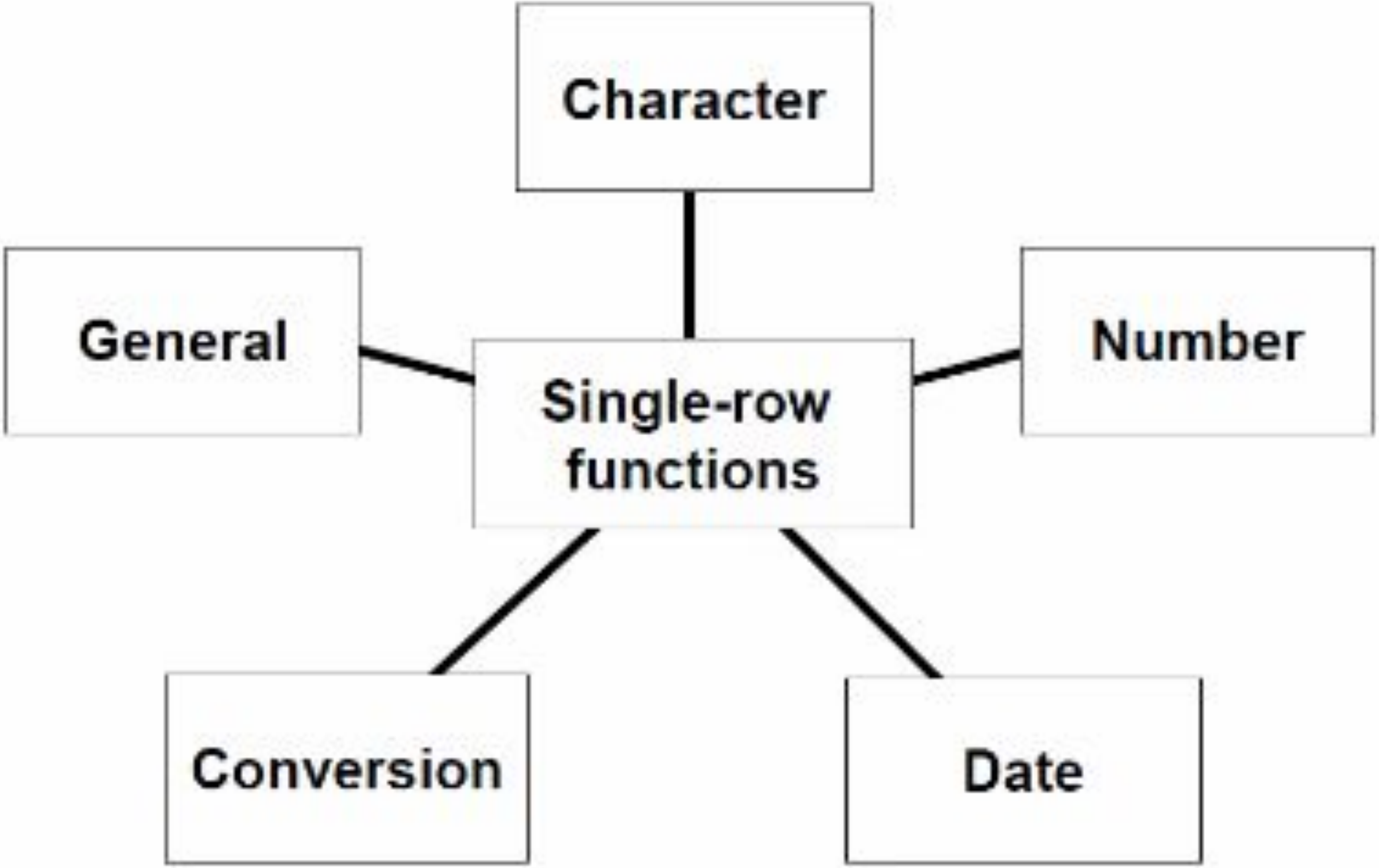
SINGLE ROW FUNCTION

- These function operate on single rows only and return one value for ach row, column name or an expression. Single-row functions can be used in SELECT. WHERE and ORDER by clauses.
- **Syntax of using a single-row function is function_name [(arg1, arg2,…..)]**
- Where, **function_name** is the name of the function. **arg1,arg2** is any argument to be used by the function. This can be represented by a user-supplied constant value, variable value, column name or an expression.

TYPES OF SINGLE ROW FUNCTIONS

- There are different types of single row function:

- Number functions
- Aggregate functions
- Character functions
- Conversion functions


Character
General
Single-row functions
Number
Conversion
Date

NUMERIC FUNCTIONS

ABS, MOD, FLOOR, CEIL,TRUNC,SQRT,SIGN,COS, LOG, EXP, LEAST, GREATEST.

1.ABS:- Returns the absolute value of ‘n’.

syntax:- ABS(x)

e.g. Select ABS(-25) from dual;

Output: 25

2.MOD :-Returns the remainder of a first number divided by second number passed a parameter.

Syntax:-MOD(N,M)

e.g. select MOD(29,3) from dual;

Output= 2

3.FLOOR:- Return a largest integer value that is equal to less than a number.

