

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN
B.C.A. Semester – V
BCA: 505 - JAVA Programming

University Examination Duration: 3 Hours (Per Batch)
(Practical List)

1. Write a Java Program find the area of circle.
2. Write a Java Program that will display factorial of the given number.
3. Write a Java Program that will find the largest no from the given two nos.
4. Write a Java Program that will find the largest no from the given three nos.
5. Write a Java Program that shows the use of switch Statement.
6. Write a Java Program to find the sum of the digits of given number.
7. Write a Java Program that will display the Sum of $1+1/2+1/3\dots+1/n$.
8. Write a Java Program that check whether the given no is prime or not.
9. Write a Java Program that implements the use of break statement.
10. Write a Java Program that implements the use of continue statement.
11. Write a Java Program that will accept Command -line Arguments and display the same.
12. Write a Java Program to sort the elements of an array in Ascending Order.
13. Write a Java Program to create a Student class and generate result of student (Total, Per, Grade).
14. Write a Java Program to create an Employee class and generate Salary Slip for the employee.
15. Write a java program which shows the use of Static Members.
16. Write a java program which shows the Nesting of Methods.
17. Write a java program which shows the use of Methods Overloading.
18. Write a java program which implements the Default Constructors.
19. Write a java program which implements the Parameterized Constructors.
20. Write a java program which implements the Overloading of Constructors.
21. Write a java program which explains the concept of Single Inheritance.
22. Write a java program which explains the concept of Multilevel Inheritance.
23. Write a java program which explains the concept of Hierarchical Inheritance.
24. Write a java program which shows the Method Overriding.
25. Write a Java Program to implement final class and final method.
26. Write a Java Program to implement abstract class and abstract method.
27. Write a java program which implements Interface.
28. Write a java program which implements Multiple Interfaces.
29. Write a java program which shows importing of classes from other packages.
30. Write a Java Program to implement the methods of Math Class.
31. Write a Java Program to implement the methods of String Class.
32. Write a Java Program to implement the methods of Vector Class.
33. Write a Java Program to implement the methods of Stack Class.
34. Write a Java Program which will read a text and count all occurrences of a particular word.
35. Write a Java Program which will read a string and rewrite it in the alphabetical Order
eg. The word "STRING" should be written a "GINRST".
36. Write a java program which creates threads using the Thread Class.
37. Write a java program which shows the use of yield(), stop() and sleep() Methods.
38. Write a java program which shows the Priority in Threads.
39. Write a java program which use of Runnable Interface.

40. Write a java program which uses try and catch for Exception Handling.
41. Write a java program which uses Multiple catch Blocks.
42. Write a java program which uses finally Statement.
43. Write a java program which uses Nested try Statements.
44. Write a java program which shows throwing our own Exception.
45. Create an Applet program that print Hello Applet.
46. Create an applet that use init(), start(), stop() and destroy() methods of applet.
47. write an applet program to implement the concept of passing parameter to applet.
48. Write a applet program to implement various methods of Graphics class.

Purushottam Singh

JAVA Programming

(Practicals With Output)

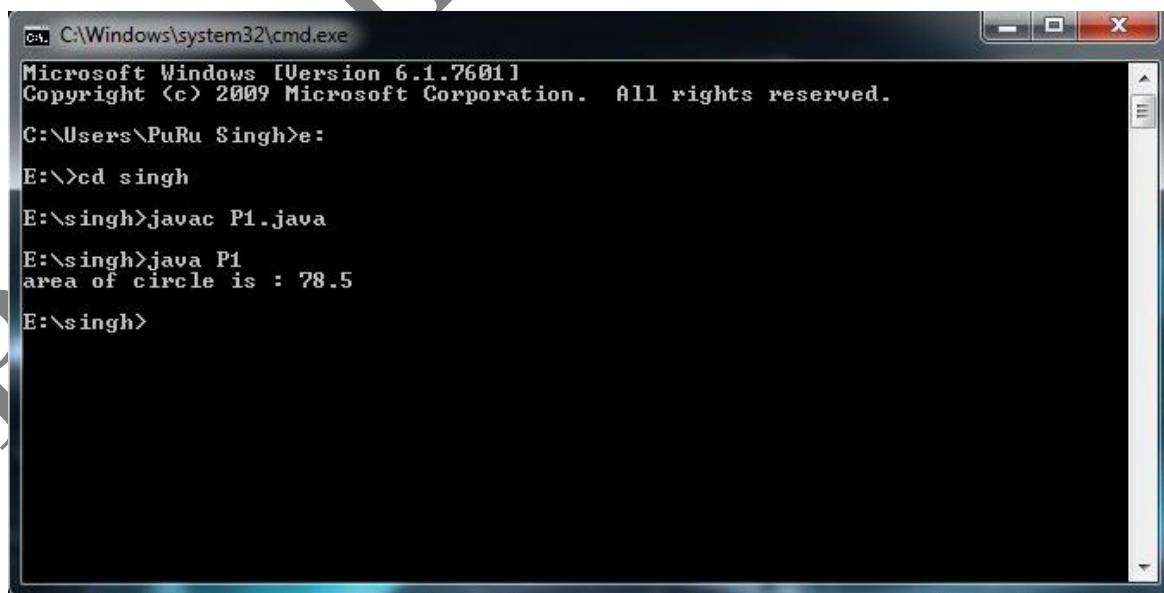
❖ Practical: 1

Write a Java Program find the area of circle.

```
class P1
{
    public static void main (String args[])
    {
        double PI=3.14;
        int R=5;
        double area;

        area=PI*R*R;
        System.out.println ("area of circle is" + area);
    }
}
```

❖ Output: 1



The screenshot shows a Microsoft Windows command prompt window titled 'C:\Windows\system32\cmd.exe'. The window displays the following command-line session:

```
C:\ C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

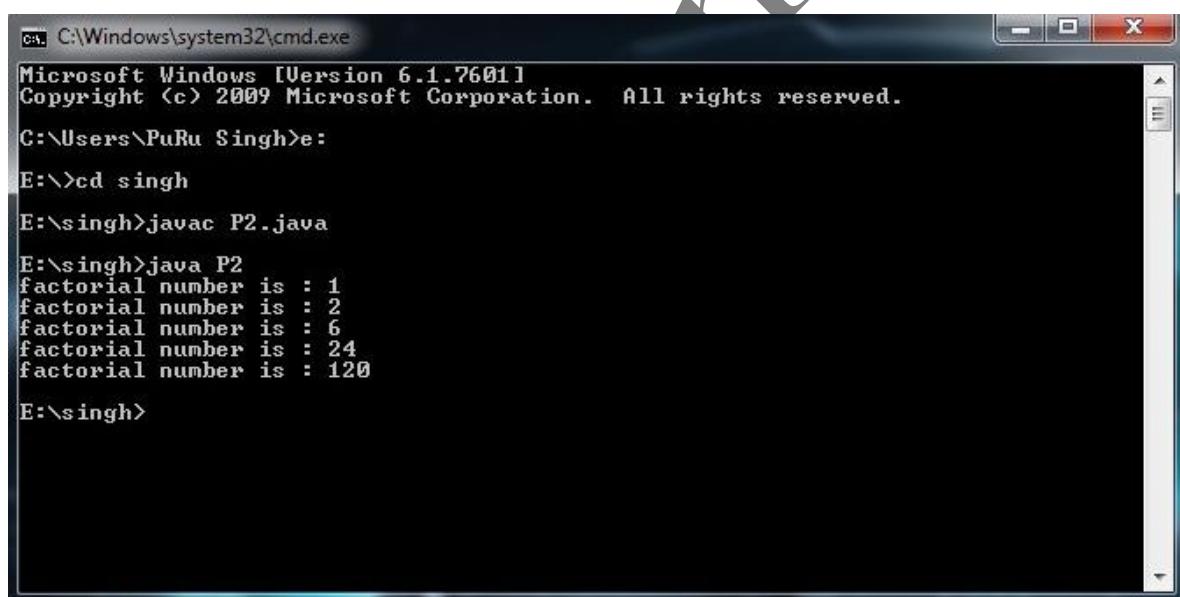
C:\Users\PuRu Singh>:
E:\>cd singh
E:\singh>javac P1.java
E:\singh>java P1
area of circle is : 78.5
E:\singh>
```

❖ **Practical: 2**

Write a Java Program that will display factorial of the given number.

```
class P2
{
    public static void main (String args[])
    {
        int i=1, sum=1;
        for (i=1; i<=5; i++)
        {
            sum=sum*i;
            System.out.println ("factorial number is" + sum);
        }
    }
}
```

❖ **Output: 2**



The screenshot shows a Microsoft Windows command prompt window titled 'C:\Windows\system32\cmd.exe'. The window displays the following command-line session:

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

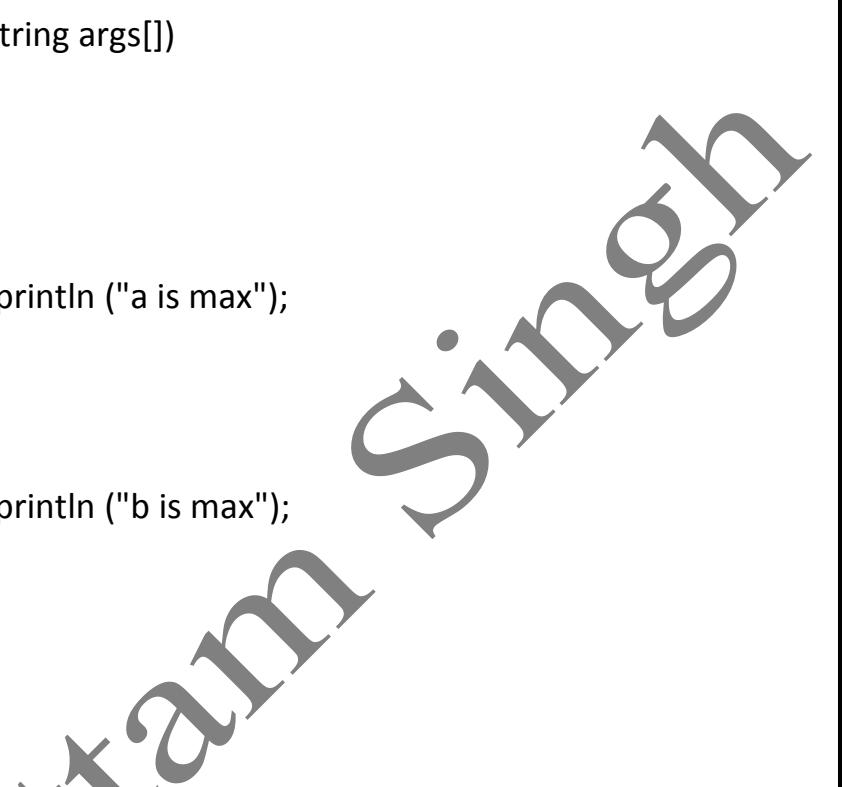
C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P2.java
E:\singh>java P2
factorial number is : 1
factorial number is : 2
factorial number is : 6
factorial number is : 24
factorial number is : 120
E:\singh>
```

❖ **Practical: 3**

Write a Java Program that will find the largest no from the given two nos.

```
class P3
{
    public static void main (String args[])
    {
        int a=15, b=10;
        if (a>b)
        {
            System.out.println ("a is max");
        }
        else
        {
            System.out.println ("b is max");
        }
    }
}
```

❖ **Output: 3**



```
c:\ C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

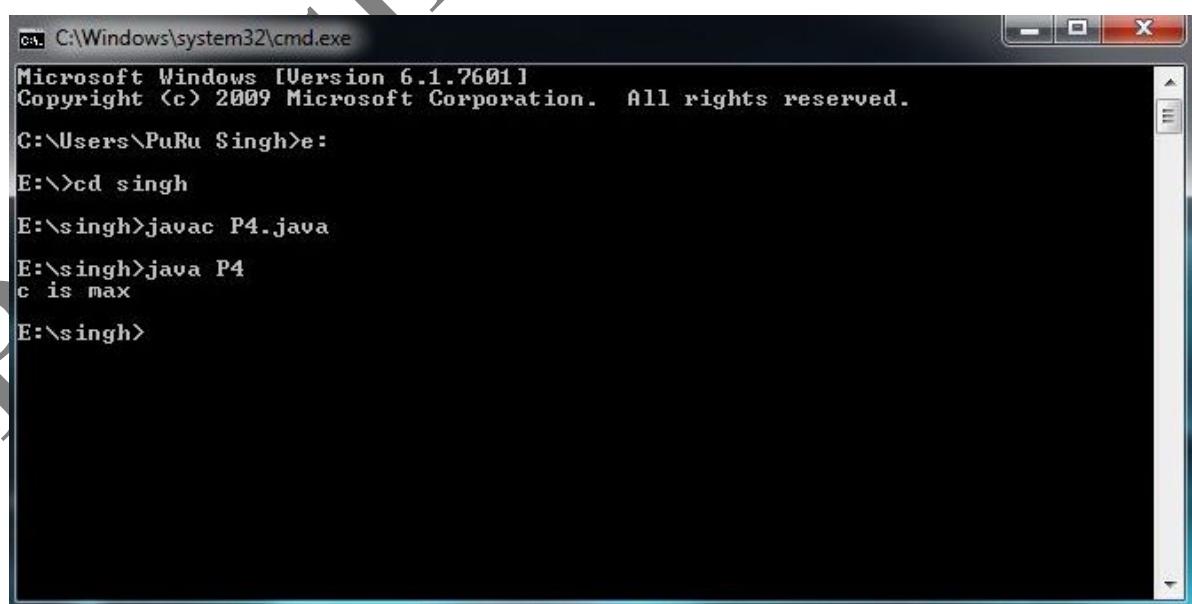
C:\Users\PuRu Singh>:
E:\>cd singh
E:\singh>javac P3.java
E:\singh>java P3
a is max
E:\singh>
```

❖ **Practical: 4**

Write a Java Program that will find the largest no from the given three nos.

