EAST WEST UNIVERSITY

Course Title: CSE110

Section: 06

Semester: Summer 22

LAB-03

SUBMITTED TO

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SUBMITTED BY

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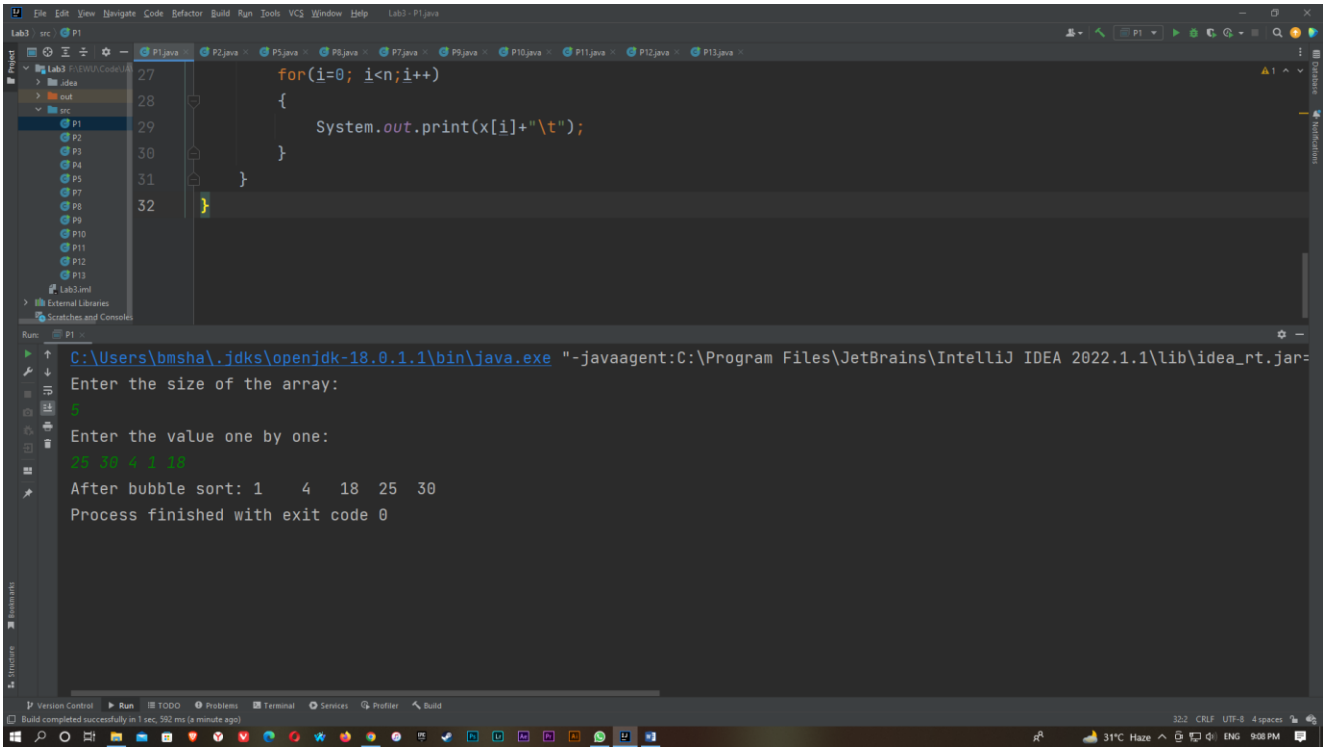
P1)

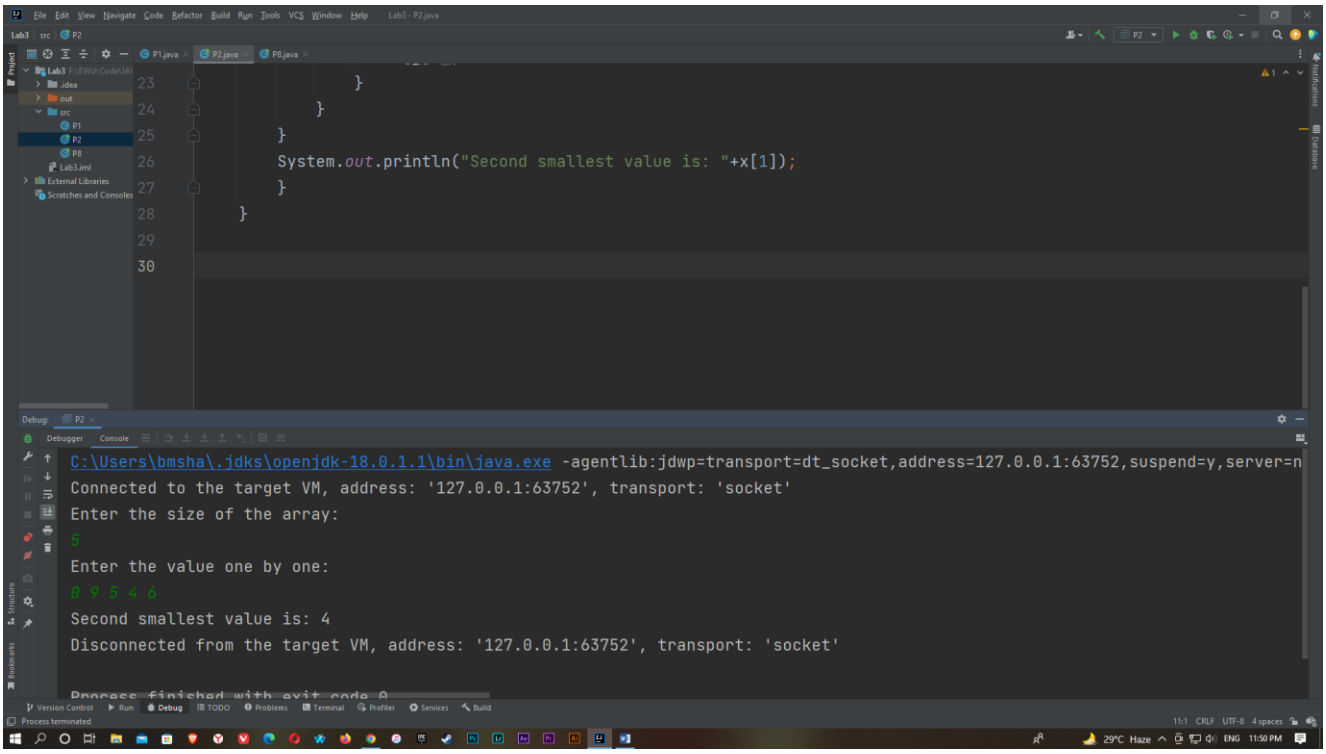
```
import java.util.Scanner;
public class P1 {
   public static void main(String[] args) {
      Scanner in= new Scanner(System.in);
      System.out.println("Enter the size of the array: ");
      int i,j,a=0;
      int n=in.nextInt();
      int[]x=new int[n];
      System.out.println("Enter the value one by one:");
      for(i=0; i<n;i++)
      {
         x[i]=in.nextInt();
      }
      for(i=0;i<n;i++)
      {
         for(j=1; j<n-i;j++)
         {
            if(x[j-1]>x[j])
            {
               a=x[j-1];
               x[j-1]=x[j];
               x[j]=a;
            }
         }
      }
      System.out.print("After bubble sort: ");
      for(i=0; i<n;i++)
      {
         System.out.print(x[i]+"\t");
      }
   }
}
```