Syntax:- FLOOR(X)

e.g. select FLOOR (3.78) from dual;

Output=3

4.CEIL:-Return the smallest integer value that is greater than or equal to a number.

Syntax:-CEIL(X)

e.g. select CEIL (25.57) from dual;

Output= 26

5.TRUNC:- Returns a number truncated to a certain no. of decimal places. The decimal place value is must be an integer.

Syntax:- TRUNC(no,[decimal_places])

e.g. select TRUNC(4.57637,2) from dual;

Output= 4.57

6.SQRT:- Returns square root of n.

syntax:-SQRT(X)

e.g. select SQRT(49) from dual;

output=7

7.SIGN:- Returns a Sign of specified number.

Syntax:- SIGN(X)

e.g. select SIGN(1) from dual;

Output= +VE

8.COS:- Returns cosine of number.

syntax:-COS(X)

e.g. select COS(90) from dual;

Output= 0.44080

9.LOG:- Return natural logarithm of x.

syntax:-LOG(X)

e.g. select LOG(45) from dual;

Output= 3.0806662

10. EXP: Returns value of e(base of natural algorithm) raised to the power of x where e=2.71828183.

syntax:- EXP(X)

E.g. select EXP(5) from dual;

Output=148.413159

11.GREATEST : Returns a greatest value in a list of expressions.

Syntax:-GREATEST(expr1,expr2,expr3…expr n)

e.g.:- select GREATEST(4,5,17) from dual;

output= 17

12.LEAST:- Returns the least value in a list of expressions.

Syntax:- LEAST(expr1,expr2,…..,exprn);

e.g. select LEAST(4,5,17) from dual;

Output= 4

GRROUP/AGGREGATE FUNCTIONS

1.SUM: Returns the sum of the value of ‘n’

syntax:- select SUM(value) from tablename;

2.AVG :- Returns the average value

syntax:- Select AVG(value) from tablename;

3.MAX: Returns the minimum value of expr.

syntax:- select MAX(value) from tablename;

4.MIN : Return the minimum value of expr.

syntax :-select MIN(value) from tablename;

5.COUNT : Returns the no. of rows where expression is not null.

syntax:-select COUNT(Columnname) from tablename;

6.COUNT(*) :- Returns the no. of rows in a table including duplicates and those with null.

syntax:- select COUNT(*) from tablename;

GROUP/AGGREGATE FUNCTION

1.SUM: Returns the sum of the field in various records.

Syntax:- select SUM(value) from tablename;

Example : Select SUM(Payment) from Emp_Table;

Output: 3,90,000

Emp_Table

Emp_Id	Designation	Payment
112	Manager	1,00,000
125	Assit. Manager	80,000
234	Supervisor	60,000
237	Div. Manager	1,20,000
320	Clerk	30,000

GROUP/AGGREGATE FUNCTION

2.AVG: Returns the average of the field in various records.

Syntax:- select AVG (value) from tablename;

Example : Select AVG (Payment) from Emp_Table;

Output: 78,000

Emp_Table

Emp_Id	Designation	Payment
112	Manager	1,00,000
125	Assit. Manager	80,000
234	Supervisor	60,000
237	Div. Manager	1,20,000
320	Clerk	30,000

GROUP/AGGREGATE FUNCTION

3.MAX: Returns the maximum value in various records.

Syntax:- select MAX (value) from tablename;

Example : Select MAX (Payment) from Emp_Table;

Output: 1,20,000

Emp_Table

Emp_Id	Designation	Payment
112	Manager	1,00,000
125	Assit. Manager	80,000
234	Supervisor	60,000
237	Div. Manager	1,20,000
320	Clerk	30,000

GROUP/AGGREGATE FUNCTION

4.MIN: Returns the mnimum value in various records.

Syntax:- select MIN (value) from tablename;

Example : Select MIN(Payment) from Emp_Table;

Output: 30,000

Emp_Table

Emp_Id	Designation	Payment
112	Manager	1,00,000
125	Assit. Manager	80,000
234	Supervisor	60,000
237	Div. Manager	1,20,000
320	Clerk	30,000

COUNT(*) FUNCTION

COUNT(*) :- Returns the no. of rows in a table including duplicates and those with null.

Syntax: Select COUNT(*) from tablename;

Example: Select COUNT(*) from Employee_table;

Output: 5

Employee_table

Cust_No.	Cust_Name	City
112	BIRLA	AHEMADABAD
125	RAO	CHENNAI
234	DEVENDRAN	TIRUCHI
237	BHATT	TRICHI
320	MUKHERJI	DARJILING

COUNT(COLUMN_NAME) FUNCTION

COUNT(Column_Name) : Returns the number of values (Null Values will not be counted) of the specified column.

Syntax: Select COUNT(Column_Name) from tablename;

Example: Select COUNT(Column_Name) from Employee_table;

Output: 4

Employee_table

Cust_No.	Cust_Name	City
112	BIRLA	AHEMADABAD
125	RAO	CHENNAI
234	DEVENDRAN	TIRUCHI
237	BHATT	TRICHI
320	MUKHERJI	NULL

STRING/CHARACTER FUNCTION
LENGTH, LOWER, UPPER, INITCAP, INSTR, SUSSTR, LPAD, RPAD, LTRIM, RTRIM, DECODE, SOUNDEX.

