



**K. J. Somaiya College of Engineering, Mumbai-77**

**Batch: B1**

**Roll No.: 1711072**

**IA No. 02**

**Grade: AA / AB / BB / BC / CC / CD / DD**

**Signature of the Staff In-charge with date**

**TITLE : OOPM IA-2**

**AIM 1:** Write a program to display characters [A...Z] and display of digits [0...9] alternatively. Create one thread for displaying characters and other to display of digits.

**Implementation Details:**

```
import java.util.*;

class Alphabets extends Thread{
    Thread t;
    Alphabets(String s){
        super(s);
    }
    public void run(){
        try{
            for(int i=0;i<26;i++){
                System.out.println((char)(i+65));
                Thread.sleep(500);
            }
        }
        catch(InterruptedException e){}
    }
}

class Numbers extends Thread{
    Thread t;
    Numbers(String s){
        super(s);
    }
}
```



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```
}  
public void run(){  
    try{  
        for(int i=0;i<26;i++){  
            System.out.println(i%10);  
            Thread.sleep(500);  
        }  
    }  
    catch(InterruptedException e){}  
}  
}  
  
class Main{  
    public static void main(String []args){  
        Alphabets a=new Alphabets("Alphabets");  
        Numbers n=new Numbers("Numbers");  
        a.start();  
        n.start();  
    }  
}
```

**My code can be found at:**  
**<https://repl.it/@arghyadeep99/OOPM-IA2-Q1>**



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### Output Screen:

A	0
0	5
B	P
1	6
C	Q
2	7
D	R
3	8
E	S
4	9
5	T
F	0
6	U
G	1
7	V
8	2
H	W
9	3
I	X
J	4
0	Y
K	5
1	6
L	7
2	8
M	9
3	0
N	1
4	2

**AIM 2:** Write a program to accept an age from the user and if the age $\leq$ 18 then the user defined exception should be thrown and appropriate message should be printed.

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### Implementation Details:

```
import java.util.*;

class IllegalAgeException extends Exception{
    int age;
    IllegalAgeException(int age){
        this.age=age;
    }
}
```



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```
}  
public String toString(){  
    return "Not yet eligible to vote!";  
}  
}  
  
class Main{  
    public static void main (String[] args) throws IllegalAgeException{  
        int age;  
        Scanner sc=new Scanner(System.in);  
        System.out.print("Enter age: ");  
        age=sc.nextInt();  
        try{  
            if(age<18)  
                throw new IllegalAgeException(age);  
            else  
                System.out.println("You are above legal age to vote.");  
        }  
        catch(Exception e){  
            System.out.println("Error has occurred, check it out: "+e);  
        }  
    }  
}
```

**My code can be found at:**

**<https://repl.it/@arghyadeep99/OOPM-IA2-Q2>**

**Output Screens:**

```
Enter age: 20  
You are above legal age to vote.
```

```
Enter age: 14  
Error has occurred, check it out: Not yet eligible to vote!
```

**AIM 3:** Write a java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green with radio buttons. On selecting a button, an appropriate message with “stop” or “ready” or “go” should appear above the buttons in a selected colour. Initially there is no message shown.

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### Implementation Details:

```
import java.applet.*;
import java.awt.*;
import java.awt.event.*;
/*<applet code="Signals" width=400 height=250></applet>*/
public class Signals extends Applet implements ItemListener
{
    String msg="";
    Checkbox red,green,yellow;
    CheckboxGroup cbg;
    public void init()
    {
        cbg = new CheckboxGroup();
        red = new Checkbox("Red", cbg, false);
        yellow = new Checkbox("Yellow", cbg, false);
        green= new Checkbox("Green", cbg, false);
        add(red);
        add(yellow);
        add(green);
        red.addItemListener(this);
        yellow.addItemListener(this);
        green.addItemListener(this);
    }

    public void itemStateChanged(ItemEvent ie)
    {
        repaint();
    }

    public void paint(Graphics g)
    {
        msg=cbg.getSelectedCheckbox().getLabel();
        g.drawOval(165,40,50,50);
        g.drawOval(165,100,50,50);
        g.drawOval(165,160,50,50);

        if(msg.equals("Red"))
        {
            g.setColor(Color.red);
            g.fillOval(165,40,50,50);
            g.setFont(new Font("TimesRoman", Font.PLAIN, 30));
            g.drawString("Stop", 230,80);
        }
    }
}
```



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```
}  
else if(msg.equals("Yellow"))  
{  
    g.setColor(Color.yellow);  
    g.fillOval(165,100,50,50);  
    g.setFont(new Font("TimesRoman", Font.PLAIN, 30));  
    g.drawString("Ready", 230,140);  
}  
else  
{  
    g.setColor(Color.green);  
    g.fillOval(165,160,50,50);  
    g.setFont(new Font("TimesRoman", Font.PLAIN, 30));  
    g.drawString("Go", 230,200);  
}  
}  
}
```

**My code can be found at:**

**<https://repl.it/@arghyadeep99/OOPM-IA2-Q3>**

**NOTE: This code cannot be run on Repl.it because Repl doesn't support Applet.**

### **Output GIF:**

Attached in the submission as separate video. Also, you can check this link alternatively:

**[https://drive.google.com/open?id=1r0\\_zouBtx-qNweLxRnuDy2iGYMWPVFnv](https://drive.google.com/open?id=1r0_zouBtx-qNweLxRnuDy2iGYMWPVFnv)**

**AIM 4:** Write a program to make a package Balance in which has Account class with Display\_Balance method in it. Import Balance package in Class Employee to access Display\_Balance method of Account class. Class Employee implements interface EmpStat which has 2 methods Attendance and Salary. Display the details of Employee(like name, Attendance, Salary , Balance.

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### **Implementation Details:**



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### Account class in Balance package:

```
package Balance;
import java.util.*;
public class Account{
    public static void Display_Balance(double bal){
        System.out.println("Your balance is: "+bal);
    }
}
```

### Employee Class:

```
import Balance.Account;
import java.util.*;

interface EmpStat{
    public static void Attendance(double att){}
    public static void Salary(double sal){}
}

class Employee implements EmpStat{
    public static void Attendance(double att){
        System.out.println("Your attendance is: "+att);
    }
    public static void Salary(double sal){
        System.out.println("Your salary is: "+sal);
    }
    public static void main(String[] args){
        String name="Arghyadeep";
        System.out.println("Name: "+name);
        Account.Display_Balance(10000.5);
        Attendance(95.7);
        Salary(100000.00);
    }
}
```

### My code can be found at:

<https://repl.it/@arghyadeep99/OOPM-IA2-Q4>

### Output Screen:

```
Name: Arghyadeep
Your balance is: 10000.5
Your attendance is: 95.7
Your salary is: 100000.0
```