AMITY INSTITUTE OF INFORMATION TECHNOLOGY

PRACTICLE FILE Of CORE JAVA

AMITY UNIVERSITY, NOIDA

SUBMITTED TO:

PROF. RAJESH KUMAR

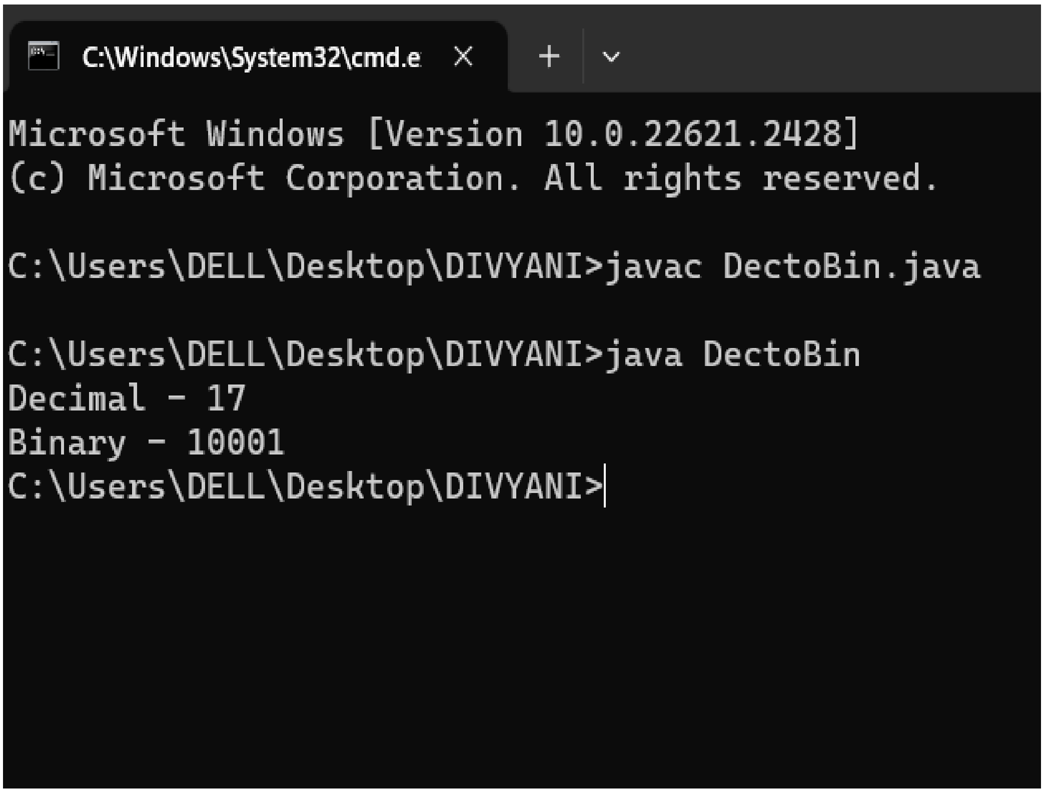
SUBMITTED BY:
NAME – DIVYANI
A010145023124
MCA – 1 (B)

32	WAP to establish a connection with jdbc				
33	WAP to create a table				
34	WAP to insert the data into table				
35	WAP to RetrieveData from tabe				
36	WAP to show prepared statement				
37	WAP to prepared statement for multiple records				
38	WAP to update result set				
39	Wap for CallableStatementExample				
40	Wap for scrollableExample				
41	Write a program for Update changes (result set).				
42	Create trigger using JDBC				
43	Scroll table without using scrollable resultset				
44	Update table without using updatable resultset				
45	Scrollable result set(rs.beforeFirst(), rs.afterLast(),....)				
46	Wap to Increase Salary				
47	Wap For RowSet				

33	WAP to create a table	82-83	05-102023		
34	WAP to create a statement	84-86	06-102023		
35	WAP to show prepared statement	87-89	15-102023		
36	WAP to Retrieve Data from tabLe	90-91	15-102023		
37	WAP to prepared statement for multiple records	92-93	15-102023		

Question 1:
Write a program in java to convert Decimal Number into Binary Number.

Solution:
```
import java.util.Scanner;
public class DecimalToBinary {
//Function to return the binary form
public void convertToBinary(int n) {
long binaryForm=0;         int rem,
rev=1;         while(n>0) {
      //storing remainder
rem=n%2;
      //dividing the given decimal value
n=n/2;
      //reversing the remainders and storing it
binaryForm=(long)binaryForm+(long)rem*(long)rev;            rev=rev*10;
    }
    System.out.println("Binary Value of given decimal number : " +binaryForm);
  }
  public static void main(String args[]) {
Scanner in = new Scanner(System.in);
    DecimalToBinary obj=new DecimalToBinary();
    //Taking input from the user
    System.out.println("Enter the decimal number :");
int input=in.nextInt();
    //Calling the function to convert decimal to binary
obj.convertToBinary(input);
  }
}
```

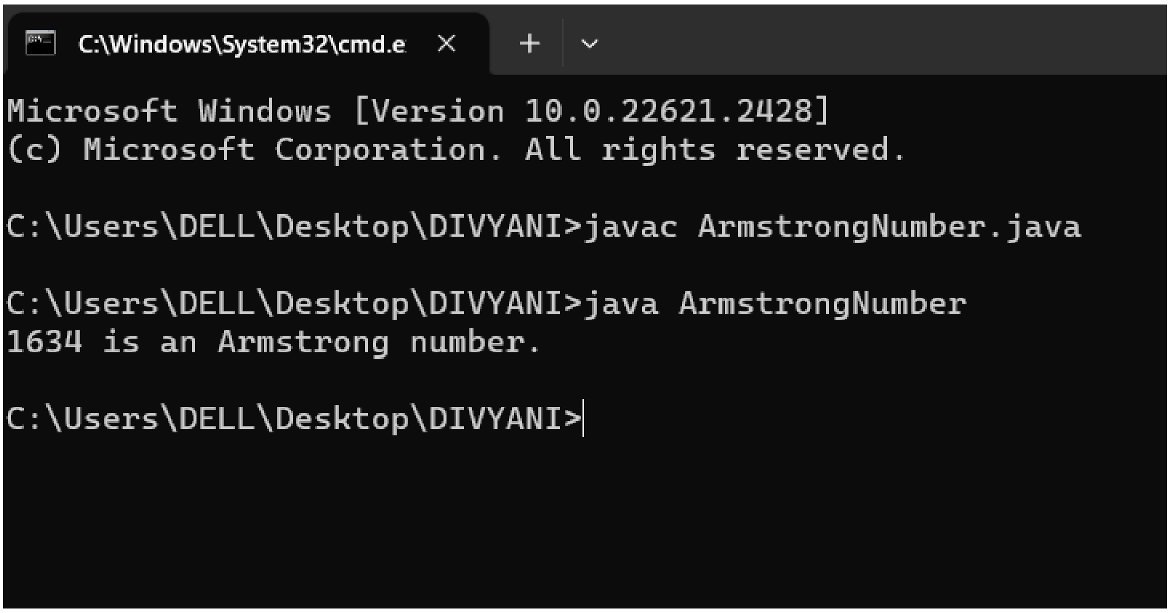


```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\Desktop\DIVYANI>javac DectoBin.java

C:\Users\DELL\Desktop\DIVYANI>java DectoBin
Decimal - 17
Binary - 10001
C:\Users\DELL\Desktop\DIVYANI>
```

Question 2:
Write a program in java to check whether a number is an Armstrong Number or not.

Solution: import

```
java.util.Scanner; public class
ArmstrongNumber {
  public void checkArmstrong(int n, int digit) {
int sum=0;        int copy=n;
while(copy!=0){            int d=copy%10;
      sum=sum+(int)(Math.pow(d,digit));
copy=copy/10;
    }
    if(sum==n){
      System.out.println(n+" is a Armstrong Number.");
    } else {
      System.out.println(n+" is not a Armstrong Number.");
    }
  }
  public int countDigit(int n){
int count=0;
while(n!=0){
count++;
      n=n/10;
    }
    return count;
  }
  public static void main(String args[]){
Scanner in = new Scanner(System.in);
    ArmstrongNumber obj = new ArmstrongNumber();
    System.out.println("Enter the number :");
    int input=in.nextInt();
    obj.checkArmstrong(input,obj.countDigit(input));
  }
}
```

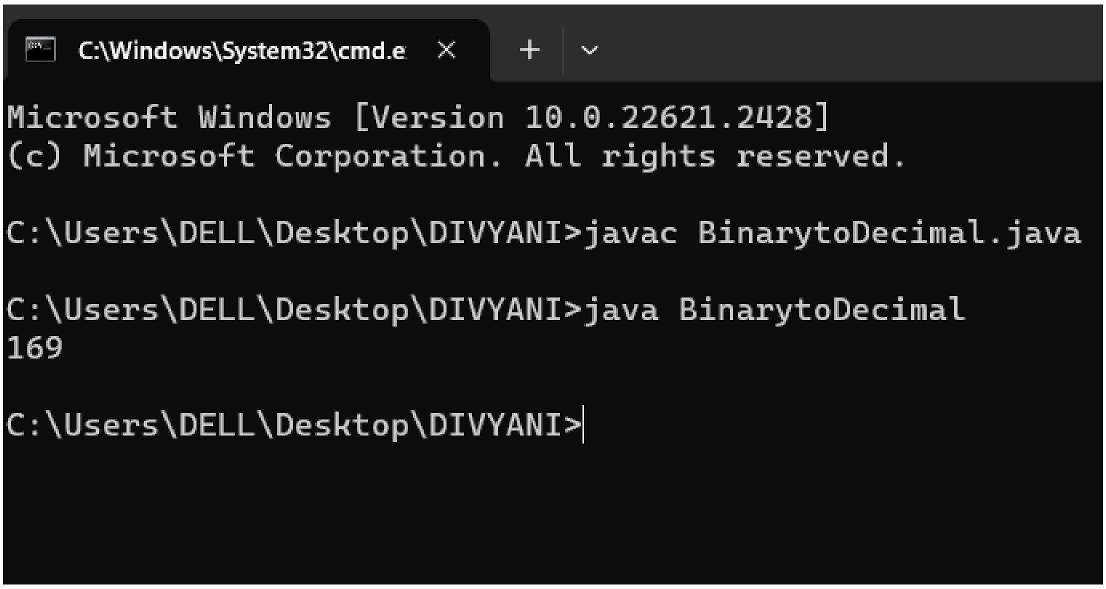


```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\Desktop\DIVYANI>javac ArmstrongNumber.java

C:\Users\DELL\Desktop\DIVYANI>java ArmstrongNumber
1634 is an Armstrong number.

C:\Users\DELL\Desktop\DIVYANI>
```

Question 3:
Write a program in java to convert Binary Number to Decimal Number.

Solution:

```
import java.util.Scanner; public class
BinaryToDecimal {     public void
convertToDecimal(long binaryNumber){         long
decimalNumber=0, j=1, remainder;
while(binaryNumber!=0){
remainder=binaryNumber%10;
decimalNumber=decimalNumber+remainder*j;
j=j*2;
      binaryNumber=binaryNumber/10;
    }
    System.out.println("Decimal Number "+decimalNumber);
  }
  public static void main(String args[]){
Scanner in = new Scanner(System.in);
    BinaryToDecimal obj = new BinaryToDecimal();
System.out.println("Enter the binary number :");         long
input=in.nextLong();
    obj.convertToDecimal(input);
  }
}
```

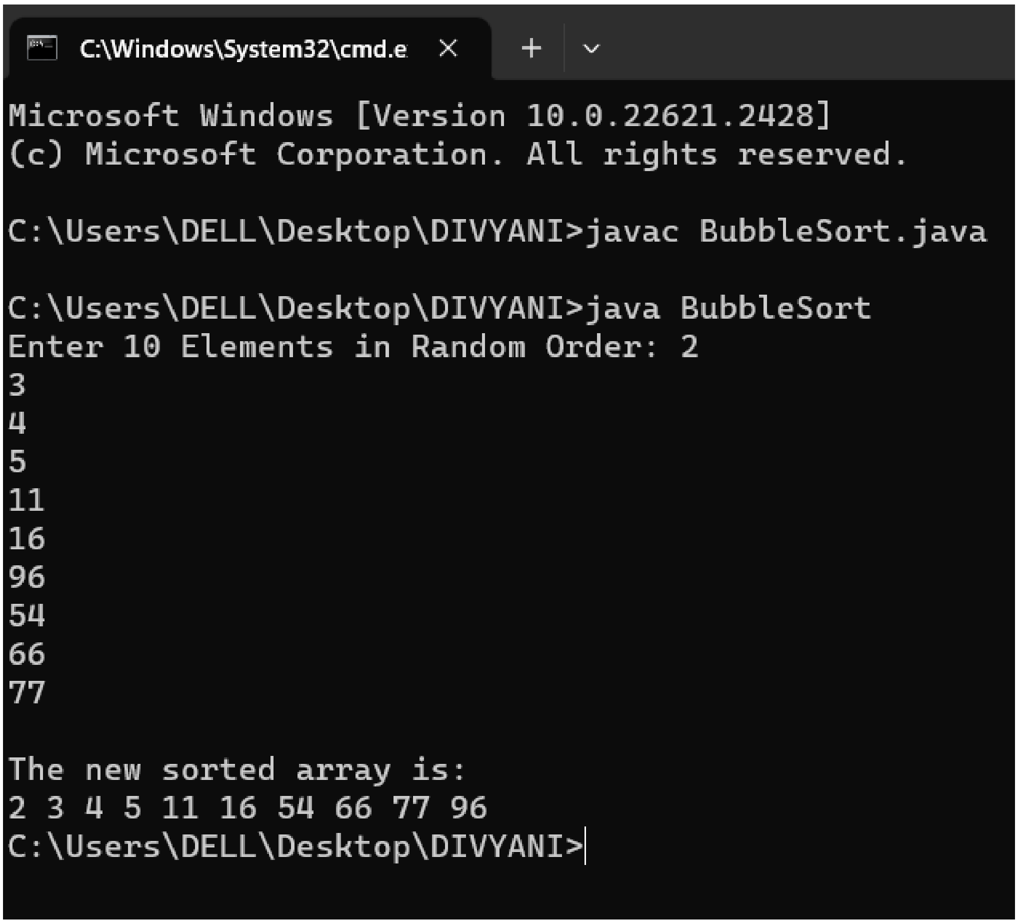


```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\Desktop\DIVYANI>javac BinarytoDecimal.java

C:\Users\DELL\Desktop\DIVYANI>java BinarytoDecimal
169

C:\Users\DELL\Desktop\DIVYANI>
```

Question 4:
Write a program in java to sort a array of numbers using Bubble sort.