P2)

```
import java.util.Scanner;
public class P2 {
   public static void main(String[] args) {
      Scanner in= new Scanner(System.in);
      System.out.println("Enter the size of the array:");
      int n,a=0,i,j;
      n=in.nextInt();
      int [] x= new int[n];
      System.out.println("Enter the value one by one: ");
      for(i=0; i<n; i++)
      {
         x[i]=in.nextInt();
      }
      for(i=0; i<n; i++)
      {
         for(j=1; j<n-1; j++)
         {
            if(x[j-1]>x[j])
```

```
            {
                a=x[j-1];
                x[j-1]=x[j];
                x[j]=a;
            }
        }
    }
    System.out.println("Second smallest value is: ");
    for(i=0; i<n; i++)
    {
        if(x[i]<x[i+1])
        {
            System.out.println(x[i+1]);
            break;
        }
    }
    }
}
```

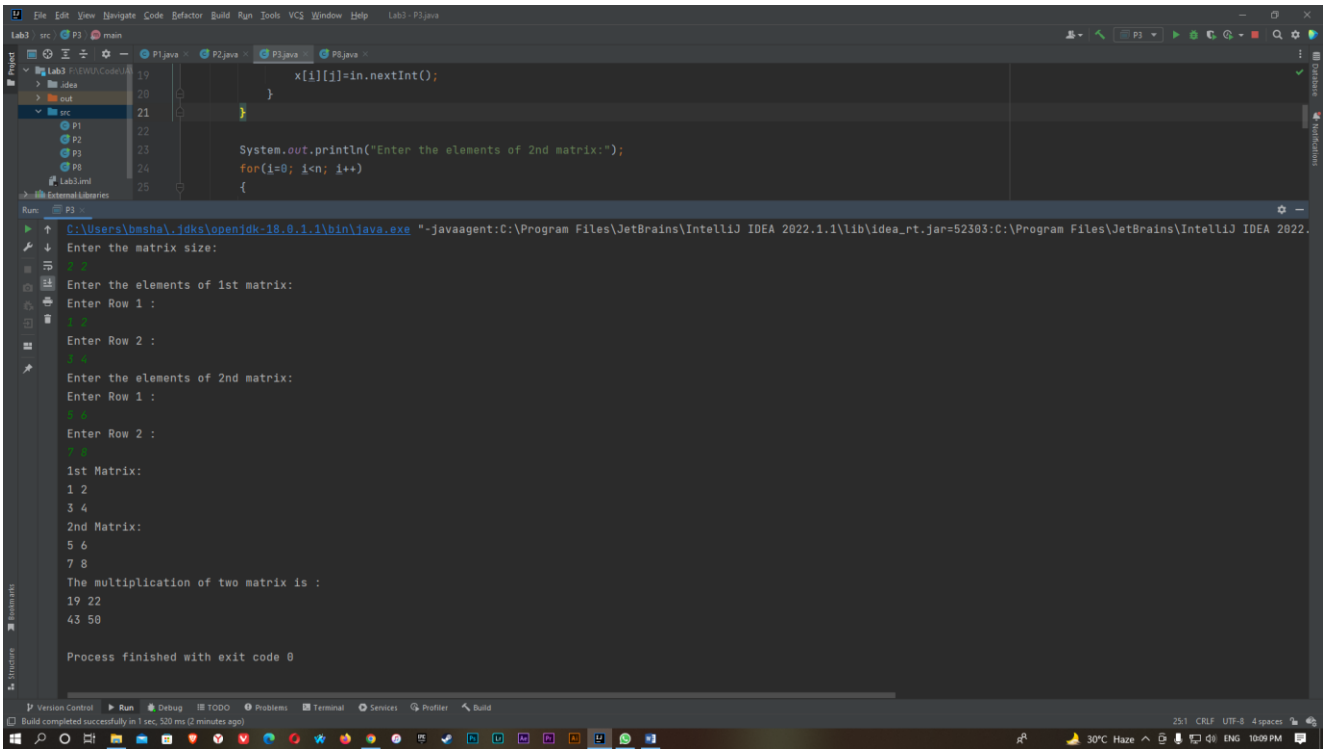


P3)

```
import java.util.Scanner;
public class P3 {
   public static void main(String[] args) {
      Scanner in= new Scanner (System.in);
      System.out.println("Enter the matrix size: ");
      int i,j ,k;
      int n= in.nextInt();
      int m= in.nextInt();
      int [] [] x= new int[n][m];
      int [] [] y= new int[n][m];
      int [] [] z= new int[n][m];

      System.out.println("Enter the elements of 1st matrix:");
      for(i=0; i<n; i++)
      {
         System.out.println("Enter Row "+ (i+1) + " :");
         for(j=0; j<m; j++)
         {
            x[i][j]=in.nextInt();
         }
      }

      System.out.println("Enter the elements of 2nd matrix:");
      for(i=0; i<n; i++)
      {
         System.out.println("Enter Row "+ (i+1) + " :");
         for(j=0; j<m;j++)
         {
            y[i][j]=in.nextInt();
         }
      }

      System.out.println("1st Matrix: ");
```

```
for(i=0; i<n; i++)
{
   for(j=0; j<m; j++)
   {
      System.out.print(x[i][j]+" ");
   }
   System.out.println(" ");
}

System.out.println("2nd Matrix: ");

for(i=0; i<n; i++)
{
   for(j=0; j<m; j++)
   {
      System.out.print(y[i][j]+" ");
   }
   System.out.println(" ");
}

for (i = 0; i < n; i++)
{
   for (j = 0; j < m; j++)
   {
      for (k = 0; k < n; k++)
      {
         z[i][j]+=x[i][k] * y[k][j] ;
      }
   }
}

System.out.println("The multiplication of two matrix is : ");
for(i=0; i<n; i++)
```

