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20MCA0057

OBJECT ORIENTED PROGRAMMING WITH JAVA

Cyclesheet-3

1. Create a thread class to print a multiplication table for any given number 'i'. Make the main thread to produce a multiplication table for any three numbers by creating 3 threads and demonstrate it.

```
package vit_cs2;
import java.lang.Runnable;
import java.util.*;


class MultiTableThread implements Runnable
{
	Thread t;
	int num;
	MultiTableThread(int x)
	{
		num=x;
		t=new Thread(this);
		t.start();
	}

	public void run()
	{
		try
		{
			for(int i=1;i<=10;i++)
			{
				System.out.println(num+" * "+i+" = "+num*i);
				Thread.sleep(500);
			}

		}
		catch(InterruptedException e)
		{
			System.out.println(e);
		}
	}
}
public class Onee {

	public static void main(String[] args)
```

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```
	{
		// TODO Auto-generated method stub
		MultiTableThread m1=new MultiTableThread(3);
		MultiTableThread m2=new MultiTableThread(5);
		MultiTableThread m3=new MultiTableThread(7);

	}

}
```

```
7 * 1 = 7
5 * 1 = 5
5 * 2 = 10
7 * 2 = 14
3 * 2 = 6
5 * 3 = 15
7 * 3 = 21
3 * 3 = 9
3 * 4 = 12
7 * 4 = 28
5 * 4 = 20
3 * 5 = 15
7 * 5 = 35
5 * 5 = 25
7 * 6 = 42
3 * 6 = 18
5 * 6 = 30
7 * 7 = 49
5 * 7 = 35
3 * 7 = 21
7 * 8 = 56
5 * 8 = 40
3 * 8 = 24
7 * 9 = 63
3 * 9 = 27
5 * 9 = 45
7 * 10 = 70
3 * 10 = 30
5 * 10 = 50
```

2. Write a java program using threads to compute the first 25 prime numbers, and to compute the first 50 Fibonacci numbers. Set the priority of the thread that computes the Fibonacci number to 8 and the other to 5. After calculating 30 Fibonacci numbers, make that thread sleep and take up prime number computation. After computing the 25 prime numbers continue the Fibonacci number computing.

```
package vit_cs2;
import java.lang.Thread;
```

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```
import java.lang.Runnable;
import java.util.*;

class fibo extends Thread{

        public void run(){
                long   f=0;
                long   s=1;
                long   sum=0;
                System.out.print("First 50 factorial number = \n");
                System.out.print(f+" ");
                System.out.print(s+" ");
                for(int i=2;i<=50;i++){
                        if(i==25){
                                try{
                                        Thread.sleep(3000);
                                }
                                catch(Exception e){
                                        System.out.print(e);
                                }
                        }
                        sum=f+s;
                        f=s;
                        s=sum;
                        System.out.print(sum+" ");
                }
        }
}

class primeN extends Thread{

        public void run(){
        Scanner sc = new Scanner(System.in);
         int  i,n,p,count,flag;

         n=25;
            System.out.println("\nFirst "+n+" prime numbers are :-");

         p=2;
   i=1;
   while(i<=n)
   {
      flag=1;
      for(count=2;count<=p-1;count++)
      {
         if(p%count==0)
```

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```
            {
             flag=0;
             break;
            }
        }
        if(flag==1)
        {
           System.out.print(p+" ") ;
           i++;
        }
        p++;
    }
    System.out.println("\n\n");
            }
}

public class Main{
        public static void main(String[] args){
                fibo f1=new fibo();
                primeN p1=new primeN();
                f1.setPriority(8);
                p1.setPriority(5);
                f1.start();
                p1.start();
        }
}
```

```
First 50 factorial number =
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987 1597 2584 4181 6765 10946 17711 28657 46368
First 25 prime numbers are :-
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97


75025 121393 196418 317811 514229 832040 1346269 2178309 3524578 5702887 9227465 14930352 24157817 39088169 63245986 102334155 165580141 267914
```

3. Demonstrate the synchronized methods in threads by an example program. (HintBank account with operations such as Deposit(), Withdraw() and checkBalance().

```
package vit_cs2;

import java.util.*;
import java.lang.Runnable;

class Account{
        private int bal;
```

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```
	public Account(int bal){
		this.bal=bal;
	}
	public boolean checkBalance(int w){
		if(bal>w){
			return true;
		}else{
			return false;
		}
	}

	public void withdraw(int amt){
		bal=bal-amt;
		System.out.println("Withdraw amount = "+amt);
		System.out.println("Current balance = "+bal);
		System.out.println();
	}
}

class Customer implements Runnable{
	private String name;
	private Account account;
	public Customer(Account account, String n){
		this.account=account;
		name=n;
	}

	public void run(){
		Scanner sc=new Scanner(System.in);

		synchronized(account){
			System.out.println(name+" Enter amount to withdraw ");
			int amt=sc.nextInt();
			if(account.checkBalance(amt)){
				System.out.println(name);
				account.withdraw(amt);
			}else{
				System.out.println("\nInsufficient balance\n");
			}
		}
	}
}

public class Main_class{
	public static void main(String[] args){
		System.out.println("Enter amount to deposit = ");
```