Solution: import

```
java.util.Scanner; public class
BubbleSort {     public void
sortArray(int arr[]){
    int n=10;         int
temp=0;         for(int
i=0;i<n;i++){             for(int
j=1;j<(n-i);j++){
if(arr[j-1]>arr[j]){
temp = arr[j-1];
arr[j-1] = arr[j];
arr[j] = temp;
        }
      }
    }
  }
  public static void main(String args[]){
Scanner in=new Scanner(System.in);
BubbleSort obj = new BubbleSort();
    int arr[]=new int[10];
    System.out.println("Enter 10 integer value in unsorted manner :");
    //taking the user input
for(int i=0;i<10;i++){
      arr[i]=in.nextInt();
    }
    //sorting the array
obj.sortArray(arr);         //printing the
sorted array
System.out.print("Sorted Array : ");
    for(int i=0;i<10;i++){
System.out.print(arr[i]+" ");
    }
  } }
```



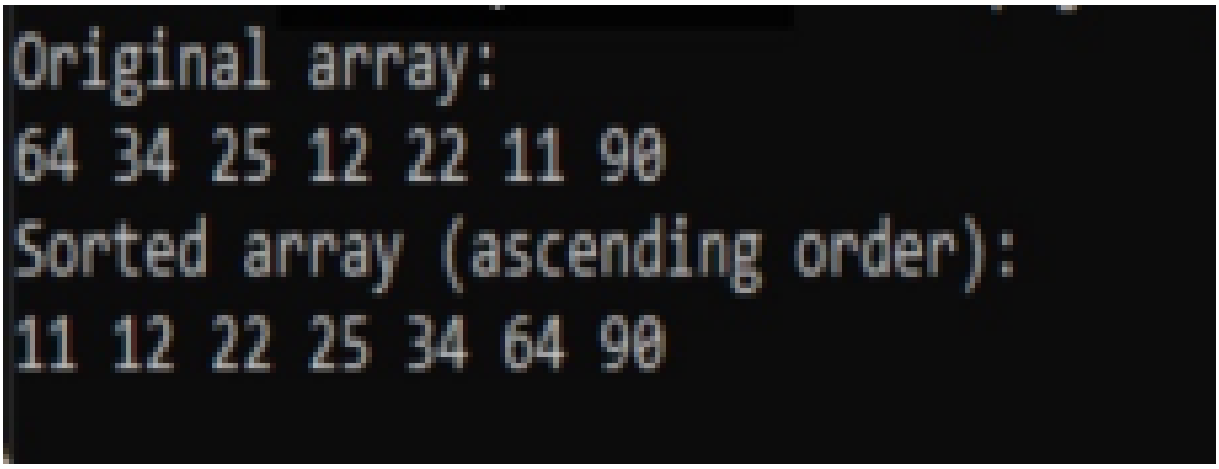
```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\Desktop\DIVYANI>javac BubbleSort.java

C:\Users\DELL\Desktop\DIVYANI>java BubbleSort
Enter 10 Elements in Random Order: 2
3
4
5
11
16
96
54
66
77

The new sorted array is:
2 3 4 5 11 16 54 66 77 96
C:\Users\DELL\Desktop\DIVYANI>
```

Question 5:
Write a program in java to sort an array of integers using heap sort.

Solution: import

```
java.util.Scanner; public
class HeapSort{
  void print(int array[],int size){
int index = 0;         while(index
< size){
      System.out.print(" " + array[index]);
      index++;
    }
  }
  void heapify(int arr[], int size, int index){
    int  maximum = index;
int leftChild = 2*index + 1;
int rightChild = 2*index + 2;
int swapper;
    if(leftChild < size && arr[leftChild] > arr[maximum]){
maximum = leftChild;
    }
    if(rightChild < size && arr[rightChild] > arr[maximum]){
maximum = rightChild;
    }
    if(maximum != index){
swapper = arr[index];
arr[index] = arr[maximum];
arr[maximum] = swapper;
      heapify(arr,size,maximum);
    }
  }
  void sort(int array[]){         int
size = array.length;         int
swapper;         int index =
(size/2) - 1;         while(index
>=0){
heapify(array,size,index);
      index--;
    }
    for(index = size -1; index > 0; index--){
swapper = array[0];            array[0] =
array[index];            array[index] =
swapper;
      heapify(array,index, 0);
    }
    }
    public static void main(String args[])
    {
        Scanner in = new Scanner(System.in);
        int array[] = new int[10];
        for(int i=0;i<10;i++){array[i]=in.nextInt();}
int size = array.length;
        HeapSort object = new HeapSort();
object.sort(array);
        System.out.println("After Heap Sort: ");
object.print(array,size);
    }
}
```

OUTPUT:



```
Original array:
64 34 25 12 22 11 90
Sorted array (ascending order):
11 12 22 25 34 64 90
```

Question 6:
Write a program to show Inheritance.

Solution:

```
 Importjava.util.*;


class Faculty
{
String designation="Professor";
String collegename="AIIT";

void does()
{
System.out.println("Teaching ");
}
}


public class JavaFaculty extends Faculty
{
String subject="Java";

void hacking()
{
System.out.println("coding is my hobby. ");
}

public static void main(String args[])
{

JavaFaculty obj= new JavaFaculty();
System.out.println(obj.designation);
System.out.println(obj.collegename);
System.out.println(obj.subject);

obj.does(); obj.hacking();

}
}
```

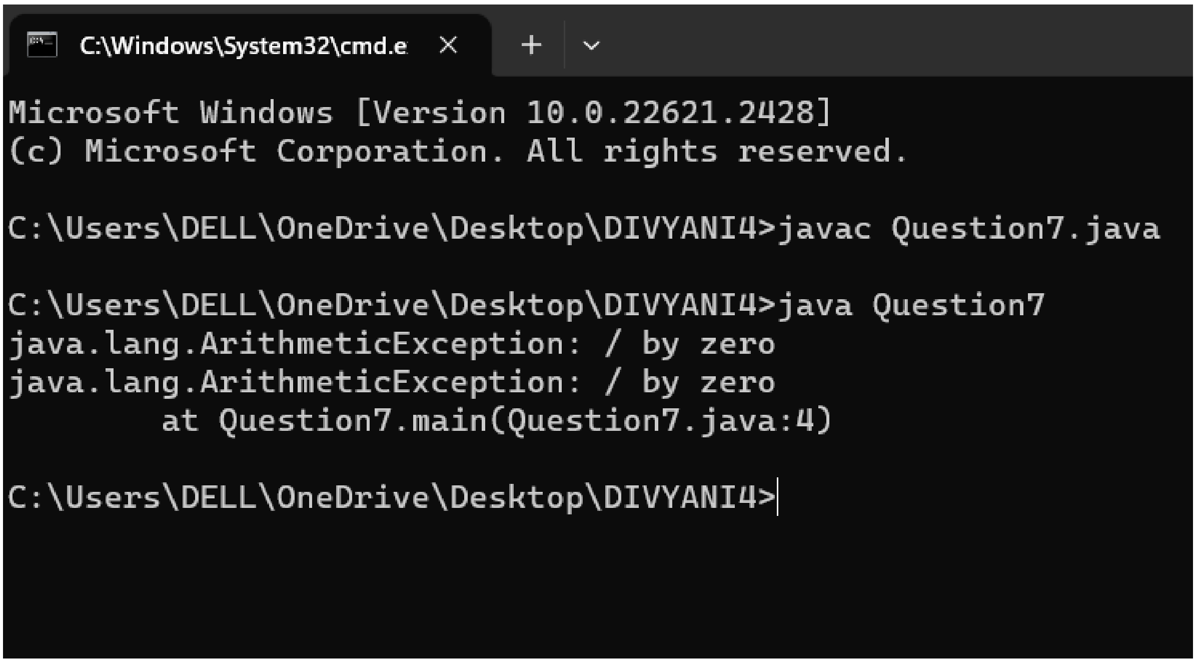
Question 7:

Write a program of ExceptionExample1(Handle an exception).

Solution:

```
import java.util.*;


class Exception1
{

public static void main(String args[])
{


try
{
System.out.println(" The division of 689/0 is " +(689/0));

}

catch(ArithmeticException e)
{
System.out.println(e);

}

System.out.println(" The division of 68/2 is " +(68/2));

}
}
```

Output:

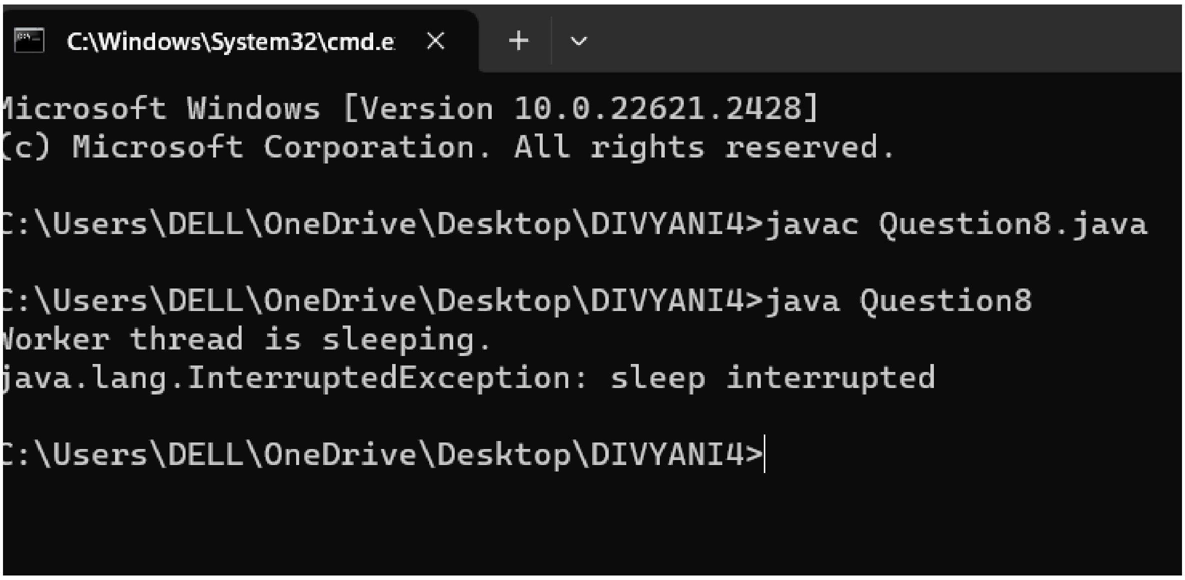


```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\DIVYANI4>javac Question7.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI4>java Question7
java.lang.ArithmeticException: / by zero
java.lang.ArithmeticException: / by zero
        at Question7.main(Question7.java:4)

C:\Users\DELL\OneDrive\Desktop\DIVYANI4>
```

Question 8:

Write a program of Exception Example 2(Interruption)
Solution:

```
import java.util.*;


class Exception2
{

public static void main(String args[])
{


try
{
System.out.println(9/0);
}

catch(ArrayIndexOutOfBoundsException e)
{
System.out.println(e);
}

catch(ArithmeticException e)
{
System.out.println(e);
}

catch(Exception e)
{
System.out.println(e);
System.out.println(e.getMessage());

}

System.out.println(" Rest of the code executed ");

} }
```



```
icrosoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

:\Users\DELL\OneDrive\Desktop\DIVYANI4>javac Question8.java

:\Users\DELL\OneDrive\Desktop\DIVYANI4>java Question8
orker thread is sleeping.
java.lang.InterruptedException: sleep interrupted

:\Users\DELL\OneDrive\Desktop\DIVYANI4>
```

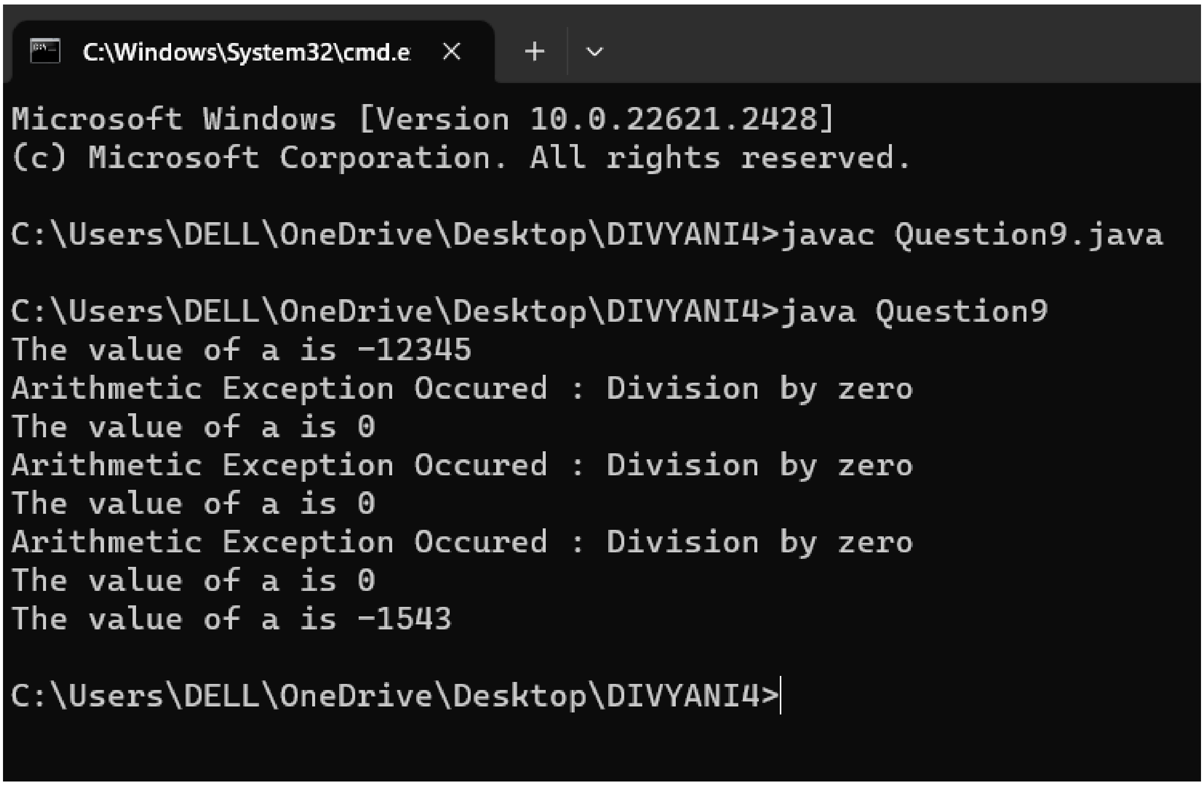
Question 9:

Write a program of Exception Example 3(Arithmetic)

Solution:

```
import java.util.*; import
java.util.Random;


class Exception3
{

public static void main(String args[])
{

int a=0, b=0, c=0;
Random r=new Random();

for (int i=0;i<3;i++)
{ try
{

b=r.nextInt(); c=r.nextInt();
a=12345/(b/c);
}


catch(Exception e)
{
System.out.println("Arithmetic exception occured : Division by 0 "); a=0;

}

System.out.println(" The value of a is "+ a);

}
}
}
```

OUTPUT:



```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\DIVYANI4>javac Question9.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI4>java Question9
The value of a is -12345
Arithmetic Exception Occured : Division by zero
The value of a is 0
Arithmetic Exception Occured : Division by zero
The value of a is 0
Arithmetic Exception Occured : Division by zero
The value of a is 0
The value of a is -1543

C:\Users\DELL\OneDrive\Desktop\DIVYANI4>
```

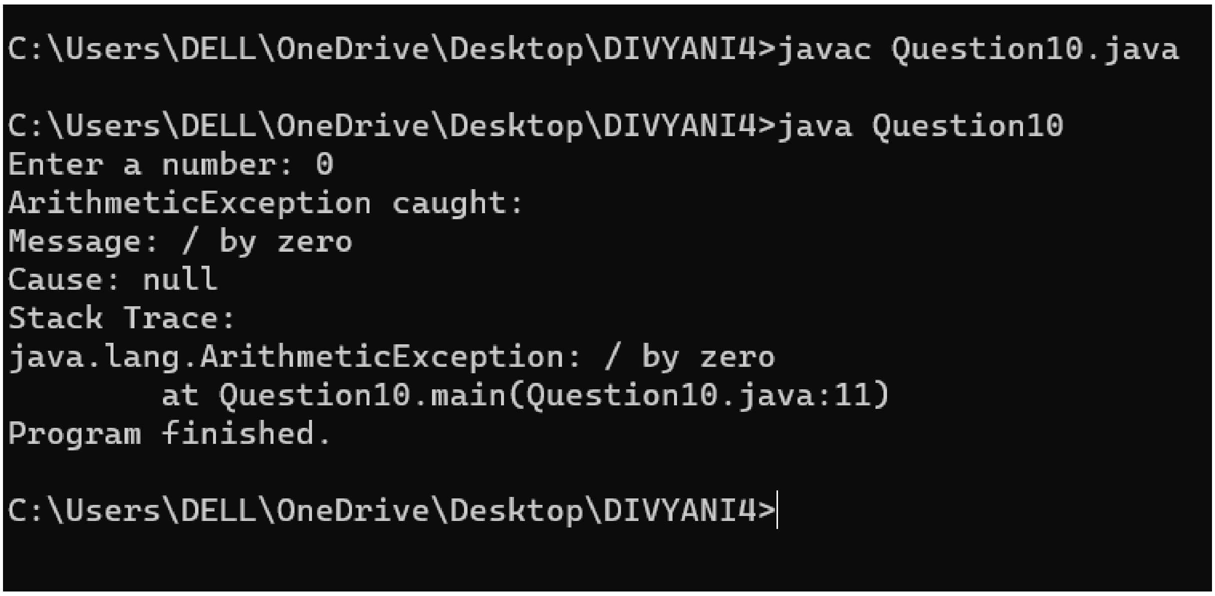
Question 10:

WAP to Handle an Exception and use its methods. (Example 4)

Solution:

```
class ExceptionExample4 {
   public static void main(String args[]){
      try {
          System.out.println(9/0);    //abnormally terminate
      }
      catch (Exception e) {
         // TODO: handle exception
         System.out.println(e);
         System.out.println(e.getMessage());
         e.printStackTrace(); //always try to use this only , it will get full details.

      }

      System.out.println("Hello World");

   }
}
```

OUTPUT:



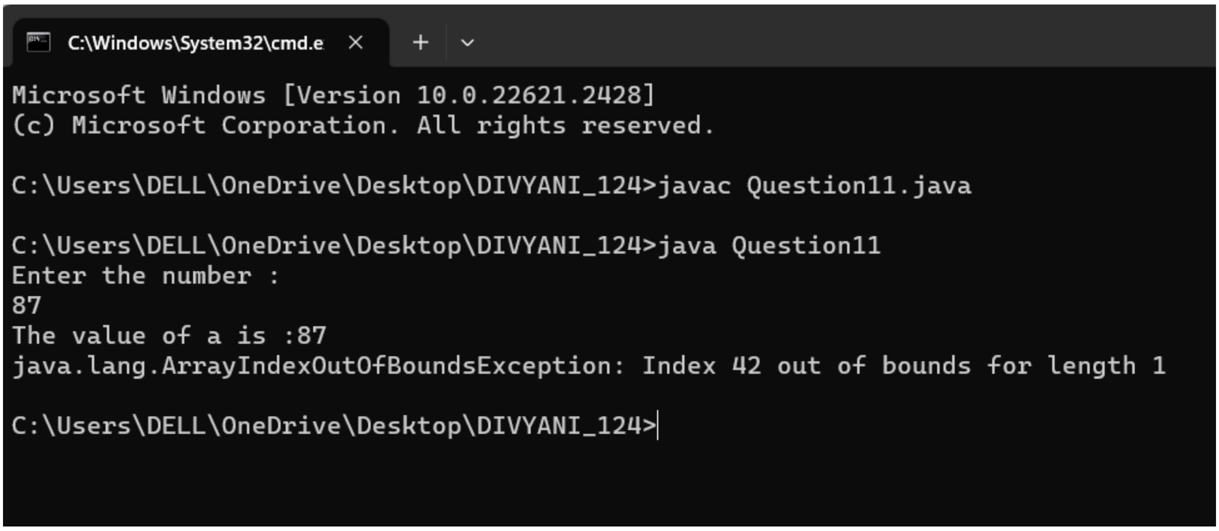
```
C:\Users\DELL\OneDrive\Desktop\DIVYANI4>javac Question10.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI4>java Question10
Enter a number: 0
ArithmeticException caught:
Message: / by zero
Cause: null
Stack Trace:
java.lang.ArithmeticException: / by zero
        at Question10.main(Question10.java:11)
Program finished.

C:\Users\DELL\OneDrive\Desktop\DIVYANI4>
```

Question 11: WAP to handle Exceptions using Multiple Catch.

Solution:

```
class Exception4MultipleCatches{
   public static void main(String args[]){
      try{
         int a = args.length;
System.out.println("a= " +a);
         int b = 42/a;
int c[] = {1};
c[42] = 99;
      }
      catch(ArithmeticException e) {
         System.out.println("Divide by 0: " +e);
      }
      catch(ArrayIndexOutOfBoundsException e) {
         System.out.println("Array Index oob: " +e);
      }
      System.out.println("After try/catch blocks.");
   }
}
```

Output:

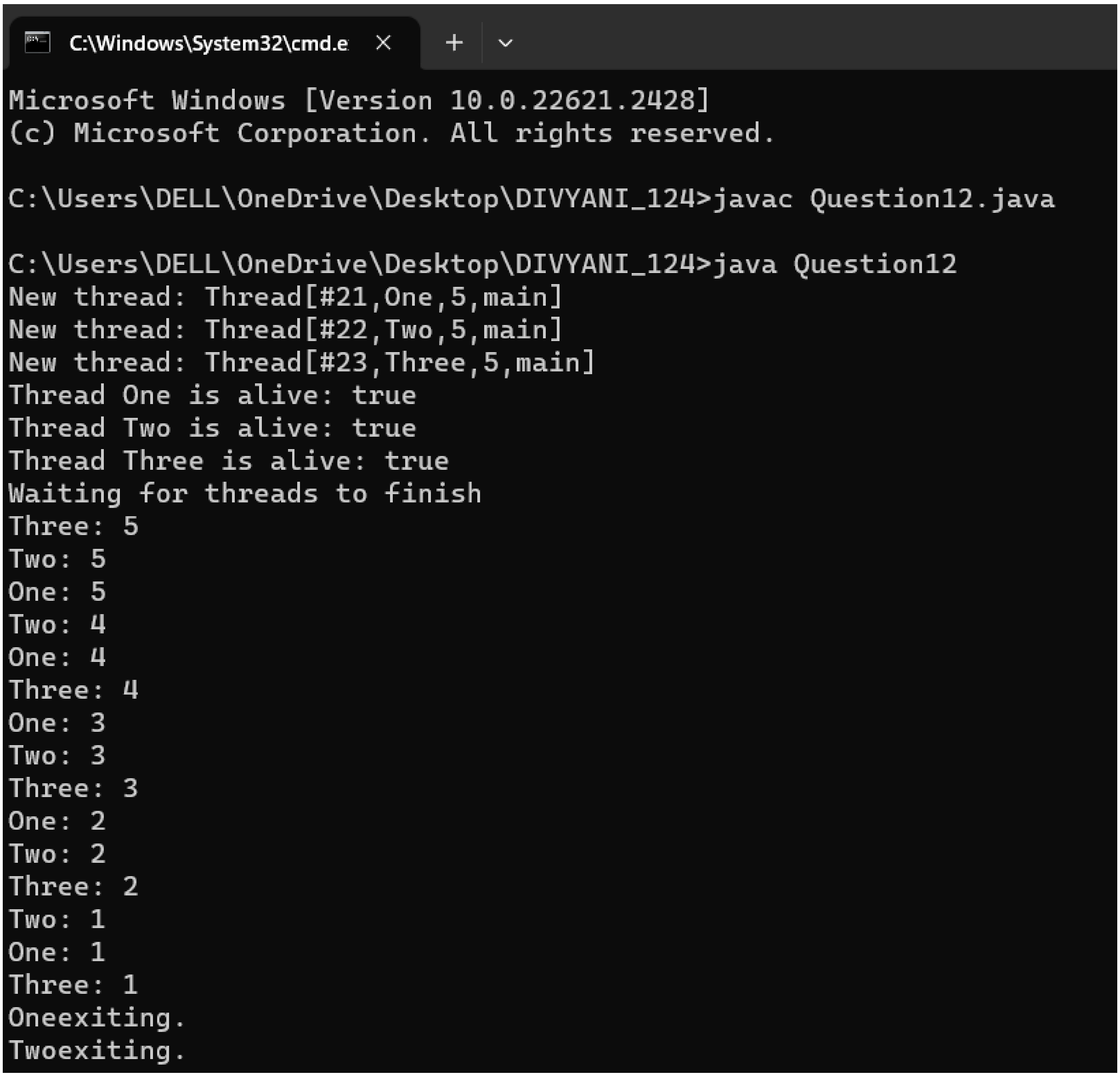


```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac Question11.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>java Question11
Enter the number :
87
The value of a is :87
java.lang.ArrayIndexOutOfBoundsException: Index 42 out of bounds for length 1

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>
```

Question 12: WAP to do Demo Join (Thread Runnable).

Solution:

```
class NewThread implements Runnable {
   String name; // name of thread
   Thread t;
   NewThread(String threadname) {
name = threadname;        t = new
Thread(this, name);
System.out.println("New thread: " + t);
      t.start(); // Start the thread
   }
   // Thus is the entry point for thread.
   public void run() {
      try {           for (int i = 5;
i > 0; i--) {
            System.out.println(name + ": " + i);
            Thread.sleep(1000);
         }
      } catch (InterruptedException e) {
         System.out.println(name + " interrupted.");
      }
      System.out.println(name + "exiting.");
   }
}

class DemoJoin {
   public static void main(String args[]) {
    NewThread ob1 = new NewThread("One");
NewThread ob2 = new NewThread("Two");        NewThread
ob3 = new NewThread("Three");

    System.out.println("Thread One is alive: " + ob1.t.isAlive());
    System.out.println("Thread Two is alive: " + ob2.t.isAlive());
    System.out.println("Thread Three is alive: " + ob3.t.isAlive());
    // wait for threads to finish
    try {
      System.out.println("Waiting for threads to finish");
      ob1.t.join();
ob2.t.join();            ob3.t.join();
    } catch (InterruptedException e) {
      System.out.println("Main thread Interrupted");
    }
    System.out.println("Thread One is Alive: " + ob1.t.isAlive());
    System.out.println("Thread Two is Alive: " + ob2.t.isAlive());
    System.out.println("Thread Three is Alive: " + ob3.t.isAlive());
    System.out.println("Main thread is exiting.");
  }
}
```



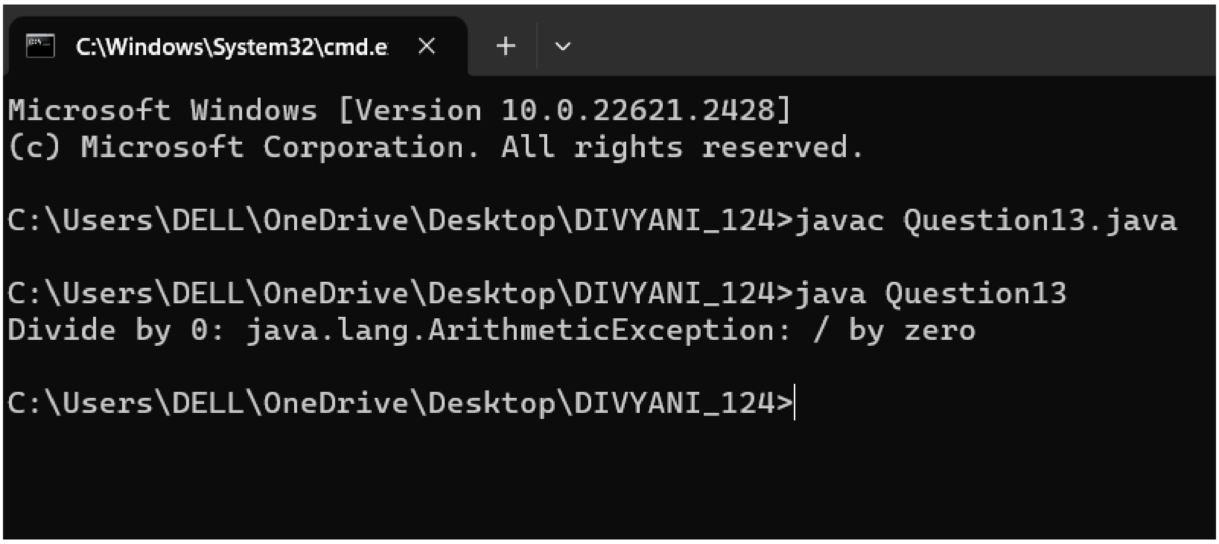
```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac Question12.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>java Question12
New thread: Thread[#21,One,5,main]
New thread: Thread[#22,Two,5,main]
New thread: Thread[#23,Three,5,main]
Thread One is alive: true
Thread Two is alive: true
Thread Three is alive: true
Waiting for threads to finish
Three: 5
Two: 5
One: 5
Two: 4
One: 4
Three: 4
One: 3
Two: 3
Three: 3
One: 2
Two: 2
Three: 2
Two: 1
One: 1
Three: 1
Oneexiting.
Twoexiting.
```

Question 13: WAP To Handle Exception Using Nested Try.

