Group Member:

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Group 31

Course: EECS3311

Section: B

Software Project: The Converter

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Part I:

a. The project is about creating an application which aims to convert a unit of value in centimeters into the units in feet and meter respectively.

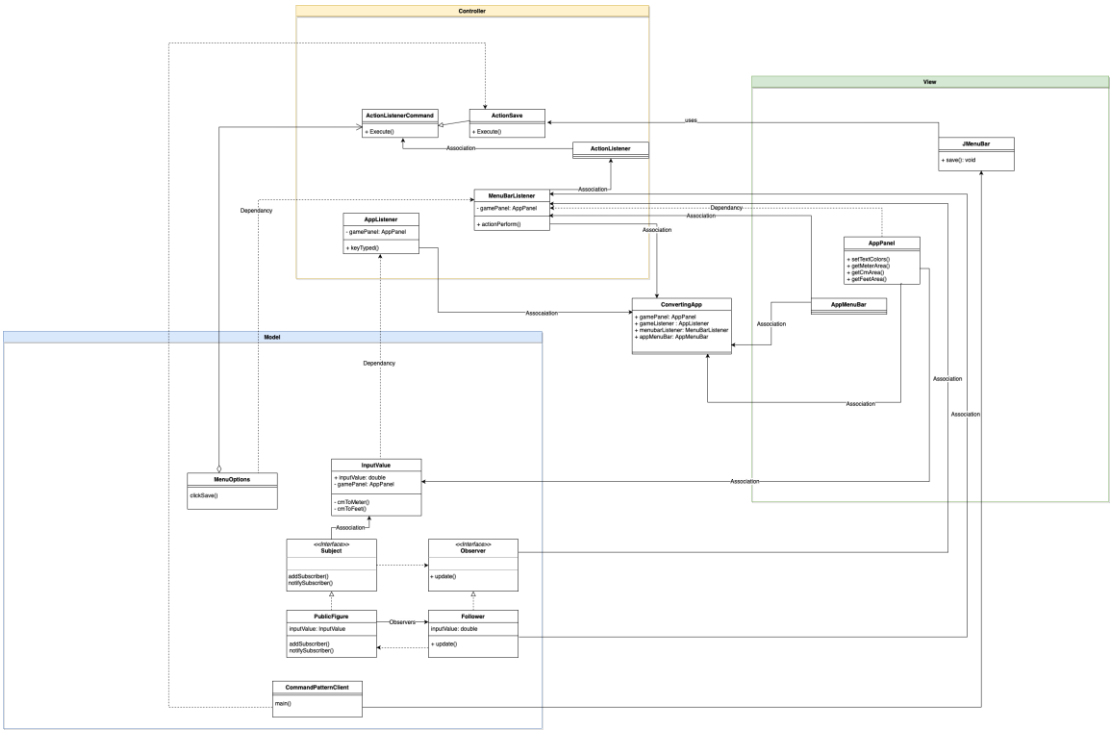
b. The difficulties we faced are to store the input in the yellow view and automatically update values on the green and orange views.

c. The project will use the knowledge of OOD, which includes states, behaviors and interactions. When we run the program, all three views will be set in 0 values, which is the initial state. However, when we modify the value in yellow view and click “Save input centimeters” under the menu “Update model”, the ValueToConvert notifies FeetConversionArea and MeterConversionArea, and the Controller will set the value in ft on the green view and in meter on the orange view, which becomes a new state in the Model. During the conversion, it shows the behavior change on both green and orange views, and their interactions with the yellow view. In addition, it is also obvious that there is an interaction between the Controller and the Model.

d. We will first analysis the project, then we know how to create an UML diagram by showing the relationships, and then implement the project based the diagram.

Part II:

a.



It is found that the diagram can be split into three parts: Controller, View and Model. Model responds the request from the Controller, and the View displays the data in the Model. The Controller is responsible for handling the interaction between View and Model. In this diagram, AppPenel and AppMenuBar are defined as View, whereas ActionListener, AppListener, and MenuBarListener are defined as Controller. The Main is the class CovertingApp. As well, the Model contains InputValue, and other relevant classes that function on InputValue.

b.

The pattern used in the diagram are Observer and Command.

Observer shows the one-to-one relationship, which means one variable changes, and other dependents will be updated automatically. In this case, the Subject will be the input in the centimetersConversionArea, while the Followers are values in both FeetConversionArea and MeterConversionArea. Therefore, Followers will depend on Subject.

Command pattern is used to satisfy requests from the client. For instance, the client can save the data by clicking “Save input centimeters” by the function of AppMenuBar and ActtionListener.

c.

The OO design principles applied in the project are abstraction and encapsulation. For the abstraction, it is an act of hiding unnecessary details of a class to others. As to the View part, the AppMenuBar just displays the values in feet and meter after conversion, without showing how the conversion works from cm to ft or cm to meter. For the encapsulation, it is the interaction between objects in different classes. From the diagram, it shows the interactions between AppListener and InputValue, AppListenser and CovertingApp, as well as MenuBarListener and ConvertingApp.

Part III:

View package

AppMenuBar: generating the menu bar

AppPanel: generating the main panel

Model

InputValue(ValueToConvertert): get the value from CentimetersConversionArea in centimiter

Main

ConvertingApp: launching the application

Controller

MenubarListener: load every values from user typing.

Tools/libraries: Eclipse IDE 2021-09 finally but I have used the one on VirtualBox from the department, and JDK is JDK 16 version.

Part IV:

In conclusion, it would be a successful project although it is a kind of easy project Firstly, the part of creating panel and creating menu bar went well once it implemented but I tried lots of time on shortcut key, which I could easily setting the shortcut key as only one key but not ALT+F at the beginning.

The advantages of completing the lab in group is that I could easier to know about how the project work and getting ideas of building project structure because we could get the good ideas from others and give up wrong thinking we did before. The disadvantages would be we are in different time zone, it is hard for us to book a time for meeting.

We are 3 member group who are ZhengshengLi(216193443), Siqin Zhang(214838023) and Zihao Wu(214808455). Firstly, we discuss the whole project (Zihao Wu gave the idea about how to design and report partIV, Siqin Zhang wrote the code and report partIII, Zhengsheng Li drew the diagram and report partI&II)and give each other some advices about the mini game. After writing, we talked about our mind and debug to imporve the project.