Department of Master in Computer Application,

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Subject :- JAVA Practical

Class :- MCA-1st year (Semester-I)

Roll. No. :- 2149

Sr. No	Name of Program
1	Write Java applications to print the given patterns a. 10101 b. 1 0101 2 3 2 101 3 4 5 4 3 01 4 5 6 7 6 5 4 1 5 6 7 8 9 8 7 6 5
2	WAP that predicts your fortune based on your birthdate.
3	Write a java program with a method,int solution(int M, int N, int A[M][N], int C[M]) that accepts a number of disks M, numbers on each disk N, numbers on each M and combination to unlock C. The function should calculate the total number of minimum moves required to open padlock with a given combination code.
4	Write a program that accepts integer input and convert the given integer number to Binary or Hexadecimal. The program should accept command line arguments too. If 0 is passed from the command line then convert the given integer number to binary and if 1 is passed from the command line then convert the given integer to hexadecimal. Command Line Input: 1 Input : 90 Output: 5A Here, 1 is passed from the command line and 90 is given as input to the program. Since command line input is 1, the given number 90 is converted to hexadecimal 5A
5	Write an application in Java which reads a string from user as a command line argument and checks the string for vowels and prints the string without the vowels. Ex:Input: **Program** Output: **Prgrm.** ***Note:Use your name as input***
6	WAP that has a class with overloaded member functions(**add**). One add takes double arguments and the other takes int arguments. The **add** member function should **display all the arguments** it takes and also **display their sum** Run the program by providing different number of arguments(NOTE: **use varargs**). Run the program atleast 10 times with different number of arguments and take 10 outputs.
7	Create an abstract class Figure3d with a data member dim1 and an abstract function vol(). Create 2 classes sphere and cylinder and that inherit Figure3d. These classes should implement the vol() function. Add this program to a package. Execute it from within and outside the package. .(Hint: Volume of sphere=4/3*pi*r*r*r, volume of cylinder=pi*r*r*h).
8	WAP in java that creates an interface figure2d with member function area().Write two classes named "rectangle" and "triangle" that implement the above interface and display area of the figure.
9	Write a program in java that generates two sets of 10 random numbers and divides a number from one set with one from another set. Anticipate the kind of exception that will be generated and catch it.

10	WAP in java that takes your birth date as input from the command line. Check if the date is valid. If yes, check if it is less than **today's date.** If not generate an exception created by you, with a message that **birthdate should be less than todays date.** If proper date is entered display the age.
11	WAP in java that creates two threads , sets their priorities(high and low) and shows the number of cpu cycles alloted to each thread.
12	WAP in java to display the use of a.synchronized method b.synchronized block. This program will have to be run without synchronized keyword, with synchronized method and with synchronized block.
13	WAP in Java to copy the contents of one file to another without using any looping statements. Read the names of the files from the command line.
14	WAP in Java that reads and displays its own contents.
15	WAP in Java that displays the implementation of Generics.

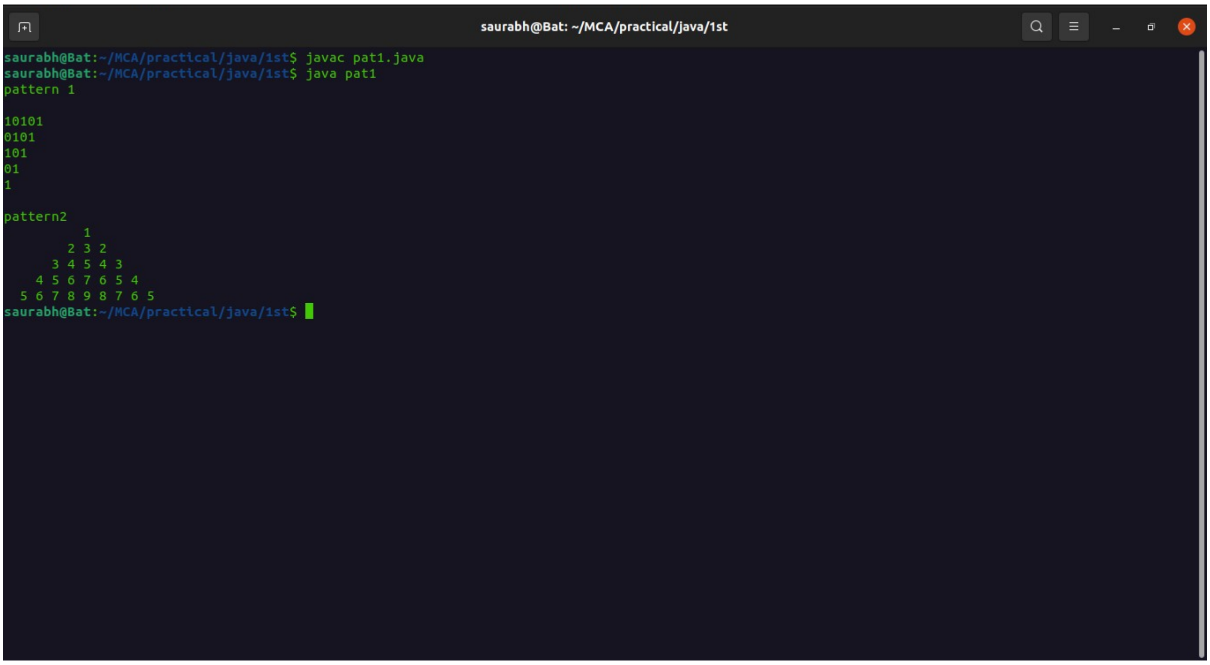
Practical No 1

Aim :– **Write Java applications to print the given patterns**

```
a. 1 0 1 0 1           b.       1
   0 1 0 1                    2 3 2
   1 0 1                    3 4 5 4 3
    0 1                   4 5 6 7 6 5 4
    1                   5 6 7 8  9 8 7 6 5
```

```
class pat1
{
    public static void main(String[] args)
    {
        // pattren 1
        System.out.println("pattern 1\n");
        for (int i=5;i>0;i--)
        {
            for (int j=0;j<i;j++)
            {
                if ((i+j)%2==0)
                {
                    System.out.print(0);

                }
                else
                {
                    System.out.print(1);
                }
            }
            System.out.println();
        }

        //pattern 2
        System.out.println("\npattern2");
        int a=0;
        for(int i=1;i<6;i++)
        {
            for(int j=i;j<6;j++)
            {
                System.out.print("  ");
            }
            int c=i;
            for(int k=1;k<=i;k++)
            {
                System.out.print(c+++" ");

            }
            int j=a;
            for(int l=2;l<=i;l++)
            {
                System.out.print(j--+" ");
            }
            System.out.println();
            a=a+2;
        }
    }
}
```