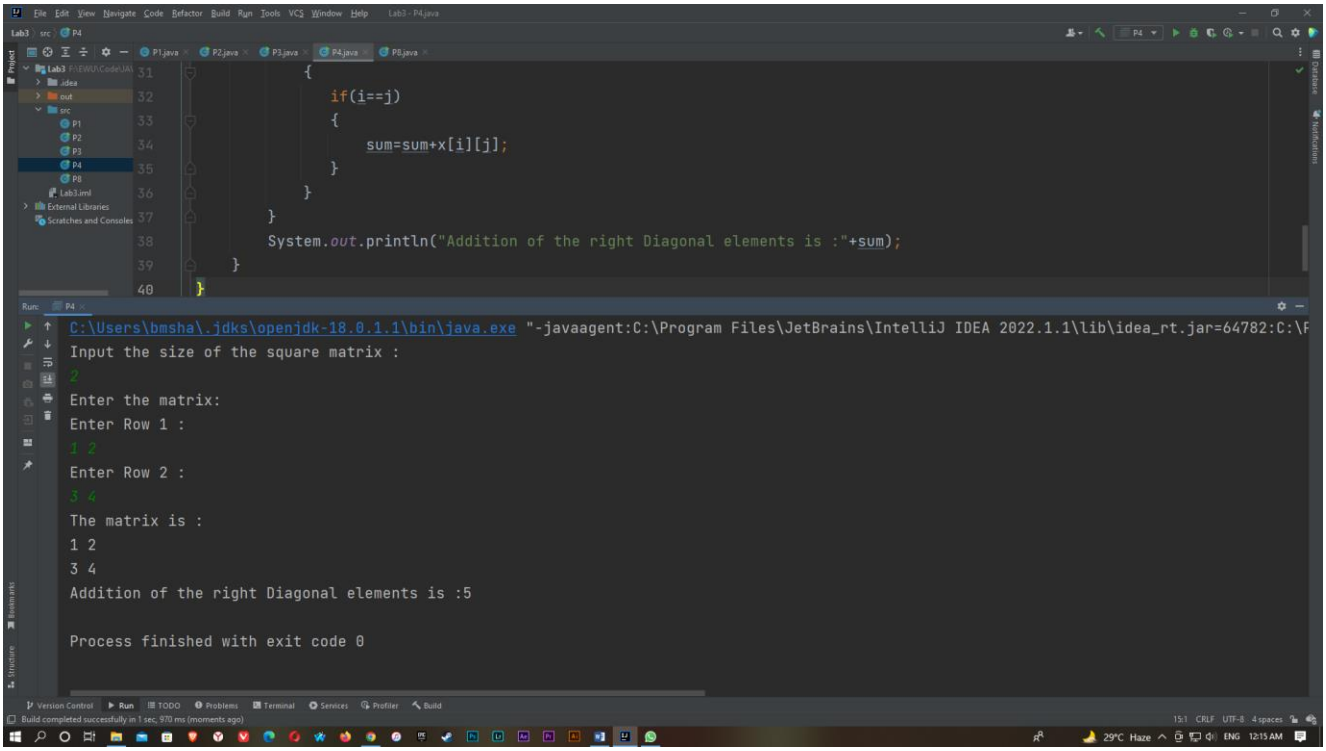
```
        {
            for(j=0; j<m; j++)
            {
                System.out.print(z[i][j]+" ");
            }
            System.out.println(" ");
        }
    }
}
```



P4)

```
import java.util.Scanner;
public class P4 {
    public static void main(String[] args) {
        Scanner in= new Scanner (System.in);
        int n,i,j,sum=0;
        System.out.println("Input the size of the square matrix :");
        n=in.nextInt();
        int [][]x =new int[n][n];
```

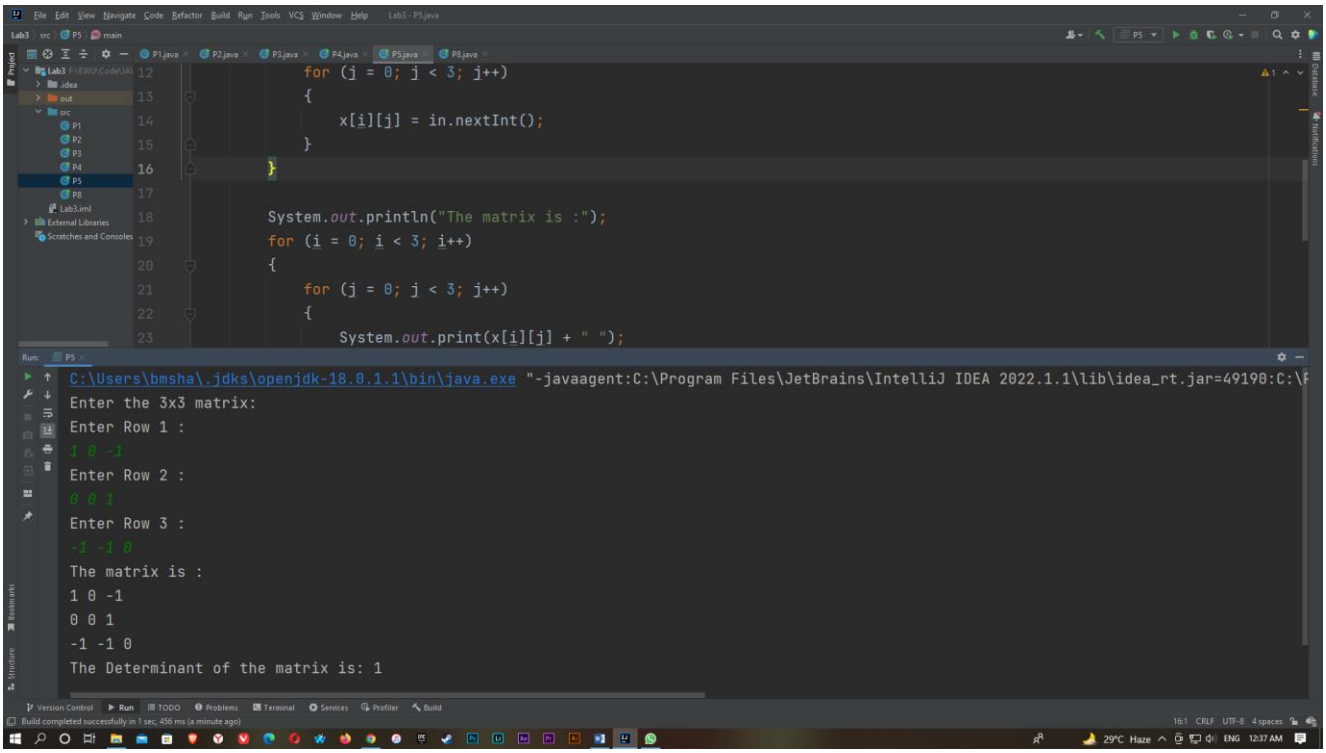
```
        System.out.println("Enter the matrix:");
        for(i=0; i<n;i++)
        {
           System.out.println("Enter Row "+ (i+1) + " :");
           for(j=0; j<n;j++)
           {
              x[i][j]=in.nextInt();
           }
        }
        System.out.println("The matrix is :");
        for(i=0; i<n;i++)
        {
           for(j=0; j<n;j++)
           {
              System.out.print(x[i][j]+ " ");
           }
           System.out.println(" ");
        }

        for(i=0; i<n;i++)
        {
           for(j=0; j<n;j++)
           {
             if(i==j)
             {
                sum=sum+x[i][j];
             }
           }
        }
        System.out.println("Addition of the right Diagonal elements is :"+sum);
    }
}
```