Solution:

```
class Exception5NestTry {     public
static void main(String args[]) {
    try {
      int a = args.length;
int b = 42 / a;
      System.out.println("a = " + a);

      try { // nested try block
        if (a == 1)           a = a / (a -
a); // divison by zero
        if (a == 2) {
int c[] = { 1 };
          c[42] = 99;   // generate an out-of-bounds exception
        }
      }

      catch (ArrayIndexOutOfBoundsException e) {
        System.out.println("Array Index out-of-bounds: " + e);
      }
    } catch (ArithmeticException e) {
      System.out.println("Divide by 0: " + e);
    }
  }
}
```

Output:



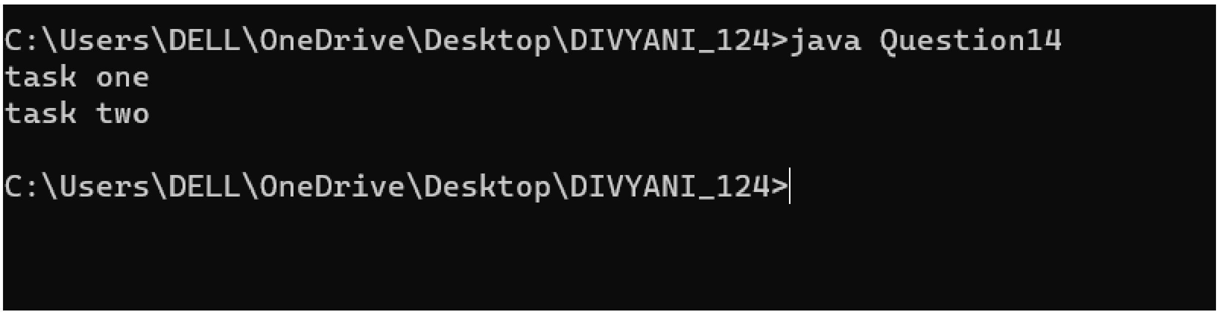
```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac Question13.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>java Question13
Divide by 0: java.lang.ArithmeticException: / by zero

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>
```

Question 14: WAP of create multiple thread for multiple tasks.

Solution:

```
class Simple1
extends Thread {
  public void run() {
    System.out.println("task one");
  }
}

class Simple2 extends Thread {
  public void run() {
    System.out.println("task two");
  }
}

class MultiToMulti {   public static void
main(String args[]) {
    Simple1 t1 = new Simple1();
Simple2 t2 = new Simple2();

    t1.start();
t2.start();
  }
}
```

Output:



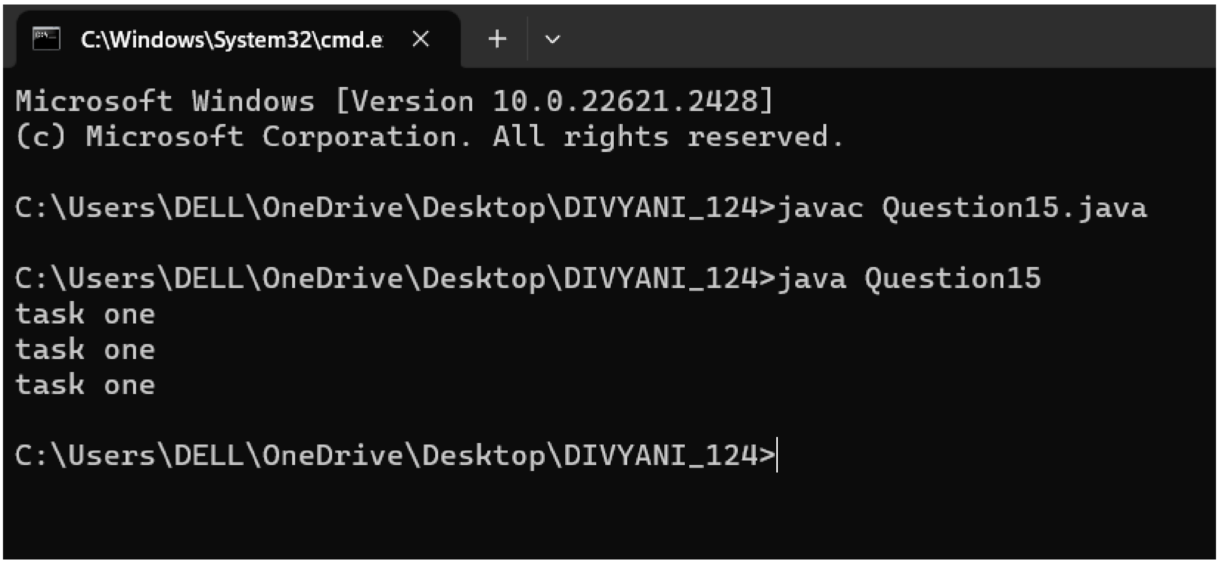
```
C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>java Question14
task one
task two

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>
```

Question 15: WAP of use Multiple thread for Single task.

Solution: class MultiToSingle

```
extends Thread {
   public void run() {
      System.out.println("task one");
   }

   public static void main(String args[]) {
      MultiToSingle t3 = new MultiToSingle();
      MultiToSingle t2 = new MultiToSingle();
MultiToSingle t1 = new MultiToSingle();

      t1.start();
t2.start();       t3.start();
   }
}
```

Output:



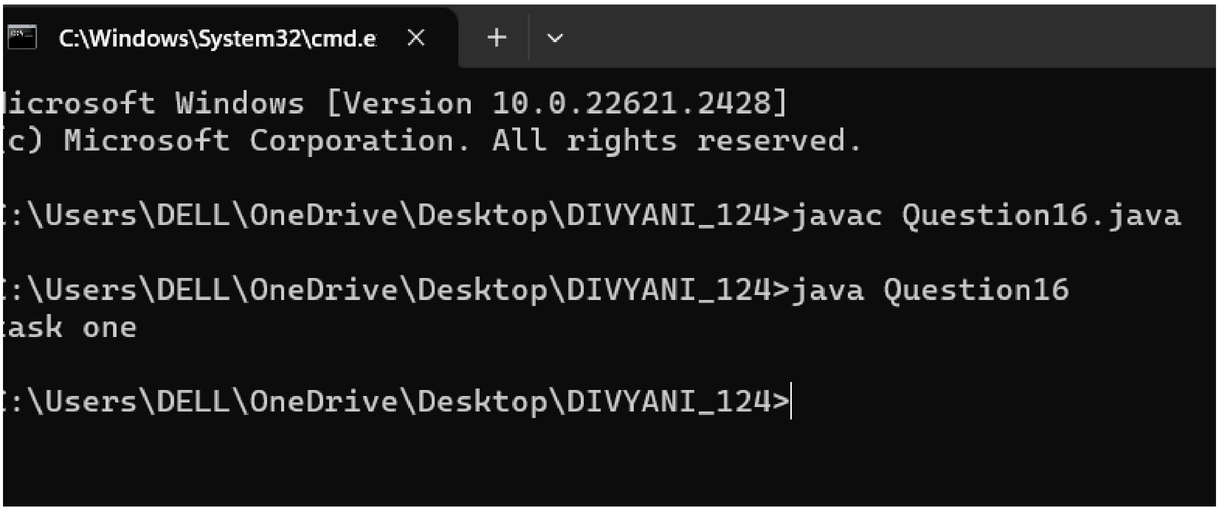
```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac Question15.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>java Question15
task one
task one
task one

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>
```

Question 16: WAP to use single thread for single task.

Solution:

```
class SingleThread
extends Thread {
  public void run() {
    System.out.println("task one");
  }
}

class SingleToSingle {   public static void
main(String args[]) {     SingleThread t1 =
new SingleThread();
    t1.start();
  }
}
```

Output:



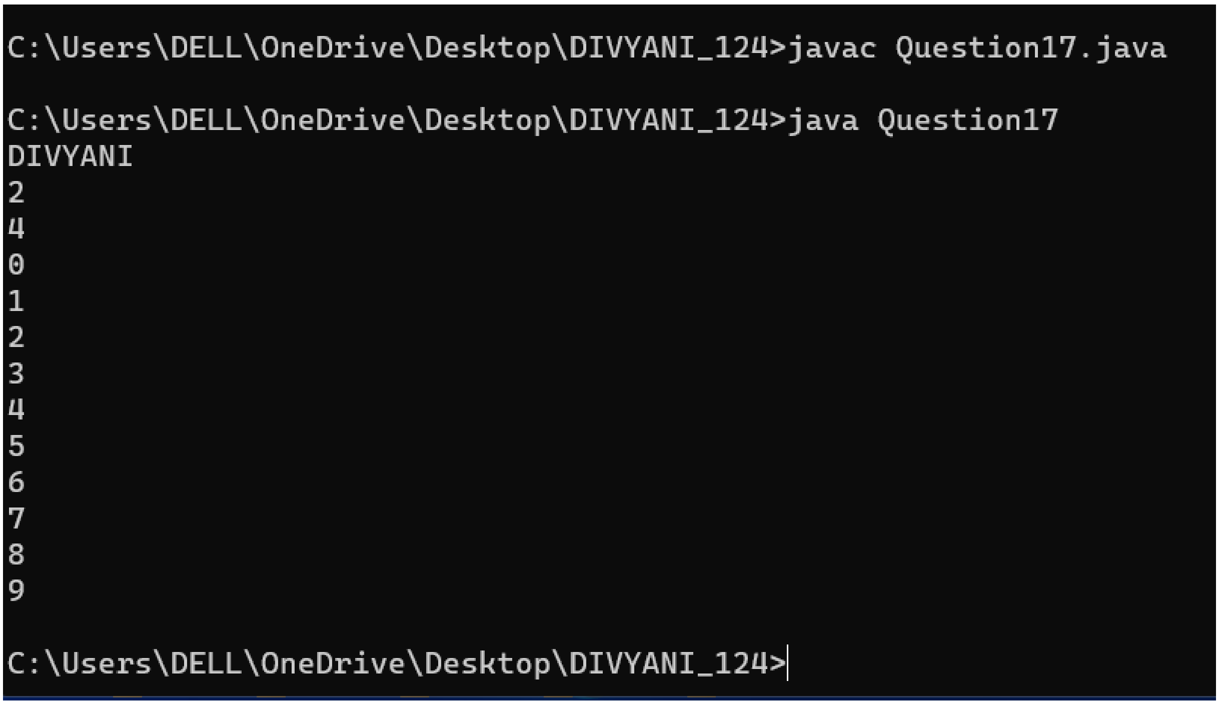
```
icrosoft Windows [Version 10.0.22621.2428]
c) Microsoft Corporation. All rights reserved.

:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac Question16.java

:\Users\DELL\OneDrive\Desktop\DIVYANI_124>java Question16
ask one

:\Users\DELL\OneDrive\Desktop\DIVYANI_124>
```

Question 17: WAP to create a Thread and use the setName, getName, activeCount, setPriority & getPriority method.

Solution:

```
public class MyThread
extends Thread {
    @Override
    public void run() {
        for (int i = 0; i < 10; i++) {
            try {
                Thread.sleep(1000);
            } catch (Exception e) {
                System.out.println(e);
            }
            System.out.println(i);
        }
    }

    public static void main(String[] args) {
        MyThread mt = new MyThread();
        // mt.run();
mt.start();
        mt.setName("avinash");        // rename thread
        System.out.println(mt.getName());   // print name of thread
System.out.println(Thread.activeCount());   // count threads
        mt.setPriority(4);
        System.out.println(mt.getPriority());
    }
}
```

OUTPUT:



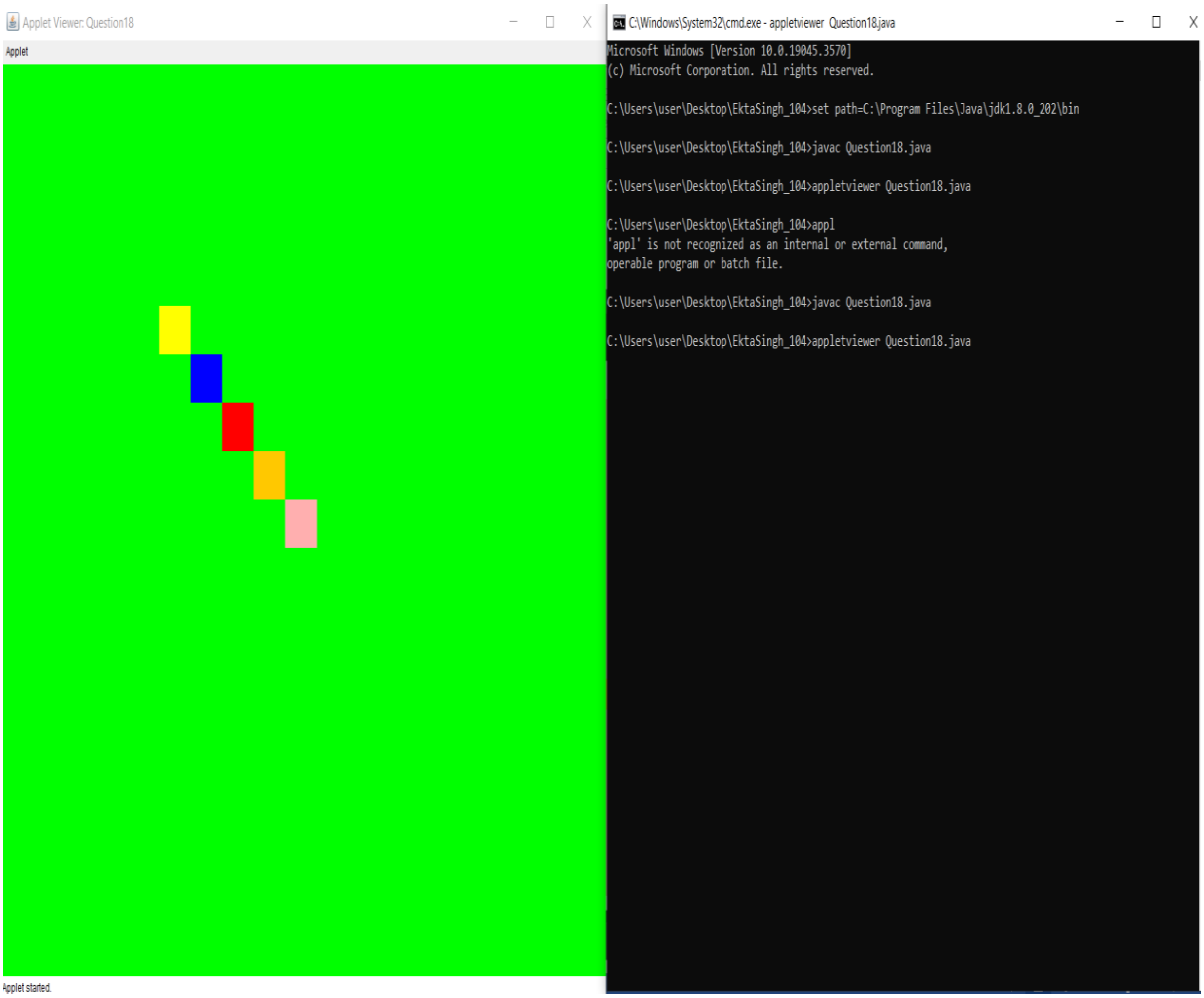
```
C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac Question17.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>java Question17
DIVYANI
2
4
0
1
2
3
4
5
6
7
8
9

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>
```

Question 18: WAP to make 5 different coloured boxes & display them diagonally.

