

IS664 Database Programming

FALL 2022

HOMEWORK



Homework 1

HW1: USER DEFINED FUNCTION CREATION

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General

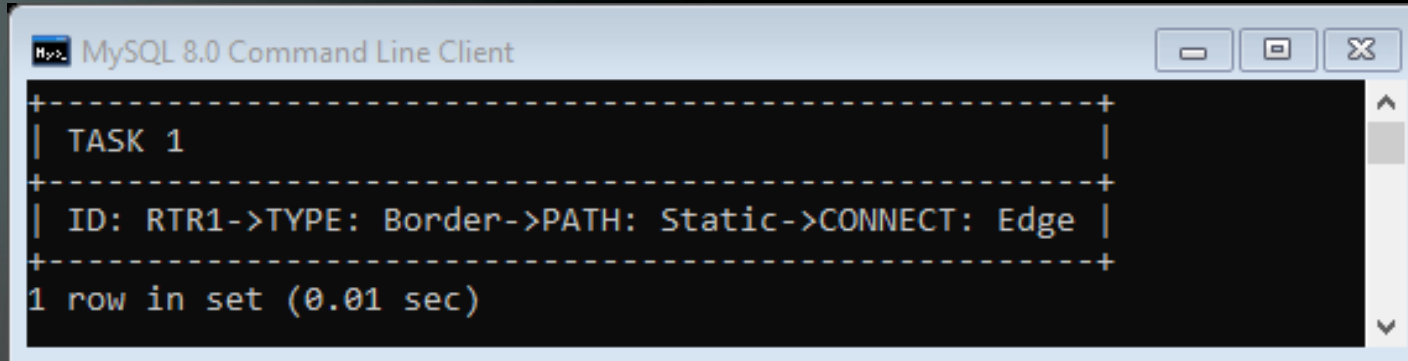
2

- ▶ This is your Homework 1 Assignment.
- ▶ This assignment utilizes the `imperial_defense` database.
- ▶ This assignment is designed to develop your ability to `create user-defined functions that manipulate data`.
- ▶ Submit this assignment as a `single .sql script`.
- ▶ You may `utilize any native MySQL functions` in your function definitions, and you `may also create any additional helper methods` to use in your function definitions.
- ▶ Ensure that the output of your function is in the format shown for each task.

Task 1

3

- ▶ Create the function **routerDisplay** that accepts a router id number and prints the following information, to the shell, about the router *in the format shown below*.
 - RID
 - RType
 - RouteFinding
 - Connectivity

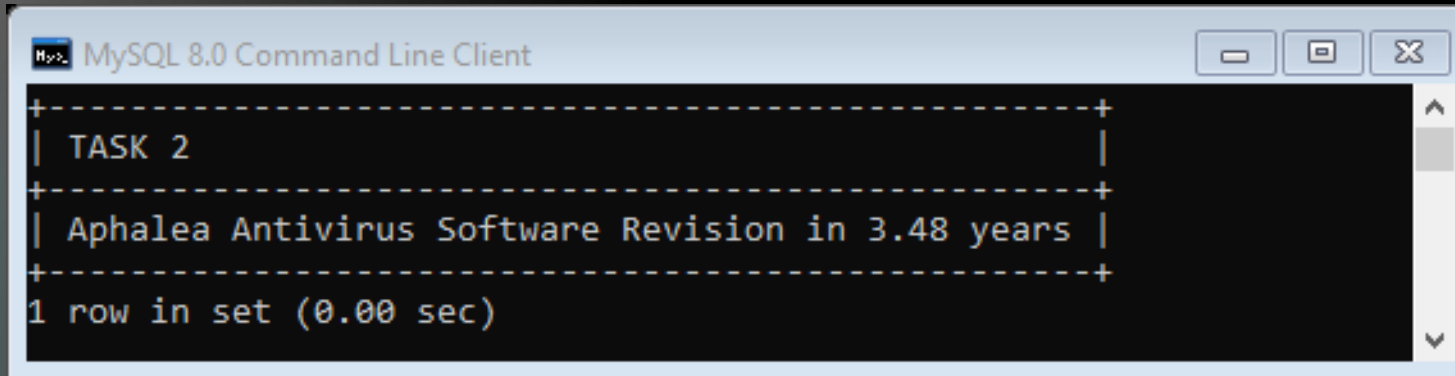


```
MySQL 8.0 Command Line Client
+-----+
| TASK 1 |
+-----+
| ID: RTR1->TYPE: Border->PATH: Static->CONNECT: Edge |
+-----+
1 row in set (0.01 sec)
```

Task 2

4

- ▶ Create the function **timeTillRevise** that accepts the name of an antivirus software and prints to the shell the software's name and the number of years from February 10, 2022, until the software's revise date *in the format shown below*.



