**Lab Exercise- Creating and Using Functions in AWS Redshift Using SQL**

**Objective:**

* To learn how to create and use SQL-based functions in AWS Redshift.
* To understand the concepts of function creation, and function invocation in Redshift.

**Prerequisites:**

* Access to an AWS Redshift cluster.
* Basic knowledge of SQL.

**Task 1: Creating a Simple SQL Function**

**Step 1.1: Create a Function to Calculate the Square of a Number**

**Create the Function:**

Write a SQL script to create a function that calculates the square of an integer.

CREATE OR REPLACE FUNCTION calculate\_square(integer)

RETURNS integer

IMMUTABLE

AS $$

SELECT $1 \* $1;

$$ LANGUAGE SQL;

**Explanation:**

* IMMUTABLE: The function will always return the same result for the same input, so it is marked as immutable.
* LANGUAGE SQL: The function is written using standard SQL.

**Test the Function:**

Write queries to test the function by calculating the square of a few numbers.

SELECT calculate\_square(4) AS square\_of\_4;

SELECT calculate\_square(10) AS square\_of\_10;

**Task 2: Creating a Function with Conditional Logic**

**Step 2.1: Create a Function to Classify a Number as Positive, Negative, or Zero**

**Create the Function:**

Write a SQL script to create a function that classifies a number as "Positive", "Negative", or "Zero".

CREATE OR REPLACE FUNCTION classify\_number(val integer)

RETURNS varchar

IMMUTABLE

AS $$

SELECT CASE

WHEN val > 0 THEN 'Positive'

WHEN val < 0 THEN 'Negative'

ELSE 'Zero'

END;

$$ LANGUAGE SQL;

**Test the Function:**

Write queries to test the function by classifying different numbers.

SELECT classify\_number(10) AS classification;

SELECT classify\_number(-5) AS classification;

SELECT classify\_number(0) AS classification;

**Task 3: Creating a Function to Manipulate String Data**

**Step 3.1: Create a Function to Reverse a String**

Create the Function:

Write a SQL script to create a function that reverses the input string.

CREATE OR REPLACE FUNCTION reverse\_string(text)

RETURNS text

IMMUTABLE

AS $$

SELECT REVERSE($1);

$$ LANGUAGE SQL;

Test the Function:

Write queries to test the function by reversing different strings.

SELECT reverse\_string('Redshift') AS reversed\_string;

SELECT reverse\_string('Hello, World!') AS reversed\_string;