MySQL User-Defined Functions Practice Questions and Answers

General Questions: User-Defined Functions

1. Convert to Uppercase: Write a function that accepts a string and returns it in uppercase.

2. Calculate Square: Write a function that takes an integer and returns its square.

3. Simple Addition: Write a function that accepts two numbers and returns their sum.

4. Length of String: Write a function that takes a string as input and returns its length.

5. Convert Fahrenheit to Celsius: Write a function that converts a temperature from Fahrenheit to Celsius. Formula: C = (F - 32) * 5 / 9.

Answers to General Questions

1. Convert to Uppercase

```
DELIMITER $$
CREATE FUNCTION toUpperCase(input_str VARCHAR(255))
RETURNS VARCHAR(255) DETERMINISTIC
BEGIN
  RETURN UPPER(input_str);
END $$
DELIMITER ;
```

2. Calculate Square

```
DELIMITER $$
CREATE FUNCTION squareNumber(n INT)
RETURNS INT DETERMINISTIC
BEGIN
  RETURN n * n;
END $$
DELIMITER ;
```

3. Simple Addition

```
DELIMITER $$
CREATE FUNCTION addNumbers(a INT, b INT)
RETURNS INT DETERMINISTIC
BEGIN
```

```
  RETURN a + b;
END $$
DELIMITER ;
```

4. Length of String

```
DELIMITER $$
CREATE FUNCTION stringLength(input_str VARCHAR(255))
RETURNS INT DETERMINISTIC
BEGIN
  RETURN CHAR_LENGTH(input_str);
END $$
DELIMITER ;
```

5. Convert Fahrenheit to Celsius

```
DELIMITER $$
CREATE FUNCTION fahrenheitToCelsius(F DECIMAL(5,2))
RETURNS DECIMAL(5,2) DETERMINISTIC
BEGIN
  RETURN (F - 32) * 5 / 9;
END $$
DELIMITER ;
```

MySQL Table-Based Questions: User-Defined Functions

Sample Table: employees

```
CREATE TABLE employees (
  emp_id INT PRIMARY KEY,
  first_name VARCHAR(50) NOT NULL,
  last_name VARCHAR(50) NOT NULL,
  salary DECIMAL(10,2) NOT NULL
);
INSERT INTO employees (emp_id, first_name, last_name, salary) VALUES
(1, 'John', 'Doe', 5000.00),
(2, 'Jane', 'Smith', 7000.00),
```

(3, 'Alice', 'Johnson', 6000.00),

(4, 'Bob', 'Brown', 5500.00),

(5, 'Charlie', 'Davis', 8000.00);

Practice Questions

1. Create a function that returns the full name of an employee given their emp_id.

2. Create a function that calculates the annual salary of an employee given their emp_id.

3. Create a function that checks if an employee's salary is above a certain threshold and returns 'Yes' or 'No'.

4. Create a function that takes an emp_id as input and returns the first name in uppercase.

5. Create a function that calculates the average salary of all employees and returns it.

Answers to Table-Based Questions

1. Full Name of Employee

```
DELIMITER $$
CREATE FUNCTION getFullName(emp INT)
RETURNS VARCHAR(255) DETERMINISTIC
BEGIN
   DECLARE full_name VARCHAR(255);
   SELECT CONCAT(first_name, ' ', last_name) INTO full_name
   FROM employees WHERE emp_id = emp;
   RETURN full_name;
END $$
DELIMITER ;
```

2. Annual Salary

```
DELIMITER $$
CREATE FUNCTION getAnnualSalary(emp INT)
RETURNS DECIMAL(10,2) DETERMINISTIC
BEGIN
   DECLARE annual_salary DECIMAL(10,2);
   SELECT salary * 12 INTO annual_salary
   FROM employees WHERE emp_id = emp;
   RETURN annual_salary;
END $$
DELIMITER ;
```

3. Check Salary Threshold

```
DELIMITER $$
CREATE FUNCTION isSalaryAboveThreshold(emp INT, threshold DECIMAL(10,2))
RETURNS VARCHAR(3) DETERMINISTIC
BEGIN
  DECLARE result VARCHAR(3);
  IF (SELECT salary FROM employees WHERE emp_id = emp) > threshold THEN
    SET result = 'Yes';
  ELSE
    SET result = 'No';
  END IF;
  RETURN result;
END $$
DELIMITER ;
```

4. First Name in Uppercase

```
DELIMITER $$
CREATE FUNCTION getUpperCaseFirstName(emp INT)
RETURNS VARCHAR(255) DETERMINISTIC
BEGIN
  DECLARE upper_name VARCHAR(255);
  SELECT UPPER(first_name) INTO upper_name
  FROM employees WHERE emp_id = emp;
  RETURN upper_name;
END $$
DELIMITER ;
```

5. Average Salary

```
DELIMITER $$
CREATE FUNCTION getAverageSalary()
RETURNS DECIMAL(10,2) DETERMINISTIC
BEGIN
  DECLARE avg_salary DECIMAL(10,2);
  SELECT AVG(salary) INTO avg_salary FROM employees;
  RETURN avg_salary;
END $$
DELIMITER ;
```
