RISE 2.0 BY BCG U

IU 3.2.8 SQL Technical Test

RISE 2.0 Business & Data Analytics

AUG 2023

Instructions:

1. You have **1.5 hours** to complete this test.
2. All questions are in the following pages.
3. You are allowed to use your local MySQL workbench to test run your code. Refer to the environment setup instructions in page 3.
4. Insert your answer in the answer sheet. Refer to the answer script instructions in page 4.
5. Save your file as "**SQL_test_<your full name>.sql**" for submission.

SQL Technical Test Environment Setup

Setup Technical Test Environment

1. Download the "**sql_tech_test_schema.zip**" file and **unzip it** into your preferred folder.

2. In MySQL Workbench (local instance view), click "**Server**" on the top menu bar and select "**Data Import**".

3. Under "**Import Options**" -> "**Import from Dump Project Folder**":
   i. Click on "**...**" to open the "Browse for Folder" window;
   ii. Navigate to the **unzipped "sql_tech_test_schema"** folder and **select it**;
   iii. Click "**OK**".

4. Click "**Start Import**" on the lower right of the Data Import tab.

5. Right click on an empty space under the **SCHEMAS pane** on the left and select "**Refresh all**". You will see the "**sql_tech_test**" schema appear.

6. Right click on the "**sql_tech_test**" schema and select "**Set as default schema**".

SQL Technical Test Answer Script

Answer Script for SQL Technical Test

1. You are provided with the "**Answer sheet.sql**" file.

2. To open the "**Answer sheet.sql**" file in MySQL Workbench:
   i. Click "**File**" on the top menu bar and select "**Open SQL Script**";
   ii. Navigate to the folder where you saved the "Answer sheet.sql" file;
   iii. Select "**Answer sheet.sql**" and click "**Open**".

3. You will need to enter all your SQL queries (answers) in the "Answer sheet.sql" file, under the respective section for each question.

4. Remember to save your file intermittently.

5. Rename your file as "**SQL_test_<your full name>.sql**" before submission.

6. You will only need to submit the completed .sql file at the end of the SQL Technical Test.

Question 1 – B2B Software Company

A B2B software company needs a query to generate a report that lists all client accounts, their usage for the current billing cycle (Sep 2023), and the corresponding billing amount. Each client has a specific rate per software usage.
The output should include these 3 columns:

- id: The unique identifier of the client account.
- total_usage: The total usage of software by a specific client in the current billing period.
- total_cost: The total cost of the software usage for a specific client in the current billing period. This cost is calculated as the sum of all usage for a client in the current billing period, multiplied by the client's rate and rounded to two decimal places.

The result should be sorted in descending order by cost, and show only Sep 2023 data. Hint: use YEAR() and MONTH().

Schema:

CLIENT		
Name	Type	Description
id	Integer	The ID of the client. This is a primary key.
rate	Double	The specific rate per usage for the client.

DT_USAGE		
Name	Type	Description
id	Integer	The ID of the client. This is a primary key.
dt	Varchar(19)	The date of usage in yyyy-mm-dd format.
day_usage	Integer	The total usage in that day by the client.

Sample Input:

CLIENT	
id	rate
1	8.691
2	5.032
3	3.431
4	9.8
5	1.95

DT_USAGE		
id	dt	day_usage
3	2023-09-17	13
1	2023-09-14	6
2	2023-09-09	12
2	2023-09-01	2
4	2023-08-03	14

Sample Output:

id	total_usage	total_cost
2	14	70.45
1	6	52.15
3	13	44.6

Note: Sample output is for reference of output format only and may not be the actual output based on dataset provided

Question 2 – University

Write a query to retrieve a list of courses and the count of students who are 20 to 22 years old, inclusive, majoring in these 2 courses: Computer Science or Engineering.
Sort the results in descending order of course names.