Output:-



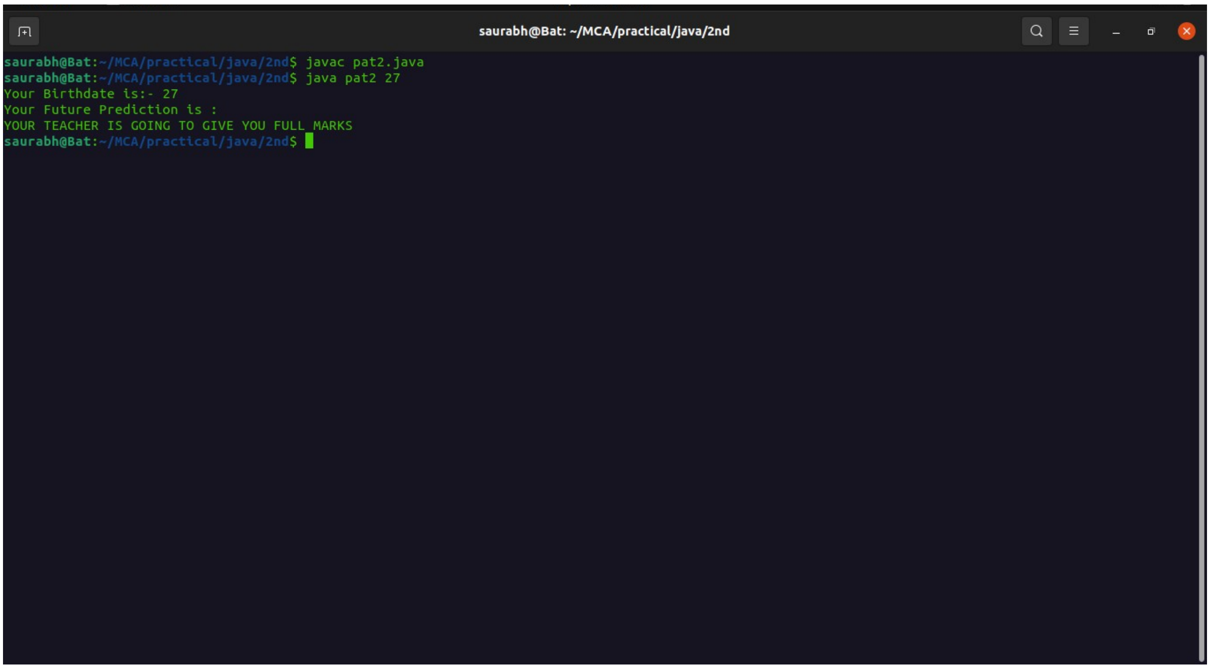
```
saurabh@Bat:~/MCA/practical/java/1st$ javac pat1.java
saurabh@Bat:~/MCA/practical/java/1st$ java pat1
pattern 1

10101
0101
101
01
1

pattern2
          1
        2 3 2
      3 4 5 4 3
    4 5 6 7 6 5 4
  5 6 7 8 9 8 7 6 5
saurabh@Bat:~/MCA/practical/java/1st$ 
```

Practical No 2

Aim :- WAP that predicts your fortune based on your birthdate.

```
import java.util.Random;
class pat2
{
         public static void main(String [] args)
         {
        int birth_date=Integer.parseInt(args[0]);
        System.out.println("Your Birthdate is:- "+birth_date);
                  String[] predictions = {"The day may bring opportunities for youngsters as far a new",
                  "Making dietary changes and proper rest may benefit you.",
                  "Matters related to property may be sorted out without legal intervention", "YOUR TEACHER IS GOING TO GIVE YOU FULL MARKS"};
                  Random ran = new Random();
                  String s_ran = predictions[ran.nextInt(predictions.length)];
                  if(birth_date<=31)
                  {
                           System.out.println("Your Future Prediction is : ");
                           System.out.println(s_ran);
                  }else {
                           System.out.println("Enter Valid Birth Date");
                  }
         }
}
```

Output:-



saurabh@Bat: ~/MCA/practical/java/2nd

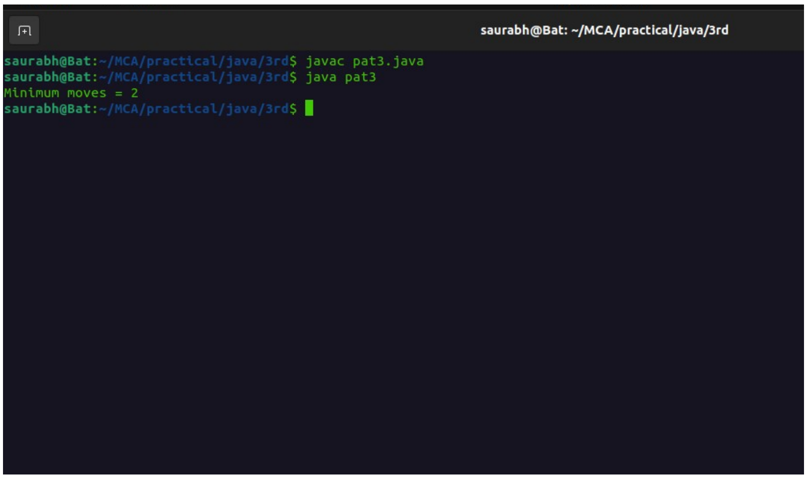
```
saurabh@Bat:~/MCA/practical/java/2nd$ javac pat2.java
saurabh@Bat:~/MCA/practical/java/2nd$ java pat2 27
Your Birthdate is:- 27
Your Future Prediction is :
YOUR TEACHER IS GOING TO GIVE YOU FULL MARKS
saurabh@Bat:~/MCA/practical/java/2nd$
```