1.**LENGTH**:- Returns a length of a word.

Syntax:- LENGTH('word')

Example: **select LENGTH('hvpm') from dual;**

Output= 4

2.**LOWER**:- Returns with all letters in lowercase.

Syntax:-LOWER('char')

Example: Select LOWER ('IVAN BAYROSS') from dual;

Output= ivan bayross

3.UPPER:- Returns with all letters in uppercase.

syntax:- UPPER('char')

e.g. select UPPER('ivan bayross') from dual;

Output= IVAN BAYROSS

4.INITCAP:- Returns a string with the first letter of each word in upper case.

Syntax:- INITCAP('char')

e.g. select INITCAP('IVAN BAYROSS') from dual;

Output= Ivan Bayross

5. INSTR:-returns a location of a substring in a string.

Syntax:- INSTR(string,substring)

e.g. select INSTR('Football','ball') from dual;

Output= 5

6.SUBSTR:-Returns a portion of characters beginning at character m, and going up to character n. if n is omitted the result returned is up to the last character in the string. The first position of char is 1.

Syntax:- SUBSTR('char', m, [n])

e.g. select SUBSTR('ABCDEF',2,3) from dual;

Output= BCD

7.LPAD:- Returns char1, left-papped to length n with the sequence of character specified in char2.

Syntax:- LPAD(‘char1’,n , ‘char2’)

E.g. select LPAD(‘page1’,10,’*’) from dual;

Output=***page1**

8.RPAD:- Returns char1, right papped to length n with the character specified in char2.

Syntax:- RPAD(‘char1’,n, ‘char2’)

e.g. select RPAD(‘ivan’,10,’x’) from dual;

Output=ivanxxxxxx

9.LTRIM:- Returns characters from the left of char with initial characters removed upto the first character not in set.

Syntax:-LTRIM(‘char’, set)

e.g. select LTRIM(‘nisha’,’n’) from dual;

Output= isha

10.RTRIM:- Returns char, with final characters removed after the last character not in set. ‘set’ is optional, it defaults to spaces.

Syntax:- RTRIM(‘char,’ set)

e.g. select RTRIM(‘sunila’,’a’) from dual;

Output= sunil

11.DECODE:

It has the functionally of an IF-THEN-ELSE statement. This is a compact & single row from of IF-THEN-ELSE statement. Decode compares exp to each search value one by one. If exp is equal to search, then it replace corresponding result, if no match found, then it returns default. The arguments can be any of the numeric types.

Syntax : ***DECODE(EXP,SEARCH,RESULT,DEFAULT)***

Example: **SELECT Supplier DECODE(SUPPLIER_ID, 100, ‘IBM’, 101, ‘MICROSOFT’, 102, ‘MOTOROLA’, 103, ‘HP’ , 104, ‘DELL’, ‘GATEWAY’) RESULT FROM SUPPLIER;**

Supplier Table

Supplier_Name	*Supplier_id*
Jaykishan	100
John	101
Martin	102
Anderson	103
Getty	104

Output

Jaykishan	IBM
John	Microsoft
Martin	Motorola
Anderson	HP
Getty	DELL

12.SOUNDEX :

It return a character string containing phonetic representation of character. This function lets you compare words that spelled differently, but sound alike in English.

Syntax: SOUNDEX('String')

Stud_data Table

RollNo	S_Name	Class
112	Amit	B. Sc. I
115	Ram	B. Sc. I
123	Ameet	B. Sc. I
211	Amar	B. Sc. II
225	Krisna	B. Sc. II
321	Amiit	B. Sc. III

Example:

Select RollNo, Class from Stud_data

Where SOUNDEX(S_Name =

SOUNDEX('Amit');

Output:

RollNo	Class
112	B. Sc. I
123	B. Sc. I
321	B. Sc. III

CONVERSION FUNCTIOSNS

- **TO_NUMER :**

- **This function is used to convert character value containing a number to value of number data type.**

Syntax : T0_NUMBER(CHARACTER)

Example: **SELECT TO_NUMBER(SUBSTR('$100',2,3)) FROM DUAL;**

OUTPUT: 100

- **TO_CHAR :**

- **This function is used to convert value of NUMBER data type. To value of character data type. Using optional format string format must be number format.**

Syntax : T0_CHAR(FORMAT)

Example: **SELECT TO_CHAR(SUBSTR(17145,'$099,999') FROM DUAL;**

OUTPUT: $017,145

Assignment Questions BASED ON UNIT-4

Q.1. Explain any SIX Number Function with meaning, syntax, example, Result 6

Q.2. Explain All Group/Aggregate Function with meaning, syntax, example, Result 5

Q.3. Explain any SEVEN Character Function with meaning, syntax, example, Result. 7

Q.4. Explain Conversion Function with meaning, syntax, example And Result for following: 4

1.To_Number   2. To_Char