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```
                Scanner sc=new Scanner(System.in);
                int n=sc.nextInt();
                Account a1=new Account(n);
                Customer c1=new Customer(a1,"Ashmita");
                Customer c2=new Customer(a1,"Priya");
                Customer c3=new Customer(a1,"Dipesh");
                Thread t1=new Thread(c1);
                Thread t2=new Thread(c2);
                Thread t3=new Thread(c3);
                t1.start();
                t2.start();
                t3.start();
        }
}
```

```
Enter amount to deposit =
19000
Priya Enter amount to withdraw
9000
Priya
Withdraw amount = 9000
Current balance = 10000

Dipesh Enter amount to withdraw
4000
Dipesh
Withdraw amount = 4000
Current balance = 6000

Surbhi Enter amount to withdraw
3000
Surbhi
Withdraw amount = 3000
Current balance = 3000
```

4. Create a smiley face with an applet as below.

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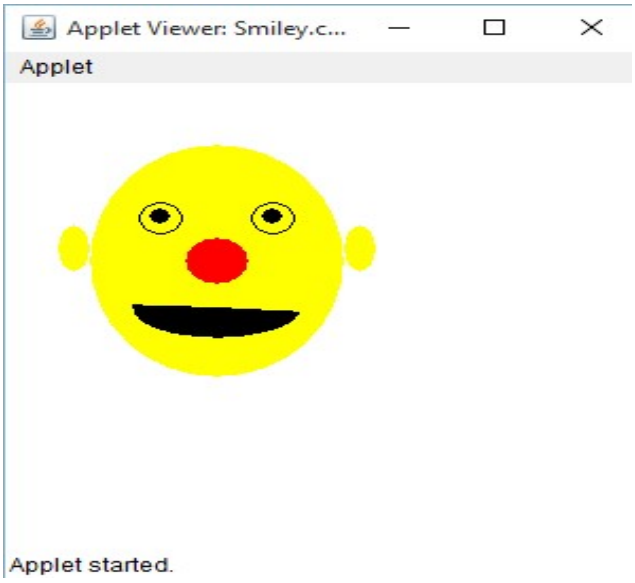
```
package ashuu87;
import java.awt.*;
import java.applet.*;
/*
 * <applet code="Smiley.class" width="300" height="300" ></applet>
 */
public class Smiley extends Applet{
	public void paint(Graphics g)
	{
		g.setColor(Color.YELLOW);
		g.fillOval(40,40,120,150);
		g.drawOval(57,75,30,20);
		g.drawOval(110,75,30,20);
		g.setColor(Color.BLACK);
		g.drawOval(63,77,20,20);
		g.fillOval(68,81,10,10);
		g.setColor(Color.BLACK);
		g.drawOval(116,77,20,20);
		g.fillOval(121,81,10,10);
		g.setColor(Color.RED);
		g.fillOval(85,100,30,30);
		g.setColor(Color.BLACK);
		g.fillArc(60,125,80,40,175,175);
		g.setColor(Color.YELLOW);
		g.fillOval(25,92,15,30);
		g.fillOval(160,92,15,30);

}
}
```



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5. Write a program to create a text file and copy the contents of this file to another file and then display.

```
package ashuu87;
import java.io.FileWriter;
import java.io.IOException;
import java.io.File;
import java.io.FileInputStream;
import java.io.FileOutputStream;
import java.io.*;
import java.util.*;

public class FileCreation {
  public static void main(String[] args) {
    //creation of file
    try {
      FileWriter myWriter = new FileWriter("Hello.txt");
      System.out.println("Enter Text to insert into file = ");
      Scanner sc=new Scanner(System.in);
      String content=sc.nextLine();

      myWriter.write(content);
      myWriter.close();
      System.out.println("Successfully wrote to the file.");


      FileInputStream instream = null;
      FileOutputStream outstream = null;

      //copying of file

      try{
         File infile =new File("Hello.txt");
         File outfile =new File("copiedHello.txt");

         instream = new FileInputStream(infile);
         outstream = new FileOutputStream(outfile);

         byte[] buffer = new byte[1024];

         int length;
         while ((length = instream.read(buffer)) > 0){
           outstream.write(buffer, 0, length);
         }

         instream.close();
```

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```
        outstream.close();

        System.out.println("File copied successfully!!");

     }catch(IOException ioe){
      ioe.printStackTrace();
     }


     //read file and display

     String fname = "copiedHello.txt";

      String line = null;
      try
      {

         FileReader fileReader = new FileReader(fname);


         BufferedReader bufferedReader = new BufferedReader(fileReader);

         while((line = bufferedReader.readLine()) != null)
         {
            System.out.println(line);
         }

         bufferedReader.close();
      }
      catch(IOException ex)
      {
         System.out.println("Error reading file named '" + fname + "'");
      }

   }
   catch (IOException e) {
    System.out.println("An error occurred.");
    e.printStackTrace();
   }
  }
}
```

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```
Enter Text to insert into file =
Hello My name is Surbhi
Successfully wrote to the file.
File copied successfully!!
Hello My name is Surbhi
```

6. Create any registration form (of your choice) using appropriate AWT controls (such as Label, TextField, Checkbox, Lists, Button etc). When you click on the Button, display all the contents of the form in TextArea, which is part of the form and placed at the bottom of the form.

