Assignment 2

CPSC 1181

Due: 7th August 2021 @ 11.59PM

Max Marks - 30

Objectives:

- Use Threads and GUI.

Instructions:

- Solve the programs as per instructions given in each question. Use the basic template with comments is being shown by the instructor in each problem definition.
- Complete all the exercises and submit your zip file prior to the due date.

Submission:

- All the problems in this assignment must be kept in one zip file. Please remove the package details from the Java files.
- Ensure you name your zip file matching the pattern: **LastName_FirstName_ID_Assignment2.zip**
- Unzipped submissions will be automatically given ZERO.

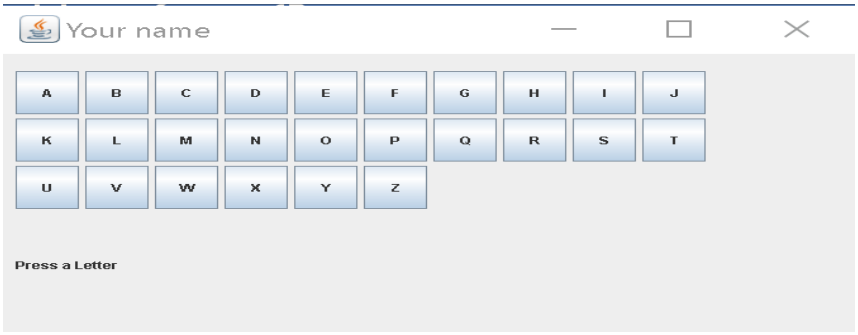
Problem 1:

Write a program that displays a moving text, as shown in Figure below. The text moves from left to right circularly. When it disappears in the right (b), it reappears from the left (a). The text freezes when the mouse is pressed and moves again when the mouse button is released. [10 Marks]

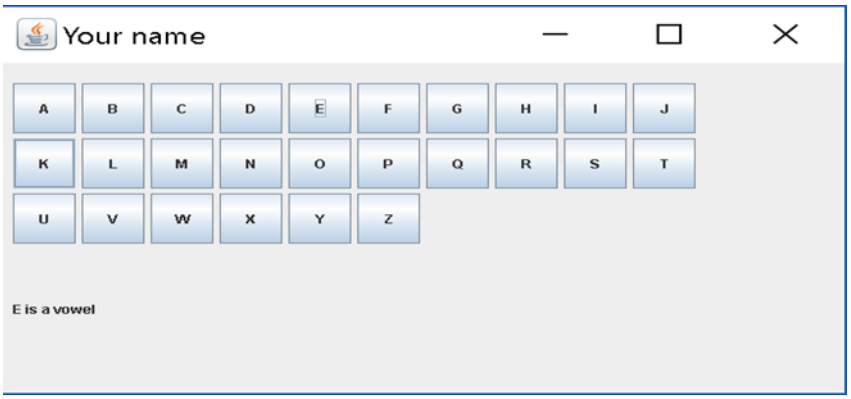
(a) (b)

Problem 2:

Create an educational GUI program for children that distinguishes between vowels and consonants as the user clicks buttons. Create an array of Buttons of size of 26, each labeled with a different letter of the alphabet (Must use Loops/Classes to code the button, Should not code 26 buttons separately). Display the Buttons with letters 'A' to 'J' on the first row, 'K' to 'T' on the second row, and the rest of the letters on the 3rd row. When the user clicks a Button, a Label's text should change to identify the button's letter as a vowel or consonant. Display the application with a Title displaying your name on the upper left corner. [10 Marks]



Sample output for when the user presses 'e':



Problem 3:

Given the code on the following page, what is printed to the console? Also briefly summarize what is the code executing? Write the explanation in the code itself with Multi-Line Comments. [5 Output + 5 Explanation]

```
public class SharedData
{
   private int value;

   public void setSharedData(int n)
   {
      value = n;
   }
   public int getSharedData()
   {
      return value;
   }
}
```

```
public class Test {

    public static void main(String[]
args) {
       SharedData sd = new SharedData();
       MyThread t1 = new
MyThread(sd,1,"T-1");
      t1.start();
       MyThread t2 = new
MyThread(sd,0,"T-2");
      t2.start();
    }
}
```

```
public class MyThread implements Runnable {
       private SharedData sd ;
       private int code;
       private String name;
       public MyThread (SharedData sd, int code, String name) {
              this.sd = sd;
              this.code = code;
              this.name = name;
              System.out.println("Creating : " + name);
       }
       public void run() {
              int s;
              System.out.println("Running : " + name);
              for (int i=1 ; i <= 3 ;i++) {
                     if (code == 1) {
                            System.out.println("Set " + i);
                            sd.setSharedData(i);
                            s = i * 100;
                     } else {
                            System.out.print("get " + i + ", ");
                            System.out.println(sd.getSharedData());
                            s = 50 ;
                     }
                     try {
                            Thread.sleep(s);
                     } catch (InterruptedException e) {
                            System.out.println(e);
                     }
              }
       }

       public void start() {
            System.out.println("Starting " +  name );
            Thread theThread = new Thread(this);
             theThread.start();
       }
}
```