Practical No 3

Aim :- Write a java program with a method ,int solution(int M, int N, int A[M][N], int C[M]) that accepts a number of disks M, numbers on each disk N, numbers on each disk M and combination to unlock C. The function should calculate the total number of minimum moves required to open padlock with a given combination code.

```
class FindMoves
{
int solution(int M, int N, int[][] A,int[] C)
{
int [] moves=new int[M];
for(int i=0;i<M;i++)
{
int j=0;
for(j=0;j<N;j++)
{
if(C[i]==A[i][j])
{
int count=j;
if(count>N/2)
{
j=N-count;
}
break;
}
}
System.out.println();
moves[i]=j;
}
int totalMoves=0;
for(int k=0;k<M;k++)
{
totalMoves+=moves[k];
}
return totalMoves;
}
}
class pat3
{
public static void main(String [] arg)
{
FindMoves ob=new FindMoves();
int M=3,N=4;
int[][] A={{1,6,7,9},{3,9,12,15},{2,4,5,6}};
int[] C={6,3,6};
System.out.println("Minimum moves = " +ob.solution(M,N,A,C));
}}
```

Output:-



```
saurabh@Bat:~/MCA/practical/java/3rd$ javac pat3.java
saurabh@Bat:~/MCA/practical/java/3rd$ java pat3
Minimum moves = 2
saurabh@Bat:~/MCA/practical/java/3rd$ 
```

Practical No. 4

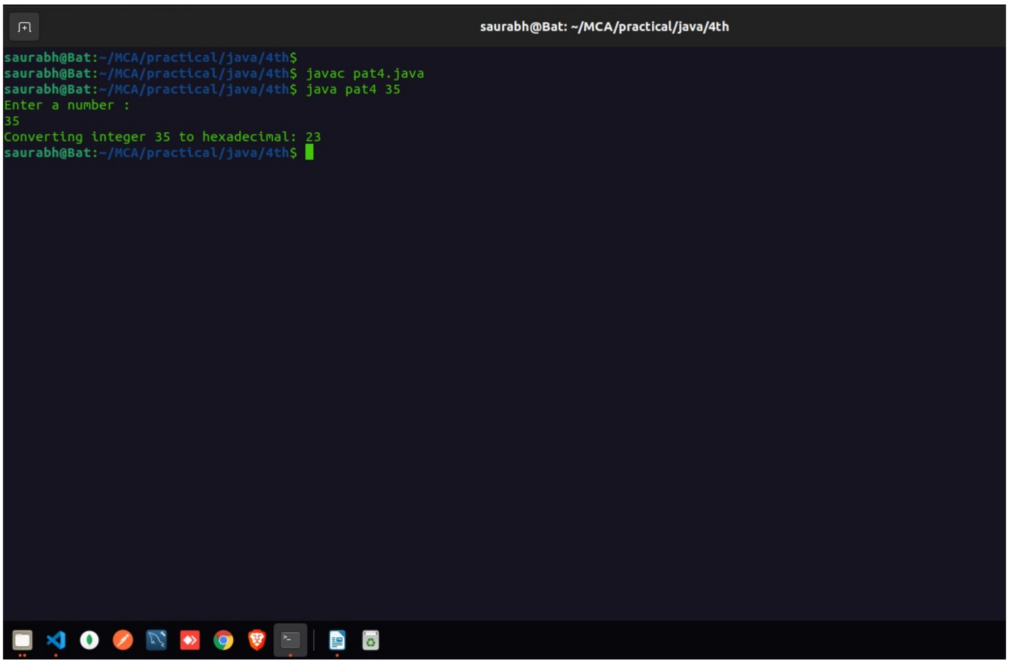
Aim:- Write a program that accepts integer input and convert the given integer number to Binary or Hexadecimal. The program should accept command line arguments too. If 0 is passed from the command line then convert the given integer number to binary and if 1 is passed from the command line then convert the given integer to hexadecimal.

Command Line Input: 1 Input : 90 Output: 5A

Here, 1 is passed from the command line and 90 is given as input to the program. Since command line input is 1, the given number 90 is converted to hexadecimal 5A

```
import java.util.*;
class pat4{
         public static void main(String[] args){
         Scanner sc = new Scanner(System.in);
   System.out.println("Enter a number : ");
       int n=sc.nextInt();
            String s= " ";
            String s2=" ";
             int q=n;
                  int q1=n;
   int argument = Integer.parseInt(args[0]);
   if(argument==0)
   {
       for(int i=0;q!=0;i++)
        {
                 int r=q%2;
                 s=r+s;
                 q=q/2;
         }
      System.out.println("Converting integer "+n+" to binary : "+s);
   }
   else
   {
         char hex[]={'0','1','2','3','4','5','6','7','8','9','A','B','C','D','E','F'};

         while(q1>0)
         {
               int rem=q1%16;
               s2=hex[rem]+s2;
               q1=q1/16;
         }
        System.out.println("Converting integer "+n+" to hexadecimal: "
+s2);
   }
   }
}
```

Output:-



```
saurabh@Bat:~/MCA/practical/java/4th$
saurabh@Bat:~/MCA/practical/java/4th$ javac pat4.java
saurabh@Bat:~/MCA/practical/java/4th$ java pat4 35
Enter a number :
35
Converting integer 35 to hexadecimal: 23
saurabh@Bat:~/MCA/practical/java/4th$
```

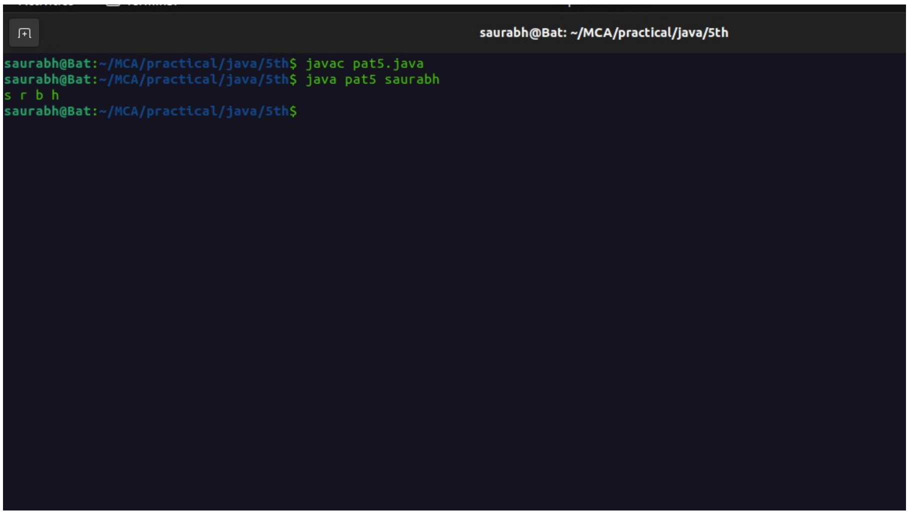
Practical No 5

Aim :- Write an application in Java which reads a string from user as a command line argument and checks the string for vowels and prints the string without the vowels. Ex:Input: Program   Output: Prgrm.