Solution:

```
import java.awt.*; import
java.applet.*;

public class boxes extends Applet {
   int x = 50;
int y = 50;
   int WIDTH = 100;
int HEIGHT = 50;
   Color[] colors = { Color.RED, Color.GREEN, Color.BLUE, Color.YELLOW, Color.ORANGE };

   public void init() {
      setBackground(Color.WHITE);
   }

   public void paint(Graphics g) {
for (Color color : colors) {
         g.setColor(color);
         g.fillRect(x, y, WIDTH, HEIGHT);
         x += 100;
y += 50;
      }
   }
}
/*
* <applet code = boxes width=600 height=600>
* </applet>
 */
```

Output:



Applet Viewer: Question18
Applet
Applet started.
C:\Windows\System32\cmd.exe - appletviewer Question18.java

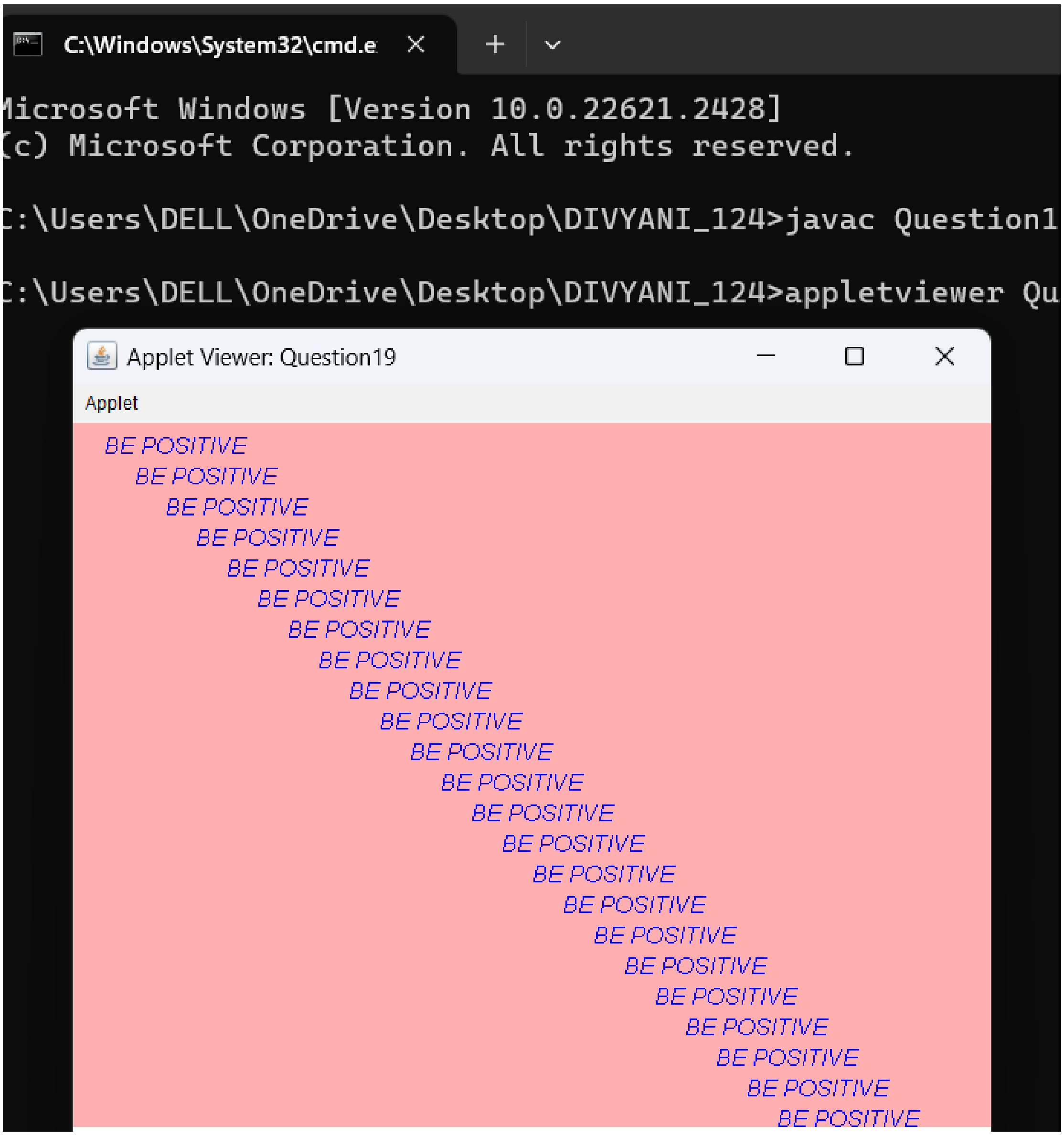
```
Microsoft Windows [Version 10.0.19045.3570]
(c) Microsoft Corporation. All rights reserved.

C:\Users\user\Desktop\EktaSingh_104>set path=C:\Program Files\Java\jdk1.8.0_202\bin

C:\Users\user\Desktop\EktaSingh_104>javac Question18.java

C:\Users\user\Desktop\EktaSingh_104>appletviewer Question18.java

C:\Users\user\Desktop\EktaSingh_104>appl
'appl' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\user\Desktop\EktaSingh_104>javac Question18.java

C:\Users\user\Desktop\EktaSingh_104>appletviewer Question18.java
```

Question 19: WAP to print multiple BE POSITIVE diagonally in a java applet.

Solution:

```
import java.applet.*; import
java.awt.*;

public class MyApplet extends Applet {
   String message = "BE POSITIVE";
      public void paint(Graphics g) {
       int x = 10;
int y = 10;

       while (x < getWidth() && y < getHeight()) {
          g.drawString(message, x, y);          x +=
g.getFontMetrics().stringWidth(message) + 10;
          y += 20;
       }
   }
}


/* <applet code= "MyApplet.java" width="400" height="400"></applet> */
```

OUTPUT:



```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac Question1

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>appletviewer Qu
```

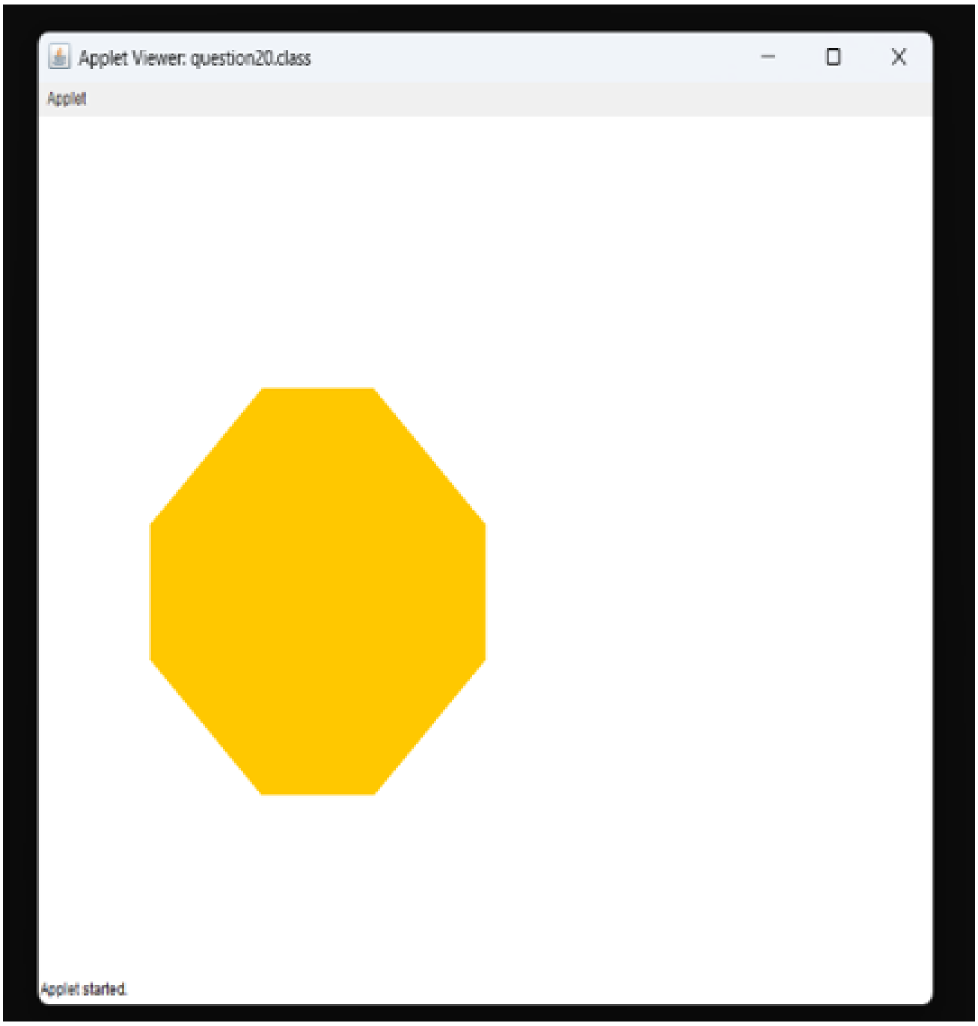
```
BE POSITIVE
   BE POSITIVE
      BE POSITIVE
         BE POSITIVE
            BE POSITIVE
               BE POSITIVE
                  BE POSITIVE
                     BE POSITIVE
                        BE POSITIVE
                           BE POSITIVE
                              BE POSITIVE
                                 BE POSITIVE
                                    BE POSITIVE
                                       BE POSITIVE
                                          BE POSITIVE
                                             BE POSITIVE
                                                BE POSITIVE
                                                   BE POSITIVE
                                                      BE POSITIVE
                                                         BE POSITIVE
                                                            BE POSITIVE
                                                               BE POSITIVE
                                                                  BE POSITIVE
```

Question 20: WAP to display an Octagon (Polygon).

Solution:

```
import java.awt.*; import
java.applet.*;


public class polygon extends Applet {
   public void init() {
      setBackground(Color.WHITE);
setForeground(Color.RED);
   }
   public void paint(Graphics g) {        int[] x = { 200,
300, 400, 400, 300, 200, 100, 100 };        int[] y = { 200,
200, 300, 400, 500, 500, 400, 300 };
      g.fillPolygon(x, y, 8);
   }
}
/* <applet code = polygon width=600 height=600>
  </applet> */
```

Output:


Applet Viewer: question20.class
Applet
Applet started.

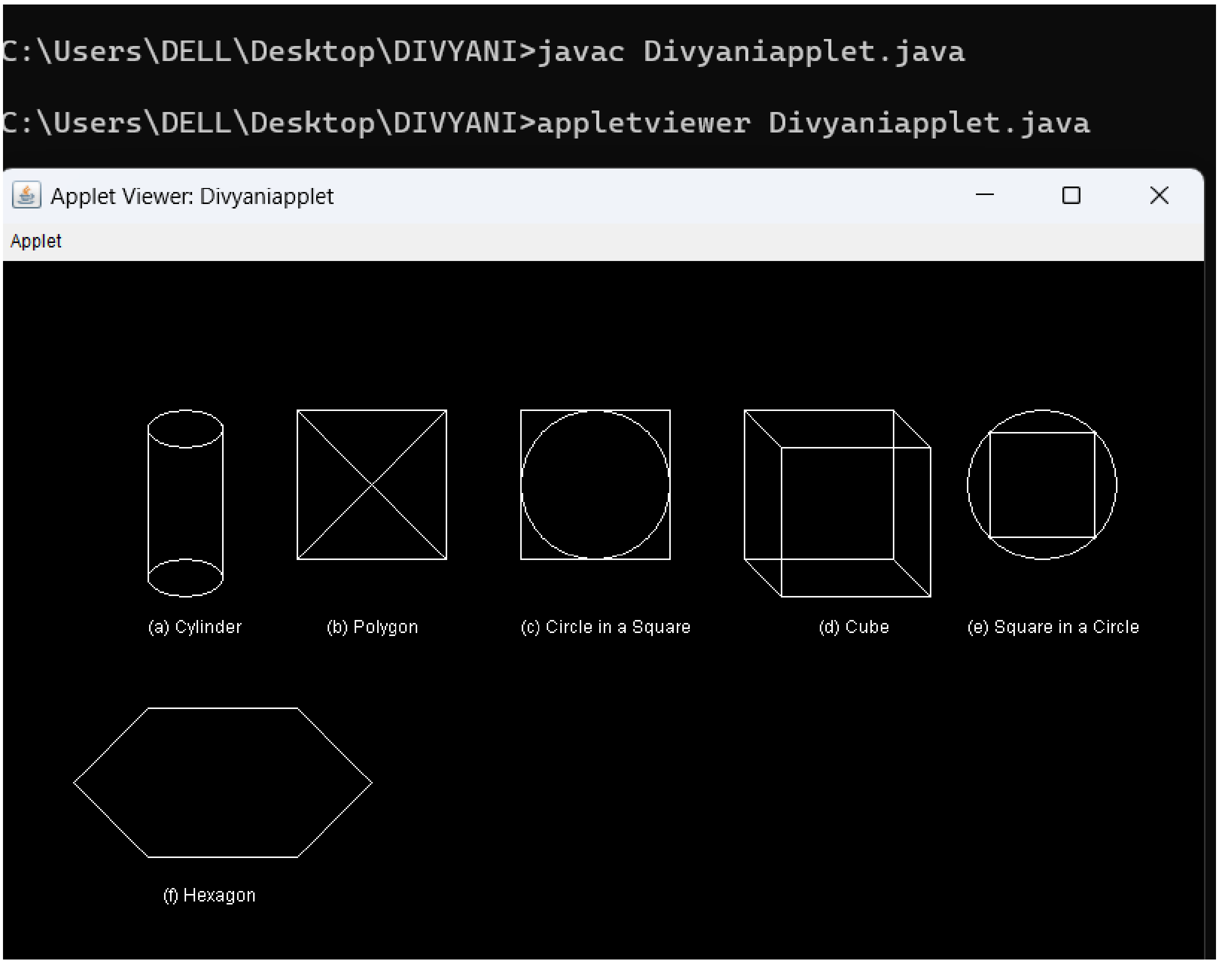
Question 21: WAP to display a Cylinder, Cube, Square in circle, Circle in Square, Polygon.