Schema:

UNIVERSITY		
Name	Type	Description
id	Integer	The ID of the student.
name	String	The name of the student.
course	String	The course taken by the student.
age	Integer	The age of the student.

Sample Input:

UNIVERSITY			
id	name	course	Age
1	Sari	Computer Science	22
2	Esma	Engineering	25
3	Banky	Engineering	22
4	Paddie	Political Science	21
5	Roley	Computer Science	21

Sample Output:

course	count_of_students
Engineering	1
Computer Science	2

Note: Sample output is for reference of output format only and may not be the actual output based on dataset provided

Question 3 – Library

A library has several books from different genres. They lend books to members each month and would like a report.
Write a query to fetch the month, name of the genre, and the total number of books lent that month.
Order the report by month and genre name.

Schema:

LIBRARY		
Name	Type	Description
id	Integer	The ID of the lending activity.
lend_date	String	The date of when the books are lent.
genre	String	The genre of the books.
quantity	Integer	The number of books lent in one activity.

Sample Input:

LIBRARY			
id	lend_date	genre	quantity
1	2023-05-14	Thriller	5
2	2023-03-03	Romance	7
3	2023-03-05	Romance	5
4	2023-04-18	Biography	2
5	2023-06-21	Historical Fiction	4

Sample Output:

month	genre	total_quantity
3	Romance	12
4	Biography	2
5	Thriller	5
6	Historical Fiction	4

Note: Sample output is for reference of output format only and may not be the actual output based on dataset provided

Question 4 – Retail Store

A retail store maintains a CUSTOMER table with information about its customers. Each row contains information of one customer. Write an SQL query to create a list containing two columns. The first column should display the name of a customer who has made fewer purchases than another customer. The second column should display the name of a customer who has made more purchases. Include all possible combinations of customers with different purchase quantities. Sort the list in ascending order, first by the ID of the customer with fewer purchases, then by the purchase quantity of the customer with more purchases.

Schema:

CUSTOMER		
Name	Type	Description
id	Integer	The ID of the customer.
name	String	The name of the customer.
purchase	Integer	The purchase quantity of the customer.

Sample Input:

CUSTOMER		
id	name	purchase
1	Gery	65
2	Dorolisa	163
3	Rozanne	28
4	Morton	3

Sample Output:

name	name
Gery	Dorolisa
Rozanne	Gery
Rozanne	Dorolisa
Morton	Rozanne
Morton	Gery
Morton	Dorolisa

Note: Sample output is for reference of output format only and may not be the actual output based on dataset provided

Question 5 – Restaurant

A restaurant keeps records of its menu items and their respective cuisines in two tables: MENU_ITEM and CUISINE. Write a SQL query to find the cuisine that has the highest average menu item price. Show the name of the cuisine and its average menu item price (rounded to two decimal places).

Schema:

MENU_ITEM		
Name	Type	Description
id	Integer	The ID of the menu items.
food_name	String	The name of the menu items.
cuisine_id	Integer	The ID of the cuisine.
price	Double	The price of the menu items

CUISINE		
Name	Type	Description
id	Integer	The ID of the cuisine.
cuisine	String	The type of the cuisine.

Sample Input:

MENU_ITEM			
id	food_name	cuisine_id	price
1	Key lime pie	1	26.12
2	Nigiri	2	29.53
3	Bisque	3	4.05
4	Sushi	2	4.39
5	Tempura	2	18.04

CUISINE	
id	cuisine
1	American
2	Japanese
3	French

Sample Output:

cuisine	avg_price
American	26.12

Note: Sample output is for reference of output format only and may not be the actual output based on dataset provided

SQL Technical Test

End of Test Submission

1. If you have yet to do so, save and rename your SQL answer sheet file as "**SQL_test_<your full name>.sql**".

2. Follow the instructions of the TA and submit only your SQL answer sheet file (.sql file).

3. Congratulations! You have completed the SQL technical test!


RISE2.0
BY BCGU