ASSIGNMENT 2

SMART HOME SYSTEM

BBM104

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Define of the problem:

There is a smart home system which includes smart lamp,smart lamp with color,smart plug and smart lamp with color.Our system should keep details about these devices, give some commands to these devices.For smart plug calculate the total consumed voltage.For smart camera calculate the total megabyte that camera has used.

Solution Approach:

Firstly created methods for every command and get every commands from text line by line and executed them. Created 4 objects for every devices and created an arraylist for keeping all of the objects that system ever created. Also made variables that can make some commands more easily.Used inheritance for avoiding copy pasting.

For adding command ,hence there is different add commands for same devices there has constructors more than one of one device.There has switch case operator which changes according to length of the command and after creating the object it appends to the arraylist of that device type's arraylist and also an arraylist which contains all of device name's.

For calculating total consumed megabyte there is 2 LocalDateTime variable which is statusOnDate and statusOffDate when device switched off it calculates the time difference between these variables and multiplies it with megabyte per record value.

Calculating the total consumed voltage was the hard part because plug only consumes energy when it is also plugged in and switched on. So basically the 2 variables becomes between the times which plug is also plugged in and switched on and with the help of a boolean plug variable it calculates the consumed voltage.

Benefits The System

The system helps us to control the devices easily. And it helps us that access their informations.Lastly, it shows how much voltage did a smart plug used or how much megabyte did a smart camera used.

Benefits The OOP

It prevents the copy paste some variables and methods.And it makes code organized clean and understandable.

4 Pillars Of OOP

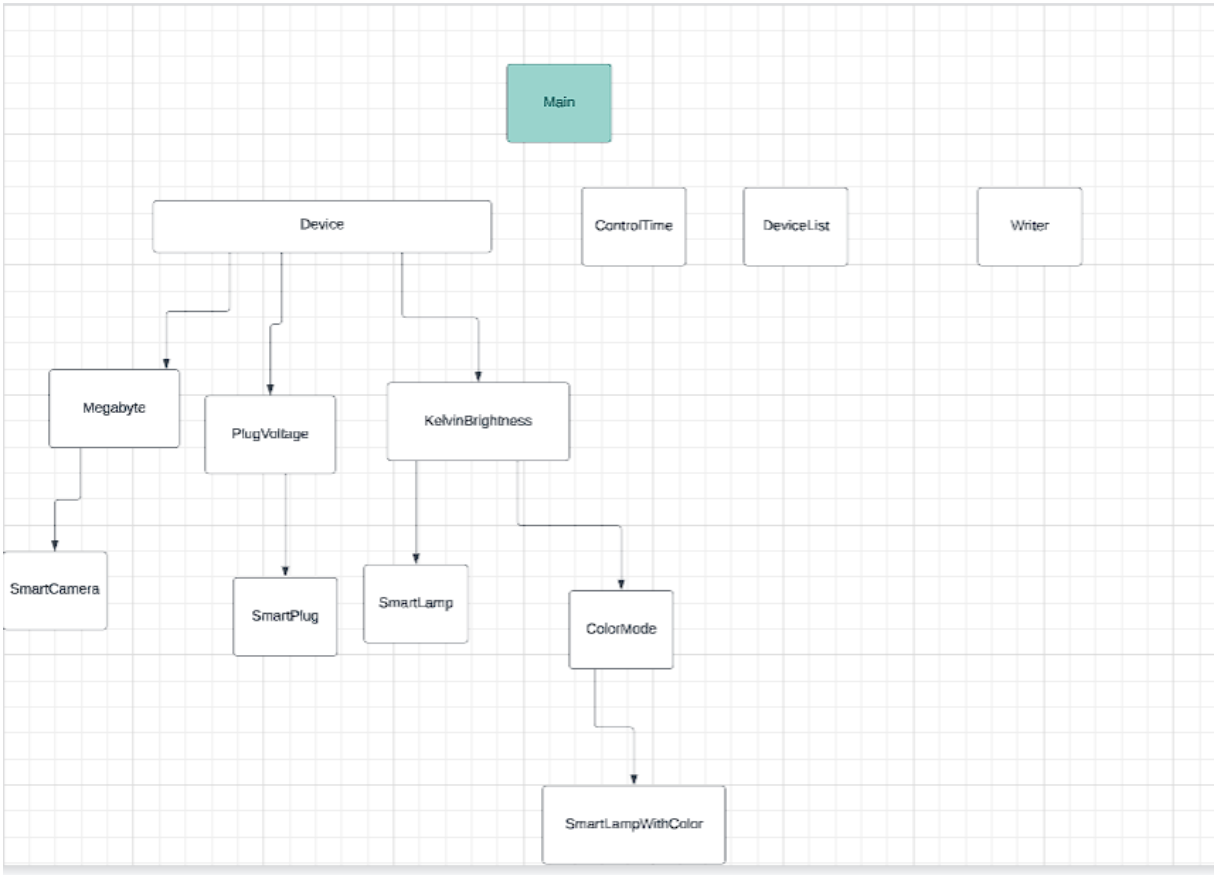
Encapsulation: It maintains some variables and methods unreachable directly.You can only reach them with methods. With that it provides security and maintainability for the code.

Abstraction: It hides the phases of the making and shows you just the product.It makes code more adaptable and cleaner.

Inheritance: It provides using the same methods and variables from different classes.It higly prevent copy paste and provide you to make a class hierarchy.

Polymorphism: It provides to using a method with different ways in different objects.It is handy tool for making code more readable and reusable.

UML DIAGRAM


Main
Device
ControlTime
DeviceList
Writer
Megabyte
PlugVoltage
KelvinBrightness
SmartCamera
SmartPlug
SmartLamp
ColorMode
SmartLampWithColor

There is 13 classes in this code.Main class is the class that takes the input and compiles it.It directs every command to their methods.Writer class is the class that acquire printing the output to the text file.DeviceList class contains lists of the class and some operations about that and ControlTime class has methods about times and the current time. The class hierarchy starts with Device class.It contains the variables that every device has and some methods about them.Megabyte class contains details about smart camera.The other classes is like megabyte class. PlugVoltage contains details about smartPlug class and it goes like that.SmartPlug,SmartCamera,SmartLamp and SmartLampWithColor contains only their constructors.