

## OOPM ASSIGNMENT

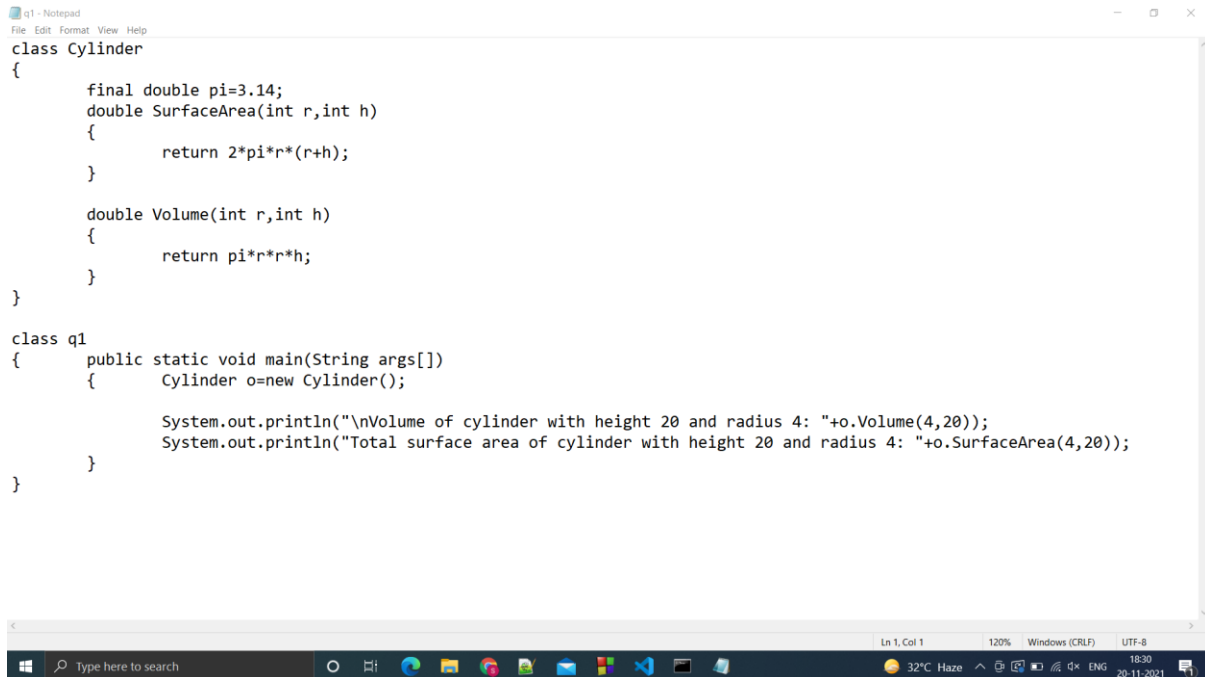
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Class: D7A

Roll No. 55

Q.1 Write a program to calculate the total surface area and volume of the cylinder . Make use of keyword final.

CODE:



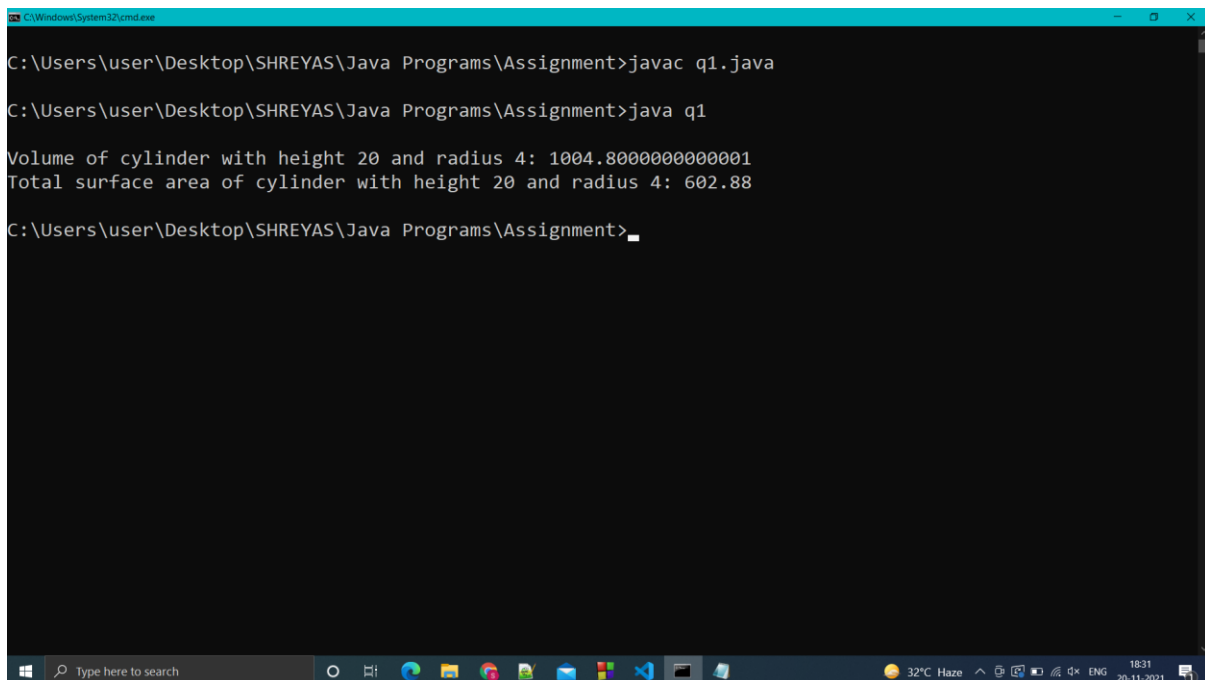
```
q1 - Notepad
File Edit Format View Help
class Cylinder
{
    final double pi=3.14;
    double SurfaceArea(int r,int h)
    {
        return 2*pi*r*(r+h);
    }

    double Volume(int r,int h)
    {
        return pi*r*r*h;
    }
}

class q1
{
    public static void main(String args[])
    {
        Cylinder o=new Cylinder();

        System.out.println("\nVolume of cylinder with height 20 and radius 4: "+o.Volume(4,20));
        System.out.println("Total surface area of cylinder with height 20 and radius 4: "+o.SurfaceArea(4,20));
    }
}
```

OUTPUT:



```
C:\Windows\System32\cmd.exe

C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>javac q1.java

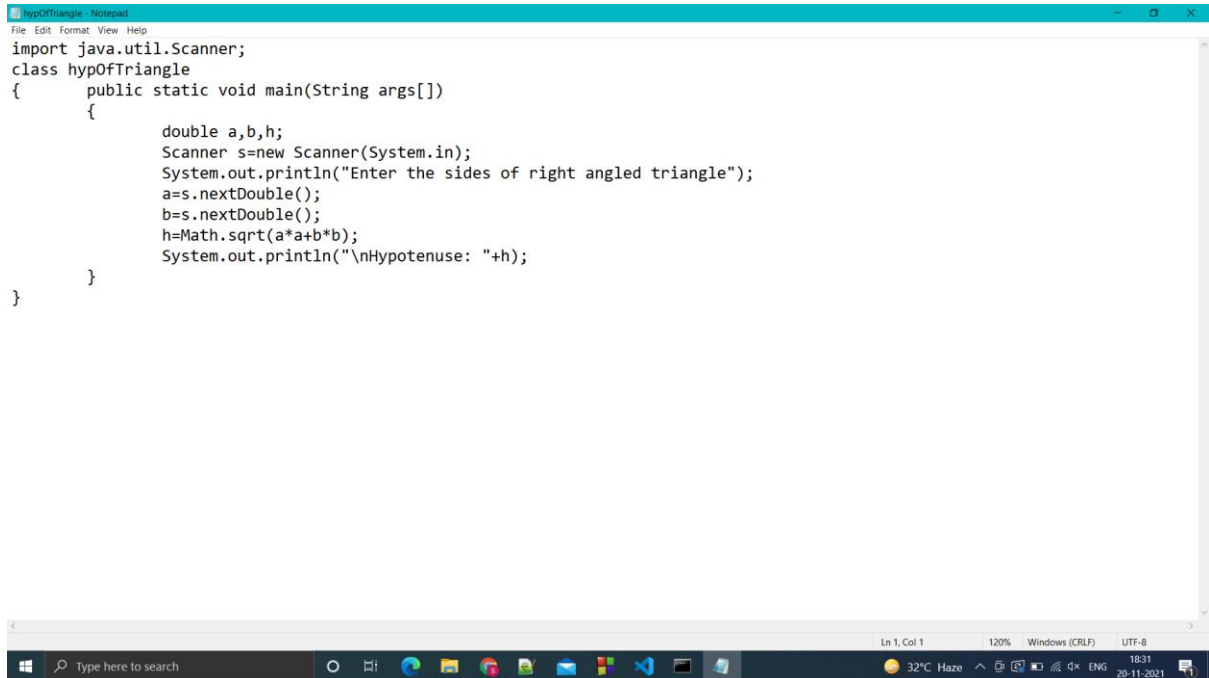
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>java q1

Volume of cylinder with height 20 and radius 4: 1004.8000000000001
Total surface area of cylinder with height 20 and radius 4: 602.88

C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>
```