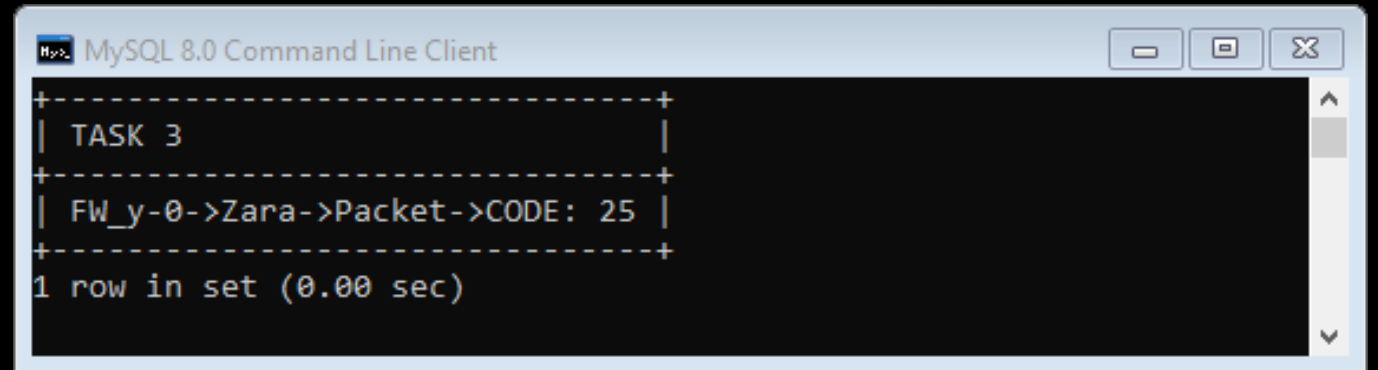
```
MySQL 8.0 Command Line Client
+-----+
| TASK 2 |
+-----+
| Aphalea Antivirus Software Revision in 3.48 years |
+-----+
1 row in set (0.00 sec)
```

Task 3

5

- ▶ Create the function **getFirewallCode** that accepts the ID number of a firewall system and prints to the shell, a firewall code based on the following scheme, *in the format shown below*.

System Name	System Filter	Code
Zara	Packet	25
Zara	Frame	30
Etis	Frame	35
Etis	Packet	40
Ecoria	Packet	45
Cheirus	Frame	50

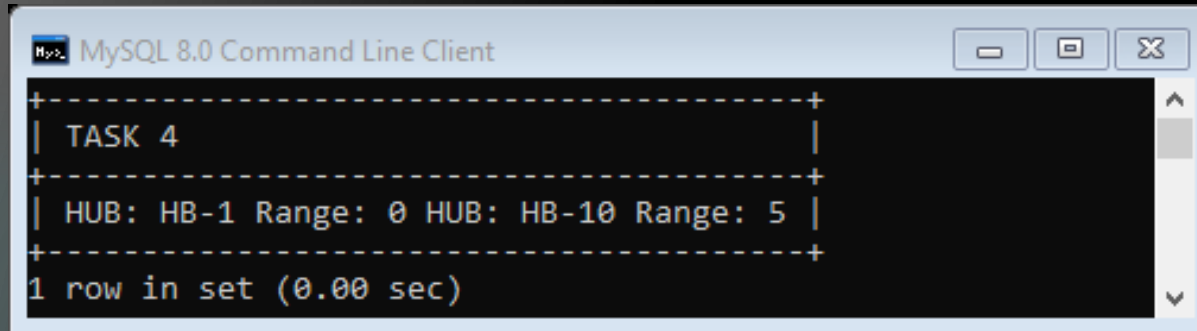


```
MySQL 8.0 Command Line Client
+-----+
| TASK 3 |
+-----+
| FW_y-0->Zara->Packet->CODE: 25 |
+-----+
1 row in set (0.00 sec)
```

Task 4

6

- ▶ Create the function **hubPortDifference** that accepts the ID number of two hubs and prints to the shell the difference (absolute value) between their entry and exit port numbers, *in the format shown below*.