```
class P4
{
    public static void main (String args[])
    {
        int a=10, b=50, c=70;
        if (a>b)
        {
            System.out.println ("a is max");
        }
        else if (b>c)
        {
            System.out.println ("b is max");
        }
        else
        {
            System.out.println ("c is max");
        }
    }
}
```

❖ **Output: 4**



The screenshot shows a Microsoft Windows command prompt window titled 'C:\Windows\system32\cmd.exe'. The window displays the following text:

```
C:\> Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\>Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P4.java
E:\singh>java P4
c is max
E:\singh>
```

❖ **Practical: 5**

Write a Java Program that shows the use of switch Statement.

```
class P5
{
    public static void main (String args[])
    {
        int marks=70;
        int index=marks/10;

        switch (index)
        {
            case 7:
                System.out.println ("Distinction");
                break;

            case 6:
                System.out.println ("First Class");
                break;

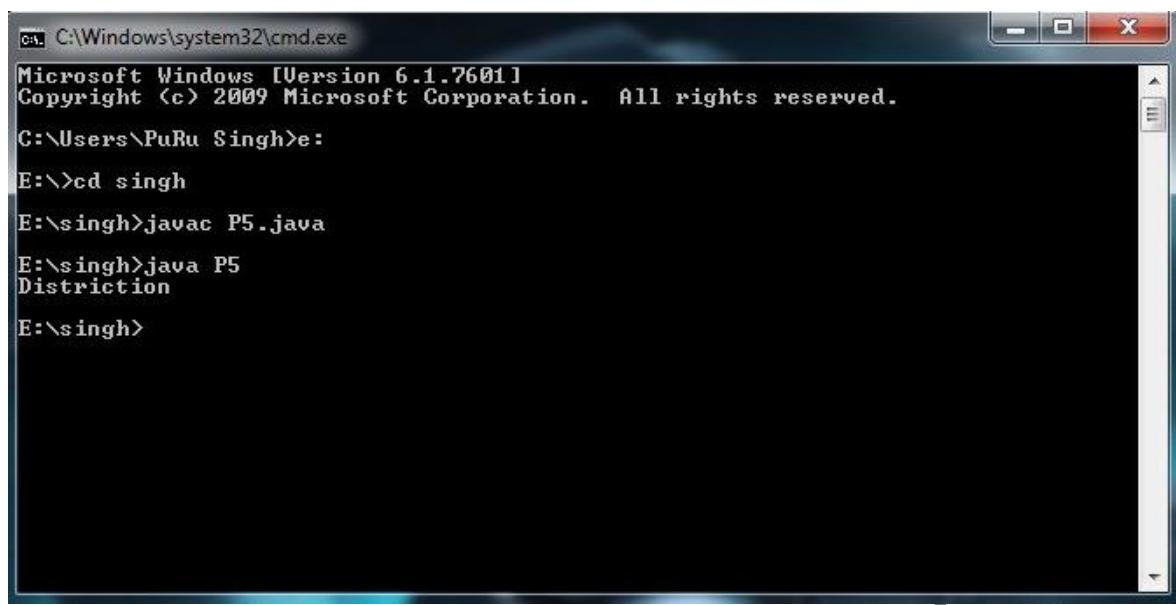
            case 5:
                System.out.println ("Second Class");
                break;

            case 4:
                System.out.println ("Third Class");
                break;

            case 3:
                System.out.println ("Pass Class");
                break;

            default:
                System.out.println ("Fail");
        }
    }
}
```

❖ **Output: 5**



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

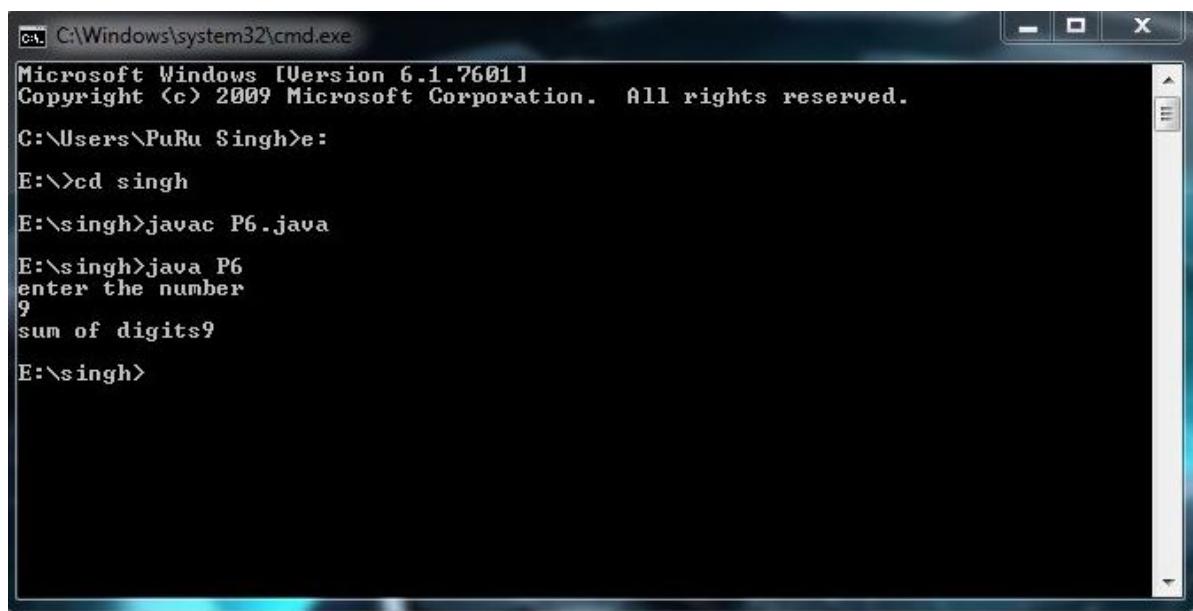
C:\Users\PuRu Singh>e:
E:>cd singh
E:\singh>javac P5.java
E:\singh>java P5
Distinction
E:\singh>
```

❖ **Practical: 6**

Write a Java Program to find the sum of the digits of given number.

```
import java.util.Scanner;
public class P6
{
    public static void main (String args[])
    {
        int m, n, sum=0;
        Scanner s=new Scanner (System.in);
        System.out.println ("enter the number");
        m=s.nextInt();
        while (m>0)
        {
            n=m%10;
            sum=sum+n;
            m=m/10;
        }
        System.out.println ("sum of digits" + sum);
    }
}
```

❖ **Output: 6**



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:>cd singh
E:\singh>javac P6.java
E:\singh>java P6
enter the number
9
sum of digits9
E:\singh>
```

❖ **Practical: 7**

Write a Java Program that will display the Sum of $1+1/2+1/3\dots+1/n$.

class P7

```
{  
    public static void main (String args[])  
    {  
        double i, j;  
        double sum=0;  
        double num=3;  
        for (i=1; i<=num; i++)  
        {  
            j=1/i;  
            sum=sum+j;  
        }  
        System.out.println ("sum of series is" + sum);  
    }  
}
```

❖ **Output: 7**



A screenshot of a Windows Command Prompt window titled 'C:\Windows\system32\cmd.exe'. The window shows the following text:

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P7.java
E:\singh>java P7
sum of series is1.8333333333333333
E:\singh>
```

❖ **Practical: 8**

Write a Java Program that check whether the given no is prime or not.

```
import java.util.Scanner;
class P8
{
    public static void main (String args[])
    {
        int num, i, count=0;
        Scanner scan=new Scanner(System.in);

        System.out.println("enter a number");
        num=scan.nextInt();

        for (i=2; i<num; i++)
        {
            if (num%i==0)
            {
                count++;
                break;
            }
        }
        if (count==0)
```

```

    {
        System.out.println("this is a prime number");
    }
    else
    {
        System.out.println("this is not a prime number");
    }
}

```

❖ **Output: 8**

The screenshot shows a Windows Command Prompt window titled 'cmd C:\Windows\system32\cmd.exe'. The window displays the following text:

```

Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>:
E:>>cd singh
E:\singh>javac P8.java
E:\singh>java P8
enter a number
58
this is not a prime number

E:\singh>java P8
enter a number
17
this is a prime number

E:\singh>

```

❖ **Practical: 9**

Write a Java Program that implements the use of break statement.

```

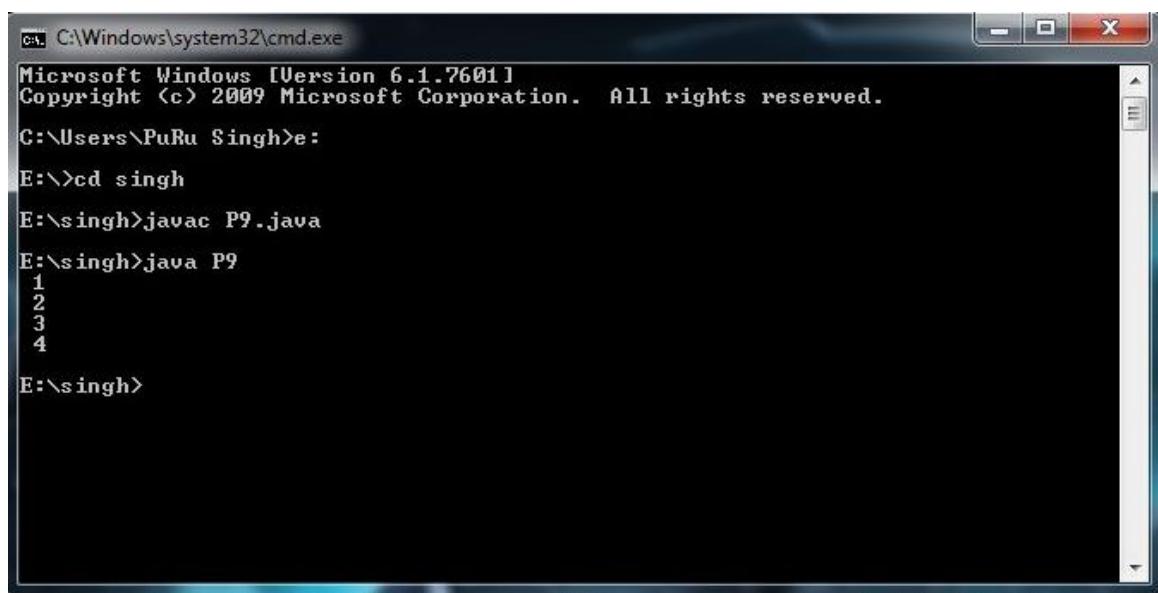
class P9
{
    public static void main (String args[])
    {
        int i;
        for (i=1; i<=10; i++)
        {
            if (i==5)
                break;
            System.out.println (" " + i);
        }
    }
}

```

```
}
```

```
}
```

❖ **Output: 9**



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>:
E:\>cd singh
E:\singh>javac P9.java
E:\singh>java P9
1
2
3
4
E:\singh>
```

❖ **Practical: 10**

Write a Java Program that implements the use of continue statement.

```
class P10
{
    public static void main (String args[])
    {
        int i;
        for (i=1; i<=10; i++)
        {
            if (i==5)
                continue;
            System.out.println (" " + i);
        }
    }
}
```

❖ **Output: 10**



The screenshot shows a Windows Command Prompt window titled 'C:\Windows\system32\cmd.exe'. The window displays the following text:

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>:
E:\>cd singh
E:\singh>javac P10.java
E:\singh>java P10
1
2
3
4
6
7
8
9
10
E:\singh>
```

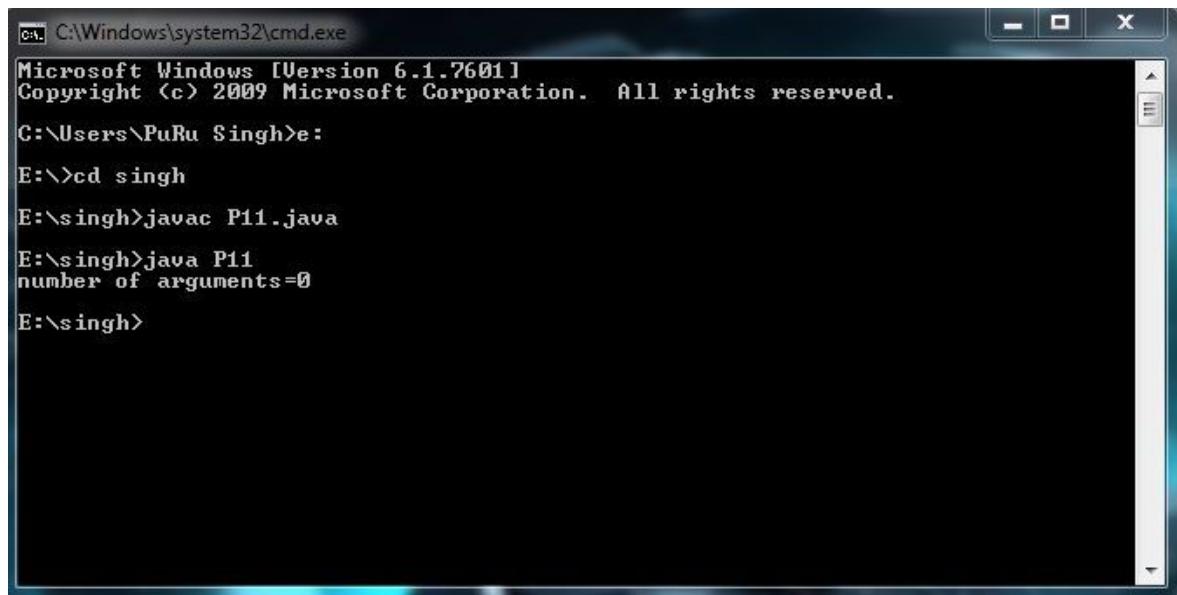
❖ **Practical: 11**

Write a Java Program that will accept Command-line Arguments and display the same.

```
class P11
{
    public static void main (String args[])
    {
        int count, i=0;
        String string;
        count=args.length;

        System.out.println ("number of arguments=" + count);
        while (i<count)
        {
            string=args[i];
            i=i+1;
            System.out.println (i+ " : " + " java is" + string + " ! ");
        }
    }
}
```

❖ **Output: 11**



A screenshot of a Microsoft Windows Command Prompt window titled 'C:\Windows\system32\cmd.exe'. The window shows the following text:
Microsoft Windows [Version 6.1.7601]
Copyright © 2009 Microsoft Corporation. All rights reserved.
C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P11.java
E:\singh>java P11
number of arguments=0
E:\singh>

❖ **Practical: 12**

Write a Java Program to sort the elements of an array in Ascending Order.