Solution:

```
import java.awt.*; import
java.applet.*;

public class shapes extends Applet {
   public void init() {
      setBackground(Color.WHITE);
setForeground(Color.BLUE);
   }

   public void paint(Graphics g) {

      // Cylinder
      // g.drawString(" (a) Cylinder", 10, 110);
     g.setColor(Color.blue);
      g.fillOval(10, 10, 50, 10);
      g.setColor(Color.blue);
      g.fillOval(10, 80, 50, 10);
      g.drawLine(10, 15, 10, 85);
      g.drawLine(60, 15, 60, 85);

      // Cube
      // g.drawString(" (b) .Cube", 95, 110);
      g.setColor(Color.red);
      g.drawRect(80, 10, 50, 50);
      g.drawRect(95, 25, 50, 50);
      g.drawLine(80, 10, 95, 25);
```

```
        g.drawLine(130, 10, 145, 25);
        g.drawLine(80, 60, 95, 75);
        g.drawLine(130, 60, 145, 75);

        // Circle in Square
        g.setColor(Color.blue);
        g.fillOval(180, 10, 80, 80);
        g.setColor(Color.red);
        g.fillRect(192, 22, 55, 55);

        // Circle Inside a Square
        // g.drawString(" (d) Circle Inside a Square", 290, 110);
        g.setColor(Color.red);
        g.fillRect(290, 10, 80, 80);
        g.setColor(Color.blue);
        g.fillOval(290, 10, 80, 80);

        // Polygon
       // g.drawString(" (e) .Polygon", 90, 250);
        g.drawLine(200, 200, 200, 500);
        g.drawLine(400, 200, 400, 500);
int a[] = { 200, 400, 200, 400 };         int
b[] = { 200, 500, 500, 200 };
        g.drawPolygon(a, b, 4);

    }
}
/*
* <applet code = shapes width=600 height=600>
* </applet>
 */
```

Output:



```
C:\Users\DELL\Desktop\DIVYANI>javac Divyaniapplet.java

C:\Users\DELL\Desktop\DIVYANI>appletviewer Divyaniapplet.java
```

Question 22: WAP to use MyMouseEvents.

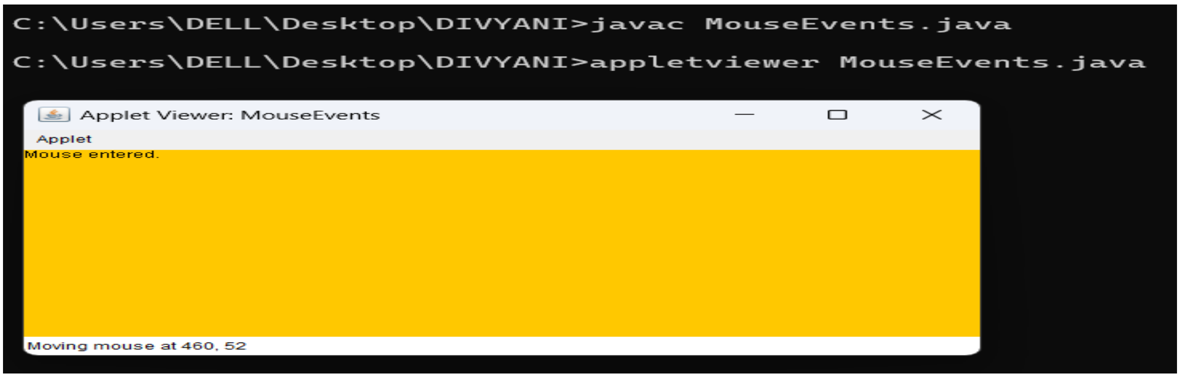
Solution:

```
import java.awt.*; import
java.applet.*; import
java.awt.event.*;

public class MymouseEvents extends Applet implements MouseListener ,
MouseMotionListener{
   String msg=" ";
int mouseX=0;    int
mouseY=0;

   public void init(){
setBackground(Color.white);
addMouseListener(this);
addMouseMotionListener(this);
   }
 //Handle mouse clicked
  public void mouseClicked(MouseEvent me){
      //save coordinates
setBackground(Color.red);
mouseX=100;
mouseY=100;       msg="Mouse
clicked";
      repaint();
   }

//Handle mouse entered public void
mouseEntered(MouseEvent me){    //save
coordinates
```

```
setBackground(Color.magenta);
mouseX=100;     mouseY=100;
msg="Mouse entered";
   repaint();
}

//Handle mouse exited public void
mouseExited(MouseEvent me){
   //save coordinates
setBackground(Color.orange);
mouseX=100;     mouseY=100;
msg="Mouse exited.";
   repaint();
}

//Handle mouse pressed public void
mousePressed(MouseEvent me){
   //save coordinates
setBackground(Color.yellow);
mouseX= me.getX();     mouseY=
me.getY();     msg="Down";
   repaint();
}

//Handle mouse released
public void mouseReleased(MouseEvent me){
   //save coordinates
setBackground(Color.black);
```

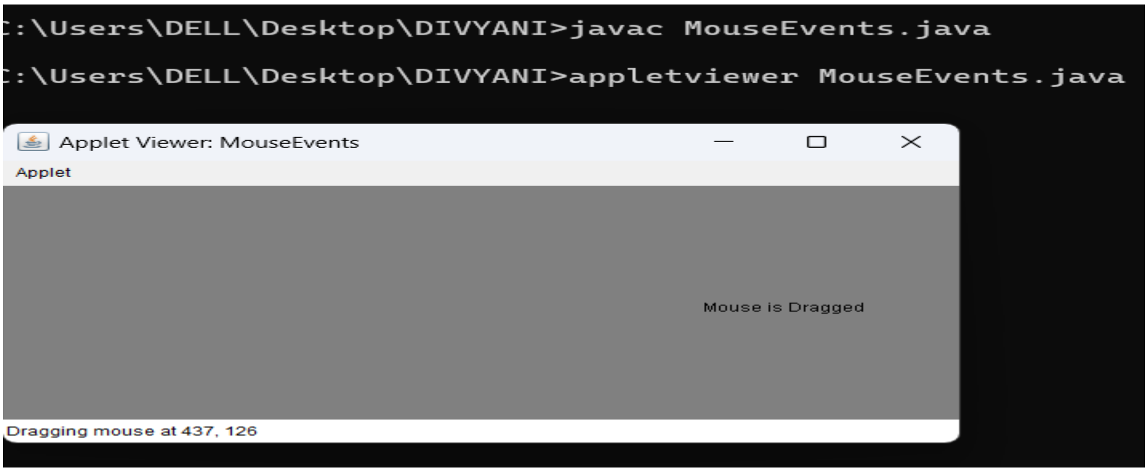
```
mouseX= me.getX();     mouseY=
me.getY();     msg="Released";
    repaint();
}
//Handle mouse dragged public void
mouseDragged(MouseEvent me){
    //save coordinates     setBackground(Color.pink);     mouseX=
me.getX();     mouseY= me.getY();     msg="Mouse is dragged";
showStatus("Dragging mouse at " + mouseX + ", " + mouseY);
    repaint();
}

//Handle mouse moved public void
mouseMoved(MouseEvent me){
    //save coordinates
setBackground(Color.cyan);
    //show status     showStatus("Dragging mouse at " + me.getX() +
", " + me.getY());
}
//Display msg in applet window at current X,Y location.

public void paint(Graphics g){
    Font f=new Font("Times New Roman" , 2 , 50);
    g.setFont(f);
    g.drawString(msg , mouseX , mouseY);
}
}

/* <applet code = MymouseEvents width=600 height=600> </applet>
```

Output:



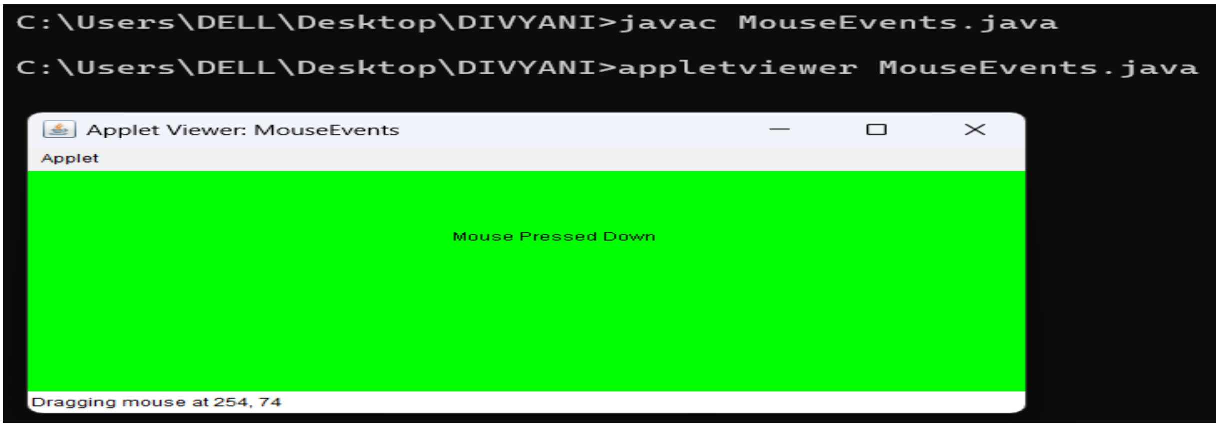
```
C:\Users\DELL\Desktop\DIVYANI>javac MouseEvents.java
C:\Users\DELL\Desktop\DIVYANI>appletviewer MouseEvents.java
```

```
Mouse entered.
Moving mouse at 460, 52
```



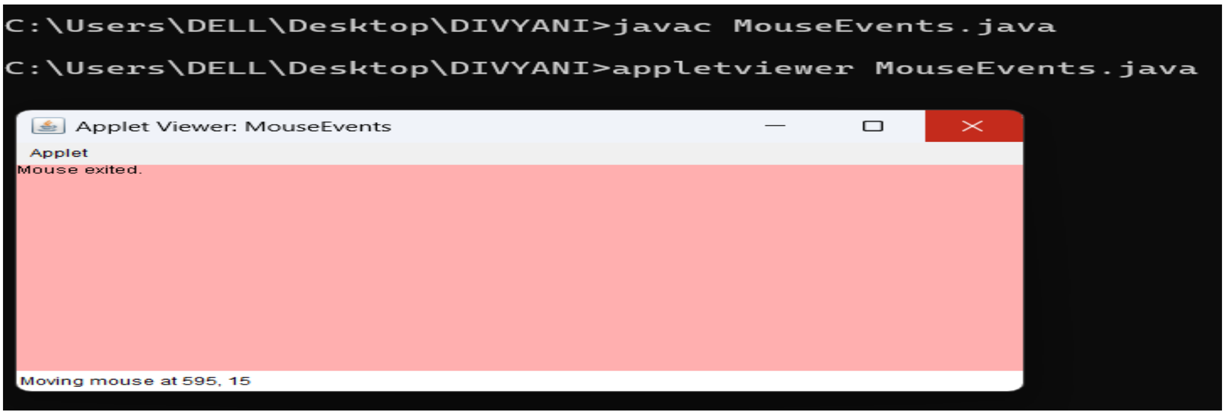
```
:\Users\DELL\Desktop\DIVYANI>javac MouseEvents.java
:\Users\DELL\Desktop\DIVYANI>appletviewer MouseEvents.java
```

```
Mouse is Dragged
Dragging mouse at 437, 126
```



```
C:\Users\DELL\Desktop\DIVYANI>javac MouseEvents.java
C:\Users\DELL\Desktop\DIVYANI>appletviewer MouseEvents.java
```

```
Mouse Pressed Down
Dragging mouse at 254, 74
```



```
C:\Users\DELL\Desktop\DIVYANI>javac MouseEvents.java
C:\Users\DELL\Desktop\DIVYANI>appletviewer MouseEvents.java
```

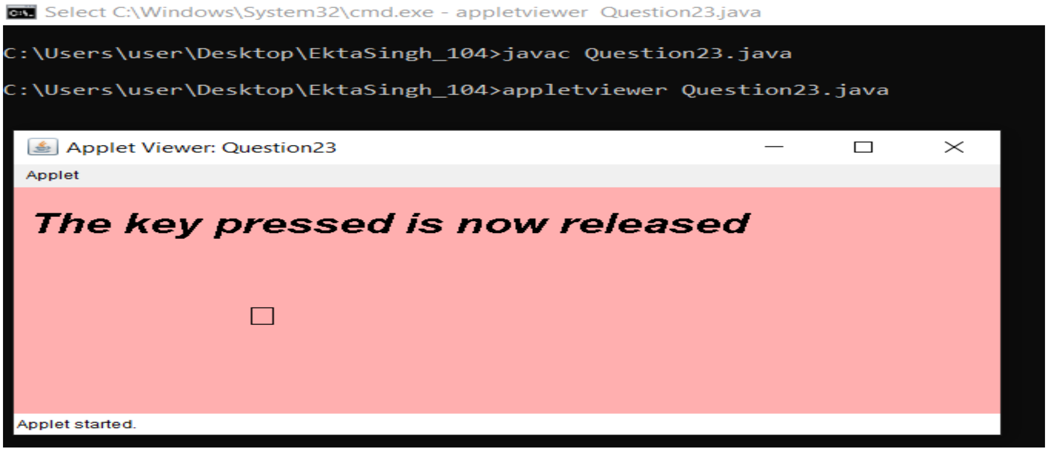
```
Mouse exited.
Moving mouse at 595, 15
```

Question 23: WAP to use KeyEvent.