Note: *Use your name as input*

```
class pat5
{
public static  void main(String [] args)
{
        String s=args[0];
        for(int i=0;i<s.length();i++)
        {
                if(s.charAt(i)!='a' && s.charAt(i)!='e' && s.charAt(i)!='i' && s.charAt(i)!='o' && s.charAt(i)!='u' && s.charAt(i)!='A' && s.charAt(i)!='E' && s.charAt(i)!='I' && s.charAt(i)!='O' && s.charAt(i)!='U' )
                {
                        System.out.print(s.charAt(i)+" ");
                }
        }
}
}
```

Output:-



saurabh@Bat: ~/MCA/practical/java/5th

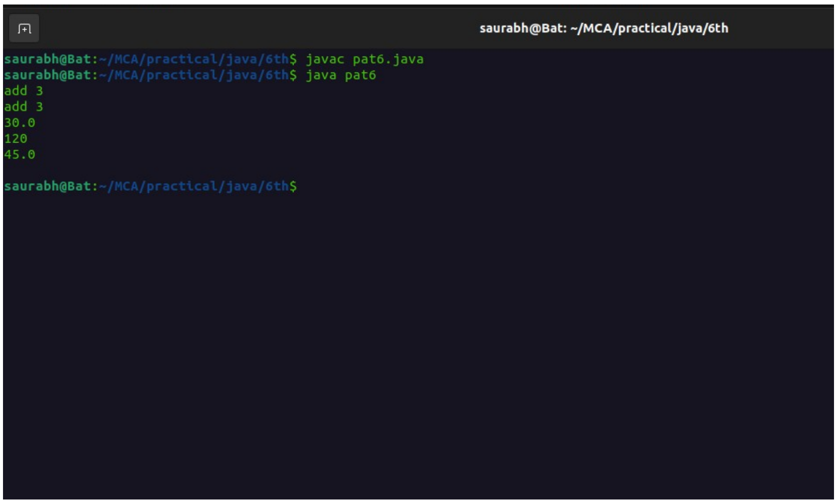
```
saurabh@Bat:~/MCA/practical/java/5th$ javac pat5.java
saurabh@Bat:~/MCA/practical/java/5th$ java pat5 saurabh
s r b h
saurabh@Bat:~/MCA/practical/java/5th$
```

Practical No 6

Aim :– **WAP that has a class with overloaded member functions(add). One add takes double arguments and the other takes int arguments. The add member function should display all the arguments it takes and also display their sum Run the program by providing different number of arguments(NOTE: use varargs). Run the program atleast 10 times with different number of arguments and take 10 outputs.**

```
class TwoM
{
        int add(int a,int b,int c)
        {
                System.out.println("add 2");
                return a+b+c;
        }
        double add(double...v)
        {
                System.out.println("add 3");

        double add=0;
        for (double x:v)
        {
                add=x+add;

        }return add;
        }


}
class pat6
{
        public static void main(String [] args)
        {
                TwoM tw=new TwoM();
                double w=tw.add(10.0,20.0);
                int e=tw.add(30,40,50);
                double r=tw.add(1.0,2.0,3.0,4.0,5.0,6.0,7.0,8.0,9.0);
                System.out.println(w+"\n"+e+"\n"+r+"\n");
        }
}
```

Output:-



```
saurabh@Bat:~/MCA/practical/java/6th$ javac pat6.java
saurabh@Bat:~/MCA/practical/java/6th$ java pat6
add 3
add 3
30.0
120
45.0

saurabh@Bat:~/MCA/practical/java/6th$
```

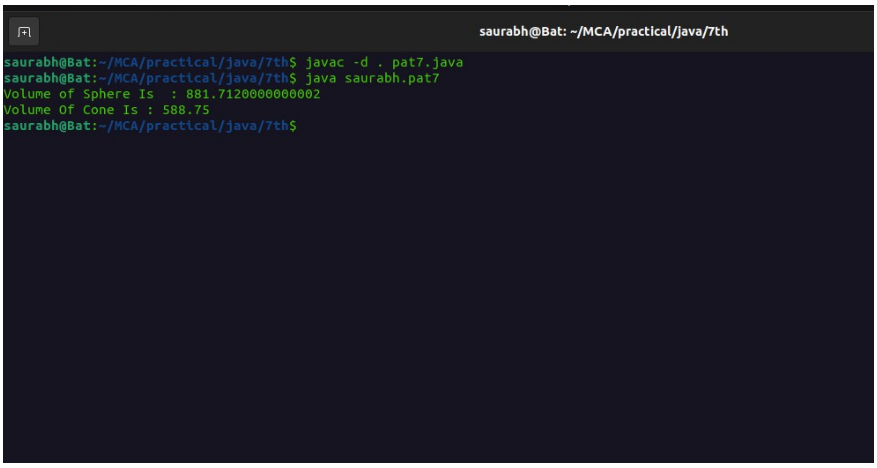
Practical No 7

Aim :- Create an abstract class Figure3d with a data member dim1 and an abstract function vol(). Create 2 classes sphere and cone that inherit Figure3d. These classes should implement the vol() function. Add this program to a package. Execute it from within and outside the package. .(Hint: Volume of sphere=4/3*pi*r*r*r, volume of cylinder=pi*r*r*h, volume of cone=1/3*pi*r*r*h).

```
package saurabh;
abstract class Figure3d{
        int dim1;

        double PI=3.14;
        Figure3d(int dim1){
                this.dim1=dim1;
        }
        abstract double vol();
}
class Sphere extends Figure3d {
        Sphere(int dim1){
                super(dim1);
        }
         double vol(){

                return 1.3*PI*dim1*dim1*dim1;
        }
}
class Cone extends Figure3d{
                int h;

        Cone(int dim1,int h){
```

```
        super(dim1);
        this.h=h;
    }
     double vol(){
        return 0.3*PI*dim1*dim1*dim1*h;
    }
}
public class pat7{
    public static void main(String [] args){
    Sphere S=new Sphere(6);
    S.vol();
    Cone C=new Cone(5,5);
    C.vol();
    System.out.println("Volume of Sphere Is  : "+S.vol());
    System.out.println("Volume Of Cone Is : "+C.vol());
}
}
```