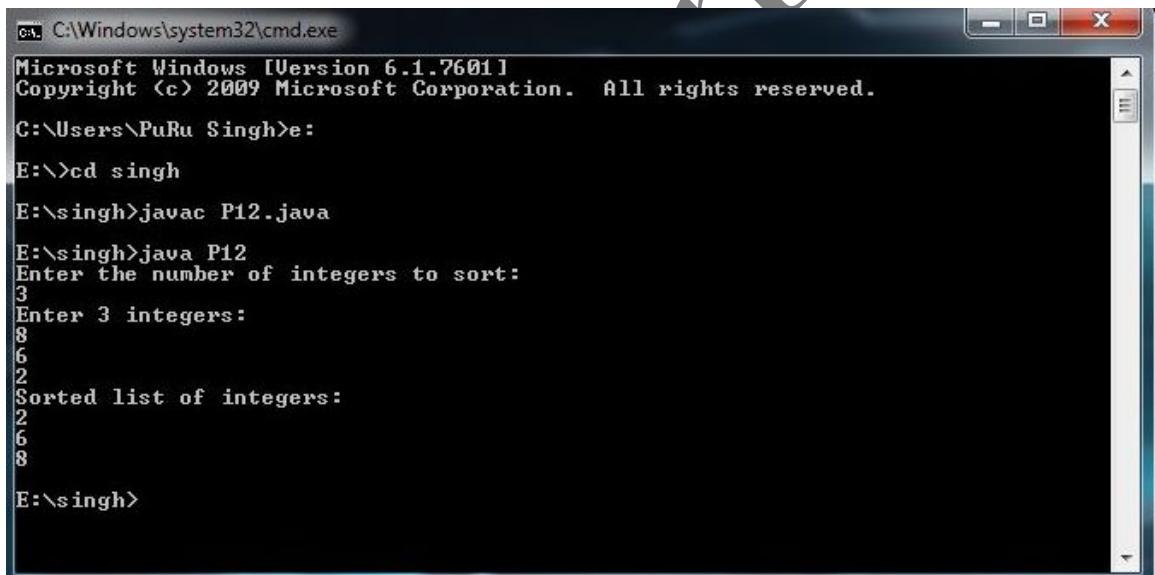
```
import java.util.Scanner;  
class P12  
{  
    public static void main(String []args)  
    {  
        int num, i, j, temp;  
        Scanner input = new Scanner(System.in);  
        System.out.println("Enter the number of integers to sort:");  
        num = input.nextInt();  
        int array[] = new int[num];  
        System.out.println("Enter " + num + " integers: ");  
  
        for (i = 0; i < num; i++)  
            array[i] = input.nextInt();  
  
        for (i = 0; i < ( num - 1 ); i++)  
        {  
            for (j = 0; j < num - i - 1; j++)  
            {  
                if (array[j] > array[j+1])
```

```
        {
            temp = array[j];
            array[j] = array[j+1];
            array[j+1] = temp;
        }
    }

System.out.println("Sorted list of integers:");

for (i = 0; i < num; i++)
    System.out.println(array[i]);
}
```

❖ **Output: 12**



The screenshot shows a Windows Command Prompt window titled 'cmd C:\Windows\system32\cmd.exe'. The window displays the following command-line session:

```
C:\> C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright © 2009 Microsoft Corporation. All rights reserved.

C:\>Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P12.java
E:\singh>java P12
Enter the number of integers to sort:
3
Enter 3 integers:
8
6
2
Sorted list of integers:
2
6
8
E:\singh>
```

❖ **Practical: 13**

Write a Java Program to create a Student class and generate result of student (Total, Per, Grade).

```
import java.util.Scanner;
public class P13
{
    public static void main(String args[])
    {
        int mark[] = new int[5];
        int i;
        float sum=0, avg;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter Marks Obtained in 5 Subjects : ");
        for(i=0; i<5; i++)
        {
            mark[i] = scan.nextInt();
            sum = sum + mark[i];
        }
        avg = sum/5;
        System.out.print("Your Grade is ");
        if(avg>80)
        {
            System.out.print("A");
        }
        else if(avg>60 && avg<=80)
        {
            System.out.print("B");
        }
        else if(avg>40 && avg<=60)
        {
            System.out.print("C");
        }
        else
        {
            System.out.print("D");
        }
    }
}
```

```
}
```

```
}
```

❖ **Output: 13**

```
cmd C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:>cd singh
E:\singh>javac P13.java
E:\singh>java P13
Enter Marks Obtained in 5 Subjects : 23
45
50
80
10
Your Grade is C
E:\singh>
```

❖ **Practical: 14**

Write a Java Program to create an Employee class and generate Salary Slip for the employee.

```
import java.lang.*;
import java.io.*;
class Employee
{
    int emp_id;
    String emp_name;
    float basic_salary;
    Employee(int id, String name, float sal)
    {
        emp_id=id;
        emp_name=name;
        basic_salary=sal;
    }
    void display()
    {
        float da=basic_salary*15/100;
        float hra=basic_salary*10/100;
```

```

        float gross_sal=basic_salary+da+hra;
        System.out.println ("Employee Id= "+emp_id);
        System.out.println ("Employee Name= "+emp_name);
        System.out.println ("Gross Salary= "+gross_sal);
    }
}

class P14
{
    public static void main(String args[]) throws IOException
    {
        BufferedReader br = new BufferedReader(new InputStreamReader
        (System.in));
        System.out.println ("Enter Employee id");
        int id = Integer.parseInt(br.readLine());
        System.out.println ("Enter Employee Name");
        String name = br.readLine();
        System.out.println ("Enter Basic Salary");
        Float sal = Float.parseFloat(br.readLine());
        Employee e = new Employee(id, name, sal);
        e.display();
    }
}

```

❖ **Output: 14**



```

C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:>cd singh
E:\singh>javac P14.java
E:\singh>java P14
Enter Employee id
6
Enter Employee Name
puru
Enter Basic Salary
5000
Employee Id= 6
Employee Name= puru
Gross Salary= 6250.0

E:\singh>

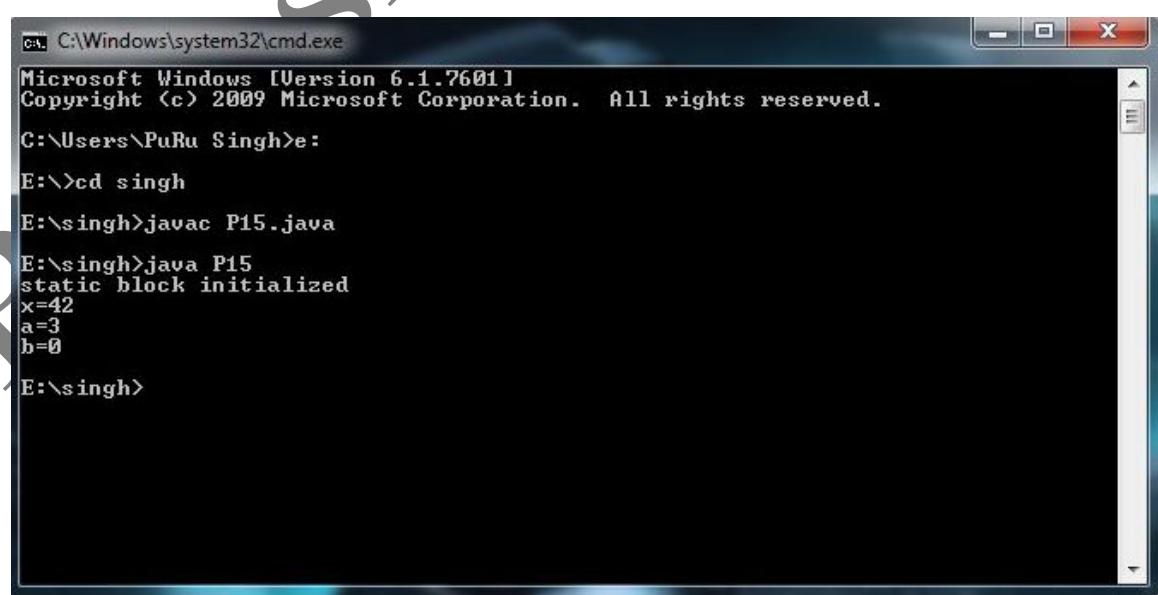
```

❖ **Practical: 15**

Write a java program which shows the use of Static Members.

```
class P15
{
    static int a=3;
    static int b;
    static void math(int x)
    {
        System.out.println("x=" + x);
        System.out.println("a=" + a);
        System.out.println("b=" + b);
    }
    static
    {
        System.out.println("static block initialized");
        b=a*b;
    }
    public static void main(String args[])
    {
        math(42);
    }
}
```

❖ **Output: 15**



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

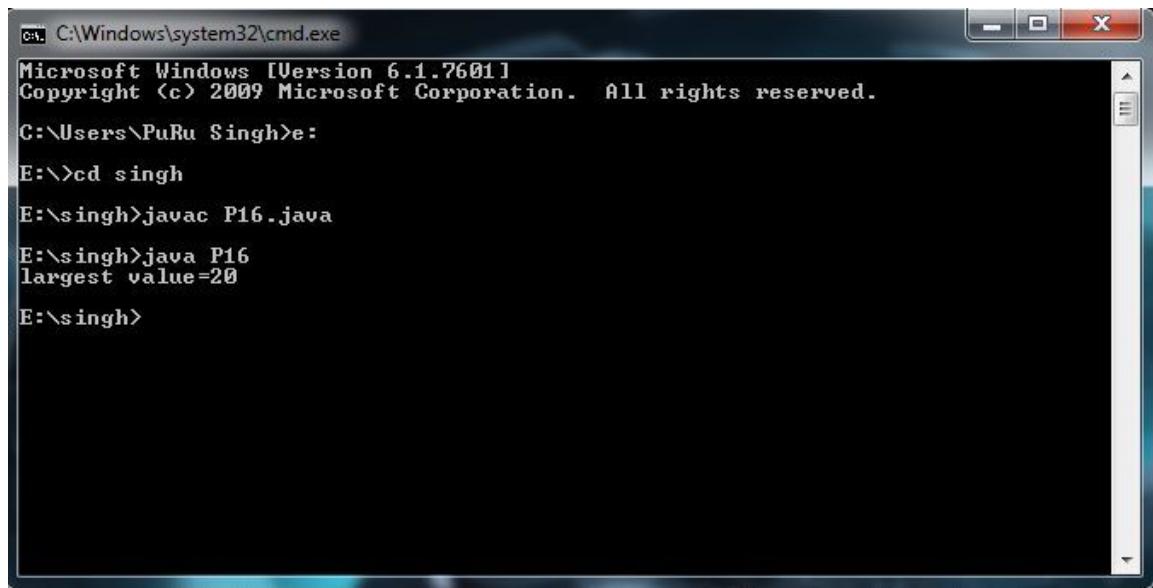
C:\Users\PuRu Singh>e:
E:>cd singh
E:\singh>javac P15.java
E:\singh>java P15
static block initialized
x=42
a=3
b=0
E:\singh>
```

❖ **Practical: 16**

Write a java program which shows the Nesting of Methods.

