



Class:

S7 ICT

Date:

Monday, May the 16th, 2022

Teacher:

Mr Barsamian

B Test — With computer

Family name: _____

First name: _____

Grade: ___ / 10

Duration: 1 hour (60 minutes).

*This test has to be done both on paper and on computer.
At the end of the test, make sure to upload the python file
on the Teams assignment (or on your teacher's USB key).*

*Some questions are bonuses, and it is highly advised to
do them only at the end, when everything else has been
done.*

*If needed, the candidate can also handle some comments
inside the code or on paper.*

*Please keep track of the clock, and avoid spending too
much time on a question. Stay focused, and good luck!*



Short description of this work:

You are working in a big chocolate company. You are in charge of the database.

1 Introduction

0 points

Please start by downloading the following files; you'll have to update the python file for this test:

http://www.barsamian.am/2021-2022/S7ICTB/BTest_Chocolates.py

http://www.barsamian.am/2021-2022/S7ICTB/BTest_Chocolates.sql

The big picture of the database is the following: there is a table containing data about the cocoa producers, and another table containing data about the chocolate bars that your company is selling:

- producers: id, name, country_name
- chocolates: #producer_id, cocoa_level, price, type

In the table “producers”, the primary key is the id (an integer). Each producer has a name and a country of origin.

In the table “chocolates”, the primary key is the couple (producer_id, cocoa_level). The producer_id is an external key, it gives the id of the chocolate producer. The cocoa_level is the percentage of cocoa in the chocolate (it is stored as an integer between 0 and 100). Then comes the price of the chocolate bar, and last the type of the chocolate. There are three main types of chocolate (white, milk, black), and each chocolate bar can also contain additional ingredients (nuts, almonds, fruits...).

We give in Table 1 and Table 2 the full tables of the database on which you'll work for this test.

id	name	country_name
1	Jose Garcia	Peru
2	Cacao Tree	Brazil
3	Alfonso	Benin
4	Black Cats	Ghana
5	Sweet Coop	Ghana
6	Daily Trumpets	Peru
7	White Hats	Salvador
8	Famous Trees	Ethiopia

Table 1: The cocoa producers.

producer_id	cocoa_level	price	type
3	50%	2	black
1	75%	2.3	black
4	30%	1.8	white
8	50%	1.5	black with almonds
5	65%	1.9	black with grapefruit
4	45%	2.3	milk
5	45%	2.5	milk with nuts
6	85%	3.1	strong black
2	75%	2.3	black

Table 2: The chocolate bars.

2 Questions

10 points

For each of the following questions, you must write a single SQL request that answers the question. You can answer on paper or in the Python file.

1. Which chocolate bars contain more than 50% of cocoa?
2. Michel wants to buy a chocolate bar for his friend. He wants to spend at least 2€, and he cannot spend more than 3€. Which bars can he buy?
3. Which producers come from Peru?
4. Which producers do not come from Peru?
5. Which chocolate bars contain cocoa from a Peruvian producer?
6. Which chocolate bars contain black chocolate?

BONUS How many chocolate bars contain cocoa from African producers?

Please answer the following questions on paper.

7. In the “chocolates” table, the primary key is the couple (producer_id, cocoa_level). What does it mean?
8. Your company received a box of chocolate bars from the producer Cacao Tree (producer_id 2), containing 75% of cocoa. This chocolate has to be eaten quickly, so you want to sell it half the price you usually sell it. What is the current price for these chocolate bars? What would you have to change in the definition of the tables so that you could add these chocolate bars in the stock (it is not asked to do it, just to explain what you would do to make this possible)?

For this last BONUS question, you are not limited to only one SQL request. Write a code that can answer the question (write your answer in the function `doQuestionBonusTwo`).

BONUS Give, for each producer, the number of different chocolate bars that contain cocoa from their plantation.