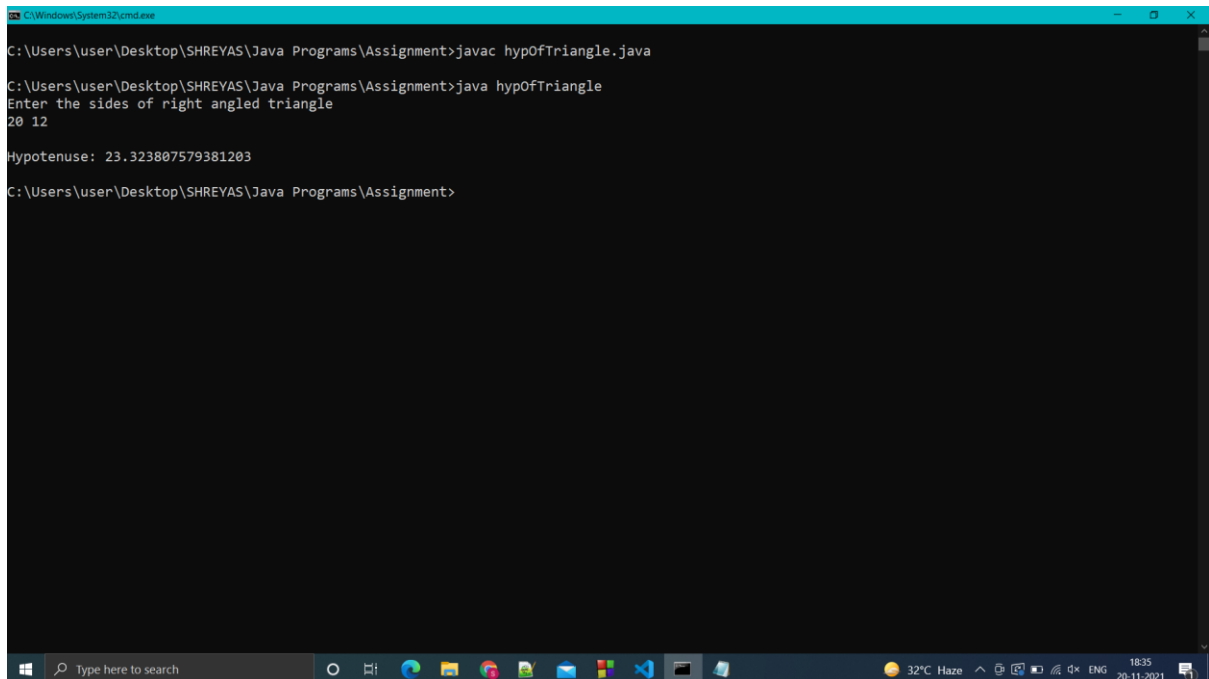
Q.2 Write a program to calculate the hypotenuse of a right angled triangle when other sides of the triangle are given.