Solution:

```
import java.awt.*;

import java.applet.*;

import java.awt.event.*;


public class Key_Event extends Applet implements KeyListener {

   String keyPressed = "";

   String msg = "";

   Color currentColor;

   Font f = new Font("Arial", 3, 30);


   public void init() {

keyPressed = "";

addKeyListener(this);

   }


   public void paint(Graphics g) {

setBackground(currentColor);

       g.setFont(f);

       g.drawString(msg, 10, 50);

       g.drawString(keyPressed, 150, 150);

   }


   public void keyTyped(KeyEvent e) {         msg =

"keyTyped ";         currentColor = Color.BLUE;

keyPressed = Character.toString(e.getKeyChar());

       repaint();

   }
   public void keyPressed(KeyEvent e) {
currentColor = Color.PINK;        msg =
"keyPressed";
       repaint();

   }

   public void keyReleased(KeyEvent e) {
currentColor = Color.RED;        msg =
"keyReleased";
       repaint();

   }
}

/*
* <applet code="Key_Event" width=600 height=600>
* </applet>
 */
```

Output:



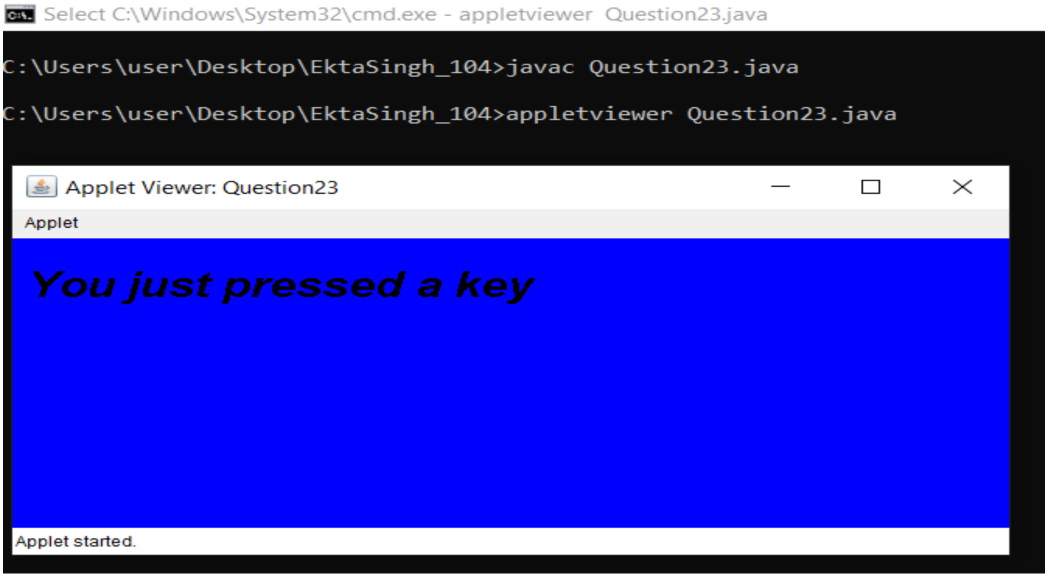
```
Select C:\Windows\System32\cmd.exe - appletviewer  Question23.java
C:\Users\user\Desktop\EktaSingh_104>javac Question23.java

C:\Users\user\Desktop\EktaSingh_104>appletviewer Question23.java
```

Applet Viewer: Question23

The key pressed is now released

□

Applet started.



```
Select C:\Windows\System32\cmd.exe - appletviewer  Question23.java
C:\Users\user\Desktop\EktaSingh_104>javac Question23.java

C:\Users\user\Desktop\EktaSingh_104>appletviewer Question23.java
```

Applet Viewer: Question23

You just pressed a key

Applet started.

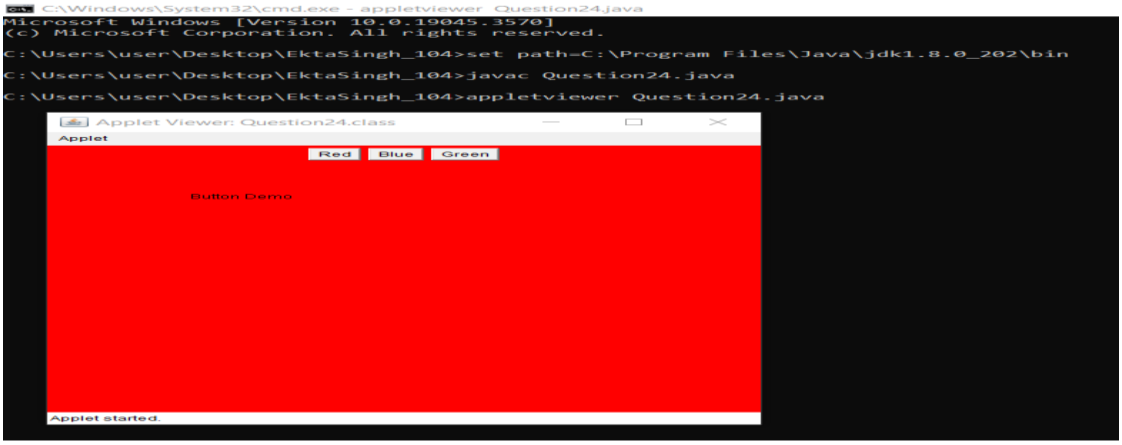
Question 24: WAP to use ButtonDemo.

Solution:

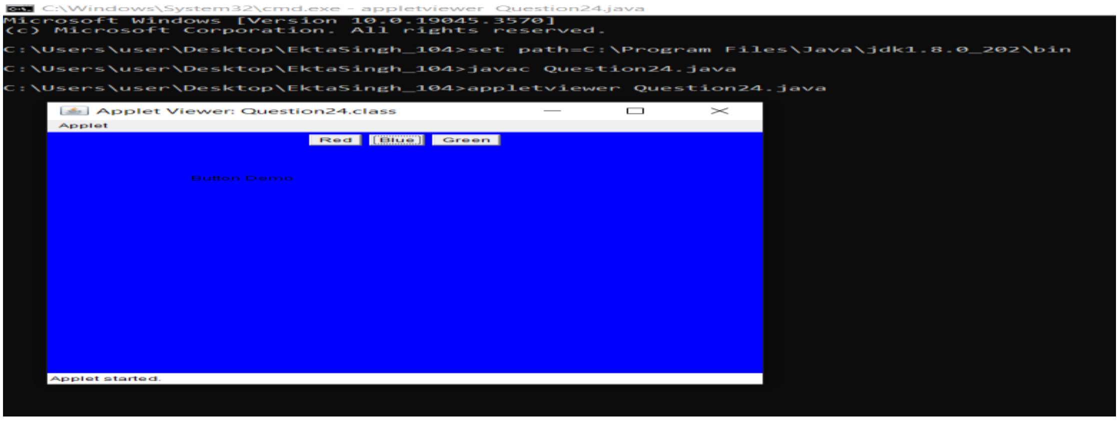
```
import java.applet.*;
import java.awt.*; import
java.awt.event.*;

public class ButtonDemo extends Applet implements ActionListener
{
  public void init()
  {
    Button b1 = new Button("Red");
    Button b2 = new Button("Blue");
Button b3 = new Button("Green");
    add(b1);      add(b2);
add(b3);
b1.addActionListener(this);
b2.addActionListener(this);
b3.addActionListener(this);
  }
  public void paint(Graphics g)
  {
    g.drawString("Button Demo",100,100);
  }
  public void actionPerformed(ActionEvent ae)
  {
    String str = ae.getActionCommand();
    if(str.equals("Red"))
setBackground(Color.red);      else
if(str.equals("Blue"))
setBackground(Color.blue);
    else
```

```
        setBackground(Color.green);
    }
}
/*
<applet code = "ButtonDemo.class" width="500" height="500">
</applet>
*/
```

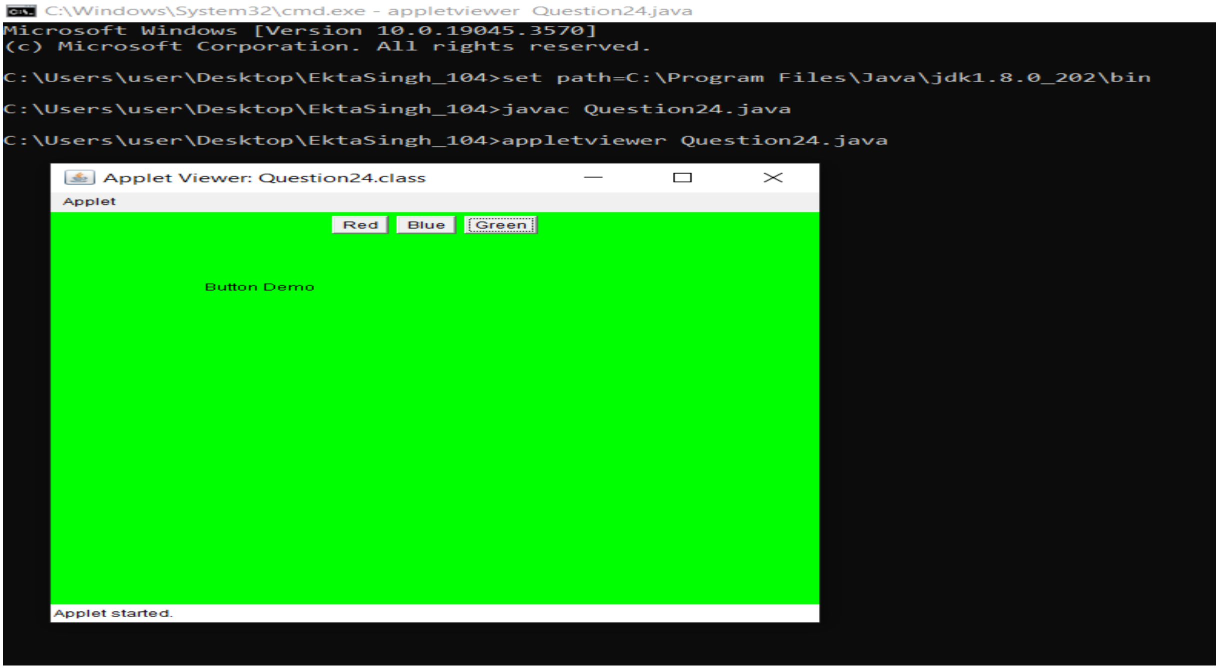
OUTPUT:



```
C:\Windows\System32\cmd.exe - appletviewer  Question24.java
Microsoft Windows [Version 10.0.19045.3570]
(c) Microsoft Corporation. All rights reserved.

C:\Users\user\Desktop\EktaSingh_104>set path=C:\Program Files\Java\jdk1.8.0_202\bin

C:\Users\user\Desktop\EktaSingh_104>javac Question24.java

C:\Users\user\Desktop\EktaSingh_104>appletviewer Question24.java
```



```
C:\Windows\System32\cmd.exe - appletviewer  Question24.java
Microsoft Windows [Version 10.0.19045.3570]
(c) Microsoft Corporation. All rights reserved.

C:\Users\user\Desktop\EktaSingh_104>set path=C:\Program Files\Java\jdk1.8.0_202\bin

C:\Users\user\Desktop\EktaSingh_104>javac Question24.java

C:\Users\user\Desktop\EktaSingh_104>appletviewer Question24.java
```



```
C:\Windows\System32\cmd.exe - appletviewer  Question24.java
Microsoft Windows [Version 10.0.19045.3570]
(c) Microsoft Corporation. All rights reserved.

C:\Users\user\Desktop\EktaSingh_104>set path=C:\Program Files\Java\jdk1.8.0_202\bin

C:\Users\user\Desktop\EktaSingh_104>javac Question24.java

C:\Users\user\Desktop\EktaSingh_104>appletviewer Question24.java
```

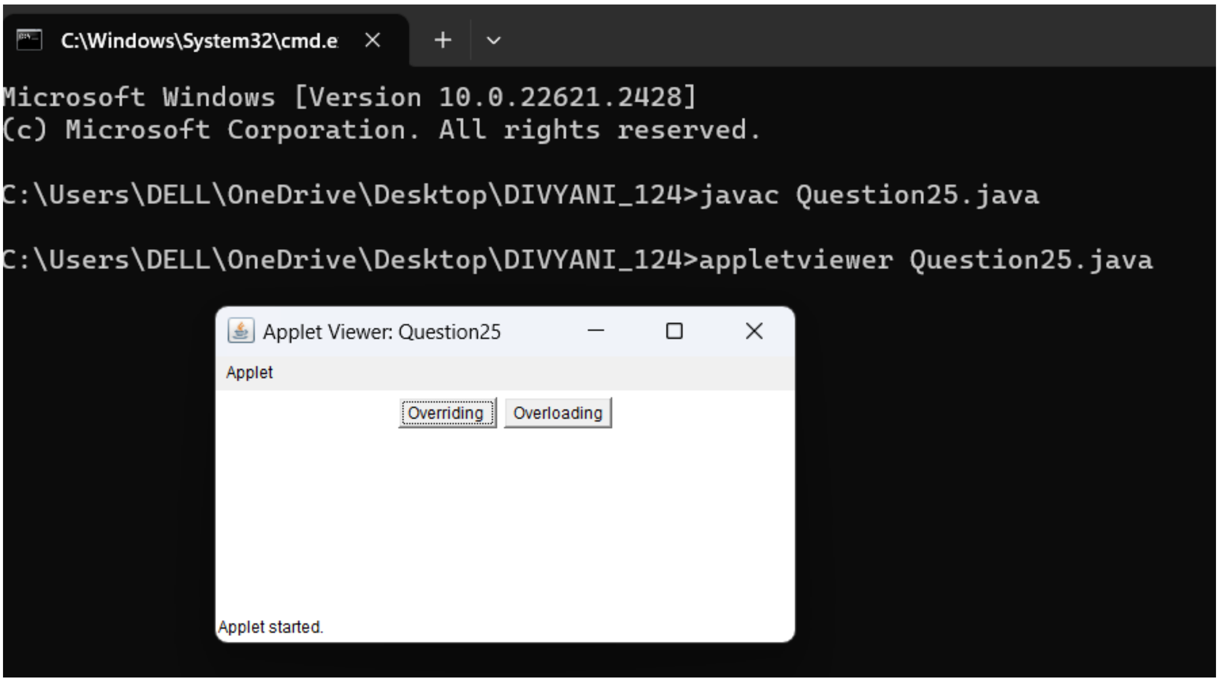
Question 25: WAP to use ButtonDemoText.

