Nepal College of Information Technology

Balkumari , Lalitpur

Database Management System

Lab 6

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Title: Inbuilt Functions

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Objective:

To practice and implement in-built functions to be executed using DML.

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Procedure:

Function is a block of codes that accept zero or more arguments and returns one or more results.

Function can be classified into ***single row functions*** and ***group functions***.

Single row functions:

- Returns only one value for every row queries in table.
- Can appear in select command and can also be included in where clause.
- E.g. Numeric functions, character functions

Group functions:

- Returns a result based on group of rows.

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SQL Command:

1. Numeric functions

Command	Query	Output
Abs(n)	Select abs(-10) from <table>	10
Ceil(n)	Select ceil(55.67) from <table>	56
Floor(n)	Select floor(100.2) from <table>	100
Exp(n)	Select exp(4) from <table>	54.59
Power(m, n)	Select power(4,2) from <table>	16
Mod(m, n)	Select mod(10,3) from <table>	1
Sqrt(n)	Select sqrt(16) from <table>	4
Round(m,n)	Select abs(100.256,2) from <table>	100.26

2. Character functions

Command	Query	Output
Lower(char)	Select lower('HELLO') from <table>	hello
Upper(char)	Select upper('hello') from <table>	Hello
Ltrim(char_exp)	Select ltrim(' csit') from <table>	csit
Rtrim(char_exp)	Select rtrim('csit ') from <table>	csit
Replace(SE,SP,SR)	Select replace('hello','ll','xx') from <table>	hexxo
Substring(exp,start,length)	Select substring('hello',2,3)	ell

3. Count functions

- COUNT(*) : counts all , inclusive of duplicates and null values
  - Select count(*) from employee
- COUNT(col_name): avoids null value
  - Select count(salary) from employee
- COUNT(distinct col_name): avoids repeated and null values
  - Select count(distinct salary) from employee

4. **Group functions**
   - AVG()
     - Select avg(salary) from employee
   - MAX()
     - Select max(salary) from employee
   - MIN()
     - Select min(salary) from employee
   - SUM()
     - Select sum(salary) from employee

- **GROUP BY clause**
  - Allows us to use simultaneous column name and group functions
  - Use in conjunction with the aggregate functions to group the result-set by one or more columns.
  - Eg.
    - Select max(salary),job from employee group by job

- **HAVING clause**
  - Use to specify conditions on rows retrieved by using ***group by*** clause.
  - Added to SQL because the WHERE keyword could not be used with aggregate functions.
  - E.g.
    - Select max(salary),job from employee group by job having count(*)>=2

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LAB EXERCISE:

Implement above functions.

works (employee-name, company-name, salary)

1. **Find those companies where the average salary is more than 12000.**
2. **Find those companies whose employees earn a higher salary, on average, than the average Salary at First Bank Corporation.**
3. **Find the company that has the smallest payroll.**
4. **Find those companies who have minimum 3 employees.**