Output:-



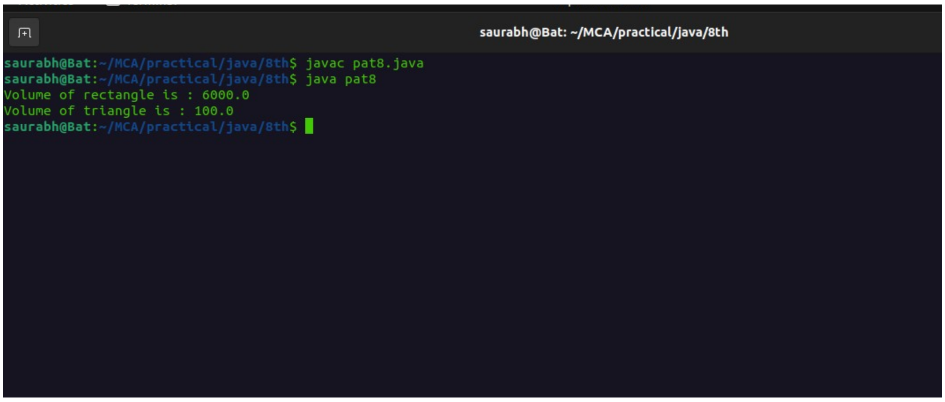
```
saurabh@Bat:~/MCA/practical/java/7th$ javac -d . pat7.java
saurabh@Bat:~/MCA/practical/java/7th$ java saurabh.pat7
Volume of Sphere Is  : 881.7120000000002
Volume Of Cone Is : 588.75
saurabh@Bat:~/MCA/practical/java/7th$
```

Practical No 8

Aim :- **WAP in java that creates an interface figure2d with two data members dim1 and dim2 and member function area().Write two classes named "rectangle" and "triangle" that implement the above interface and display area of the figure.**

```
interface Figure2d{
        void findarea();
}
class Rectangle implements Figure2d{
        double l,b,h;
        Rectangle(double l,double b,double h){
                this.l=l;
                this.b=b;
                this.h=h;
}

        public void findarea(){
                System.out.println("Volume of rectangle is : "+l*b*h);
}
}
class Triangle implements Figure2d{
        double l,b;
        Triangle(double l,double b){
                this.l=l;
                this.b=b;


}
        public void findarea(){
                System.out.println("Volume of triangle is : "+l*b*1/2);
}
}
 class pat8{
        public static void main(String [] args){
        Rectangle R=new Rectangle(10.0,20.0,30.0);
        R.findarea();
        Triangle T=new Triangle(10.0,20.0);
        T.findarea();

}
}
```

Output:-



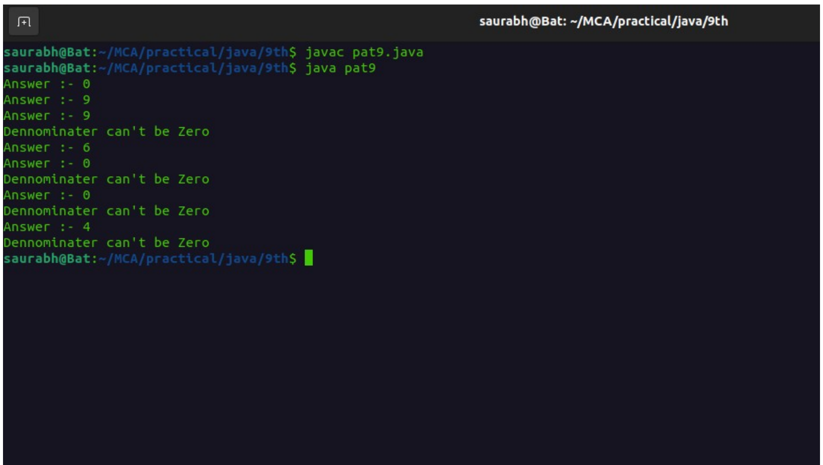
```
saurabh@Bat:~/MCA/practical/java/8th$ javac pat8.java
saurabh@Bat:~/MCA/practical/java/8th$ java pat8
Volume of rectangle is : 6000.0
Volume of triangle is : 100.0
saurabh@Bat:~/MCA/practical/java/8th$
```

Practical No 9

Aim:- **Write a program in java that generates two random numbers and divides them. Anticipate the kind of exception that will be generated and catch it.**

```
import java.util.Random;
class pat9{
        public static void main(String[] args){
                int d,n,ans;
                int num=10;
                Random ran = new Random();
                for(int i=0;i<=num;i++){
                        n=ran.nextInt(10);
                        d=ran.nextInt(2);
                        try{
                                ans=n/d;
                                System.out.println("Answer :- "+ans);
                        }
                        catch(ArithmeticException e){
                                System.out.println("Dennominater can't be Zero");
                        }


                }


        }
}
```

Output:-



saurabh@Bat: ~/MCA/practical/java/9th

```
saurabh@Bat:~/MCA/practical/java/9th$ javac pat9.java
saurabh@Bat:~/MCA/practical/java/9th$ java pat9
Answer :- 0
Answer :- 9
Answer :- 9
Dennominater can't be Zero
Answer :- 6
Answer :- 0
Dennominater can't be Zero
Answer :- 0
Dennominater can't be Zero
Answer :- 4
Dennominater can't be Zero
saurabh@Bat:~/MCA/practical/java/9th$ 
```

Practical No 10

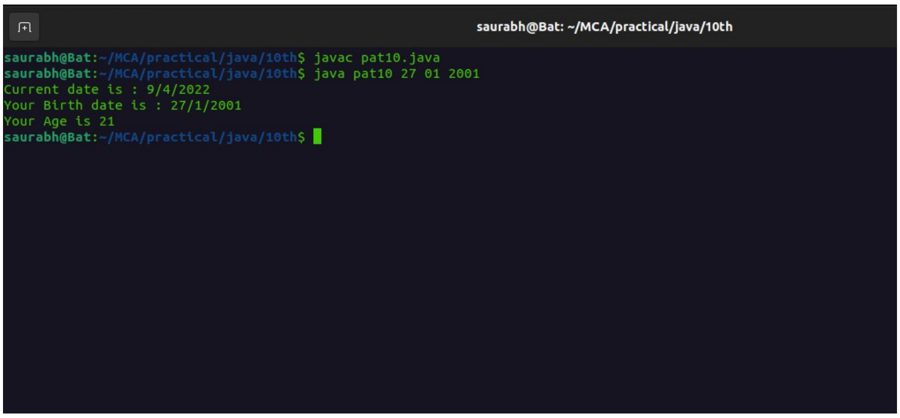
Aim:- **WAP in java that takes your birth date as input from the command line. Check if the date is valid. If yes, check if it is less than today's date. If not generate an exception created by you, with a proper message that birthdate should be less than todays date. If proper date is entered display the age.**