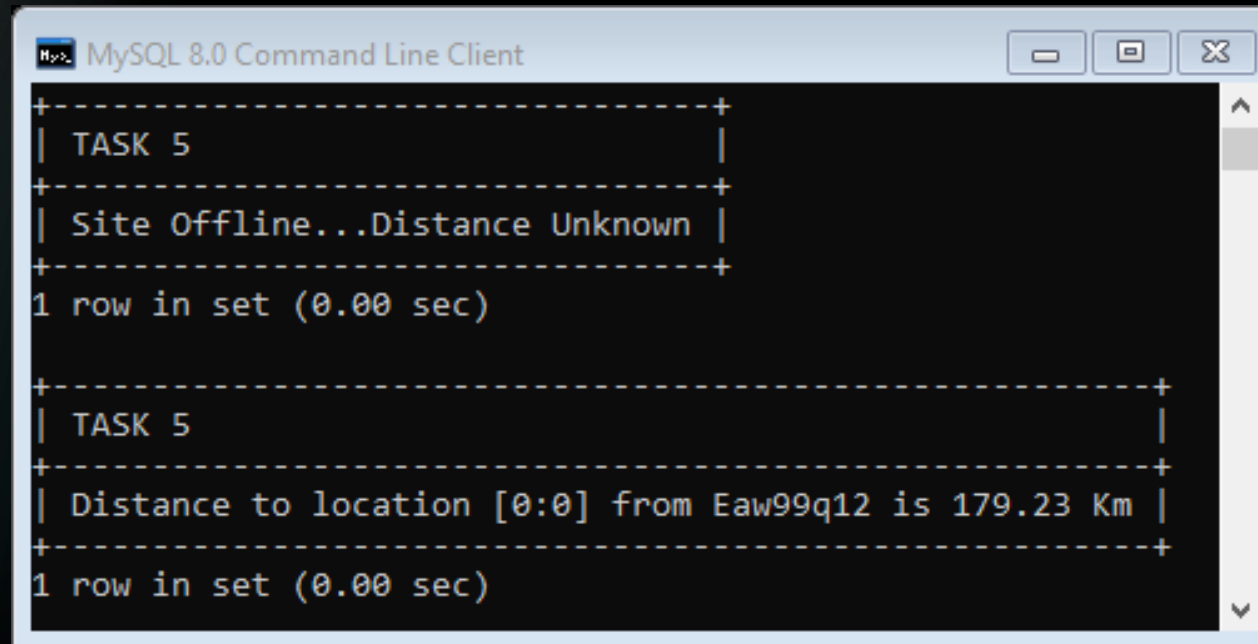


```
MySQL 8.0 Command Line Client
+-----+
| TASK 4 |
+-----+
| HUB: HB-1 Range: 0 HUB: HB-10 Range: 5 |
+-----+
1 row in set (0.00 sec)
```

Task 5

7

- ▶ Create the function **distanceToSite** that accepts the name of a site and the x and y coordinates of another location and prints to the shell the 2D Euclidean distance from the site to the other location, *in the format shown below*.
- ▶ **Special Instructions:**
- ▶ If the status of the site is '**OFFLINE**' then the function prints '**Site Offline...Distance Unknown**' to the shell.



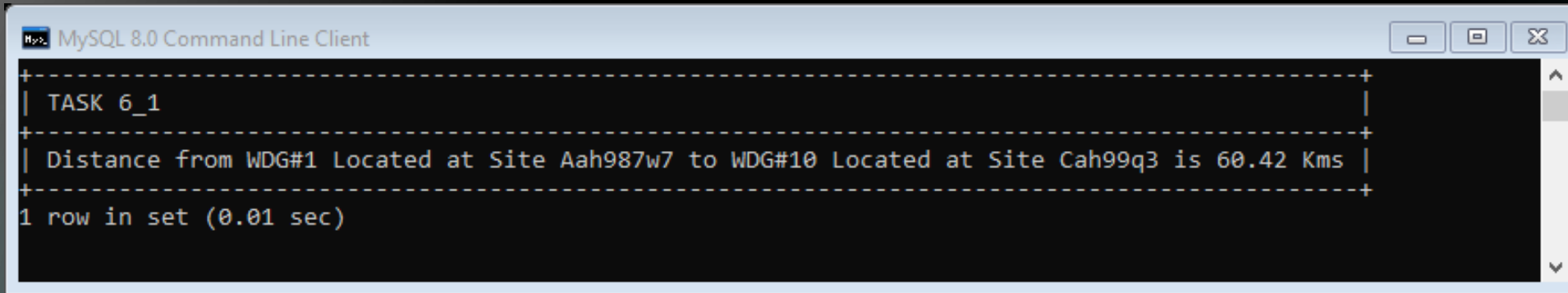
```
MySQL 8.0 Command Line Client
+-----+
| TASK 5 |
+-----+
| Site Offline...Distance Unknown |
+-----+
1 row in set (0.00 sec)

+-----+
| TASK 5 |
+-----+
| Distance to location [0:0] from Eaw99q12 is 179.23 Km |
+-----+
1 row in set (0.00 sec)
```