```
class nesting
{
    int a,b;
    nesting(int p,int q)
    {
        a=p;
        b=q;
    }
    int largest()
    {
        if(a>=b)
        {
            return(a);
        }
        else
        {
            return(b);
        }
    }
    void display()
    {
        int large=largest();
        System.out.println("largest value=" + large);
    }
}
class P16
{
    public static void main(String args[])
    {
        nesting n=new nesting(10,20);
        n.display();
    }
}
```

❖ **Output: 16**



The screenshot shows a Windows Command Prompt window titled 'cmd.exe' running on Windows 6.1.7601. The command line shows the user navigating to their home directory ('E:\singh') and executing 'javac P16.java'. After compilation, the user runs 'java P16' and the program outputs 'largest value=20'. The command prompt then returns to the user's directory.

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\singh>javac P16.java
E:\singh>java P16
largest value=20
E:\singh>
```

❖ **Practical: 17**

Write a java program which shows the use of Methods Overloading.

```
class OverloadDemo
{
    void test()
    {
        System.out.println("No parameters");
    }
    void test(int a)
    {
        System.out.println("a: " + a);
    }
    void test(int a, int b)
    {
        System.out.println("a and b: " + a + " " + b);
    }
    double test(double a)
    {
        System.out.println("double a: " + a);
        return a*a;
    }
}
```

```
class P17
{
    public static void main(String args[])
    {
        OverloadDemo ob = new OverloadDemo();
        double result;
        ob.test();
        ob.test(10);
        ob.test(10, 20);
        result = ob.test(123.2);
        System.out.println("Result of ob.test(123.2): " + result);
    }
}
```

❖ **Output: 17**



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P17.java
E:\singh>java P17
No parameters
a: 10
a and b: 10 20
double a: 123.2
Result of ob.test<123.2>: 15178.240000000002
E:\singh>
```

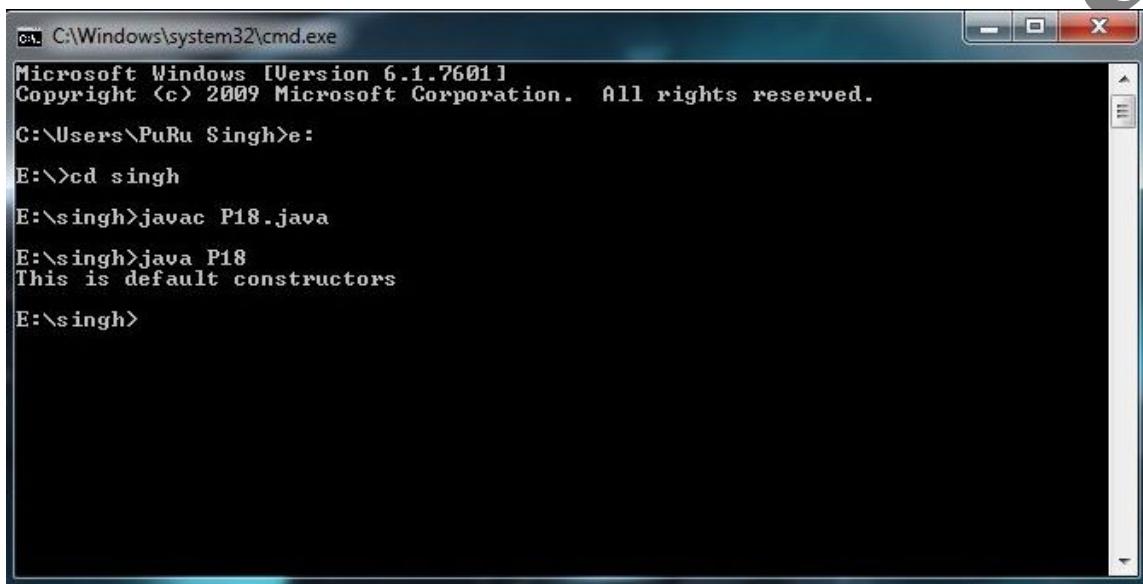
❖ **Practical: 18**

Write a java program which implements the Default Constructors.

```
class room
{
    room()
    {
        System.out.println("This is default constructors");
    }
}
```

```
class P18
{
    public static void main(String args[])
    {
        room r1=new room();
    }
}
```

❖ **Output: 18**



The screenshot shows a Windows Command Prompt window titled 'cmd.exe' running on Windows 7. The command line shows the path 'C:\Windows\system32\cmd.exe'. The output of the command 'java P18' is displayed, which prints 'This is default constructors' to the console.

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:>>cd singh
E:\singh>javac P18.java
E:\singh>java P18
This is default constructors
E:\singh>
```

❖ **Practical: 19**

Write a java program which implements the Parameterized Constructors.

```
class rectangle
{
    int length;
    int width;
    rectangle(int x, int y)
    {
        length=x;
        width=y;
    }
    int area()
    {
        return(length*width);
    }
}
```

```

}
class P19
{
    public static void main(String args[])
    {
        rectangle r1=new rectangle(10,15);
        int a=r1.area();
        System.out.println("Area is:"+a);
    }
}

```

❖ **Output: 19**

```

C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P19.java
E:\singh>java P19
Area is:150
E:\singh>

```

❖ **Practical: 20**

Write a java program which implements the Overloading of Constructors.

```

class Square
{
    int height;
    int width;
    Square()
    {
        height = 0;
        width = 0;
    }
    Square(int side)

```

```
{  
    height = width = side;  
}  
Square(int sideh, int sidew)  
{  
    height = sideh;  
    width = sidew;  
}  
}  
class P20  
{  
    public static void main(String args[]){  
        Square sObj1 = new Square();  
        Square sObj2 = new Square(5);  
        Square sObj3 = new Square(2,3);  
  
        System.out.println("Variable values of object1 :");  
        System.out.println("Object1 height = " + sObj1.height);  
        System.out.println("Object1 width = " + sObj1.width);  
        System.out.println("");  
  
        System.out.println("Variable values of object2 :");  
        System.out.println("Object2 height = " + sObj2.height);  
        System.out.println("Object2 width = " + sObj2.width);  
        System.out.println("");  
  
        System.out.println("Variable values of object3 :");  
        System.out.println("Object3 height = " + sObj3.height);  
        System.out.println("Object3 width = " + sObj3.width);  
    }  
}
```

❖ **Output: 20**



The screenshot shows a Windows Command Prompt window titled 'cmd C:\Windows\system32\cmd.exe'. The window displays the following text:

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\singh>cd singh
E:\singh>javac P20.java
E:\singh>java P20
Variable values of object1 :
Object1 height = 0
Object1 width = 0

Variable values of object2 :
Object2 height = 5
Object2 width = 5

Variable values of object3 :
Object3 height = 2
Object3 width = 3

E:\singh>
```

❖ **Practical: 21**

Write a java program which explains the concept of Single Inheritance.

```
class a
{
    int i,j;
    void showij()
    {
        System.out.println("i and j :" + i + " " +j);
    }
}
class b extends a
{
    int k;
    void showk()
    {
        System.out.println("k:" +k);
    }
    void sum()
    {
        System.out.println("i+j+k:" +(i+j+k));
    }
}
```

```
class P21
{
    public static void main(String args[])
    {
        a superob=new a();
        b subob=new b();

        superob.i=10;
        superob.j=20;

        System.out.println("contents of superob:");

        superob.showij();
        System.out.println();

        subob.i=7;
        subob.j=8;
        subob.k=9;

        System.out.println("contents of subob:");

        subob.showij();
        subob.showk();
        System.out.println();
        System.out.println("sum of i,j and k in subob");

        subob.sum();
    }
}
```

❖ **Output: 21**

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P21.java
E:\singh>java P21
contents of superob:
i and j :10 20

contents of subob:
i and j :7 8
k:9

sum of i,j and k in subob
i+j+k:24

E:\singh>
```

❖ **Practical: 22**

Write a java program which explains the concept of Multilevel Inheritance.

```
import java.lang.*;
import java.io.*;
class Account
{
    String cust_name;
    int acc_no;
    Account(String a, int b)
    {
        cust_name=a;
        acc_no=b;
    }
    void display()
    {
        System.out.println ("Customer Name: "+cust_name);
        System.out.println ("Account No: "+acc_no);
    }
}
class Saving_Acc extends Account
{
    int min_bal,saving_bal;
```

```
Saving_Acc(String a, int b, int c, int d)
{
    super(a,b);
    min_bal=c;
    saving_bal=d;
}
void display()
{
    super.display();
    System.out.println ("Minimum Balance: "+min_bal);
    System.out.println ("Saving Balance: "+saving_bal);
}
class Acct_Details extends Saving_Acc
{
    int deposits, withdrawals;
    Acct_Details(String a, int b, int c, int d, int e, int f)
    {
        super(a,b,c,d);
        deposits=e;
        withdrawals=f;
    }
    void display()
    {
        super.display();
        System.out.println ("Deposit: "+deposits);
        System.out.println ("Withdrawals: "+withdrawals);
    }
}
class P22
{
    public static void main(String args[])
    {
        Acct_Details A = new Acct_Details("PuRu",666,1000,5000,500,9000);
        A.display();
    }
}
```

```
}
```

❖ **Output: 22**

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:>cd singh
E:\singh>javac P22.java
E:\singh>java P22
Customer Name: PuRu
Account No: 666
Minimum Balance: 1000
Saving Balance: 5000
Deposit: 500
Withdrawals: 9000

E:\singh>
```

❖ **Practical: 23**

Write a java program which explains the concept of Hierarchical Inheritance.

```
class HierarchicalInheritance
```

```
{
```

```
    void DisplayA()
```

```
{
```

```
    System.out.println("This is a content of parent class");
```

```
}
```

```
}
```

```
class A extends HierarchicalInheritance
```

```
{
```

```
    void DisplayB()
```

```
{
```

```
    System.out.println("This is a content of child class 1");
```

```
}
```

```
}
```

```
class B extends HierarchicalInheritance
```

```
{
```

```
    void DisplayC()
```

```
{
```

```
    System.out.println("This is a content of child class 2");
```

```
    }
}

class P23
{
    public static void main(String args[])
    {
        System.out.println("Calling for child class C");
        B b = new B();
        b.DisplayA();
        b.DisplayC();
        System.out.println("Calling for child class B");
        A a = new A();
        a.DisplayA();
        a.DisplayB();
    }
}
```

❖ **Output: 23**

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P23.java
E:\singh>java P23
Calling for child class C
This is a content of parent class
This is a content of child class 2
Calling for child class B
This is a content of parent class
This is a content of child class 1
E:\singh>
```

❖ **Practical: 24**

Write a java program which shows the Method Overriding.

```
class a
{
    int i,j;
    a(int a,int b)
    {
        i=a;
        j=b;
    }
    void show()
    {
        System.out.println("i and j:" + i + " " + j);
    }
}
class b extends a
{
    int k;
    b(int a,int b, int c)
    {
        super(a,b);
        k=c;
    }
    void show()
    {
        System.out.println("k:"+ k);
    }
}
class P24
{
    public static void main(String args[])
    {
        b subob=new b(1,2,3);
        subob.show();
    }
}
```

❖ **Output: 24**



The screenshot shows a Windows Command Prompt window titled 'cmd C:\Windows\system32\cmd.exe'. The window displays the following command-line session:

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P24.java
E:\singh>java P24
k:3
E:\singh>
```

❖ **Practical: 25**

Write a Java Program to implement final class and final method.

```
final class xyz
{
    final void display()
    {
        System.out.println("This is the final class and method");
    }
}

class abc
{
    void display()
    {
        System.out.println("This is simple class and method");
    }
}

class P25
{
    public static void main(String args[])
    {
        abc fi=new abc();
        fi.display();
    }
}
```

```
}
```

```
}
```

❖ **Output: 25**



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:>>cd singh
E:\singh>javac P25.java
E:\singh>java P25
This is simple class and method
E:\singh>
```

❖ **Practical: 26**

Write a Java Program to implement abstract class and abstract method.

```
abstract class Bike
```

```
{
```

```
    abstract void run();
```

```
}
```

```
class P26 extends Bike
```

```
{
```

```
    void run()
```

```
{
```

```
        System.out.println("Running Safely...");
```

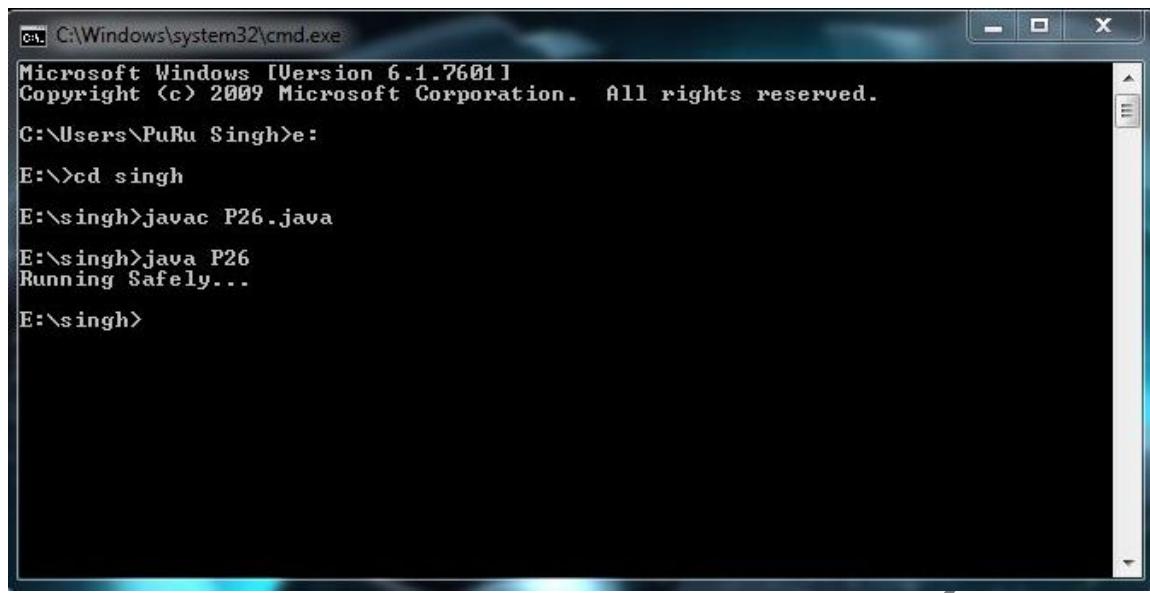
```
}
```

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

```
        Bike obj = new P26();
```

```
        obj.run();
    }
}
```