P5)

```
import java.util.Scanner;

public class P5 {

   public static void main(String[] args) {

      Scanner in = new Scanner(System.in);

      int i,j,a,b,c,d=0;

      int[][]x = new int[3][3];


      System.out.println("Enter the 3x3 matrix: ");

      for (i = 0; i < 3; i++)

      {

         System.out.println("Enter Row " + (i + 1) + " :");

         for (j = 0; j < 3; j++)

         {

            x[i][j] = in.nextInt();

         }

      }


      System.out.println("The matrix is :");
```

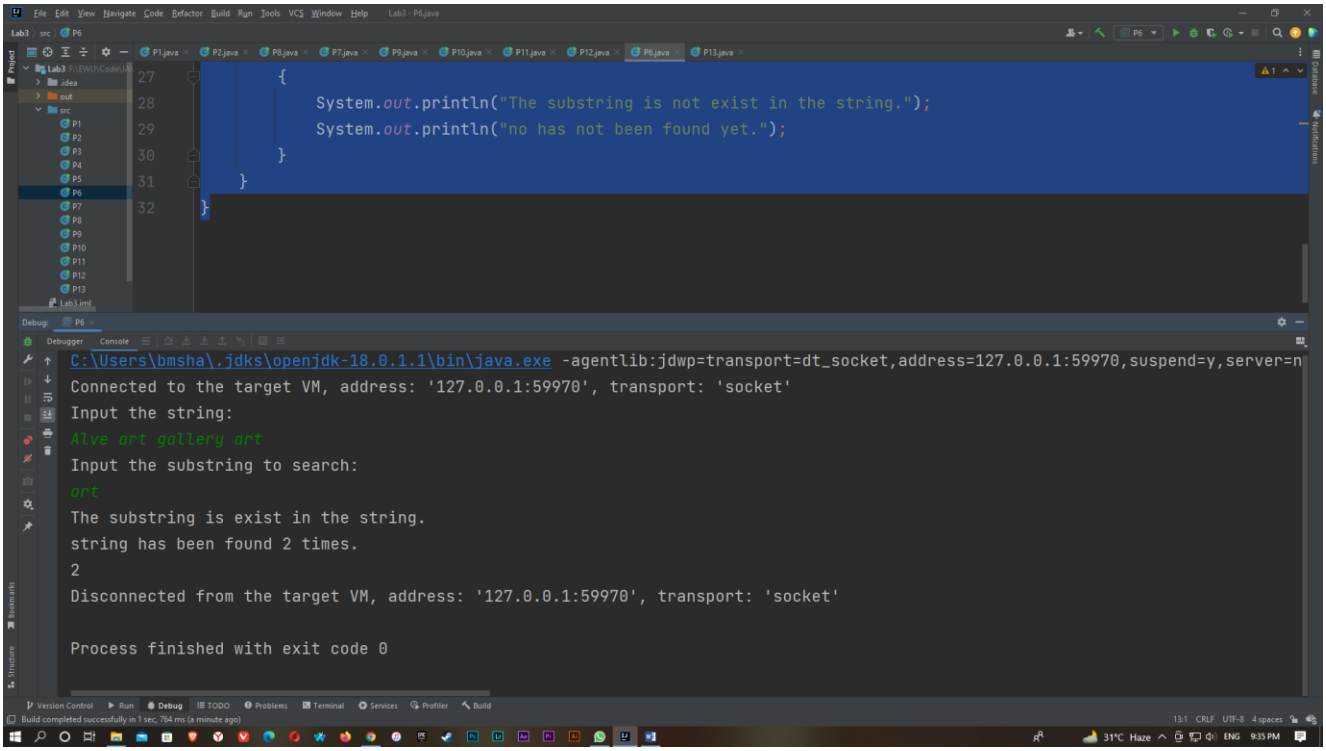
```
        for (i = 0; i < 3; i++)
        {
            for (j = 0; j < 3; j++)
            {
                System.out.print(x[i][j] + " ");
            }
            System.out.println(" ");
        }
        a=(x[0][0] * (x[1][1]* x[2][2]-x[1][2]* x[2][1]));
        b=(x[0][1] * (x[1][0]* x[2][2]-x[1][2]* x[2][1]));
        c=(x[0][2] * (x[1][0]* x[2][1]-x[1][1]* x[2][0]));
        d=a-b+c;
        System.out.println("The Determinant of the matrix is: "+d);
    }
}
```



P6)

```
import java.util.Scanner;
public class P6 {
    public static void main(String[] args)
```