Task 6

8

- ▶ Create the function **distanceBetweenWidgets** that accepts the ID number of two widgets and prints to the shell the 2D Euclidean distance between them, *in the format shown below*.

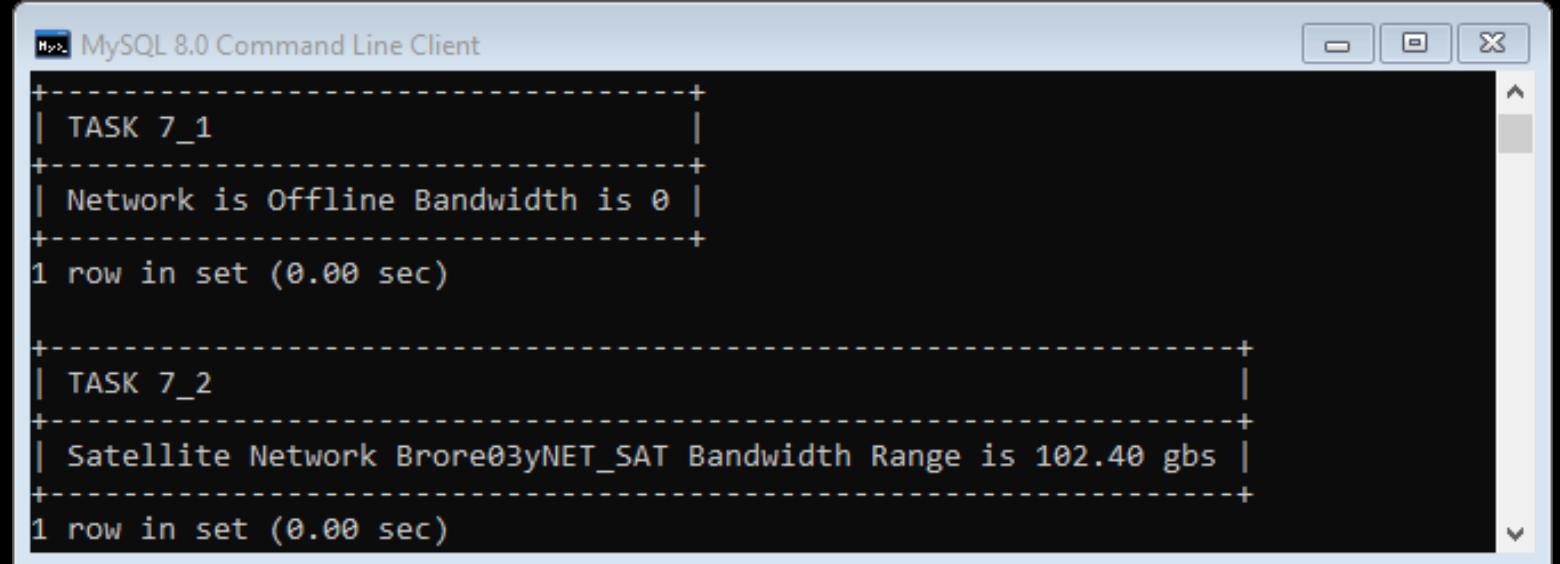


```
MySQL 8.0 Command Line Client
+-----+
| TASK 6_1 |
+-----+
| Distance from WDG#1 Located at Site Aah987w7 to WDG#10 Located at Site Cah99q3 is 60.42 Kms |
+-----+
1 row in set (0.01 sec)
```