CODE:



```
hypOfTriangle - Notepad
File Edit Format View Help
import java.util.Scanner;
class hypOfTriangle
{
    public static void main(String args[])
    {
        double a,b,h;
        Scanner s=new Scanner(System.in);
        System.out.println("Enter the sides of right angled triangle");
        a=s.nextDouble();
        b=s.nextDouble();
        h=Math.sqrt(a*a+b*b);
        System.out.println("\nHypotenuse: "+h);
    }
}
```

OUTPUT:

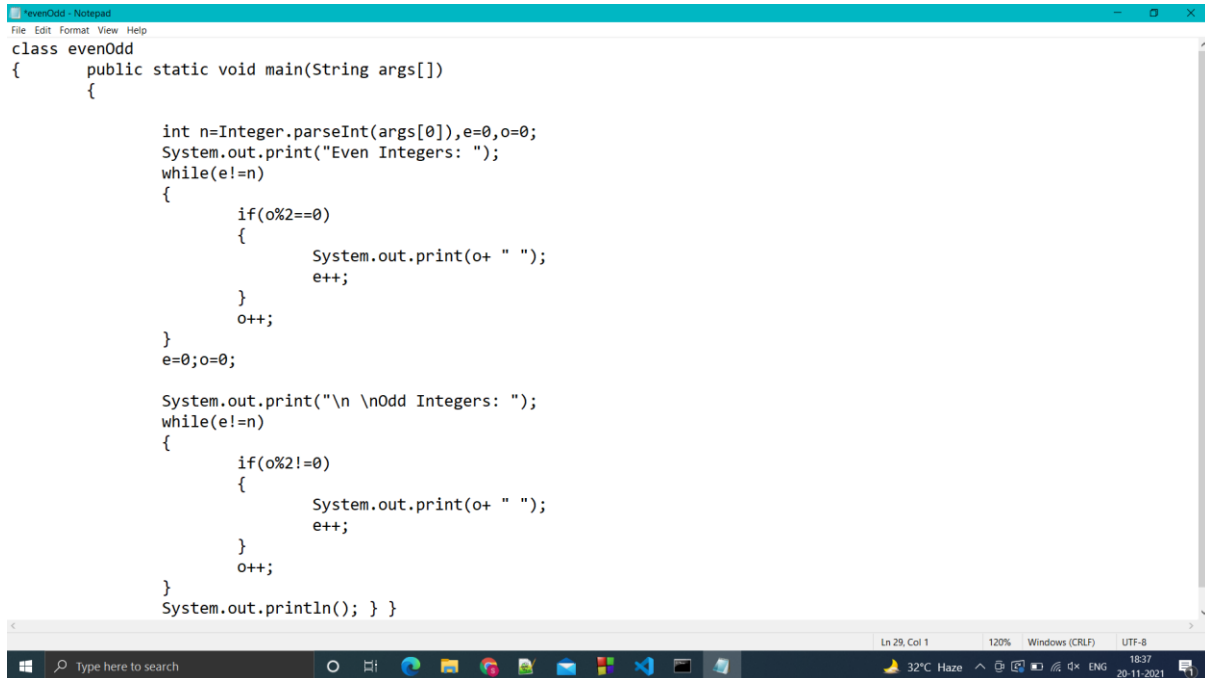


```
C:\Windows\System32\cmd.exe
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>javac hypOfTriangle.java
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>java hypOfTriangle
Enter the sides of right angled triangle
20 12

Hypotenuse: 23.323807579381203
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>
```

Q.3 Write a program to print first n even and odd nos. take the value of n from the keyboard via command line argument.

