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Work on project. Stage 4/6: Action!

Project: Coffee Machine
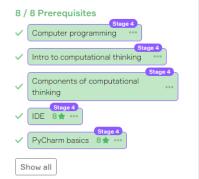
📶 Hard ❓   🕐 30 minutes

Description

Let's simulate an actual coffee machine! What do we need for that? This coffee machine will have a limited supply of water, milk, coffee beans, and disposable cups. Also, it will calculate how much money it gets for selling coffee.

There are several options for the coffee machine we want you to implement: first, it should sell coffee. It can make different types of coffee: espresso, latte, and cappuccino. Of course, each variety requires a different amount of supplies, however, in any case, you will need only one disposable cup for a drink. Second, the coffee machine must get replenished by a special worker. Third, another special worker should be able to take out money from the coffee machine.

8 / 8 Prerequisites

✓ Computer programming `Stage 4` •••
✓ Intro to computational thinking `Stage 4` •••
✓ Components of computational thinking `Stage 4` •••
✓ IDE 8⭐ ••• `Stage 4`
✓ PyCharm basics 8⭐ ••• `Stage 4`

[Show all]

Objectives

Write a program that offers to buy one cup of coffee or to fill the supplies or to take its money out. Note that the program is supposed to do one of the mentioned actions at a time. It should also calculate how many ingredients and money have left. Display the number of supplies before and after purchase.

1. First, your program reads one option from the standard input, which can be `"buy"`, `"fill"`, `"take"`. If a user wants to buy some coffee, the input is `"buy"`. If a special worker thinks that it is time to fill out all the supplies for the coffee machine, the input line will be `"fill"`. If another special worker decides that it is time to take out the money from the coffee machine, you'll get the input `"take"`.

2. If the user writes `"buy"` then they must choose one of three types of coffee that the coffee machine can make: espresso, latte, or cappuccino.
   - For one espresso, the coffee machine needs *250 ml* of water and *16 g* of coffee beans. It costs *$4*.
   - For a latte, the coffee machine needs *350 ml* of water, *75 ml* of milk, and *20 g* of coffee beans. It costs *$7*.
   - And for a cappuccino, the coffee machine needs *200 ml* of water, *100 ml* of milk, and *12 g* of coffee. It costs *$6*.

3. If the user writes `"fill"`, the program should ask them how much water, milk, coffee and how many disposable cups they want to add into the coffee machine.

4. If the user writes `"take"` the program should give all the money that it earned from selling coffee.

At the moment, the coffee machine has *$550*, *400 ml* of water, *540 ml* of milk, *120 g* of coffee beans, and *9* disposable cups.

> To sum up, your program should print the coffee machine's state, process one query from the user, as well as print the coffee machine's state after that. Try to use functions for implementing every action that the coffee machine can do.

Examples

An espresso should be as number *1* in the list, a latte as number *2* and a cappuccino as number *3*.
Options are named as `"buy"`, `"fill"`, `"take"`.

The greater-than symbol followed by space (`>`) represents the user input. Notice that it's not the part of the input.

Example 1:

```
The coffee machine has:
400 of water
540 of milk
120 of coffee beans
9 of disposable cups
550 of money

Write action (buy, fill, take):
> buy
What do you want to buy? 1 - espresso, 2 - latte, 3 - cappuccino:
> 3

The coffee machine has:
200 of water
440 of milk
108 of coffee beans
8 of disposable cups
556 of money
```

Example 2:

```
 1    The coffee machine has:
 2    400 of water
 3    540 of milk
 4    120 of coffee beans
 5    9 of disposable cups
 6    550 of money
 7
 8    Write action (buy, fill, take):
 9    > fill
10    Write how many ml of water do you want to add:
11    > 2000
12    Write how many ml of milk do you want to add:
13    > 500
14    Write how many grams of coffee beans do you want to add:
15    > 100
16    Write how many disposable cups of coffee do you want to add:
17    > 10
18
19    The coffee machine has:
20    2400 of water
21    1040 of milk
22    220 of coffee beans
23    19 of disposable cups
24    550 of money
```

Example 3:

```
 1    The coffee machine has:
 2    400 of water
 3    540 of milk
 4    120 of coffee beans
 5    9 of disposable cups
 6    550 of money
 7
 8    Write action (buy, fill, take):
 9    > take
10    I gave you $550
11
12    The coffee machine has:
13    400 of water
14    540 of milk
15    120 of coffee beans
16    9 of disposable cups
17    0 of money
```

↱ Write a program

Code Editor   IDE

Python

```python
 1  # Write your code here
 2  water_in_storage = int(input("Write how many ml of water the coffee machine has:\n"))
 3  milk_in_storage = int(input("Write how many ml of milk the coffee machine has:\n"))
 4  coffee_beans_in_storage = int(input("Write how many grams of coffee beans the coffee machine has:\n"))
 5  number_of_coffee = int(input("Write how many cups of coffee you will need:\n"))
 6
 7  water_per_cup_coffee = 200
 8  milk_per_cup_coffee = 50
 9  coffee_beans_per_cup_coffee = 15
10
11  total_water = number_of_coffee * water_per_cup_coffee
12  total_milk = number_of_coffee * milk_per_cup_coffee
13  total_coffee_beans = number_of_coffee * coffee_beans_per_cup_coffee
14
15  water_remaining = water_in_storage - total_water
16  milk_remaining = milk_in_storage - total_milk
17  coffee_beans_remaining = coffee_beans_in_storage - total_coffee_beans
18
19  extra_coffee_1 = water_remaining // water_per_cup_coffee
20  extra_coffee_2 = milk_remaining // milk_per_cup_coffee
21  extra_coffee_3 = coffee_beans_remaining // coffee_beans_per_cup_coffee
22
23  possible_extra_coffee = min(extra_coffee_1, extra_coffee_2, extra_coffee_3)
24
25  # print("For 25 cups of coffee you will need:")
26  # print(f"{total_water} ml of water")
27  # print(f"{total_milk} ml of milk")
28  # print(f"{total_coffee_beans} g of coffee beans")
29
30  if total_water <= water_in_storage and total_milk <= milk_in_storage and total_coffee_beans <= coffee_beans_in_storage:
31      if possible_extra_coffee >= 1:
32          print(f"Yes, I can make that amount of coffee (and even {possible_extra_coffee} more than that)")
33      else:
34          print("Yes, I can make that amount of coffee")
```

```python
35  else:
36      cups1 = water_in_storage // water_per_cup_coffee
37      cups2 = milk_in_storage // milk_per_cup_coffee
38      cups3 = coffee_beans_in_storage // coffee_beans_per_cup_coffee
39      max_cups = min(cups1, cups2, cups3)
40      print(f"No, I can make only {max_cups} cup(s) of coffee")
41
```

Continue   This problem has been changed. Reload?   Solutions (490)

Show discussion (637)