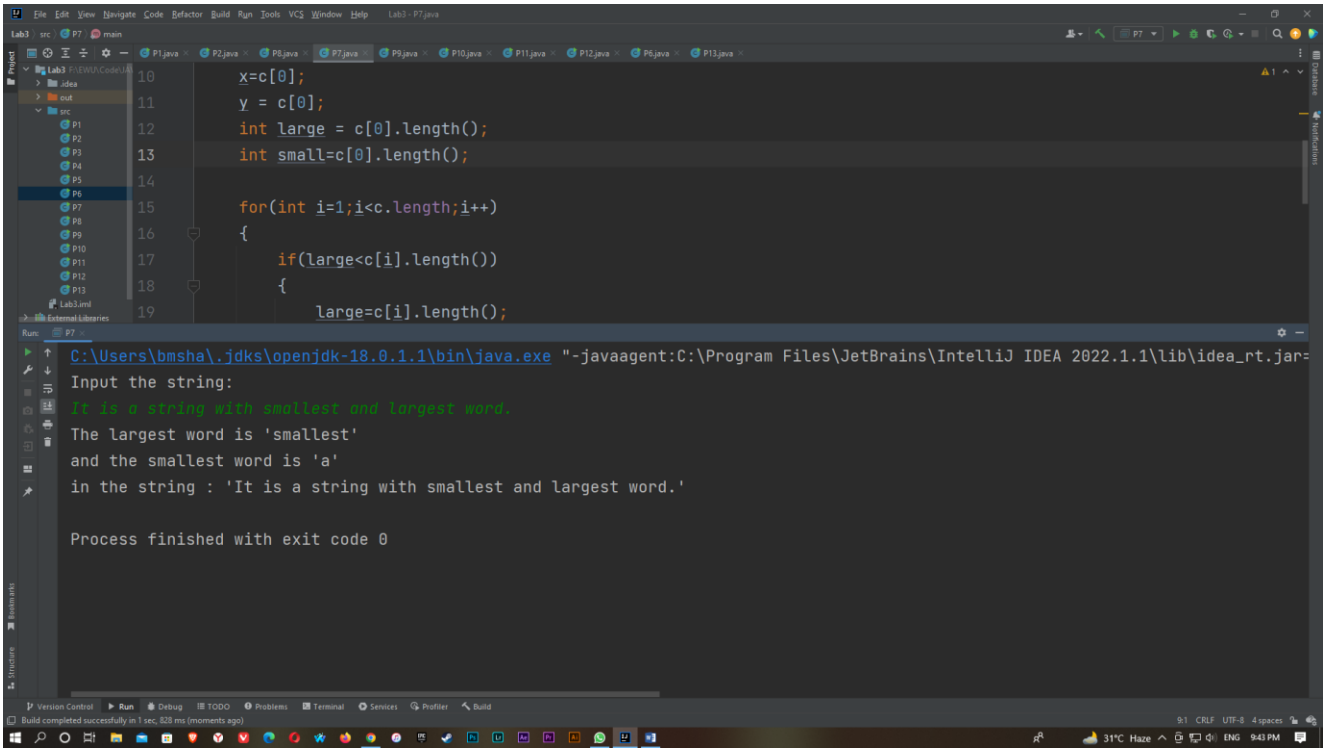
```
  {
    Scanner in = new Scanner(System.in);
    int x=0,i;
    String a,b;
    String c[];
    System.out.println("Input the string: ");
    a = in.nextLine();
    System.out.println("Input the substring to search: ");
    b = in.nextLine();
    c = a.split("\\s+");
    for(i=0;i<c.length;i++)
    {
      if(c[i].equals(b))
      {
        x++;
      }
    }
    if(x>0)
    {
      System.out.println("The substring is exist in the string.");
      System.out.println("string has been found "+x+" times.");
    }
    else
    {
      System.out.println("The substring is not exist in the string.");
      System.out.println("no has not been found yet.");
    }
  }
}
```



P7)

```
import java.util.Scanner;

public class P7 {

   public static void main(String[] args)

   {

   Scanner input = new Scanner(System.in);

   String a,x,y,c[];

   System.out.println("Input the string: ");

   a = input.nextLine();

   c = a.split("\\s+");

   x=c[0];

   y = c[0];

   int large = c[0].length();

   int small=c[0].length();


   for(int i=1;i<c.length;i++)

   {

      if(large<c[i].length())

      {
```

```
            large=c[i].length();
            x=c[i];
        }
        if(small>c[i].length())
        {
            small=c[i].length();
            y=c[i];
        }
    }
    System.out.println("The largest word is '"+x+"'");
    System.out.println("and the smallest word is '"+y+"'");
    System.out.println("in the string : '"+a+"'");
    }
}
```



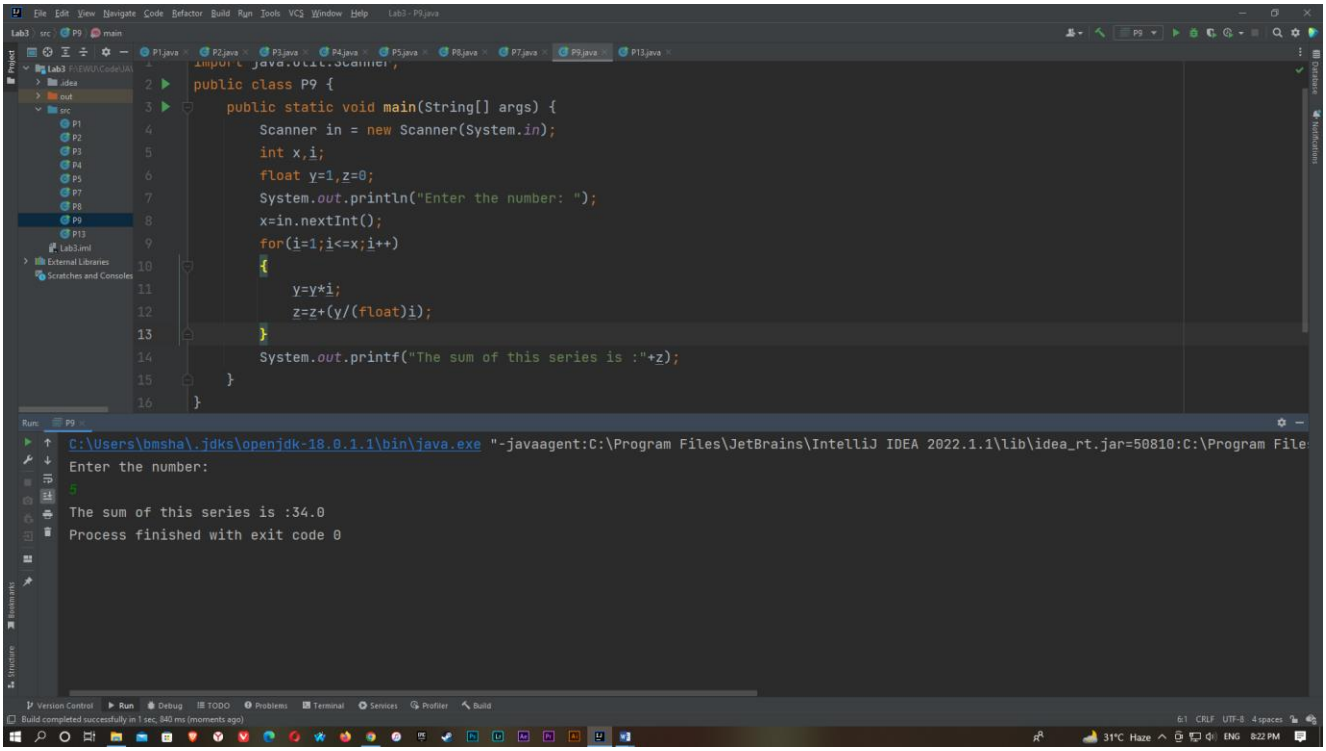
P8)

```
import java.util.Scanner;
public class P8 {
    public static void main(String[] args) {
    char a ='\u221A';
```

```
    char b= '\u2126';
    char c= '\u00B1';
    char d= '\u2260';
    System.out.println("square root ("+a+")");
    System.out.println("Ohm ("+b+")");
    System.out.println("Plus-Minus ("+c+")");
    System.out.println("not equal ("+d+")");
    }
}
```