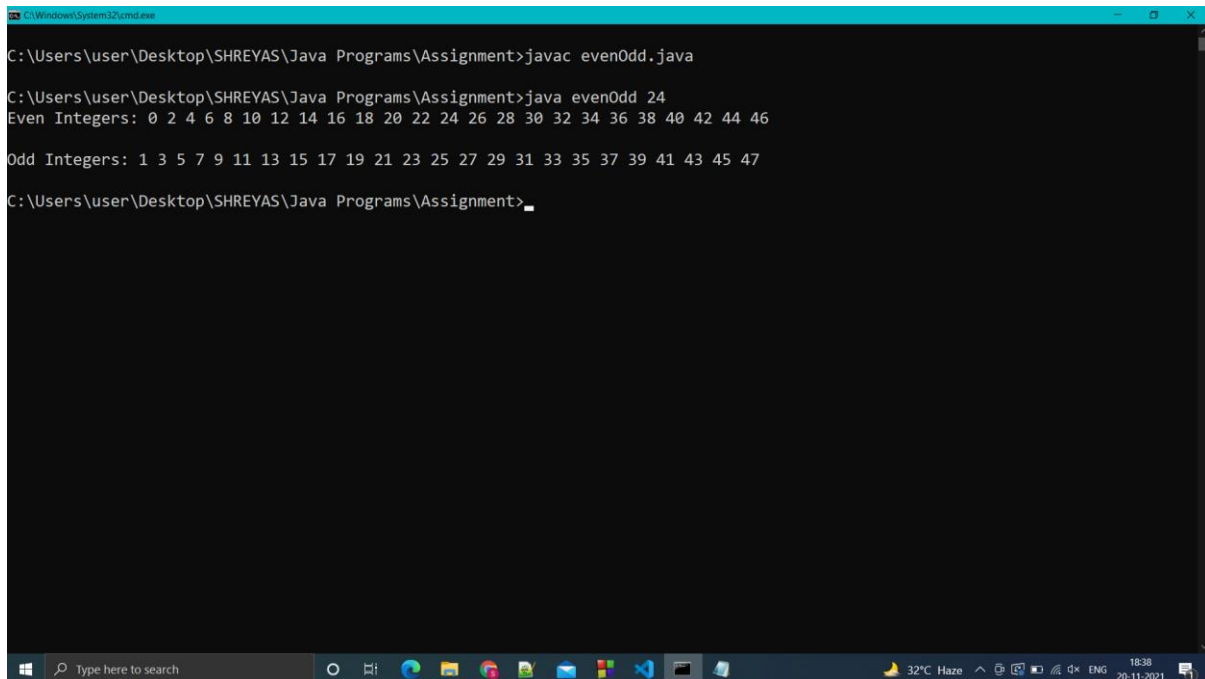
CODE:



```
evenOdd - Notepad
File Edit Format View Help
class evenOdd
{
    public static void main(String args[])
    {
        int n=Integer.parseInt(args[0]),e=0,o=0;
        System.out.print("Even Integers: ");
        while(e!=n)
        {
            if(o%2==0)
            {
                System.out.print(o+ " ");
                e++;
            }
            o++;
        }
        e=0;o=0;

        System.out.print("\n \nOdd Integers: ");
        while(e!=n)
        {
            if(o%2!=0)
            {
                System.out.print(o+ " ");
                e++;
            }
            o++;
        }
        System.out.println(); } }
```

OUTPUT:



```
C:\Windows\System32\cmd.exe
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>javac evenOdd.java
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>java evenOdd 24
Even Integers: 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46
Odd Integers: 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>
```

Q.4 Write a program to print the spiral Matrix of order 5:

CODE:

```
spiralMat - Notepad
File Edit Format View Help
import java.util.*;
class spiralMat
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);
        int n=5;
        int a[][]={{1,2,3,4,5},{16,17,18,19,6},{15,24,25,20,7},{14,23,22,21,8},{13,12,11,10,9}};
        int i, k=0, l=0,m=5;

        for(i=0;i<5;i++)
        {
            for(int j=0;j<5;j++)
            {
                System.out.print(a[i][j]+" ");
            }
            System.out.println();
        }
        System.out.println();
        while (k<m && l<n)
        {
            for (i=l; i<n; ++i)
            {
                System.out.print(a[k][i]+" ");
            }
            k++;

            for (i=k; i< m; ++i)
            {
                System.out.print(a[i][n-1]+" ");
            }
            n--;

            if (k<m)
            {
                for (i=n-1; i>=l; --i)
                {
                    System.out.print(a[m-1][i]+" ");
                }
                m--;
            }

            if (l<n)
            {
                for (i=m-1; i>=k; --i)
                {
                    System.out.print(a[i][l]+" ");
                }
                l++;
            }
        }
        System.out.println();
    }
}
```

## OUTPUT:

```
C:\Windows\System32\cmd.exe

C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>javac spiralMat.java

C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>java spiralMat
1 2 3 4 5
16 17 18 19 6
15 24 25 20 7
14 23 22 21 8
13 12 11 10 9

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

C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>
```

Q.5 Write a program to find sum and average of numbers on even and odd indexes in the array entered by the user.