❖ **Output: 26**



The screenshot shows a Windows Command Prompt window titled 'cmd' with the path 'C:\Windows\system32\cmd.exe'. The window displays the following text:

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright © 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P26.java
E:\singh>java P26
Running Safely...
E:\singh>
```

❖ **Practical: 27**

Write a java program which implements Interface.

interface callback

```
{  
    void callback(int param);  
}
```

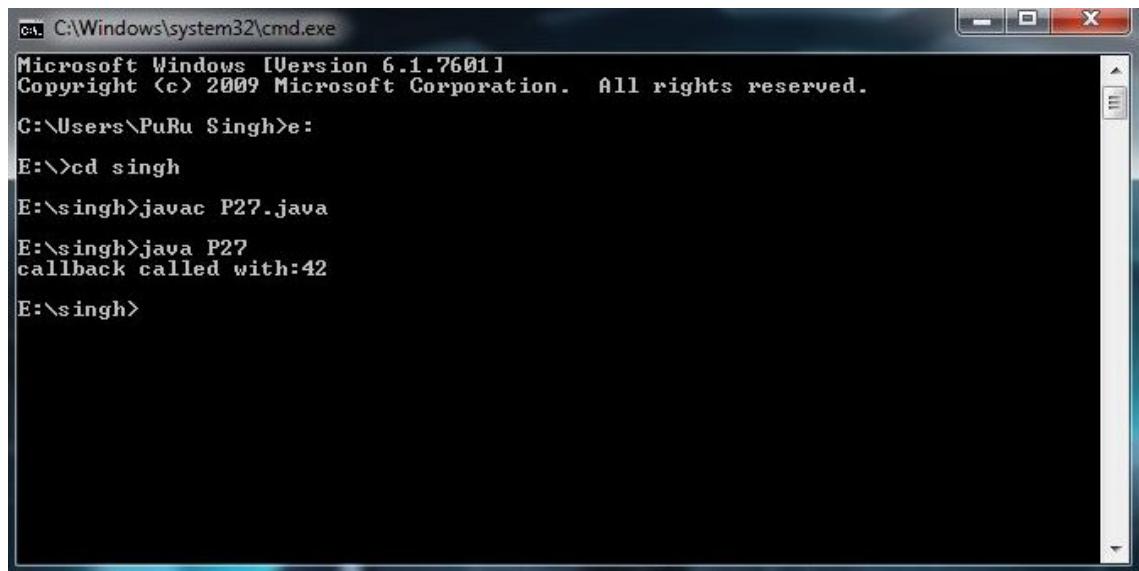
class client implements callback

```
{  
    public void callback(int p)  
    {  
        System.out.println("callback called with:" + p);  
    }  
}
```

class P27

```
{  
    public static void main(String args[])  
    {  
        callback c=new client();  
        c.callback(42);  
    }  
}
```

❖ **Output: 27**



A screenshot of a Windows Command Prompt window titled "cmd C:\Windows\system32\cmd.exe". The window shows the following text:

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P27.java
E:\singh>java P27
callback called with:42
E:\singh>
```

❖ **Practical: 28**

Write a java program which implements Multiple Interfaces.

interface car

```
{  
    int speed=90;  
    public void distance();  
}
```

interface bus

```
{  
    int distance=100;  
    public void speed();  
}
```

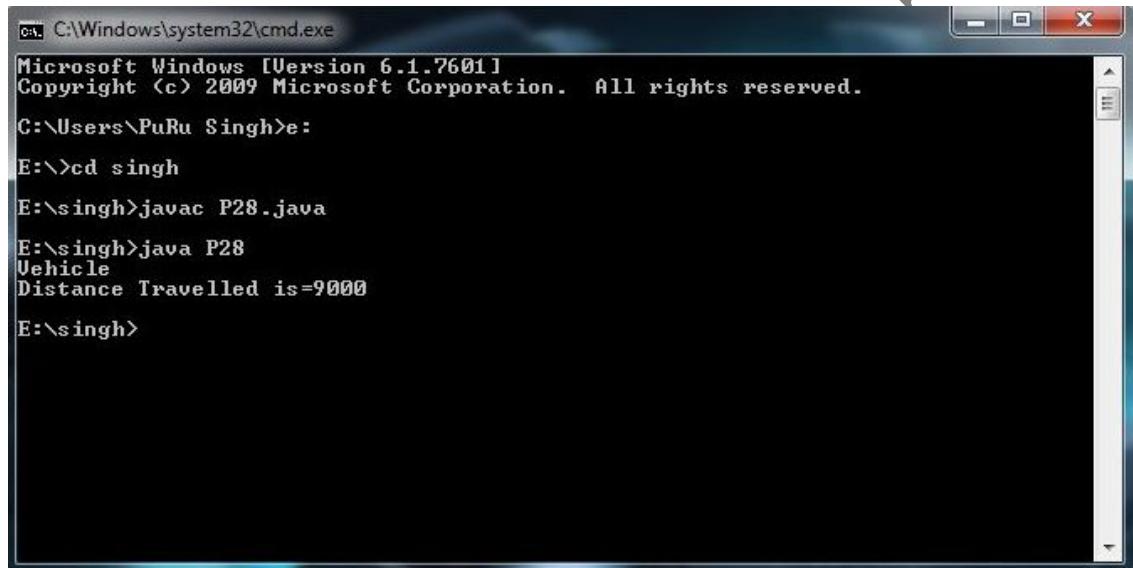
class vehicle implements car,bus

```
{  
    public void distance()  
    {  
        int distance=speed*100;  
        System.out.println("Distance Travelled is="+distance);  
    }  
    public void speed()  
    {  
        int speed=distance/100;  
    }  
}
```

```
    }
}

class P28
{
    public static void main(String args[])
    {
        System.out.println("Vehicle");
        vehicle v1=new vehicle();
        v1.distance();
        v1.speed();
    }
}
```

❖ **Output: 28**



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P28.java
E:\singh>java P28
Vehicle
Distance Travelled is=9000
E:\singh>
```

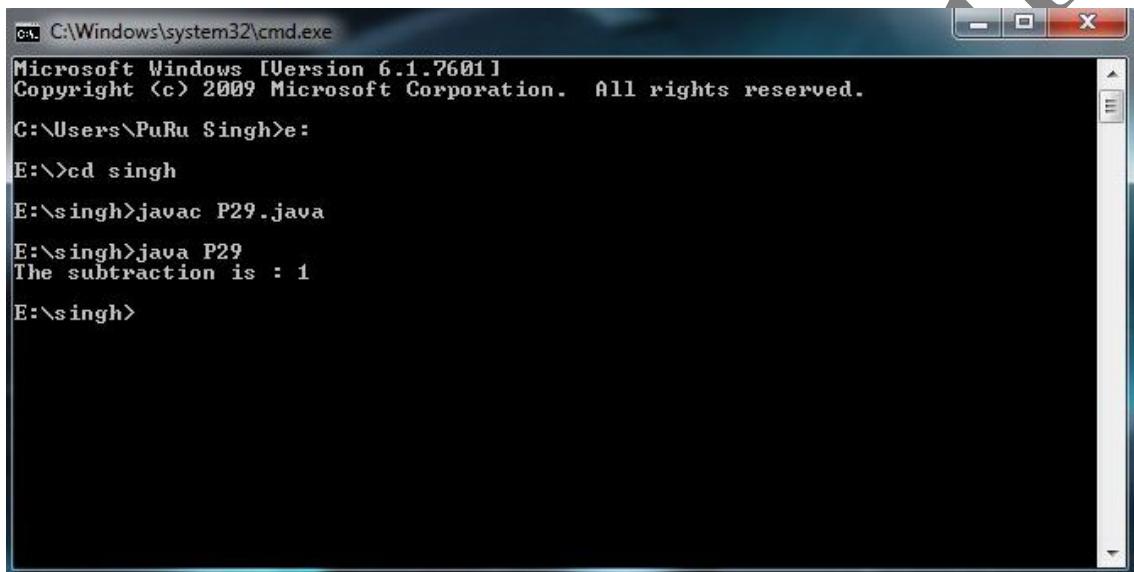
❖ **Practical: 29**

Write a java program which shows importing of classes from other packages.

```
package packageP29;
public class subtraction
{
    public int add(int x,int y)
    {
        return(x-y);
    }
}
```

```
import packageP29.*;
class P29
{
    public static void main(String args[])
    {
        subtraction a=new subtraction();
        System.out.println("The subtraction is : "+a.add(5,4));
    }
}
```

❖ **Output: 29**



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P29.java
E:\singh>java P29
The subtraction is : 1
E:\singh>
```

❖ **Practical: 30**

Write a Java Program to implement the methods of Math Class.

```
import java.lang.Math;
class P30
{
    public static void main(String args[])
    {
        int num = 9;
        if (Math.sqrt(num) * Math.sqrt(num) == num)
            System.out.println(num + " is a perfect square");
        else
            System.out.println(num + " is not a perfect square");
        num = -2;
    }
}
```

```

        System.out.println("Value of num : " + Math.abs(num));
        System.out.println("value when Math.ceil is used : " +Math.ceil
        (Math.PI));
        System.out.println("Value when Math.floor is used : " +Math.floor
        (Math.PI));
        num = (int) (Math.random() * 10);
        System.out.println("Random number between 0 and 10 : "+ num);
    }
}

```

❖ **Output: 30**

```

C:\> C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P30.java
E:\singh>java P30
9 is a perfect square
Value of num : 2
value when Math.ceil is used : 4.0
Value when Math.floor is used : 3.0
Random number between 0 and 10 : 0
E:\singh>

```

❖ **Practical: 31**

Write a Java Program to implement the methods of String Class.

```

public class P31
{
    public static void main(String args[])
    {
        String str="StudyTonight";
        System.out.println(str.indexOf('u'));
        System.out.println(str.indexOf('t', 3));

        String subString="Ton";
        System.out.println(str.indexOf(subString));
        System.out.println(str.indexOf(subString,7));
    }
}

```

```
}
```

```
}
```

❖ **Output: 31**

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P31.java
E:\singh>java P31
2
5
-1
E:\singh>
```

❖ **Practical: 32**

Write a Java Program to implement the methods of Vector Class.

```
import java.util.*;
public class P32
{
    public static void main(String args[])
    {
        Vector v = new Vector(3, 2);
        System.out.println("Initial size: " + v.size());
        System.out.println("Initial capacity: " + v.capacity());

        v.addElement(new Integer(1));
        v.addElement(new Integer(2));
        v.addElement(new Integer(3));
        v.addElement(new Integer(4));
        System.out.println("Capacity after four additions: " + v.capacity());

        v.addElement(new Double(5.45));
        System.out.println("Current capacity: " + v.capacity());
```

```
v.addElement(new Double(6.08));
v.addElement(new Integer(7));
System.out.println("Current capacity: " + v.capacity());

v.addElement(new Float(9.4));
v.addElement(new Integer(10));
System.out.println("Current capacity: "+ v.capacity());

v.addElement(new Integer(11));
v.addElement(new Integer(12));
System.out.println("First element: " + (Integer)v.firstElement());
System.out.println("Last element: " + (Integer)v.lastElement());

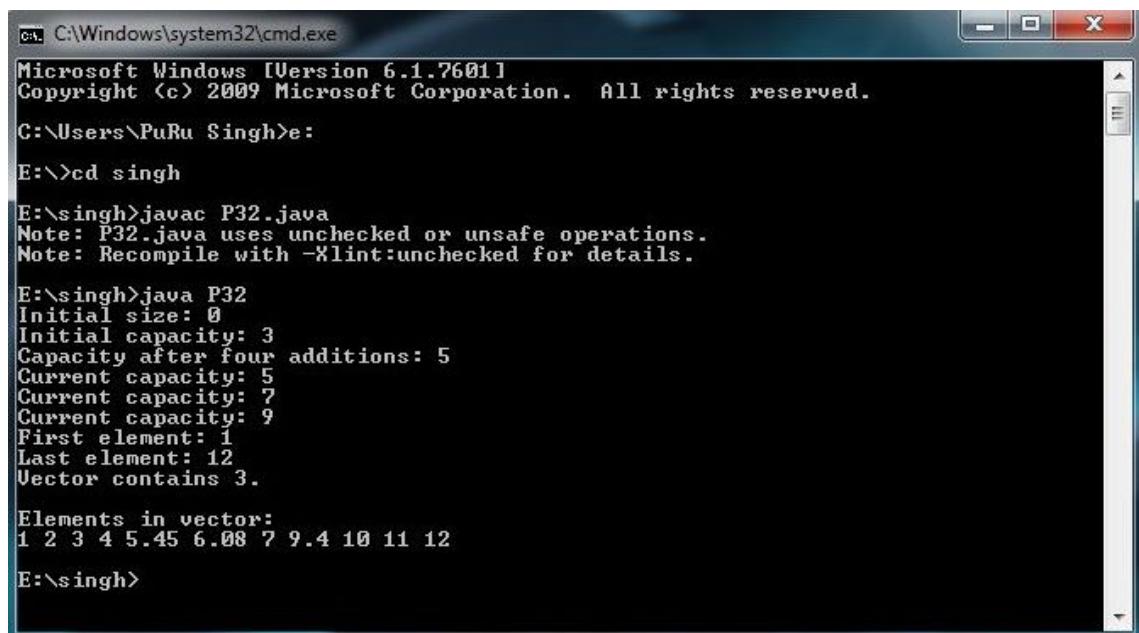
if(v.contains(new Integer(3)))
    System.out.println("Vector contains 3.");

Enumeration vEnum = v.elements();
System.out.println("\nElements in vector:");

while(vEnum.hasMoreElements())
    System.out.print(vEnum.nextElement() + " ");
    System.out.println();

}
```

❖ **Output: 32**



```
c:\> C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh

E:\singh>javac P32.java
Note: P32.java uses unchecked or unsafe operations.
Note: Recompile with -Xlint:unchecked for details.