P9)

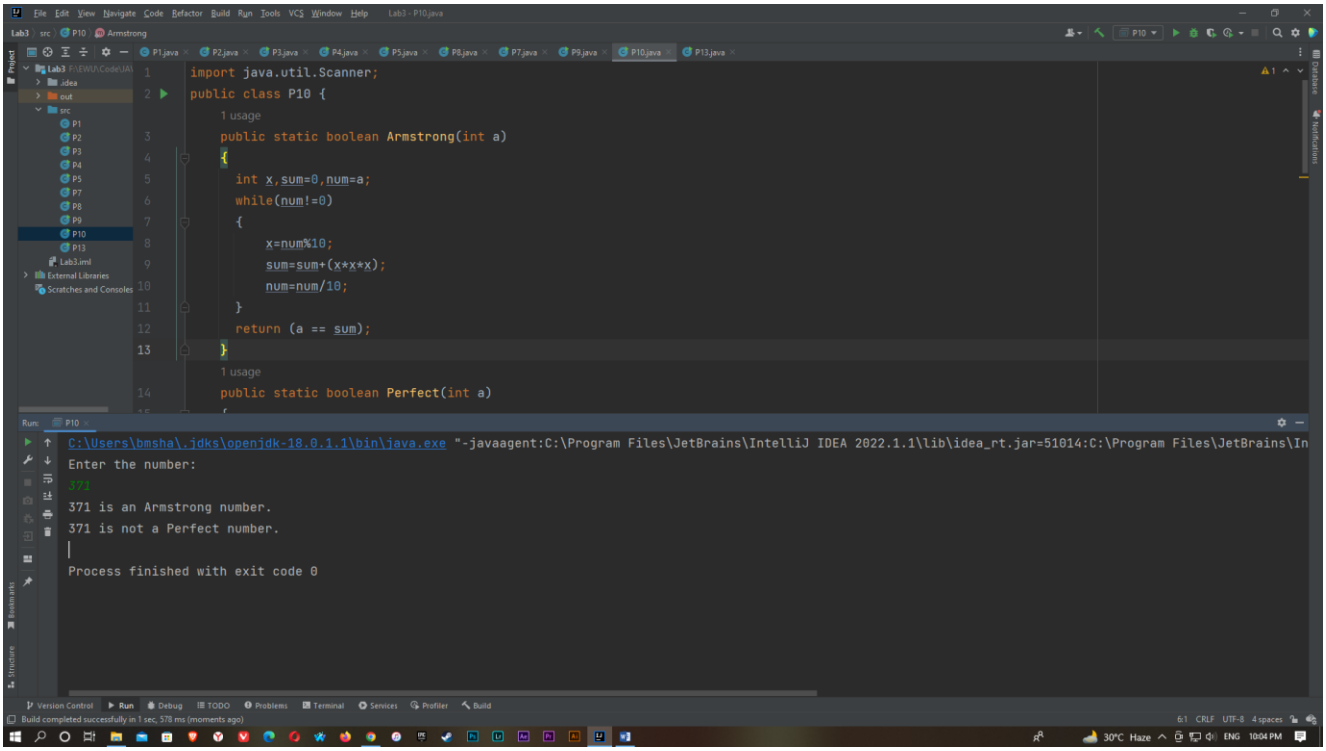
```
import java.util.Scanner;
public class P9 {
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        int x,i;
        float y=1,z=0;
        System.out.println("Enter the number: ");
        x=in.nextInt();
        for(i=1;i<=x;i++)
        {
            y=y*i;
            z=z+(y/(float)i);
        }
        System.out.printf("The sum of this series is :"+z);
    }
}
```



P10)

```
import java.util.Scanner;
public class P10 {
   public static boolean Armstrong(int a)
   {
    int x,sum=0,num=a;
    while(num!=0)
    {
       x=num%10;
       sum=sum+(x*x*x);
       num=num/10;
    }
    return (a == sum);
   }
   public static boolean Perfect(int a)
   {
      int i, sum=0, num=a;

      for(i=1; i<num; i++)
```