CODE:

```
sumAndAverage - Notepad
File Edit Format View Help
import java.util.Scanner;
class sumAndAverage
{
    public static void main(String args[])
    {
        Scanner k=new Scanner(System.in);
        int n,a[],eve[],odd[];
        System.out.println("Enter the size of array");
        n=k.nextInt();
        a=new int[n];
        System.out.println("Enter elements of array");
        for(int i=0;i<n;i++)
        {
            a[i]=k.nextInt();
        }
        int s=0,s1=0,k1=0,k2=0;

        for(int i=0;i<n;i++)
        {
            if(i%2==0)
            {
                s=s+a[i];k1++;
            }
            else
            {
                s1=s1+a[i];k2++;
            }
        }
        System.out.println("\nSum of odd indexes "+s);

        for(int i=0;i<n;i++)
        {
            if(i%2==0)
            {
                s=s+a[i];k1++;
            }
            else
            {
                s1=s1+a[i];k2++;
            }
        }
        System.out.println("\nSum of odd indexes "+s);
        System.out.println("Average of even indexes "+(double)s/k1);

        System.out.println("\nSum of even indexes "+s1);
        System.out.println("Average of even indexes "+(double)s1/k2);
    }
}
```

## OUTPUT

```
C:\Windows\System32\cmd.exe
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>javac sumAndAverage.java
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>java sumAndAverage
Enter the size of array
15
Enter elements of array
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Sum of odd indexes 64
Average of even indexes 8.0

Sum of even indexes 56
Average of even indexes 8.0

C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>
```

Q.6 Write a program to sort the list of students on the basis of their marks.

CODE:

```
sortMarks - Notepad
File Edit Format View Help
import java.util.Scanner;
class sortMarks
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);
        String a[][]={{{"Gopal","60"}, {"Jordan","50"}, {"Krishna","55"}, {"Laurel","78"}, {"Sara","80"}, {"Polis","99"}, {"Lopez","12"}}};
        System.out.println("Original Sheet");
        for(int i=0;i<a.length;i++)
        {
            for(int j=0;j<2;j++)
            {
                System.out.print(a[i][j]+" ");
            }
            System.out.println();
        }
        for(int i=0;i<a.length-1;i++)
        {
            for(int k=0;k<a.length-i-1;k++)
            {
                if(Integer.parseInt(a[k][1])>Integer.parseInt(a[k+1][1]))
                {
                    String t=a[k][1];
                    a[k][1]=a[k+1][1];
                    a[k+1][1]=t;

                    t=a[k][0];
                    a[k][0]=a[k+1][0];
                    a[k+1][0]=t;
                }
            }
        }
        System.out.println("Sorted Sheet");
        for(int i=0;i<a.length;i++)
        {
            for(int j=0;j<2;j++)
            {
                System.out.print(a[i][j]+" ");
            }
            System.out.println();
        }
    }
}
```

```
sortMarks - Notepad
File Edit Format View Help
        {
            if(Integer.parseInt(a[k][1])>Integer.parseInt(a[k+1][1]))
            {
                String t=a[k][1];
                a[k][1]=a[k+1][1];
                a[k+1][1]=t;

                t=a[k][0];
                a[k][0]=a[k+1][0];
                a[k+1][0]=t;
            }
        }
        System.out.println("Sorted Sheet");
        for(int i=0;i<a.length;i++)
        {
            for(int j=0;j<2;j++)
            {
                System.out.print(a[i][j]+" ");
            }
            System.out.println();
        }
    }
}
```