```
package ashuu87;
import javax.swing.*;
import java.awt.*;
import java.awt.event.*;


class MyFrame extends JFrame implements ActionListener{

        JLabel l1,l2,l3,l4,l5;
        JTextField t1,t2;
        JRadioButton male,female;
        JComboBox date,month,year;
        JTextArea ta1;
        JCheckBox terms;
        JButton submit;
        JLabel msg;
        JTextArea screen;

        MyFrame(){
                setTitle("Registration Form");
                setSize(800,900);
                setLocationRelativeTo(null);
                setDefaultCloseOperation(EXIT_ON_CLOSE);
                Container c = getContentPane();
                c.setLayout(null);
                l1=new JLabel("Name");
                l1.setBounds(20,50,100,20);
                c.add(l1);

                t1=new JTextField();
                t1.setBounds(130,50,100,20);
                c.add(t1);
```

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```
                l2=new JLabel("Mobile");
                l2.setBounds(20,100,100,20);
                c.add(l2);
                t2=new JTextField();
                t2.setBounds(130,100,100,20);
                c.add(t2);

                l3=new JLabel("Gender");
                l3.setBounds(20,150,100,20);
                c.add(l3);
                male=new JRadioButton("Male");
                female=new JRadioButton("Female");
                male.setBounds(130,150,80,20);
                female.setBounds(230,150,80,20);
                c.add(male);
                c.add(female);
                ButtonGroup gen=new ButtonGroup();
                gen.add(male);
                gen.add(female);

                l4=new JLabel("Date Of Birth");
                l4.setBounds(20,200,100,20);
                c.add(l4);

                String days[]={"1", "2", "3", "4", "5", "6", "7", "8", "9",
                 "10", "11", "12", "13", "14", "15", "16", "17", "18",
                  "19", "20", "21", "22", "23", "24", "25", "26", "27", "28", "29", "30", "31"};
                String months[]={"1", "2", "3", "4", "5", "6", "7", "8",
                 "9", "10", "11", "12"};
                String years[]={"1980", "1981", "1982", "1983", "1984", "1985", "1986",
"1987",
                "1988", "1989", "1990", "1991", "1992", "1993", "1994", "1995", "1996",
"1997",
                 "1998", "1999", "2000", "2001", "2002", "2003", "2004", "2005", "2006",
        "2007", "2008", "2009"};

                 date=new JComboBox(days);
                 month=new JComboBox(months);
                 year=new JComboBox(years);
                 date.setBounds(130,200,50,20);
                 month.setBounds(190,200,50,20);
                 year.setBounds(250,200,60,20);
                 c.add(date);
                 c.add(month);
                 c.add(year);
```

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```
                l5=new JLabel("Address");
                l5.setBounds(20,250,100,20);
                c.add(l5);
                ta1=new JTextArea();
                ta1.setBounds(130,240,200,50);
                c.add(ta1);

                terms = new JCheckBox("Accept T&C");
                terms.setBounds(80,330,250,20);
                c.add(terms);

                submit=new JButton("SUBMIT");
                submit.setBounds(150,380,80,20);
                c.add(submit);

                msg=new JLabel();
                msg.setBounds(150,420,170,20);
                c.add(msg);


                screen=new JTextArea();
                screen.setBounds(150,450,600,200);
                c.add(screen);

                submit.addActionListener(this);

               setVisible(true);
        }

        public void actionPerformed(ActionEvent e){
                if(terms.isSelected()){
                        msg.setText("Successfully registered");
                        String name=t1.getText();
                        String mobile=t2.getText();
                        String gender="male";
                        if(female.isSelected()){
                                gender="female";
                        }
                        String dob=date.getSelectedItem()+"-"+month.getSelectedItem()+"-
"+year.getSelectedItem();

                        String add=ta1.getText();

                        screen.setText("Name : "+name+"\n"+
```

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```
                                                    "Mobile : "+mobile+"\n"+
                                                    "Gender : "+gender+"\n"+
                                                    "Date of Birth : "+dob+"\n"+
                                                    "Address : "+add+"\n"
                                );

                        }else{
                                msg.setText("Please Accept T&C to proceed ");
                                screen.setText("");
                        }
                }

}

class Registration{
        public static void main(String[] args){
                MyFrame frame=new MyFrame();
        }
}
```

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