

CoSc 10403
Lab # 4 :
Using if's and actionPerformed()

Part I, Experiment – classtime, Tuesday Mar 3rd, 2020

Part II, Program - by midnight, Tuesday Mar 3rd, 2020

Note also that we provide a zipped folder (i.e. images.zip) that you have to unzip to get the required images.

Part I MUST be typed and submitted to your instructor at the **BEGINNING** of class on the due date. **IT WILL NOT BE ACCEPTED LATE.** *Failure to print, left it in your dorm room, etc. are unacceptable excuses.*

Part II is the programming component. It should be submitted the Lab4.java that you are instructed to build for every Java **JFrame** that you create in this class using D2L to submit the **Lab4.java** file for grading.

You should be aware that there is a Java reference readily available on the web (<https://docs.oracle.com/javase/7/docs/api/>) that can be used to find information on all Java packages, classes, methods, etc. Some questions in Part I are designed to help familiarize you with this web site.

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Part I. Experiment. (20%).

Remember that all your classes must include a header with comments similar to the one for Lab1.

Use the Java code provided in the file "Lab4Experiment.java to create a Lab5Experiment. **This Lab4ExperimentCode in your Lab4Project.** Put the file in your project's **src** folder to run the experiment. (Follow the same procedure that you used to create your past labs).

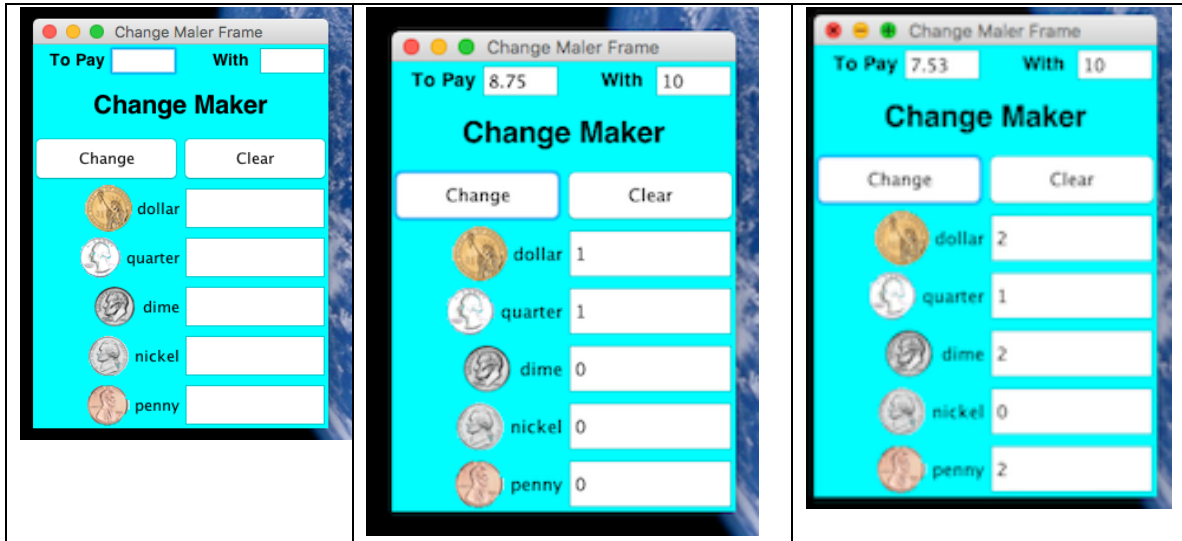
You will experiment with this code in answering some of the questions in this section. Testing this code will allow you to become familiar with the use of the **extends** clause in java by extending a **JFrame** class. Also you will get practice using *actionPerfomrd()* method required when implementing an **ActionListeners**.

REMEMBER - ALL EXPERIMENTS MUST BE TYPED - NOT HANDWRITTEN!!!!

1. What is the purpose of the import `java.awt.event.*`;
2. What happens when you remove the line `submitB.addActionListener(this)`;
3. In the method `numberConvert(int year)`, what happens if you remove the line `return roman`? Why?
4. In the heading of method `numberConvert(int year)`, what does the word **String** mean?
5. In the heading of method `numberConvert(int year)`, what is the class of the object passed as parameter?
6. In examining the methods defined in the **JButton** class the method `addActionListener()` is not present, yet you have the ability to use it with method calls. How?
7. In the method `numberConvert(int year)`, what does the line `rest=year % 1000`; do?;
8. In the method `numberConvert(int year)`, what does the line `else if(unit==5) roman=roman+"V"` do?;
9. What happens in the *Lab4Experiment1* if you type "two thousand" in the field for the year?
10. In the method `actionPerformed(ActionEvent e)`, what does the line `String whichButton = e.getActionCommand()`; do?;

Part II. Programming. (80%)

For this assignment you are asked to develop a visual change maker app. That will accept a any amount in cash and based on the amount to pay should provide the number of coins and the denomination of each one as shown below:



Coding Strategy:

Since presumably you know how to read images and create a view with labels and icons you will need to use the define a set of JTextFields and use the setText() method to display the number of coins required.

Note that to read a number from a JTextField since it is a String you will need to parse it as a double using a lines such as

```
double amountD = Double.parseDouble(numTf.getText());
```

You will then need to convert the amount in dollars into 100 pennies to convert the double to an integer , this using a cast (int) operation:

```
int amountI = (int) amountD*100;
```

and then perform int division (/) and int (%) .To write back into the JTextField an integer you may simply use the setText() method with a null concatenation, for example:

```
amountTF.setText(""+ amountI);
```