Task 7

9

- ▶ Create the function **networkBWRange** that accepts the name of a network and prints the following information to the shell about the network *in the format shown below*.
 - Name of Network, Expanded Suffix Description, and the Bandwidth Range of the network (MaxBW – MinBW)
- ▶ Special Instructions:
- ▶ If the status of the network is 'OFFLINE' then the function prints 'Network is Offline Bandwidth is 0' to the shell.
- ▶ Expanded Suffix Description
 - **_SAT** = Satellite Network
 - **_DEF** = Defense Network
 - **_CIV** = Civilian Network
 - **_SURV** = Surveillance Network
 - **_TRACK** = Tracking Network



```
MySQL 8.0 Command Line Client
+-----+
| TASK 7_1 |
+-----+
| Network is Offline Bandwidth is 0 |
+-----+
1 row in set (0.00 sec)

+-----+
| TASK 7_2 |
+-----+
| Satellite Network Brore03yNET_SAT Bandwidth Range is 102.40 gbs |
+-----+
1 row in set (0.00 sec)
```

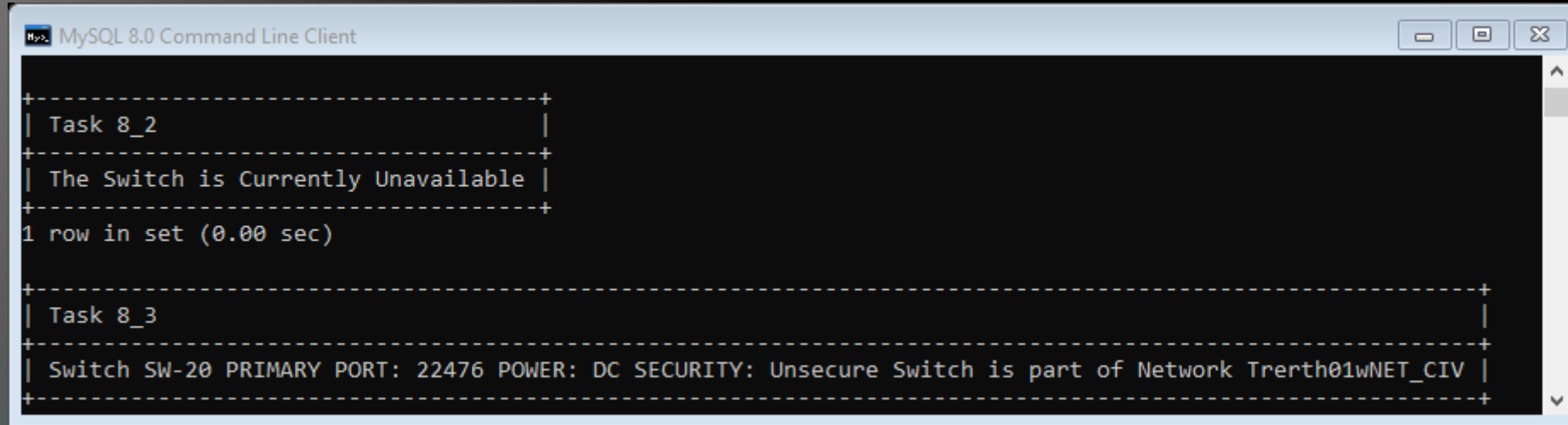
Task 8

10

- ▶ Create the function **switchConfiguration** that accepts the ID number of a switch and prints to the shell information about the switch, *in the format shown on slide 11*.
- ▶ Special Instructions:
- ▶ If the status of the network the switch is assigned to is 'OFFLINE' then the function prints 'The Switch is Currently Unavailable' to the shell.
- ▶ A switch has a Primary Port based on its ID number and whether it is stackable.
 - ▶ If number (digits) is even and Stackable is 0 Primary Port is EntryPort ... otherwise Primary Port is ExitPort
- ▶ A switch has a security rating based on:
 - ▶ If Primary Port is EntryPort switch is 'Secure Switch' ... otherwise switch is 'Unsecure Switch'
- ▶ A switch has a power source based on its PoE:
 - ▶ If PoE is 1 then power source is AC otherwise it is DC

Task 8 Format

11



```
MySQL 8.0 Command Line Client

+-----+
| Task 8_2 |
+-----+
| The Switch is Currently Unavailable |
+-----+
1 row in set (0.00 sec)

+-----+
| Task 8_3 |
+-----+
| Switch SW-20 PRIMARY PORT: 22476 POWER: DC SECURITY: Unsecure Switch is part of Network Trerth01wNET_CIV |
+-----+
```