CSE308

Offline 2

Creational Design Pattern

Problem Description:

Suppose you are running a shop where you intend to sell various shakes such as *Chocolate Shake, Coffee Shake, Strawberry Shake, Vanilla Shake, and Zero Shake*.

All these shakes contain milk. All these shakes except for Zero Shake include sugar. The additional ingredients are as follows:

➔ Chocolate syrup and chocolate ice cream for Chocolate Shake
➔ Coffee and jello for Coffee Shake
➔ Strawberry syrup and strawberry ice cream for Strawberry Shake
➔ Vanilla flavoring and jello for Vanilla Shake
➔ Zero Shake includes sweetener instead of sugar, along with vanilla flavoring and sugar-free jello.

The base prices for the shakes are as follows:

➢ Chocolate Shake: Tk 230
➢ Coffee Shake: Tk 250
➢ Strawberry Shake: Tk 200
➢ Vanilla Shake: Tk 190
➢ Zero Shake: Tk 240

You permit customers to customize their shakes with the following options:

★ All shakes can be made lactose-free by substituting almond milk for regular milk. However, making the shake lactose-free adds Tk 60 to the base price.
★ All shakes can have candy added on top, which adds Tk 50 to the base price.
★ All shakes can have cookies added on top, resulting in an additional Tk 40 to the base price.

Now, for your shop, you want to develop an order management system, specifically a menu program in Java console. You should incorporate the concept of design patterns and ensure that object creation handles all the aforementioned cases.

The details of the ordering system are outlined below:

- ❖ Your system will prompt the user to place an order. If 'o' is pressed, an order opens, and if 'e' is pressed, the order closes.
- ❖ An order can contain multiple shakes. It is essential to have at least one item in an order before closing it.
- ❖ While adding a shake to an order, also take the user's choice for customization (adding ingredients).
- ❖ Once placed, an order cannot be changed.
- ❖ Note that there can be multiple orders during a run. However, the orders are sequential. If one tries to open another order while a current order is ongoing, you should show an error message and ask if they want to include something else in the current order.
- ❖ Additionally, consider a few more boundary cases and include those in your code.
- ❖ After the order placing is done, the code should output the names of the shakes ordered, the base and added ingredients, and the individual prices. In case of a price increase, mention why the pricing increased. Perform this using a print function. Also, output the total price of the order.

Submission instructions:

Enclose all the source files inside a single folder named after your 7 digit student id. For example, *2005001* will enclose all the files in a folder named *2005001*. Then, zip the folder (the name of the zipped file will also be the same as the folder, i.e., *2005001.zip*). Submit the zip file in moodle.