Program:-

```
import java.util.Calendar;

import java.time.LocalDate;//onwards java 8

import java.lang.Exception;

class InvalidBirthdateException extends Exception{

        String msg;

     InvalidBirthdateException(String s){

                msg=s;

     }

          public String toString(){

          return("InvalidBirthdateException"+ msg);

          }

}

class pat10{

        public static void main(String[] args){

                 int Date=Integer.parseInt(args[0]);

        int Month=Integer.parseInt(args[1]);

        int Year=Integer.parseInt(args[2]);

                 LocalDate CDate=LocalDate.now();//getting current date in
yy/mm/dd format

                 int day = CDate.getDayOfMonth();//for getting today's date
form month



                 Calendar calen = Calendar.getInstance();
```

```
                        int mont;

                        mont=CDate.getMonthValue();//mont is month


                int y = CDate.getYear();//y is year for current year


                System.out.println("Current date is :
"+day+"/"+mont+"/"+y);

                System.out.println("Your Birth date is :
"+Date+"/"+Month+"/"+Year);

        int CYear=y-Year;

                int CMonth=mont-Month;


                try{

                        if (Date==0 || Month==0 || Year==0){

                                throw new InvalidBirthdateException(":--
"+"Birhdate can't be zero");

                        }

                }catch(InvalidBirthdateException e){

                        System.out.println(e );

                }


        try{

                        if(Month==0 || Month>12){

                                throw new InvalidBirthdateException("Invalid
month");

                        }

                if(Month==1 && Date>=31 || Month==3 && Date>=31 ||
Month==5 && Date>=31 || Month==7 && Date>=31 || Month==8 &&
Date>=31 || Month==10 && Date>=31 || Month==12 && Date>=31){

                                throw new InvalidBirthdateException(":-- "+"For
month 1,3,5,7,8,10 and 12 date should be between 1 to 31");

                }
        if(Month==4 && Date>=30 | Month==6 && Date>=30 | Month==8 && Date>=30 | Month==9 && Date>=30 | Month==8 && Date>=30 | Month==10 && Date>=31 | Month==11 && Date>=30){

                throw new InvalidBirthdateException(":-- "+"For month 4,6,8,9 and 11 date should be between 1 to 30");

        }

        if(Month==2 && ((Year%4==0) && (Year%100!=0)) || (Year%400==0)){

                if(Date>29){

                    throw new InvalidBirthdateException(":-- "+"If leap year then date upto 29");

                }

        }


        else if(Month==2 && Date>28){

            throw new InvalidBirthdateException("Date should be upto 28");

        }



         if (Year>y || mont>Month && Month>mont){

       throw new InvalidBirthdateException(":-- "+"year or month is greater than current year");

            }

            System.out.println("Your Age is "+ CYear);

        }

         catch(InvalidBirthdateException e){

            System.out.println(e);

         }


    }

}
```

Output:-



```
saurabh@Bat:~/MCA/practical/java/10th$ javac pat10.java
saurabh@Bat:~/MCA/practical/java/10th$ java pat10 27 01 2001
Current date is : 9/4/2022
Your Birth date is : 27/1/2001
Your Age is 21
saurabh@Bat:~/MCA/practical/java/10th$ 
```

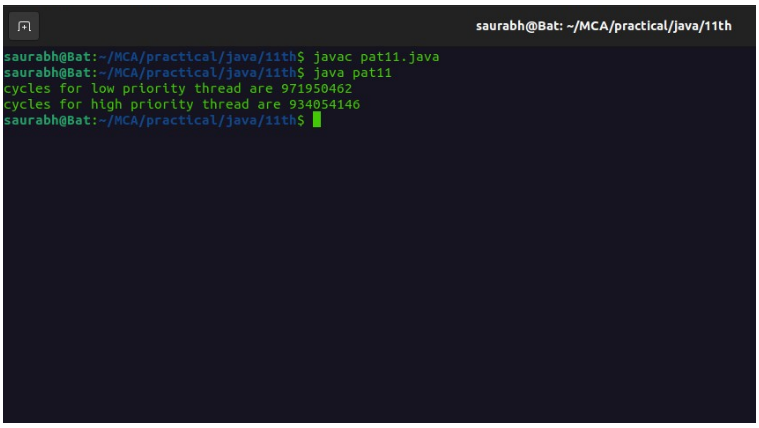
Practical No 11

Aim:- WAP in java that creates two threads , sets their priorities(high and low) and shows the number of cpu cycles alloted to each thread. Make use of join() method.

```
class Thread1 extends Thread
{
private volatile boolean running=true;
long count=0;
Thread1(String name,int priority)
{
super(name);
setPriority(priority);
start();
}
public void run(){
   //thread run infinitely
  while(running){
          count++;
  }//while
}
void stopper(){
 running=false;
}
}
class pat11{
  public static void main(String args[]) throws InterruptedException{
    Thread1 t1=new Thread1("LowPriorityThread",1);
         Thread1 t2=new Thread1("HighPriorityThread",10);
```

```
        Thread.sleep(2000);
        t2.stopper();
        t1.stopper();
        t1.join();
        t2.join();
        System.out.println("cycles for low priority thread are "+ t1.count);
        System.out.println("cycles for high priority thread are "+ t2.count);
  }
}
```

Output:-



```
saurabh@Bat:~/MCA/practical/java/11th$ javac pat11.java
saurabh@Bat:~/MCA/practical/java/11th$ java pat11
cycles for low priority thread are 971950462
cycles for high priority thread are 934054146
saurabh@Bat:~/MCA/practical/java/11th$ 
```

