

IS664 Database Programming Spring 2022

EXAM



MIDTERM EXAM

EXAM: STORED PROCEDURE PROGRAMMING

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GENERAL

- This is your **MIDTERM EXAM**.
- You receive **30** points for a **CORRECT** solution.
- Read the task carefully and write the code necessary to create the defined Stored Procedure.
- Create a **single SQL script** containing all the code for the Task.
- The Stored Procedure **MUST** be created in the `imperial_defense` database.
- The Stored Procedure **MUST** utilize one or more cursors to retrieve all required data and **MAY NOT** have hardcoded values.
- You **MAY NOT** use any `SELECT ...INTO` statements in your procedure... You **can use** them in any function.
- The Stored Procedure **MAY INCLUDE** user-defined and native functions.
- Utilize your MySQL documentation.
- Be conscious of good style and eliminate extraneous code from your SQL script.
- The **EXAM** is due on **Tuesday February 8 at 6 PM**.

TASK

Create the stored procedure `networkComponentAnalysis` which accepts the name of any network and a component type (**Hub**, **Switch**, **Repeater**, or **Router**) and creates, populates, shows structure and data of a table which contains the specified information about every specified component type in the specified network.

```
MySQL 8.0 Command Line Client
mysql> describe networkhubanalysis;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| H_ID       | varchar(20) | NO   | PRI | NULL    |       |
| H_SUMMARY  | json       | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> describe networkswitchanalysis;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| S_ID       | varchar(20) | NO   | PRI | NULL    |       |
| S_SUMMARY  | json       | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> describe networkrepeateranalysis;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| RP_ID      | varchar(20) | NO   | PRI | NULL    |       |
| RP_SUMMARY | json       | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> describe networkrouteranalysis;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| RT_ID      | varchar(20) | NO   | PRI | NULL    |       |
| RT_SUMMARY | json       | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

networkhubanalysis

networkswitchanalysis

networkrepeateranalysis

networkrouteranalysis

Port Ratio is the sum of the **EntryPort** and the **ExitPort** divided by the number of **Ports**.

Port Difference is the absolute value of the difference between the **EntryPort** and the **ExitPort**

EXPECTED OUTPUT

Call the procedure with the following parameters ('Brore03yNET_SAT','Hub')

```
MySQL 8.0 Command Line Client
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| H_ID       | varchar(20) | NO   | PRI | NULL    |       |
| H_SUMMARY  | json       | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.08 sec)

+-----+-----+
| H_ID | H_SUMMARY |
+-----+-----+
| HB-14 | {"Hub": "HB-14", "Port Ratio": 191.14, "Port Difference": 0} |
| HB-17 | {"Hub": "HB-17", "Port Ratio": 72.84, "Port Difference": 6} |
| HB-20 | {"Hub": "HB-20", "Port Ratio": 232.50, "Port Difference": 8} |
| HB-29 | {"Hub": "HB-29", "Port Ratio": 32.75, "Port Difference": 11} |
| HB-30 | {"Hub": "HB-30", "Port Ratio": 15.17, "Port Difference": 5} |
+-----+-----+
5 rows in set (0.09 sec)
```

EXPECTED OUTPUT

Call the procedure with the following parameters ('Brore03yNET_SAT','Switch')

```
MySQL 8.0 Command Line Client

+-----+-----+-----+-----+-----+-----+
| Field | Type   | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| S_ID  | varchar(20) | NO   | PRI | NULL    |       |
| S_SUMMARY | json      | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.02 sec)

+-----+-----+
| S_ID | S_SUMMARY |
+-----+-----+
| SW-19 | {"Switch": "SW-19", "Port Difference": 32775} |
| SW-22 | {"Switch": "SW-22", "Port Difference": 5034} |
| SW-26 | {"Switch": "SW-26", "Port Difference": 13595} |
| SW-3  | {"Switch": "SW-3", "Port Difference": 19459} |
+-----+-----+
4 rows in set (0.03 sec)
```

EXPECTED OUTPUT

Call the procedure with the following parameters ('Brore03yNET_SAT','Repeater')

```
MySQL 8.0 Command Line Client

+-----+-----+-----+-----+-----+-----+
| Field | Type   | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| RP_ID | varchar(20) | NO   | PRI | NULL    |       |
| RP_SUMMARY | json      | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.02 sec)

+-----+-----+
| RP_ID | RP_SUMMARY |
+-----+-----+
| RPTR-2 | {"Repeater": "RPTR-2", "Port Ratio": 0.01, "Port Difference": 41} |
| RPTR-25 | {"Repeater": "RPTR-25", "Port Ratio": 0.11, "Port Difference": 5} |
+-----+-----+
2 rows in set (0.02 sec)

Query OK, 0 rows affected (0.03 sec)
```

EXPECTED OUTPUT

Call the procedure with the following parameters ('Brore03yNET_SAT','Router')

```
MySQL 8.0 Command Line Client

+-----+-----+-----+-----+-----+-----+
| Field | Type   | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| RT_ID | varchar(20) | NO   | PRI | NULL    |       |
| RT_SUMMARY | json      | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.05 sec)

+-----+-----+
| RT_ID | RT_SUMMARY |
+-----+-----+
| RTR10 | {"Type": "Exterior", "Router": "RTR10", "Connect": "Backbone", "Finding": "Static"} |
| RTR29 | {"Type": "Border", "Router": "RTR29", "Connect": "Backbone", "Finding": "Static"} |
| RTR8  | {"Type": "Border", "Router": "RTR8", "Connect": "Backbone", "Finding": "Dynamic"} |
+-----+-----+
```