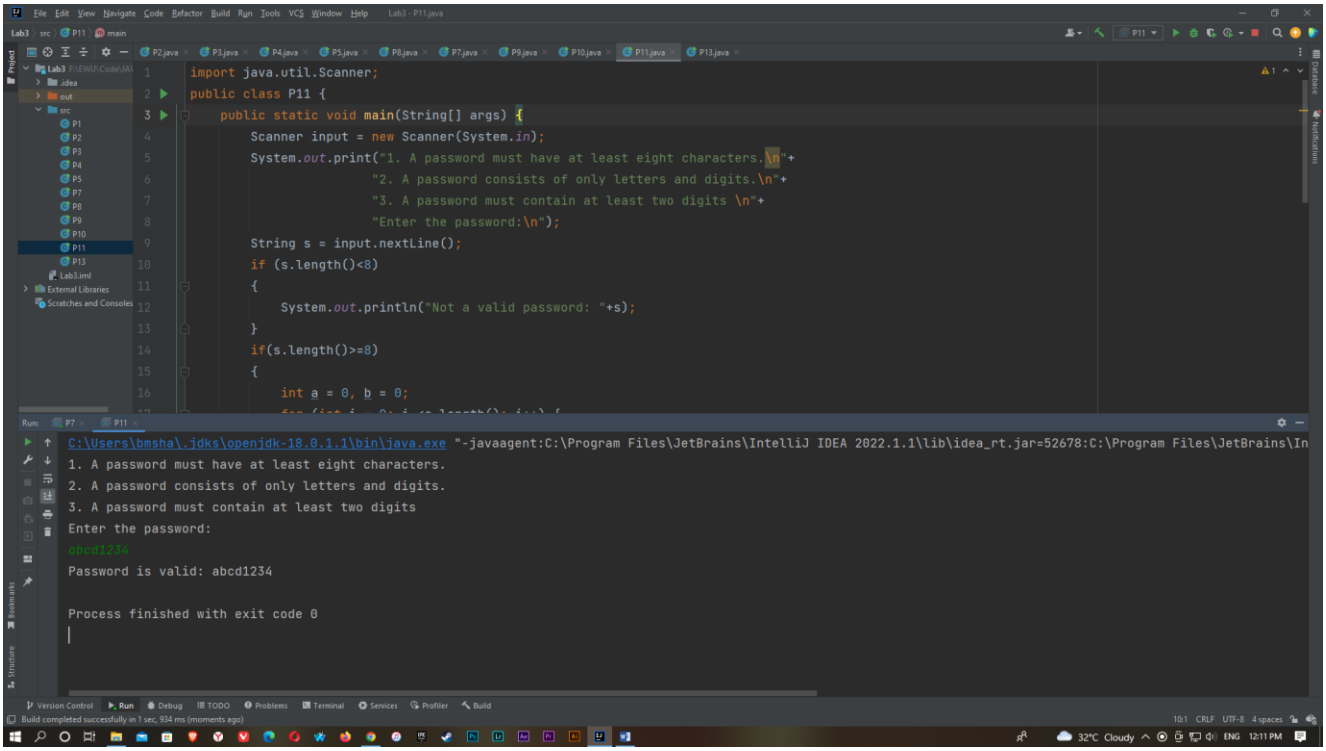
```
        {
            if(num%i == 0)
            {
                sum += i;
            }
        }
        return (a == sum);
    }
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        int x;
        System.out.println("Enter the number: ");
        x = in.nextInt();
        if (Armstrong(x))
        {
            System.out.println(x + " is an Armstrong number.");
        }
        else
        {
            System.out.println(x + " is not an Armstrong number.");
        }

        if (Perfect(x))
        {
            System.out.println(x + " is an Perfect number.");
        }
        else
        {
            System.out.println(x + " is not a Perfect number.");
        }
    }
}
```



P11)

```
import java.util.Scanner;
public class P11 {
   public static void main(String[] args) {
      Scanner input = new Scanner(System.in);
      System.out.print("1. A password must have at least eight characters.\n"+
                  "2. A password consists of only letters and digits.\n"+
                  "3. A password must contain at least two digits \n"+
                  "Enter the password:\n");
      String s = input.nextLine();
      if (s.length()<8)
      {
         System.out.println("Not a valid password: "+s);
      }
      if(s.length()>=8)
      {
         int a = 0, b = 0;
         for (int i = 0; i <s.length(); i++) {
            char ch = s.charAt(i);
```

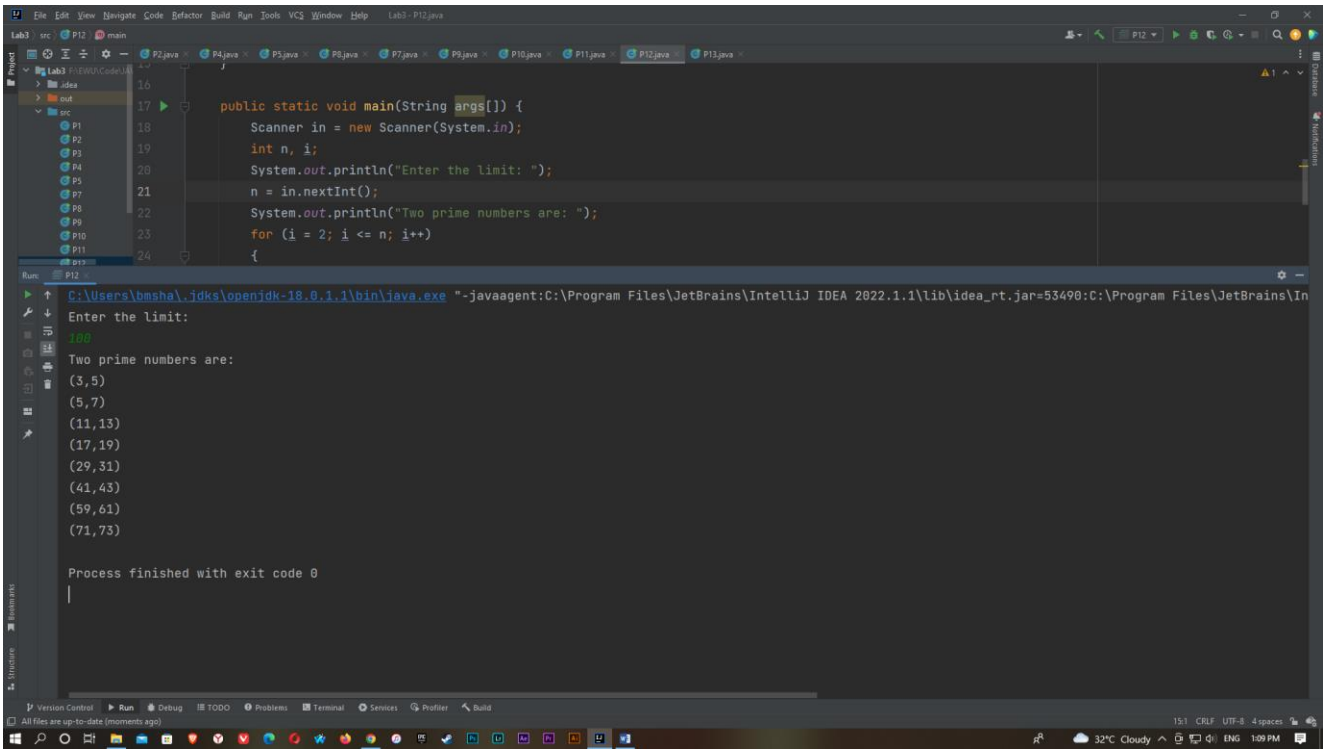
```
            if (ch >= '0' && ch <= '9')
            {
               a++;
            }
            else if ((ch >= 'A' && ch <= 'Z') || (ch >= 'a' && ch <= 'z'))
            {
               b++;
            }
         }

         if (a >= 2 && b >= 2)
         {
            System.out.println("Password is valid: "+s);
         }
         else
         {
            System.out.println("Not a valid password: "+s);
         }
      }
   }
}
```



