Credit Name: CSE2140 2nd Language Programming

Assignment Name: Build A Thermostat

How has your program changed from planning to coding to now? Please explain?

Declared an int global variable as 21 so that it can be used within methods in the main method.

```
public class BuildAThermostat
{
    //Global variable
    public static int temperature = 21;
```

In the main method I created objects for the red and green buttons and LEDs.

```
public static void main(String[] args) throws Exception
{
    //Create objects for red and green buttons
    DigitalInput redButton = new DigitalInput();
    DigitalOutput redLED = new DigitalOutput();
    DigitalInput greenButton = new DigitalInput();
    DigitalOutput greenLED = new DigitalOutput();
```

Addressed each object, telling the program which port to find it, setting the setIsHubPortDevice as true.

```
//Address objects
redButton.setHubPort(0);
redButton.setIsHubPortDevice(true);
redLED.setHubPort(1);
redLED.setIsHubPortDevice(true);
greenButton.setHubPort(5);
greenButton.setIsHubPortDevice(true);
greenLED.setHubPort(4);
greenLED.setIsHubPortDevice(true);
```

Created an event where the code within method will run when the data input from the red button changes, if the red button's state is true, it will decrease the temperature by 1 and print out that the tempertaure has been decreased by 1. Created an event for the green button where if the green button's state is true, it will increase the temperature by 1 and print out that the tempertaure has been increased by 1.

```
//Runs code when data input from red button changes
redButton.addStateChangeListener(new DigitalInputStateChangeListener() {
    public void onStateChange(DigitalInputStateChangeEvent e) {
        //Decreases temperature by 1°C
```

```
        if (e.getState() == true)
        {
            temperature--;
            System.out.println("Temperature decreased by 1°C");
        }
    }
});

//Runs code when data input from green button changes
greenButton.addStateChangeListener(new DigitalInputStateChangeListener() {
    public void onStateChange(DigitalInputStateChangeEvent f) {
        //Increases temperature by 1°C
        if (f.getState() == true)
        {
            temperature++;
            System.out.println("Temperature increased by 1°C");
        }
    }
});
```

Opened a connection between the program and the physical device. Will timeout if after 1 sec(1000 miliseconds) and throw execption if it cannot locate the device.

```
//Connect program to device
redButton.open(1000);
redLED.open(1000);
greenButton.open(1000);
greenLED.open(1000);
```

Using a while loop to keep the program running, it will display the current temperature in degrees Celcius. If the temperature is between 23 and 19 degreees, it will turn on the green LED and turn off the red LED. Else it will turn on the red LED and turn off the green LED. The message and any LED change will occur every 10 seconds due to the Thread.sleep.

```
//Loop keeps code running
while (true)
{
    //Display set temperature
    System.out.println("Current temperature: " + temperature + "°C");

    //Changes LED colour depending on range within temperature
```

```
    if (temperature <= 23 && temperature >= 19)
    {
        greenLED.setState(true);
        redLED.setState(false);
    }
    else
    {
        redLED.setState(true);
        greenLED.setState(false);
    }

    Thread.sleep(10000);
}
```