Practical No 12

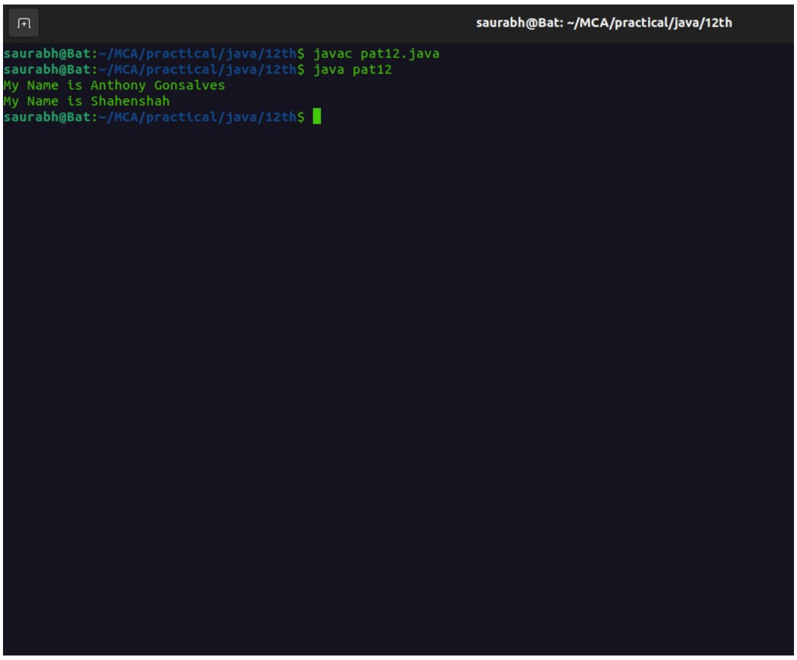
Aim:- WAP in java to display the use of

a. **synchronized method**
b. **synchronized block**

```
 void display()
{
  System.out.println("My Name is "+Thread.currentThread().getName()  );
  //System.out.println("My Name is 
"+Thread.currentThread().getName()  );
 }//display
}//Data
class Thread2 extends Thread{
 Data d1;  //reference to Data
 Thread2(String name,Data d1){
  super(name);
  this.d1=d1;
  start();
 }//const
 public void run(){
        synchronized(d1){
                d1.display();
        }//synchronized
 }
}
class pat12{        //synchronized
  public static void main(String args[]) throws InterruptedException{
    Data d1=new Data(); //shared resource
        Thread2 t1=new Thread2("Anthony Gonsalves", d1);
```

```
          Thread2 t2=new Thread2("Shahenshah",d1);
            }
}
```

Output:-



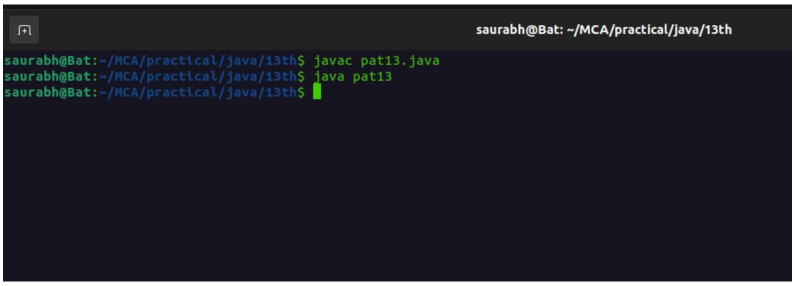
```
saurabh@Bat:~/MCA/practical/java/12th$ javac pat12.java
saurabh@Bat:~/MCA/practical/java/12th$ java pat12
My Name is Anthony Gonsalves
My Name is Shahenshah
saurabh@Bat:~/MCA/practical/java/12th$ 
```

Practical No 13

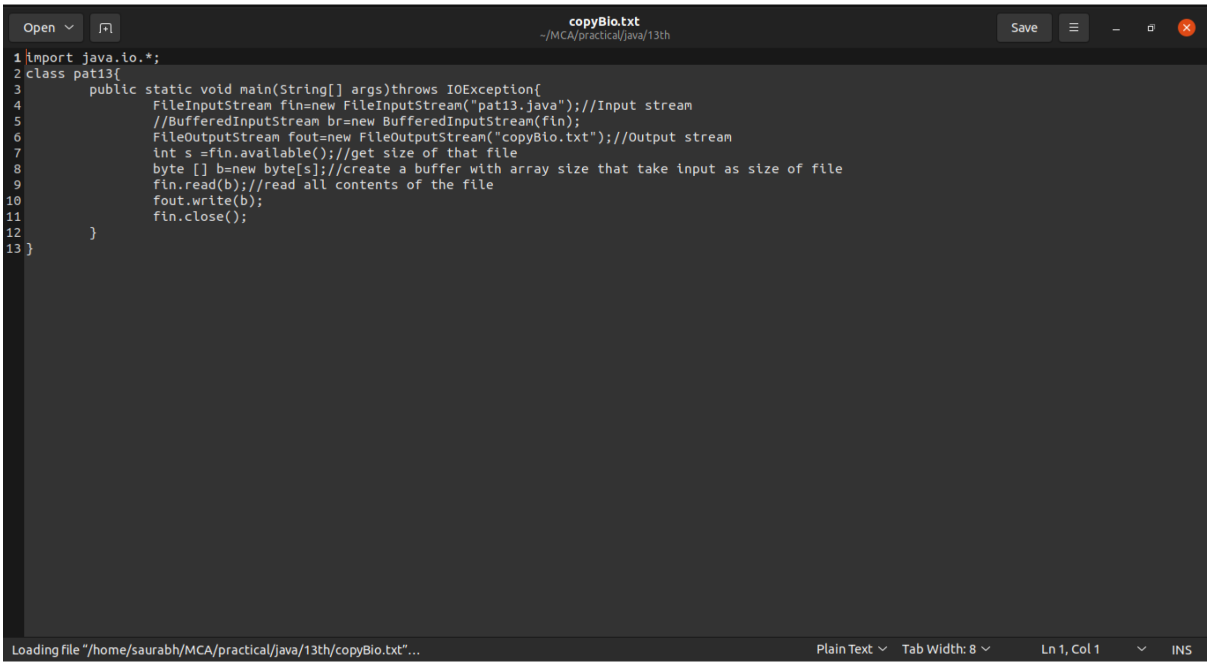
Aim:- **WAP in Java to copy the contents of one file to another without using any looping statements. Read the names of the files from the command line.**

```
import java.io.*;
class pat13{
        public static void main(String[] args)throws IOException{
                FileInputStream fin=new FileInputStream("Pat13.java");//Input stream
                //BufferedInputStream br=new BufferedInputStream(fin);
                FileOutputStream fout=new FileOutputStream("copyBio.txt");//Output stream
                int s =fin.available();//get size of that file
                byte [] b=new byte[s];//create a buffer with array size that take input as size of file
                fin.read(b);//read all contents of the file
                fout.write(b);
                fin.close();
        }
}
```