## OUTPUT:

```
C:\Windows\System32\cmd.exe

C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>javac sortMarks.java

C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>java sortMarks
Original Sheet

Gopal 60
Jordan 50
Krishna 55
Laurel 78
Sara 80
Polis 99
Lopez 12

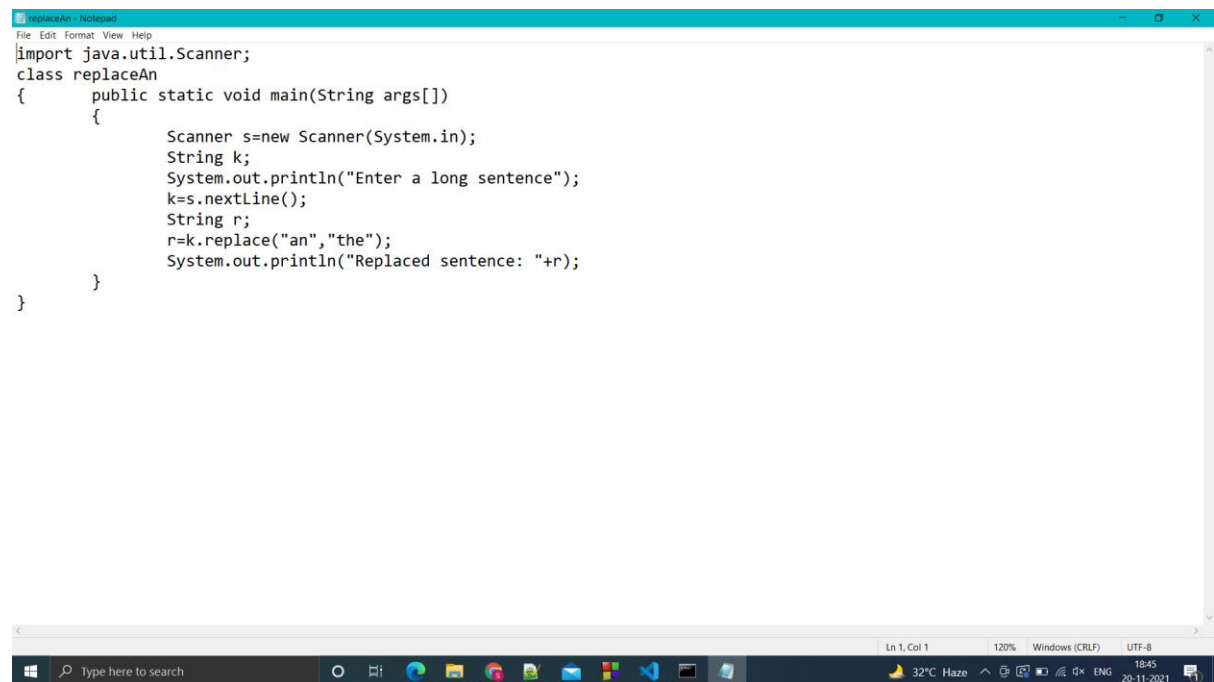
Sorted Sheet

Lopez 12
Jordan 50
Krishna 55
Gopal 60
Laurel 78
Sara 80
Polis 99

C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>
```

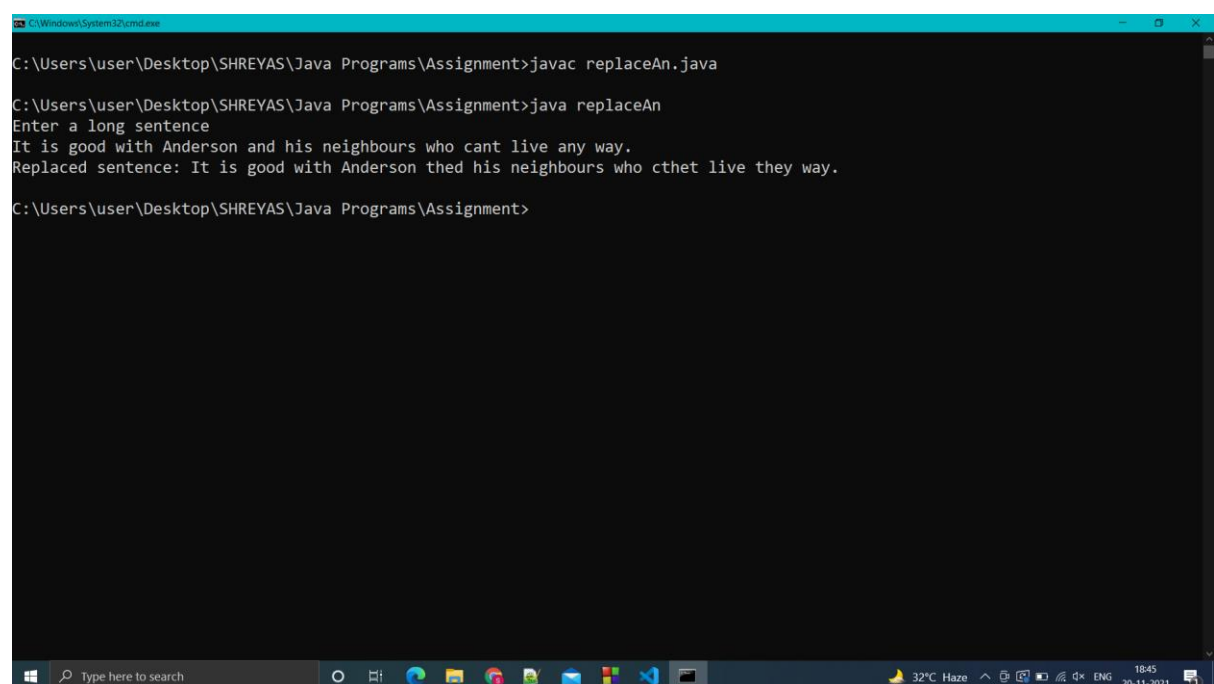
Q.7 Write a program to create a long string and replace all the occurrence of 'an' with 'the'.

