Homework 4

CPS 240 Due: 14 Sun 2018

Introduction

The factor method pattern is one of the twenty-three well-known design patterns, outlined by the "Gang of Four" in the 1990s. This is used when one does not show the creation logic to the programmer (such as with API usage) and instead use the same 'factory method' to instantiate different classes.

Without Factory Method:

```
Vehicle v1 = new FordFocus();
Vehicle v2 = new FordF150();
```

Factory Method alternate:

```
Vehicle v1 = FordFactory("focus");
Vehicle v2 = FordFactory("f150");
```

This is particularly useful if we know something is subject to change. If we have a website about buying vehicles and we add a new car type, FordFusion, we would have to go throughout our code and manually add that selection option to every situation that FordFocus and Ford150 appear. But with the factory method, it takes in a String (in this example). So, we could simply just have it read from a list of available car names and add "fusion" to the list. Now, fusion is available everywhere in the code without having to manually search through it so long as it is reading from the updated list. All we would have to do is add a 'fusion' option in the FordFactory. This limits instantiation to one centralized area to provide for better organization.

Assignment

1) Look through the code that was provided on BlackBoard. **Read this thoroughly**. There is an abstract parent class, Appliance, and two subclasses that inherit it (Refrigerator and CoffeeMaker). These subclasses will be the items for the factory method, ApplianceFactory. The class, Main, is the driver class that contains the entry point, main().
2) Add three new appliance classes that inherit Appliance: Microwave, Stove, and Washer. Make sure it follows the general format of the other Appliance subclasses, Refrigerator and CoffeeMaker. So essentially make sure they have a toString() method and your own constructor.
3) Update these new appliances in the buildAppliance() method in the ApplianceFactory class.
4) In Main, instantiate an example of the Microwave, Stove, and Washer using the buildAppliance() method and add them to the ArrayList. You will not receive credit if you do not use the buildAppliance() method to instantiate the objects. If you are having difficulty, look at how it was already written with the other appliance objects.
5) Submit the assignment on BlackBoard. Only submit the .java files.