

Chapter 16: Stored Procedures & User-Defined Functions

Stored Procedures & UDFs in Snowflake

Sometimes, we may want to perform operations that Snowflake does not allow us to do with the built-in, system-defined functions. This is not going to be a problem as we can use Stored Procedures and User-Defined Functions. Let's see them and understand the differences between them in one of the shortest chapters of the course!

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INTRODUCTION

Both Store Procedures & User-Defined Functions (UDFs) are like functions in any other programming language. You can use both JavaScript and SQL to extend Snowflake functionality. The differences between them are shown in the following table, although let's see them in detail in the following sections.

Languages for Creating UDFs

- SQL
- JavaScript
- Java
- Python

Languages for Creating Store Procedures.

- Java (using Snowpark)
- JavaScript
- Python (using Snowpark)
 - Scala (using Snowpark)
- Snowflake Scripting

<https://docs.snowflake.com/en/sql-reference/udf-overview.html>

<https://docs.snowflake.com/en/sql-reference/stored-procedures-overview.html>

Name	Programming languages that support	Return	Can you use it directly from a SQL Statement?	Typical use cases
Store Procedure	JavaScript SQL	0 - 1 value	No	Typical queries (select) + DML (insert, update...) Administrative Tasks.
UDF	JavaScript SQL Java	One output row for each input row	Yes	If you need a function that can be called as part of a SQL statement and that must return a value that will be used in the statement.
UDTF	Same as UDF.	0 - Several rows	Yes	Same case as UDF but returning multiple rows.

Differences between Stored Procedures & User-Defined Functions

The difference with Store procedures is that:

- *It returns one output row for each input row. The returned row consists of a single column/value.*
- *It must return something.*
- *The returned values CAN be used directly in statement SQL*

---- Function definition ----

```
create or replace function add5 (n number)
  returns number
  as 'n + 5';
```

---- Calling the function ----

```
select add5(1)
```

---- Result ----

ADD5 (1)
6

USER-DEFINED TABLE FUNCTIONS (UDTFs)

UDFs that can return multiple rows for each input row, that's the only difference with UDFs.

---- Function definition ----

```
create function t()
  returns table(msg varchar)
  as
  $$
    select 'Hello'
    union
    select 'World'
  $$;
```

---- Calling the function ----

```
select msg
  from table(t())
 order by msg;
```

---- Result ----

```
+-----+
| MSG   |
+-----+
| Hello |
| World |
+-----+
```

TYPICAL EXAM QUESTIONS

1. Which Snowflake object returns a set of rows instead of a single, scalar value, and can be accessed in the FROM clause of a query?

1. UDF
2. UDTF
3. Stored procedure

Solution: 2.

2. Do UDFs support both SQL & JavaScript in Snowflake?

1. True
2. False

Solution: 1

3. Are UDFs, UDTFs, and Stored Procedures account or schema level objects in Snowflake?

1. Schema level
2. Account-level

Solution: 1

Thanks for Reading!