Output:-



```
saurabh@Bat:~/MCA/practical/java/13th$ javac pat13.java
saurabh@Bat:~/MCA/practical/java/13th$ java pat13
saurabh@Bat:~/MCA/practical/java/13th$ 
```



```
import java.io.*;
class pat13{
        public static void main(String[] args)throws IOException{
                FileInputStream fin=new FileInputStream("pat13.java");//Input stream
                //BufferedInputStream br=new BufferedInputStream(fin);
                FileOutputStream fout=new FileOutputStream("copyBio.txt");//Output stream
                int s =fin.available();//get size of that file
                byte [] b=new byte[s];//create a buffer with array size that take input as size of file
                fin.read(b);//read all contents of the file
                fout.write(b);
                fin.close();
        }
}
```

Loading file "/home/saurabh/MCA/practical/java/13th/copyBio.txt"...

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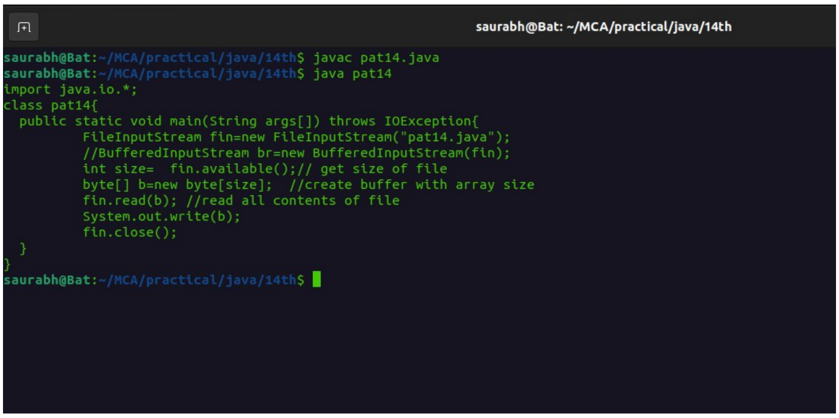
Practical No 14

Aim:- **WAP in Java that reads and displays its own contents.**

```
import java.io.*;
class pat14{
  public static void main(String args[]) throws IOException{
          FileInputStream fin=new FileInputStream("Practical14.java");
          //BufferedInputStream br=new BufferedInputStream(fin);
          int size=  fin.available();// get size of file
          byte[] b=new byte[size];  //create buffer with array size
          fin.read(b); //read all contents of file
          System.out.write(b);
          fin.close();
  }
}
```

Output:-



```
saurabh@Bat:~/MCA/practical/java/14th$ javac pat14.java
saurabh@Bat:~/MCA/practical/java/14th$ java pat14
import java.io.*;
class pat14{
  public static void main(String args[]) throws IOException{
          FileInputStream fin=new FileInputStream("pat14.java");
          //BufferedInputStream br=new BufferedInputStream(fin);
          int size=  fin.available();// get size of file
          byte[] b=new byte[size];  //create buffer with array size
          fin.read(b); //read all contents of file
          System.out.write(b);
          fin.close();
  }
}
saurabh@Bat:~/MCA/practical/java/14th$ 
```

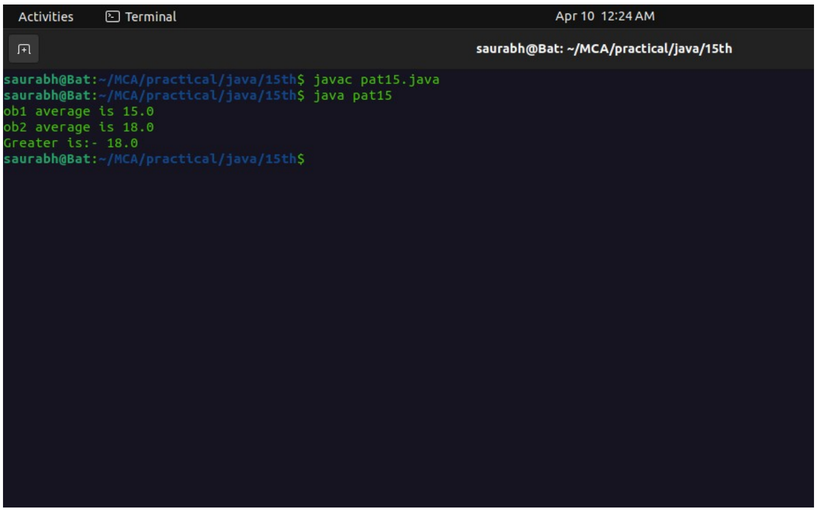
Practical No 15

Aim:- WAP in Java that displays the implementation of Generics.

```
class Stats<T extends Number>
{
    T[] arr;
    //T e;
    Stats(T[] arr)
    {
      this.arr=arr;
    }
     public double fsums()
      {
        double sum = 0.0;
        for (int i = 0; i < arr.length; i++)
        sum += arr[i].doubleValue();
        return sum;
      }
      void compare_sums(Stats<?> ob)
      {
        double s1=fsums();
        double s2=ob.fsums();
        if(s1>s2)
        {
          System.out.println("Greater is:- "+s1);
        }
        else
        {
          System.out.println("Greater is:- "+s2);
        }
      }
}
```

```
class pat15{
public static void main(String[] args)
{
    Integer inums[] = { 1, 2, 3, 4, 5 };
    Stats<Integer> ob1 = new Stats<Integer>(inums);
    System.out.println("ob1 average is " + ob1.fsums());
    Double d[] = { 1.5, 2.6, 3.4, 4.6, 5.9 };
    Stats<Double> ob2 = new Stats<Double>(d);
    System.out.println("ob2 average is " + ob2.fsums());
    ob1.compare_sums(ob2);
}
}
```

Output:-



```
saurabh@Bat:~/MCA/practical/java/15th$ javac pat15.java
saurabh@Bat:~/MCA/practical/java/15th$ java pat15
ob1 average is 15.0
ob2 average is 18.0
Greater is:- 18.0
saurabh@Bat:~/MCA/practical/java/15th$
```