**Exercise 1: Create a Scalar Function**

CREATE FUNCTION fn\_CalculateAnnualSalary(@Salary DECIMAL(10,2))

RETURNS DECIMAL(10,2)

AS

BEGIN

RETURN @Salary \* 12;

END;

SELECT

EmployeeID,

FirstName,

LastName,

Salary,

dbo.fn\_CalculateAnnualSalary(Salary) AS AnnualSalary

FROM Employees;

**Exercise 2: Create a Table-Valued Function**

CREATE FUNCTION fn\_GetEmployeesByDepartment(@DeptID INT)

RETURNS TABLE

AS

RETURN

(

SELECT EmployeeID, FirstName, LastName, DepartmentID, Salary, JoinDate

FROM Employees

WHERE DepartmentID = @DeptID

);

-- Test the function

SELECT \* FROM dbo.fn\_GetEmployeesByDepartment(2); -- IT Department

**Exercise 3: Create a User-Defined Function**

CREATE FUNCTION fn\_CalculateBonus(@Salary DECIMAL(10,2))

RETURNS DECIMAL(10,2)

AS

BEGIN

RETURN @Salary \* 0.10;

END;

-- Test the function

SELECT

EmployeeID,

FirstName,

LastName,

Salary,

dbo.fn\_CalculateBonus(Salary) AS Bonus

FROM Employees;

**Exercise 4: Modify a User-Defined Function**

ALTER FUNCTION fn\_CalculateBonus(@Salary DECIMAL(10,2))

RETURNS DECIMAL(10,2)

AS

BEGIN

RETURN @Salary \* 0.15;

END;

SELECT

EmployeeID,

FirstName,

LastName,

Salary,

dbo.fn\_CalculateBonus(Salary) AS Bonus

FROM Employees;

**Exercise 5: Delete a User-Defined Function**

DROP FUNCTION fn\_CalculateBonus;

**Exercise 6: Execute a User-Defined Function**

SELECT

EmployeeID,

FirstName,

LastName,

Salary,

dbo.fn\_CalculateAnnualSalary(Salary) AS AnnualSalary

FROM Employees;

**Exercise 8: Return Data from a Table-Valued Function**

SELECT \* FROM dbo.fn\_GetEmployeesByDepartment(3);

Exercise 9: Create a Nested User-Defined Function

CREATE FUNCTION fn\_CalculateTotalCompensation(@Salary DECIMAL(10,2))

RETURNS DECIMAL(10,2)

AS

BEGIN

DECLARE @AnnualSalary DECIMAL(10,2) = dbo.fn\_CalculateAnnualSalary(@Salary);

DECLARE @Bonus DECIMAL(10,2) = dbo.fn\_CalculateBonus(@Salary);

RETURN @AnnualSalary + @Bonus;

END;

SELECT

EmployeeID,

FirstName,

LastName,

Salary,

dbo.fn\_CalculateTotalCompensation(Salary) AS TotalCompensation

FROM Employees;

**Exercise 10: Modify a Nested User-Defined Function**

ALTER FUNCTION fn\_CalculateTotalCompensation(@Salary DECIMAL(10,2))

RETURNS DECIMAL(10,2)

AS

BEGIN

DECLARE @AnnualSalary DECIMAL(10,2) = dbo.fn\_CalculateAnnualSalary(@Salary);

DECLARE @Bonus DECIMAL(10,2) = dbo.fn\_CalculateBonus(@Salary); -- Now uses 15% bonus

RETURN @AnnualSalary + @Bonus;

END;

SELECT

EmployeeID,

FirstName,

LastName,

Salary,

dbo.fn\_CalculateTotalCompensation(Salary) AS TotalCompensation

FROM Employees;