E:\singh>java P32
Initial size: 0
Initial capacity: 3
Capacity after four additions: 5
Current capacity: 5
Current capacity: 7
Current capacity: 9
First element: 1
Last element: 12
Vector contains 3.

Elements in vector:
1 2 3 4 5.45 6.08 7 9.4 10 11 12

E:\singh>
```

❖ **Practical: 33**

Write a Java Program to implement the methods of Stack Class.

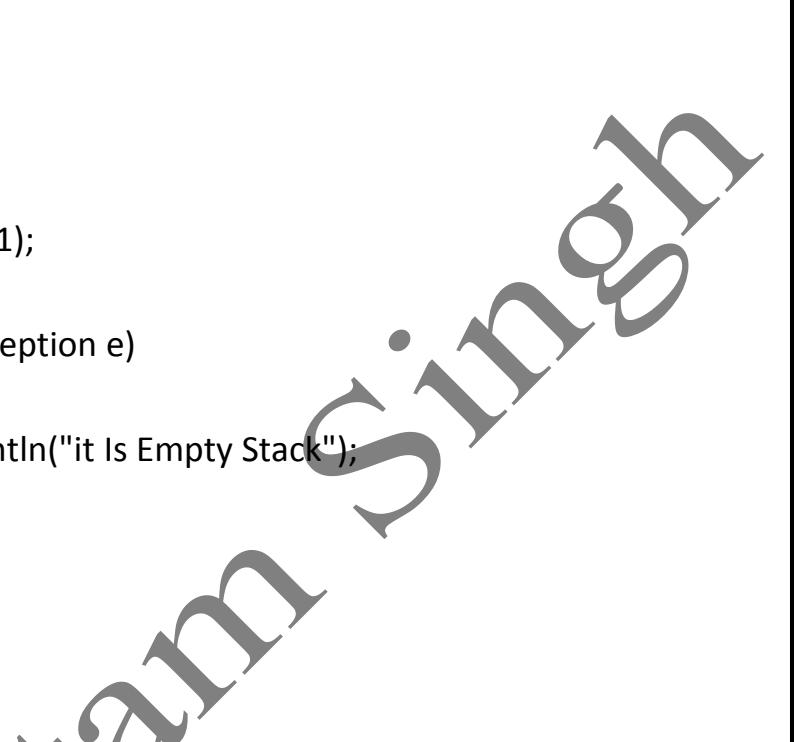
```
import java.util.*;
public class P33
{
    static void showpush(Stack stack1, int a)
    {
        stack1.push(new Integer(a));
        System.out.println("push(" + a + ")");
        System.out.println("stack: " + stack1);
    }
    static void showpop(Stack stack1)
    {
        Integer a = (Integer) stack1.pop();
        System.out.println(a);
        System.out.println("stack: " + stack1);
    }
    public static void main(String args[])
    {
        Stack stack1 = new Stack();
        System.out.println("stack: " + stack1);
```

```

        showpush(stack1, 40);
        showpush(stack1, 50);
        showpush(stack1, 60);
        showpop(stack1);
        showpop(stack1);
        showpop(stack1);
        try
        {
            showpop(stack1);
        }
        catch (EmptyStackException e)
        {
            System.out.println("it Is Empty Stack");
        }
    }
}

```

❖ **Output: 33**



```

C:\> C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\>Users\PuRu Singh>e:
E:\>cd singh

E:\singh>javac P33.java
Note: P33.java uses unchecked or unsafe operations.
Note: Recompile with -Xlint:unchecked for details.

E:\singh>java P33
stack: []
push(40)
stack: [40]
push(50)
stack: [40, 50]
push(60)
stack: [40, 50, 60]
60
stack: [40, 50]
50
stack: [40]
40
stack: []
it Is Empty Stack

E:\singh>

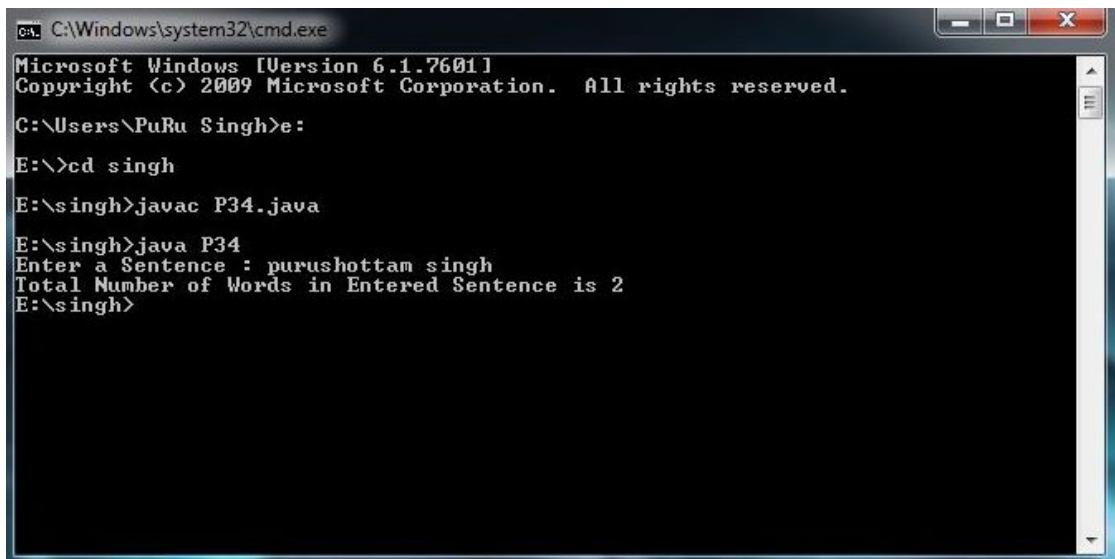
```

❖ **Practical: 34**

Write a Java Program which will read a text and count all occurrences of a particular word.

```
import java.util.Scanner;
public class P34
{
    public static int countWords(String str)
    {
        int count = 1;
        for(int i=0; i<=str.length()-1; i++)
        {
            if(str.charAt(i) == ' ' && str.charAt(i+1)!=' ')
            {
                count++;
            }
        }
        return count;
    }
    public static void main(String args[])
    {
        String sentence;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter a Sentence : ");
        sentence = scan.nextLine();
        System.out.print("Total Number of Words in Entered Sentence is " +
        countWords(sentence));
    }
}
```

❖ **Output: 34**



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P34.java
E:\singh>java P34
Enter a Sentence : purushottam singh
Total Number of Words in Entered Sentence is 2
E:\singh>
```

❖ **Practical: 35**

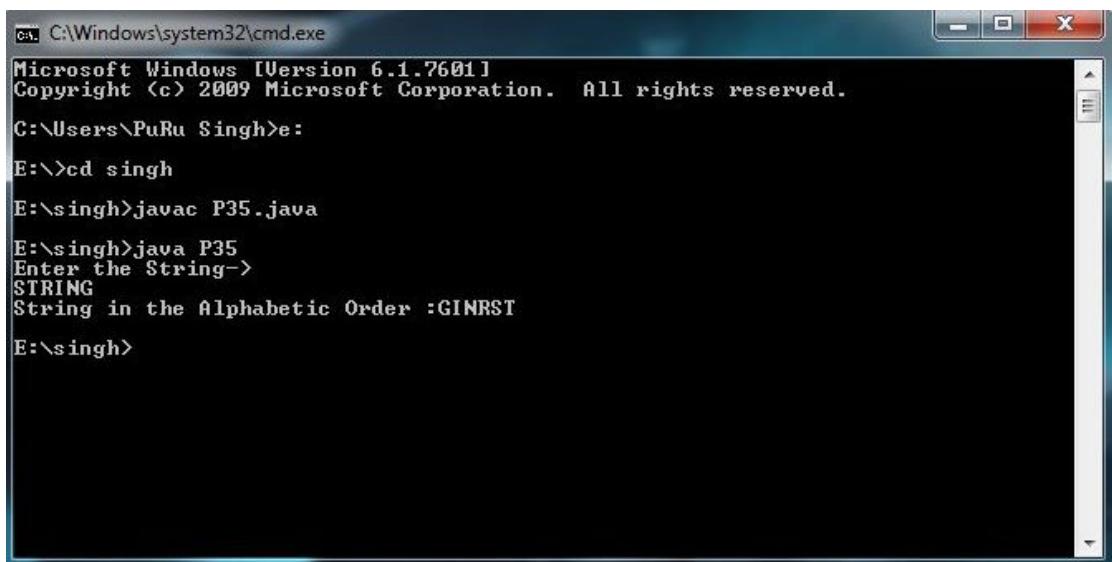
Write a Java Program which will read a string and rewrite it in the alphabetical order eg. The word “STRING” should be written a “GINRST”.

```
import java.io.*;
import java.util.*;
class P35
{
    String alphaOrder(String str)
    {
        char[] charArray=str.toCharArray();
        Arrays.sort(charArray);
        String aString=new String(charArray);
        return aString;
    }
    public static void main(String[] args)throws IOException
    {
        System.out.println("Enter the String->");
        BufferedReader br=new BufferedReader(new InputStreamReader
        (System.in));
        String inputString=br.readLine();
        P35 obj=new P35();
        String alphaString=obj.alphaOrder(inputString);
        System.out.println("String in the Alphabetic Order :" +alphaString);
```

```
}
```

```
}
```

❖ **Output: 35**



```
C:\ C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:>cd singh
E:>singh>javac P35.java
E:>singh>java P35
Enter the String->
STRING
String in the Alphabetic Order :GINRST
E:>singh>
```

❖ **Practical: 36**

Write a java program which creates threads using the Thread Class.

```
class mythread extends Thread
{
    public void run()
    {
        for(int i=1; i<=10; i++)
        {
            System.out.println(i);
        }
    }
}

class P36
{
    public static void main(String args[])
    {
        mythread obj=new mythread();
        Thread t=new Thread(obj);
        t.start();
    }
}
```

```
}
```

❖ **Output: 36**



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:>cd singh
E:\singh>javac P36.java
E:\singh>java P36
1
2
3
4
5
6
7
8
9
10
E:\singh>
```

❖ **Practical: 37**

Write a java program which shows the use of yield(), stop() and sleep() Methods.

class a extends Thread

```
{  
    public void run()  
    {  
        for(int i=0;i<5;i++)  
        {  
            if(i==0) yield();  
            System.out.println("From Class a i =" + i);  
        }  
    }  
}
```

class b extends Thread

```
{  
    public void run()  
    {  
        for(int i=0;i<5;i++)  
        {  
            if(i==2) stop();  
            System.out.println("From Class b i =" + i);  
        }  
    }  
}
```

```
        }
    }
}

class c extends Thread
{
    public void run()
    {
        for(int i=0;i<5;i++)
        {
            if(i==1)
            {
                try
                {
                    sleep(1000);
                }
                catch(Exception e)
                {
                }
            }
            System.out.println("From Class c i =" + i);
        }
    }
}

public class P37
{
    public static void main(String[] args)
    {
        new a().start();
        new b().start();
        new c().start();
    }
}
```

❖ **Output: 37**



A screenshot of a Windows Command Prompt window titled 'cmd C:\Windows\system32\cmd.exe'. The window shows the following text:

```
C:\> Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P37.java
Note: P37.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.

E:\singh>java P37
From Class a i =0
From Class a i =1
From Class a i =2
From Class a i =3
From Class a i =4
From Class c i =0
From Class b i =0
From Class b i =1
From Class c i =1
From Class c i =2
From Class c i =3
From Class c i =4
E:\singh>
```

❖ **Practical: 38**

Write a java program which shows the Priority in Threads.