P12)

```
import java.util.Scanner;
public class P12 {
   public static int prime (int n)
   {
      int i, a=0;
      for (i = 2; i <= n / 2; i++)
      {
         if (n % i == 0)
         {
            a = 1;
            break;
         }
      }
      return a;
   }

   public static void main(String args[]) {
      Scanner in = new Scanner(System.in);
```

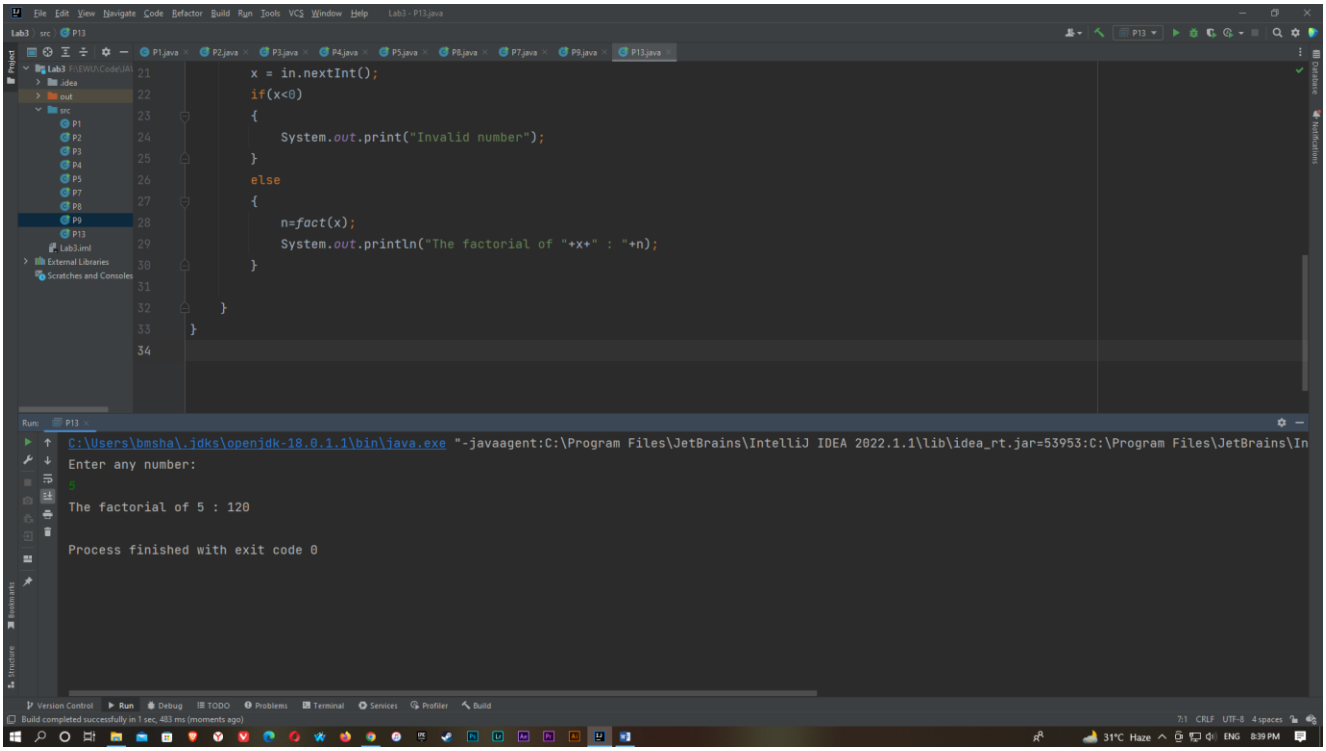
```
        int n, i;
        System.out.println("Enter the limit: ");
        n = in.nextInt();
        System.out.println("Two prime numbers are: ");
        for (i = 2; i <= n; i++)
        {
          if (prime(i) == 0 && prime(i + 2) == 0)
          {
              System.out.println("(" +i+ "," +(i + 2)+ ")");
          }
        }
    }
}
```



P13)

```
import java.util.Scanner;
public class P13
{
   public static int fact (int x)
   {
```

```
    if (x==0 || x==1)
    {
       return 1;
    }
    else
    {
       return (x* fact (x-1));
    }
  }

  public static void main(String[] args)
  {
    Scanner in = new Scanner(System.in);
    int x, n;
    System.out.println("Enter any number:");
    x = in.nextInt();
    if(x<0)
    {
       System.out.print("Invalid number");
    }
    else
    {
       n=fact(x);
       System.out.println("The factorial of "+x+" : "+n);
    }
  }
}
```



P14)

```
import java.util.Arrays;
import java.util.Scanner;
   public class P14 {
      public static void main(String[] args) {
         Scanner input= new Scanner(System.in);
         System.out.println("Enter the first word:");
         String x = input.nextLine();
         System.out.println("Enter the Second word:");
         String y = input.nextLine();
         x = x.toLowerCase();
         y = y.toLowerCase();
         System.out.println(x);
         System.out.println(y);

         if(x.length()== y.length())
         {
            char[]a= x.toCharArray();
            char[]b= y.toCharArray();
```

```
        Arrays.sort(a);
        Arrays.sort(b);
        boolean z = Arrays.equals(a, b);
        if(z)
        {
           System.out.println(x+" and "+y+" are anagram.");
        }
        else
        {
           System.out.println(x+" and "+y+" are not anagram.");
        }
      }
      else
      {
        System.out.println(x+" and "+y+" are not anagram.");
      }
    }
}
```