

# Database Design & Applications

## User-Defined Functions



## Objectives

- User Defined Function
- Types of User Defined Functions
- Create a Scaler User Defined Functions
- Calling a Scaler User Defined Functions
- Places where you can use Scaler User Defined Functions
- Alter and Drop a Scaler User Defined Functions



## User-Defined Functions

- In SQLSever there are 3 types of User Defined Functions
  - Scalar Functions
  - Inline Table-Valued Functions
  - Multi-Statement Table Valued Functions

## Scaler Functions

- Scaler Functions may or may not have parameters, but always returns a single/scalar value.
- The returned value can be of any datatype except:
  - Text
  - Ntext
  - Image
  - Cursor
  - Timestamp



## Create Function

```
CREATE FUNCTION function_name  
(@parameter1 datatype, @parameter2 datatype ... @parameterN datatype)  
RETURNS return_datatype  
As  
BEGIN  
---function body  
RETURN return_datatype  
END
```

## Create Function

```
CREATE FUNCTION tax
(@psalary decimal(18,0))
RETURNS dec(18,0)
AS
BEGIN
    DECLARE @rtax dec(18,0)
    SET @rtax=@psalary*.08
    RETURN @rtax
END
```



## Invoking Function

- When calling a scalar function, you must specify a two-part name :
  - OwnerName.FunctionName  
Select dob.tax(100000)
  - Dbo stands for database owner
- You can also invoke it using the complete 3 part name
- DatabaseName.OwnerName.FunctionName  
Select sample.dob.tax(100000)

## Invoking UDF

- Scalar UDF can be used in the SELECT Clause  
`SELECT` dbo.tax(salary) as tax `FROM` employee;
- Scalar UDF can be used in the SELECT WHERE Clause:  
`SELECT` first\_name, last\_name, salary, dbo.tax(salary) `AS` M\_tax  
`FROM` employee  
`WHERE` dbo.tax(salary\*12) > 10000;



## ALTER and DROP

- To change the User Defined Function:  
ALTER FUNCTION 'function\_name';
- To delete a User Defined Function :  
DROP FUNCTION 'function\_name';



## Difference between Procedures and Functions

Function	Procedure
Always returns a single value	Can return zero, single or multiple values.
Functions are compiled and executed at run time.	Stored procedures are stored in parsed and compiled state in the database.
Only Select statements are allowed	Can perform select and DML statements.
Allows only input parameters. Does not allow output parameters.	Allows both input and output parameters
Cannot call a stored procedure from a function.	Can call a function from a stored procedure.
Functions can be called from a Select statement.	Stored procedures cannot be called from a Select/Where or Having statements. Execute statement has to be used to execute a stored procedure.

THANK YOU!