```
import java.lang.*;
class P38 extends Thread
{
    public void run()
    {
        System.out.println("Inside run method");
    }
    public static void main(String args[])
    {
        P38 t1 = new P38();
        P38 t2 = new P38();
        P38 t3 = new P38();

        System.out.println("t1 thread priority : " + t1.getPriority());
        System.out.println("t2 thread priority : " + t2.getPriority());
        System.out.println("t3 thread priority : " + t3.getPriority());

        t1.setPriority(2);
        t2.setPriority(5);
        t3.setPriority(8);
```

```

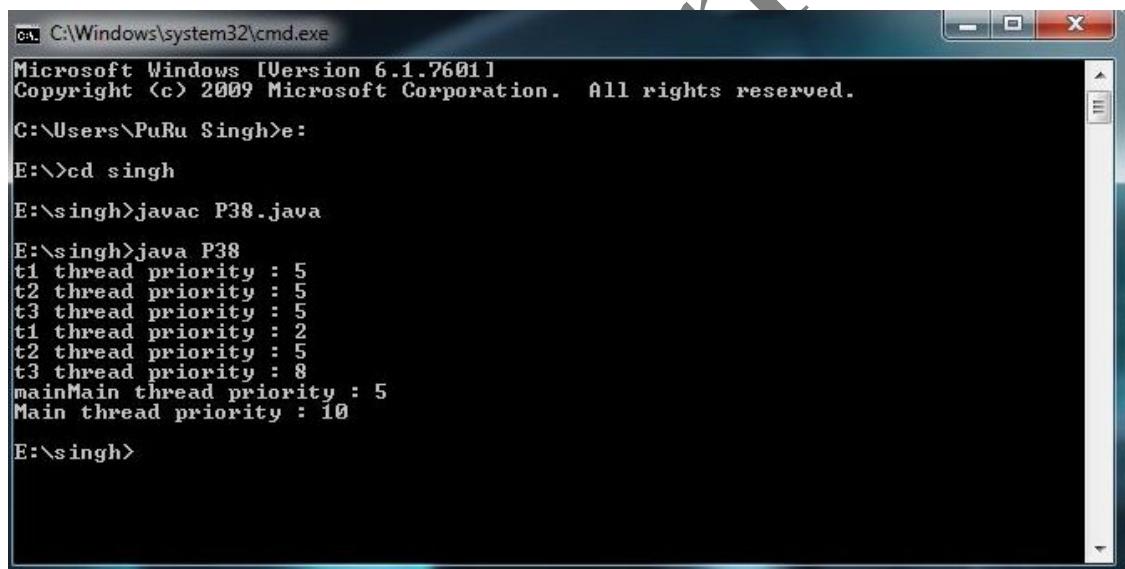
        System.out.println("t1 thread priority : " + t1.getPriority());
        System.out.println("t2 thread priority : " + t2.getPriority());
        System.out.println("t3 thread priority : " + t3.getPriority());

        System.out.print(Thread.currentThread().getName());
        System.out.println("Main thread priority : " + Thread.currentThread().
getPriority());

        Thread.currentThread().setPriority(10);
        System.out.println("Main thread priority : " + Thread.currentThread().
getPriority());
    }
}

```

❖ **Output: 38**



```

C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P38.java
E:\singh>java P38
t1 thread priority : 5
t2 thread priority : 5
t3 thread priority : 5
t1 thread priority : 2
t2 thread priority : 5
t3 thread priority : 8
mainMain thread priority : 5
Main thread priority : 10
E:\singh>

```

❖ **Practical: 39**

Write a java program which use of Runnable Interface.

class P39

{

```

    public static void main(String args[])
    {
        StringThread t=new StringThread("Java",5);
        new Thread(t).start();
    }
}
```

```
    }
}

class StringThread implements Runnable
{
    String str;
    int num;
    StringThread(String s,int n)
    {
        str=new String(s);
        num=n;
    }
    public void run()
    {
        for(int i=1; i<=num; i++)
        {
            System.out.println(str+" ");
        }
    }
}
```

❖ **Output: 39**



The screenshot shows a Microsoft Windows command prompt window titled 'cmd C:\Windows\system32\cmd.exe'. The window displays the following command-line session:

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

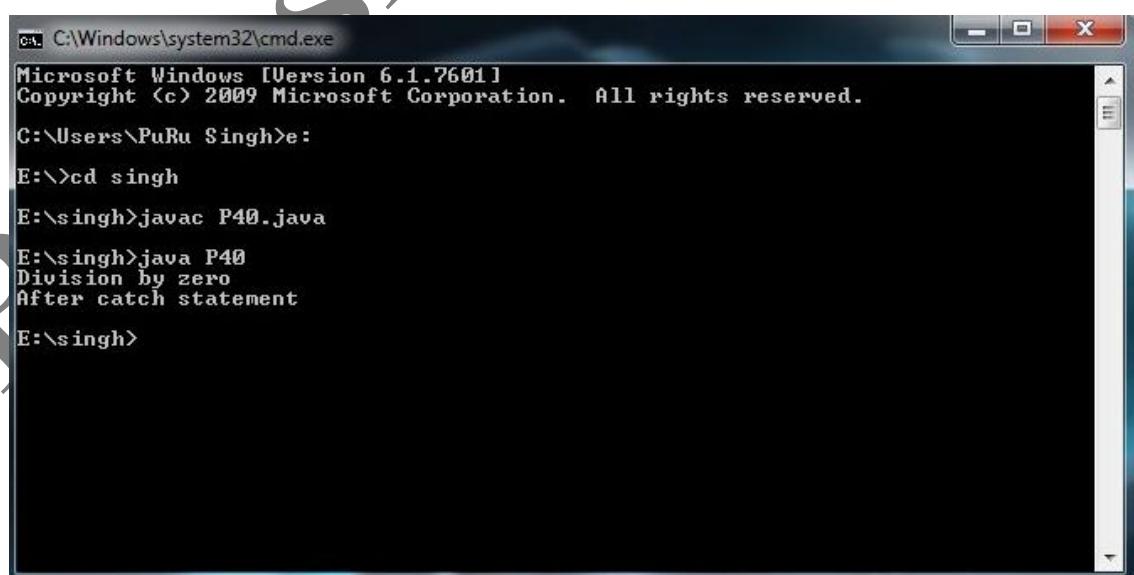
C:\Users\PuRu Singh>e:
E:>cd singh
E:\singh>javac P39.java
E:\singh>java P39
Java
Java
Java
Java
Java
E:\singh>
```

❖ Practical: 40

Write a java program which uses try and catch for Exception Handling.

```
class P40
{
    public static void main(String args[])
    {
        int d,a;
        try
        {
            d=0;
            a=42/d;
            System.out.println("This will not be printed");
        }
        catch(ArithmaticException e)
        {
            System.out.println("Division by zero");
        }
        System.out.println("After catch statement");
    }
}
```

❖ Output: 40



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

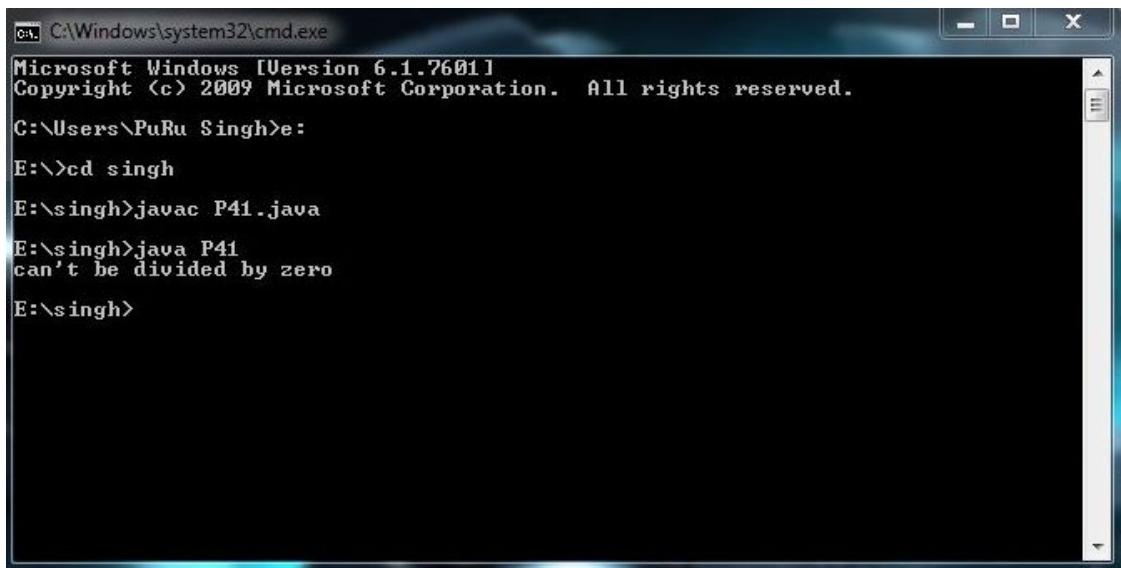
C:\Users\PuRu Singh>:
E:\>cd singh
E:\singh>javac P40.java
E:\singh>java P40
Division by zero
After catch statement
E:\singh>
```

❖ **Practical: 41**

Write a java program which uses Multiple catch Blocks.

```
public class P41
{
    public static void main(String args[])
    {
        int array[]={20,10,30};
        int num1=15,num2=0;
        int res=0;
        try
        {
            res=num1/num2;
            System.out.println("The result is" + res);
            for(int ct=2; ct>=0; ct--)
            {
                System.out.println("The value of array are" + array[ct]);
            }
        }
        catch(ArrayIndexOutOfBoundsException e)
        {
            System.out.println("Error... Array is out of Bounds");
        }
        catch(ArithmetricException e)
        {
            System.out.println("can't be divided by zero");
        }
    }
}
```

❖ **Output: 41**



The screenshot shows a Windows Command Prompt window titled 'cmd C:\Windows\system32\cmd.exe'. The window displays the following text:

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P41.java
E:\singh>java P41
can't be divided by zero
E:\singh>
```

❖ **Practical: 42**

Write a java program which uses finally Statement.

class P42

{

```
public static void main(String args[])
{
    int a[]=new int[2];
    try
    {
        System.out.println("Access element three :" + a[3]);
    }
    catch(ArrayIndexOutOfBoundsException e)
    {
        System.out.println("Access element three :" + e);
    }
    finally
    {
        a[0]=6;
        System.out.println("First element value :" + a[0]);
        System.out.println("The Finally statement is executing...");
    }
}
```

```
}
```

❖ **Output: 42**



```
C:\> C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\>Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P42.java
E:\singh>java P42
Access element three :java.lang.ArrayIndexOutOfBoundsException: 3
First element value :6
The Finally statement is executing...
E:\singh>
```

❖ **Practical: 43**

Write a java program which uses Nested try Statements.

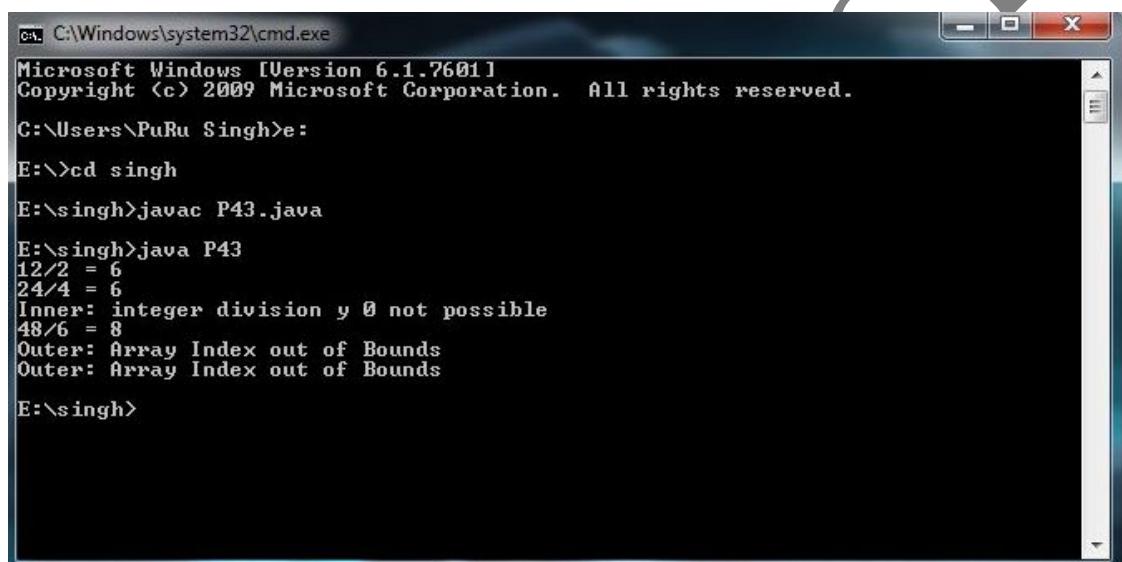
```
public class P43
```

```
{
```

```
    public static void main(String args[])
    {
        int[] num={12,24,36,48,60,72};
        int[] den={2,4,0,6};
        for(int i=0;i<num.length;i++)
        {
            try
            {
                try
                {
                    System.out.println(num[i]+"'"+den[i]+" = "+num[i]/
den[i]);
                }
                catch(ArithmaticException e)
                {
                    System.out.println("Inner: integer division by 0 not
possible");
                }
            }
        }
    }
}
```

```
        }
    }
}
catch(ArrayIndexOutOfBoundsException e)
{
    System.out.println("Outer: Array Index out of
                      Bounds");
}
}
```

❖ *Output: 43*



❖ Practical: 44

Write a java program which shows throwing our own Exception.

```
import java.lang.Exception;  
class MyException extends Exception  
{  
    MyException(String Message)  
    {  
        super(Message);  
    }  
}  
class P44  
{
```

```
public static void main(String args[])
{
    int x=5,y=1000;
    try
    {
        float z=x/y;
        if(z<0.01)
        {
            throw new MyException("Number is two small");
        }
    }
    catch(MyException e)
    {
        System.out.println("Caught my Exception");
        System.out.println(e.getMessage());
    }
    finally
    {
        System.out.println("I am always here");
    }
}
```

❖ **Output: 44**



The screenshot shows a Windows Command Prompt window titled 'cmd C:\Windows\system32\cmd.exe'. The window displays the following command-line session:

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

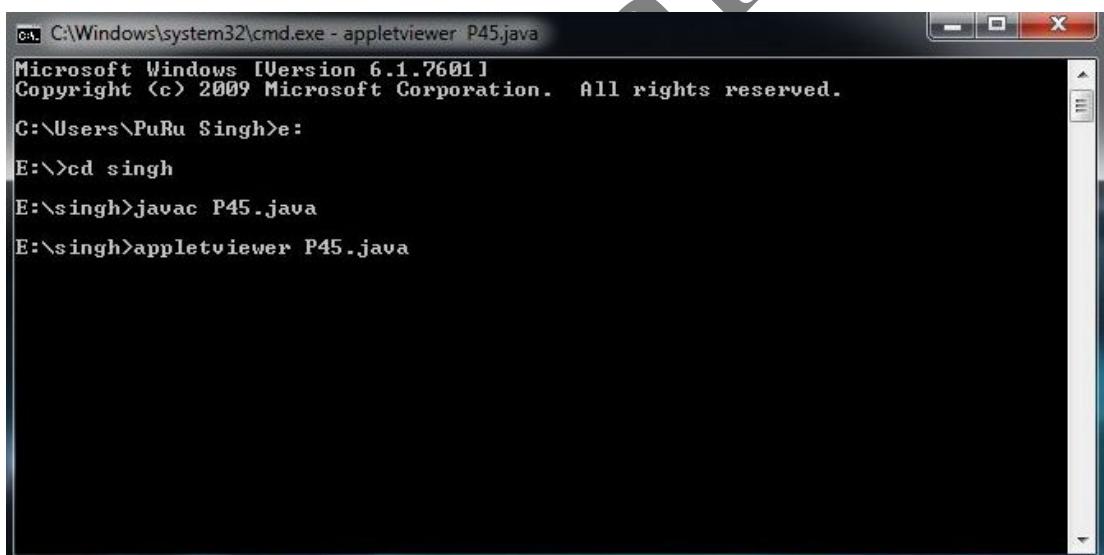
C:\Users\PuRu Singh>:
E:\>cd singh
E:\singh>javac P44.java
E:\singh>java P44
Caught my Exception
Number is two small
I am always here
E:\singh>
```

❖ **Practical: 45**

Create an Applet program that print Hello Applet.

```
import java.applet.Applet;
import java.awt.Graphics;
/*
<applet code="P45" width="500" height="250">
</applet>
*/
public class P45 extends Applet
{
    public void paint(Graphics g)
    {
        g.drawString("Hello Applet!", 100, 70);
    }
}
```

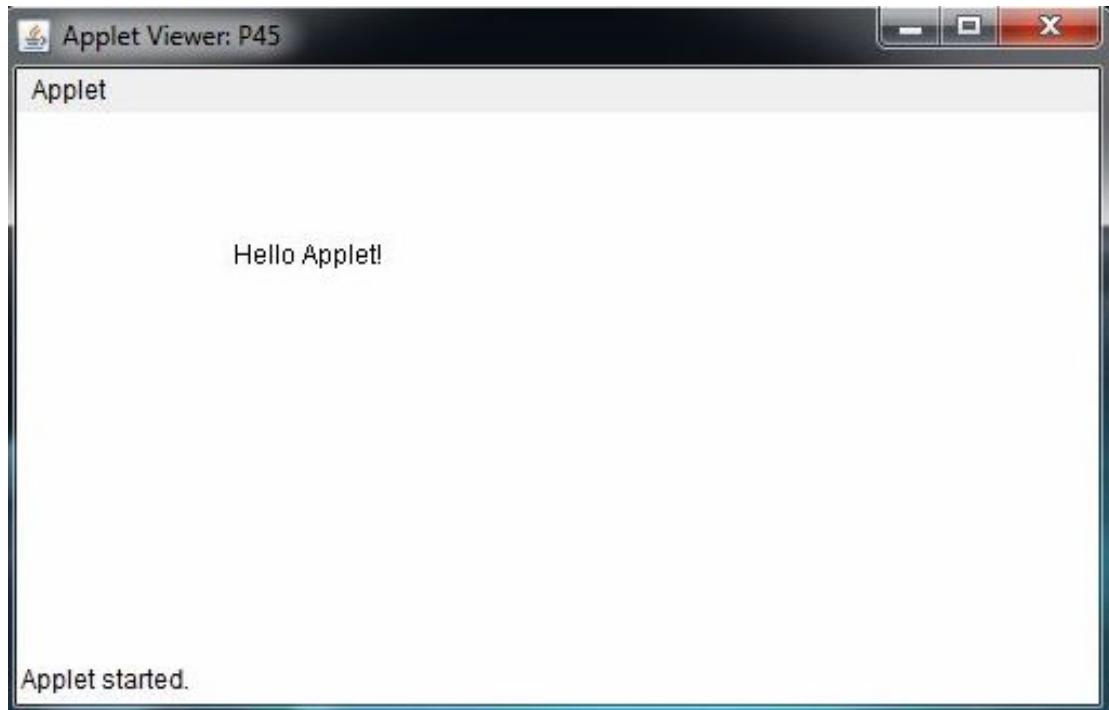
❖ **Output: 45**



The screenshot shows a Microsoft Windows command prompt window titled 'C:\Windows\system32\cmd.exe - appletviewer P45.java'. The window displays the following command-line session:

```
C:\> C:\Windows\system32\cmd.exe - appletviewer P45.java
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\Users\PuRu Singh>e:
E:\>cd singh
E:\singh>javac P45.java
E:\singh>appletviewer P45.java
```



❖ **Practical: 46**

Create an applet that use init(),start(),stop() and destroy() methods of applet.

```
import java.applet.Applet;
import java.awt.Graphics;
import javax.swing.JOptionPane;
/*
<applet code="P46" width="500" height="250">
</applet>
*/
public class P46 extends Applet
{
    public void init()
    {
        JOptionPane.showMessageDialog(null,"Applet : Initialized");
    }
    public void start()
    {
        JOptionPane.showMessageDialog(null,"Applet : Started");
    }
    public void stop()
    {
        JOptionPane.showMessageDialog(null,"Applet : Stopped");
    }
}
```

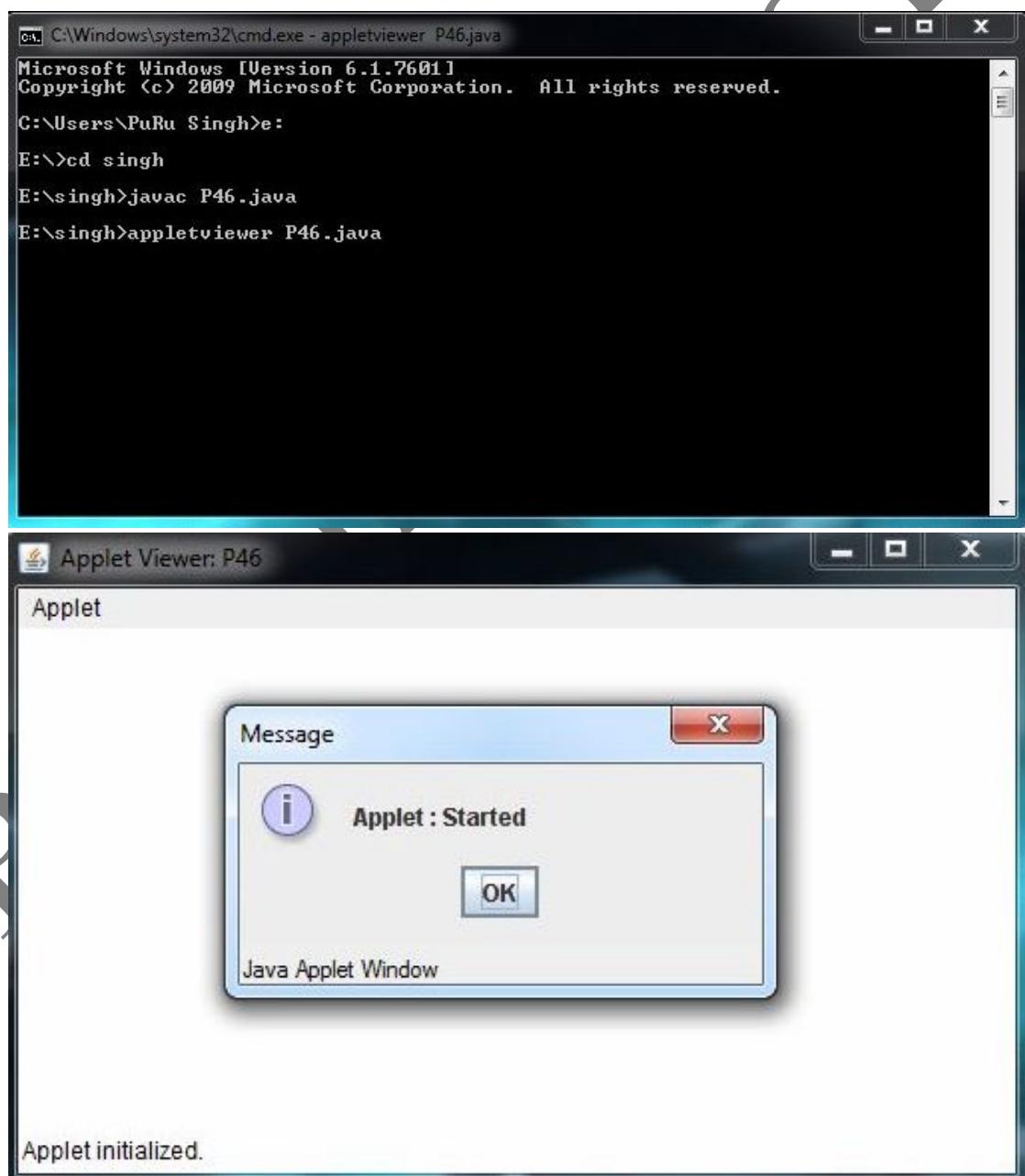
```
}

public void paint(Graphics g)
{
    g.drawString("Applet : Running", 100, 100);
}

public void destroy()
{
    JOptionPane.showMessageDialog(null,"Applet : Destroyed");
}

}
```

❖ **Output: 46**

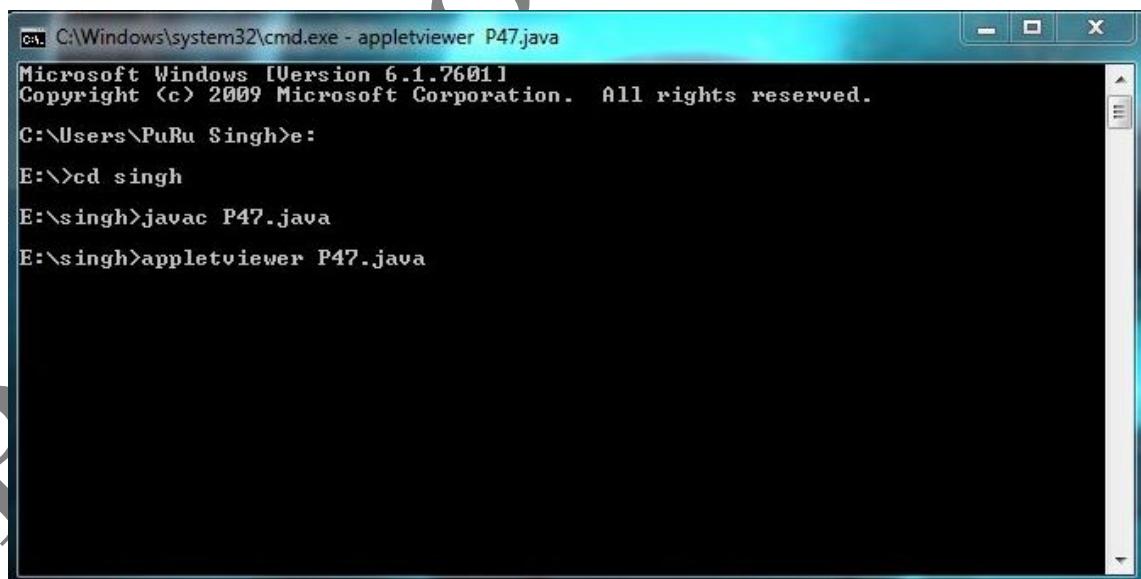


❖ **Practical: 47**

write an applet program to implement the concept of passing parameter to applet.

```
import java.applet.*;
import java.awt.*;
/*
<applet code="P47" width="500" height="250">
</applet>
*/
public class P47 extends Applet
{
    private String strDefault = "Hello! Java Applet.";
    public void paint(Graphics g)
    {
        String strParameter = this.getParameter("Message");
        if (strParameter == null)
            strParameter = strDefault;
        g.drawString(strParameter, 50, 25);
    }
}
```

❖ **Output: 47**





❖ **Practical: 48**

Write a applet program to implement various methods of Graphics class.

```
import java.applet.Applet;
import java.awt.*;
/*
<applet code="P48" width=300 height=200>
</applet>
*/
public class P48 extends Applet
{
    public void paint(Graphics g)
    {
        g.setColor(Color.red);
        g.drawString(" Various Methods Of Graphics:- ",50, 50);
        g.drawLine(50,30,20,300);
        g.drawRect(70,100,30,30);
        g.fillRect(170,100,30,30);
        g.drawOval(70,200,30,30);

        g.setColor(Color.pink);
        g.fillOval(170,200,30,30);
```

```
        g.drawArc(90,150,30,30,30,270);  
        g.fillArc(270,150,30,30,0,180);  
  
    }  
}
```

❖ **Output: 48**