CODE:



```
replaceAn - Notepad
File Edit Format View Help
import java.util.Scanner;
class replaceAn
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);
        String k;
        System.out.println("Enter a long sentence");
        k=s.nextLine();
        String r;
        r=k.replace("an","the");
        System.out.println("Replaced sentence: "+r);
    }
}
```

OUTPUT:



```
C:\Windows\System32\cmd.exe
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>javac replaceAn.java
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>java replaceAn
Enter a long sentence
It is good with Anderson and his neighbours who cant live any way.
Replaced sentence: It is good with Anderson thed his neighbours who cthet live they way.
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>
```

Q.8 Predict the output:

```
class A{
    A()
    {
        System.out.println("A");
    }
}
public class B extends A{
    public static void main(String args[])
    {
        B b1=new B();
        super();
    }
    B()
    {
        System.out.println("B");
    }
}
```

Output:

Error: super() must be first statement of constructor

Q.9 Predict the output:

```
class MySuper
{
    public static void MyMethod()
    {
        System.out.println("Static Method in super class");
    }
}
public class Mysub extends Mysuper{
    public static void MyMethod()
    {
        System.out.println("static method in subclass");
    }
    public void MyMethod()
    {
        System.out.println("Non-static method in subclass");
    }
    public static void main(String args[])
    {
        MySuper s=new MySub();
        MyMethod();
    }
}
```

OUTPUT:

Error: Mysuper is not defined

Error: public void MyMethod()-> MyMethod() is already defined in class Mysub

Error: MySub is not defined

Q.10 Write a program to calculate volume of cube, cuboid and sphere using interfaces.

CODE:

```
volFig - Notepad
File Edit Format View Help
interface FigVol
{
    double pi=3.14;
    public double volume();
}
class Cube implements FigVol
{
    double a;
    Cube(double s)
    {
        a=s;
    }
    public double volume()
    {
        return pi*a*a*a;
    }
}
class Cuboid implements FigVol
{
    double l,b,h;
    Cuboid(double x,double y,double z)
    {
        l=x;b=y;h=z;
    }
    public double volume()
    {
        return l*b*h;
    }
}

}
    public double volume()
    {
        return l*b*h;
    }
}
class Sphere implements FigVol
{
    double r;
    Sphere(double radius)
    {
        r=radius;
    }
    public double volume()
    {
        return 4/3*pi*r*r*r;
    }
}
class volFig
{
    public static void main(String args[])
    {
        Cube ob=new Cube(5);
        Cuboid ob1=new Cuboid(2.3,5,10.03);
        Sphere ob2=new Sphere(4.5);
        System.out.println("\nVolume of Cube with side 5 units= "+ob.volume()+" cubic units");
        System.out.println("Volume of Cuboid with dimensions 2.3 5 10.03 units= "+ob1.volume()+" cubic units");
        System.out.println("Volume of Sphere with radius 4.5 units= "+ob2.volume()+" cubic units");
    }
}
```

## OUTPUT:

```
C:\Windows\System32\cmd.exe
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>javac volFig.java
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>java volFig
Volume of Cube with side 5 units= 392.5 cubic units
Volume of Cuboid with dimensions 2.3 5 10.03 units= 115.345 cubic units
Volume of Cube with side 4.5 units= 286.1325 cubic units
C:\Users\user\Desktop\SHREYAS\Java Programs\Assignment>_
```