Solution:

```
import java.applet.*;

import java.awt.*; import

java.awt.event.*;


public class ButtonDemoText extends Applet implements ActionListener {

   String msg = " ";

   Button EventHandling , ExceptionHandling , DataTypes;


   public void init() {

      EventHandling  = new Button("EventHandling ");

      ExceptionHandling  = new Button("ExceptionHandling ");

      DataTypes = new Button("DataTypes");


      add(EventHandling );

add(ExceptionHandling );        add(DataTypes);


      EventHandling .addActionListener(this);

      ExceptionHandling .addActionListener(this);

      DataTypes.addActionListener(this);

   }


   public void actionPerformed(ActionEvent ae) {

String str = ae.getActionCommand();        if

(str.equals("EventHandling "))

         msg = "Event Handling is the mechanism that controls the event and decides what
should happen if an event occurs.";
```

```
        else if (str.equals("ExceptionHandling "))
            msg = "Exception handling is the process of responding to unwanted or unexpected events when a computer program runs.";


        else
            msg = "Data types are divided into two groups:\n Primitive data types - includes byte, short, int, long, float, double, boolean and char\nNon-primitive data types - such as String, Arrays and Classes (you will learn more about these in a later chapter)";


        repaint();
    }


    public void paint(Graphics g) {
        g.drawString(msg, 6, 100);
    }
}
/*
* <applet code = "ButtonDemoText" width=250 height=150>
* </applet>
 */
```

OUTPUT:



```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac Question25.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>appletviewer Question25.java
```

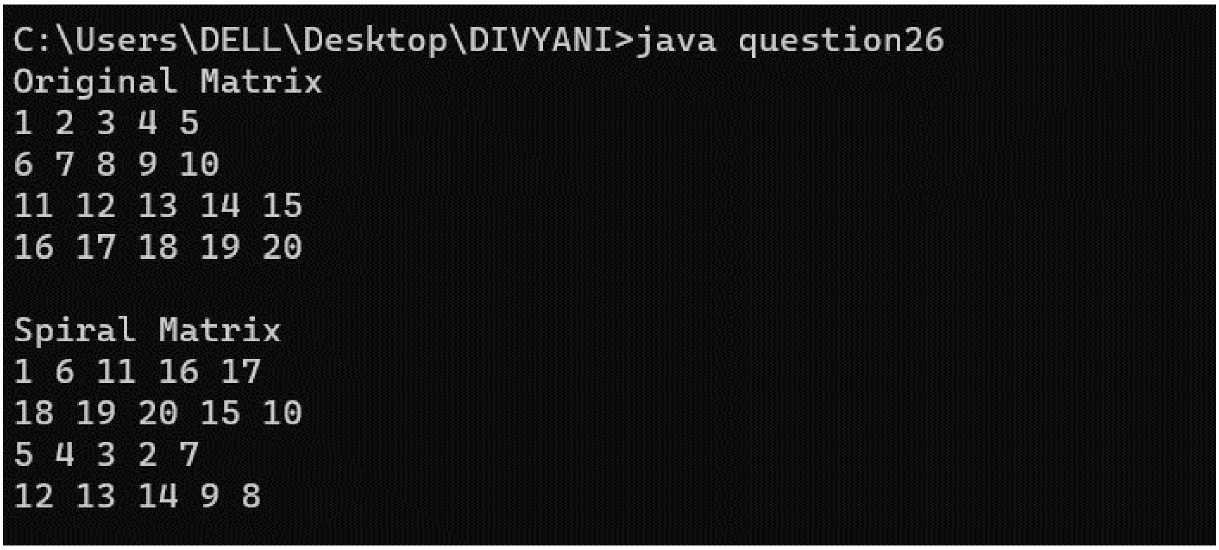
Applet started.

Question 26: WAP to make SpiralMatrix.

Solution:

```
public class SpiralMatrix{     public static void
printSpiral(int[][] matrix) {
        int top = 0;
        int bottom = matrix.length - 1;
        int left = 0;
        int right = matrix[0].length - 1;

        while (left <= right && top <= bottom) {
// Print left column from top to bottom
for (int i = top; i <= bottom; i++) {
                System.out.print(matrix[i][left] + " ");
            }
            left++;

            // Print bottom row from left to right
            for (int i = left; i <= right; i++) {
                System.out.print(matrix[bottom][i] + " ");
            }
            bottom--;

            // Check if there's more to print
            if (left <= right) {
                // Print right column from bottom to top
                for (int i = bottom; i >= top; i--) {
                    System.out.print(matrix[i][right] + " ");
                }
                right--;
            }

           // Check if there's more to print
if (top <= bottom) {
                // Print top row from right to left
                for (int i = right; i >= left; i--) {
                    System.out.print(matrix[top][i] + " ");
                }
                top++;
            }
        }
    }

    public static void main(String[] args) {
        int[][] matrix = {
{1, 2, 3, 4},
            {5, 6, 7, 8},
            {9, 10, 11, 12},
            {13, 14, 15, 16}
        };

        System.out.println("Matrix in spiral order:");
printSpiral(matrix);
    }
}
```

OUTPUT:



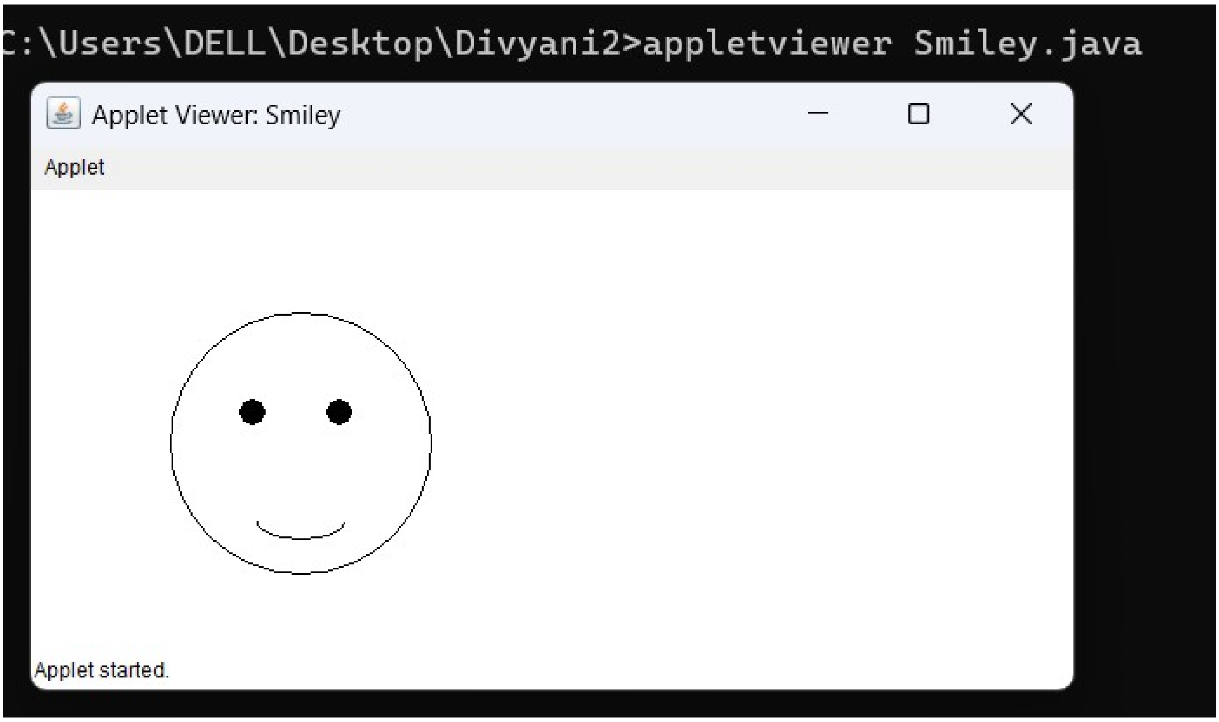
```
C:\Users\DELL\Desktop\DIVYANI>java question26
Original Matrix
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20

Spiral Matrix
1 6 11 16 17
18 19 20 15 10
5 4 3 2 7
12 13 14 9 8
```

Question 27: WAP to make SmileyFace.

Solution:

```
import java.applet.Applet; import
java.awt.*;

public class SmileyFace extends Applet{
public void paint(Graphics g){

       g.setColor(Color.yellow);
       g.fillOval(20,20,150,150);  //For face
       g.setColor(Color.black);
       g.fillOval(50,60,15,25);   //Left Eye
       g.fillOval(120,60,15,25);  //Right Eye
int  x[]  =  {95,85,106,95};            int  y[]  =
{85,104,104,85};
       g.drawPolygon(x , y , 4);    //Nose
       g.drawArc(55,95,78,50,0,-180);  //Smile



       // g.drawRect(ALLBITS, ABORT, WIDTH, HEIGHT);
    }
}

/*
* <applet code="SmileyFace.class" width="300" height="300">
* </applet code>
 */
```

Output:



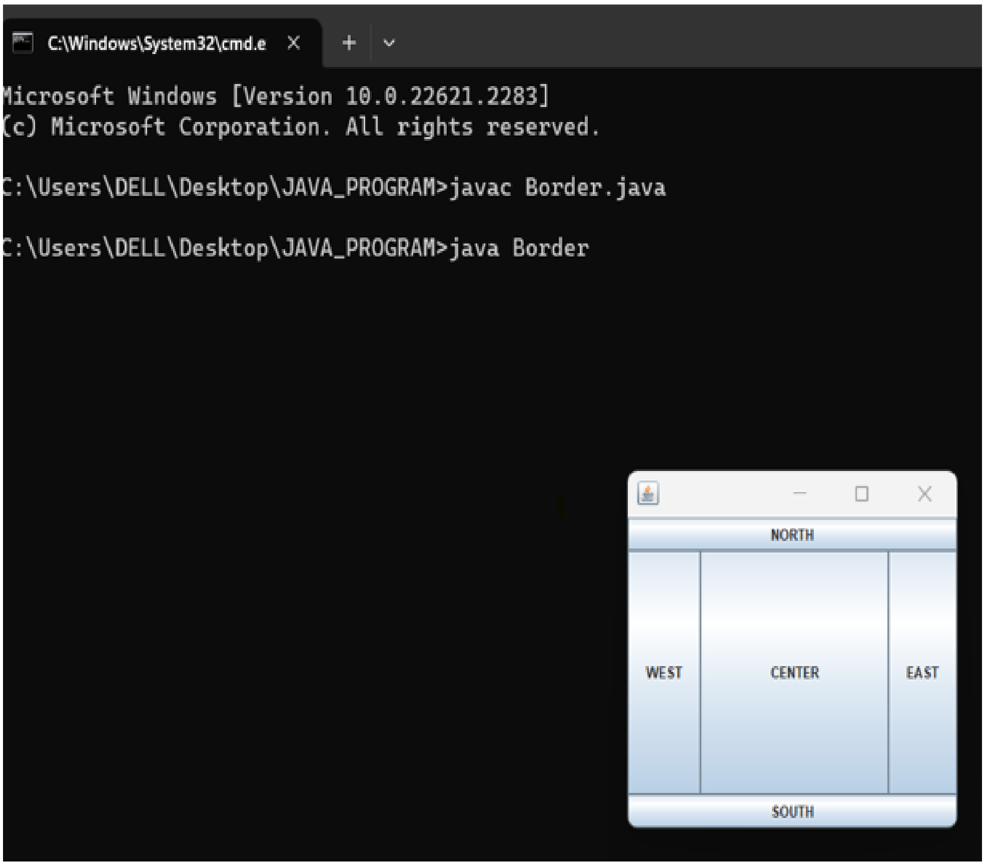
```
:\Users\DELL\Desktop\Divyani2>appletviewer Smiley.java
```

Question 28: WAP to make BorderLayout.

Solution:

```
import
java.awt.BorderLayout; import
javax.swing.*; public class
BorderLayoutExample
{
 public static void main(String[] args) {
 JFrame frame=new JFrame("BorderLayout Example");
frame.setSize(550,550);  JPanel panel=new JPanel();
panel.setLayout(new BorderLayout());  panel.add(new
JButton("North"),BorderLayout.NORTH);  panel.add(new
JButton("South"),BorderLayout.SOUTH);  panel.add(new
JButton("West"),BorderLayout.WEST);  panel.add(new
JButton("East"),BorderLayout.EAST);  panel.add(new
JButton("Center"),BorderLayout.CENTER);
frame.add(panel);
frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
 frame.pack();
frame.setVisible(true);
 }
}
/*<applet code="BorderLayoutExample.class" width="300" height="300">
</applet>*/
```

OUTPUT:



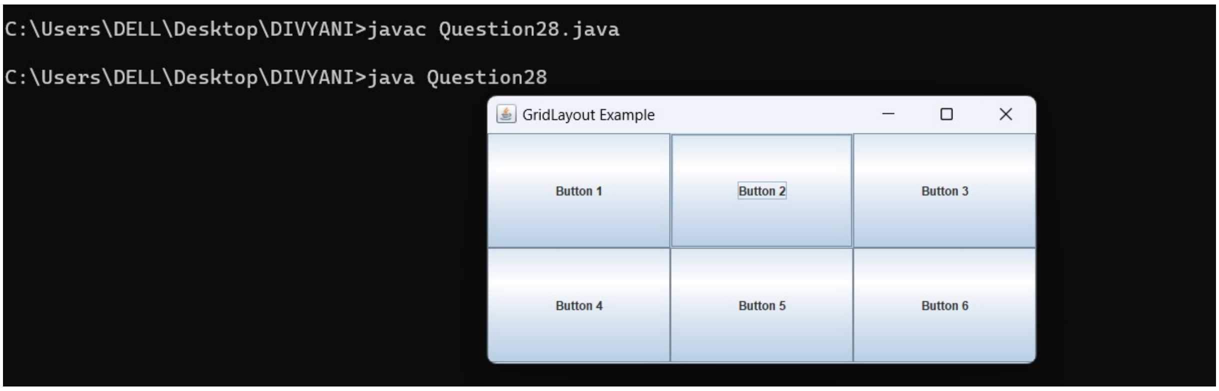
```
icrosoft Windows [Version 10.0.22621.2283]
(c) Microsoft Corporation. All rights reserved.

:\Users\DELL\Desktop\JAVA_PROGRAM>javac Border.java

:\Users\DELL\Desktop\JAVA_PROGRAM>java Border
```

Question 29: WAP to make GridLayout.

Solution: import

```
java.awt.GridLayout; import
javax.swing.*; public class
GridLayoutExample
{
 public static void main(String[] args) {
 JFrame frame=new JFrame("GridLayout Example");  JPanel
panel=new JPanel();  panel.setLayout(new
GridLayout(3,3));  panel.add(new JButton("1"));
panel.add(new JButton("2"));  panel.add(new
JButton("3"));  panel.add(new JButton("4"));
panel.add(new JButton("5"));  panel.add(new
JButton("6"));  panel.add(new JButton("7"));
panel.add(new JButton("8"));  panel.add(new
JButton("9"));  frame.add(panel);
frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
 frame.pack();
frame.setVisible(true);
 }
}
/*<applet code="GridLayoutExample.class" width="300" height="300">
</applet>*/
```

Output:



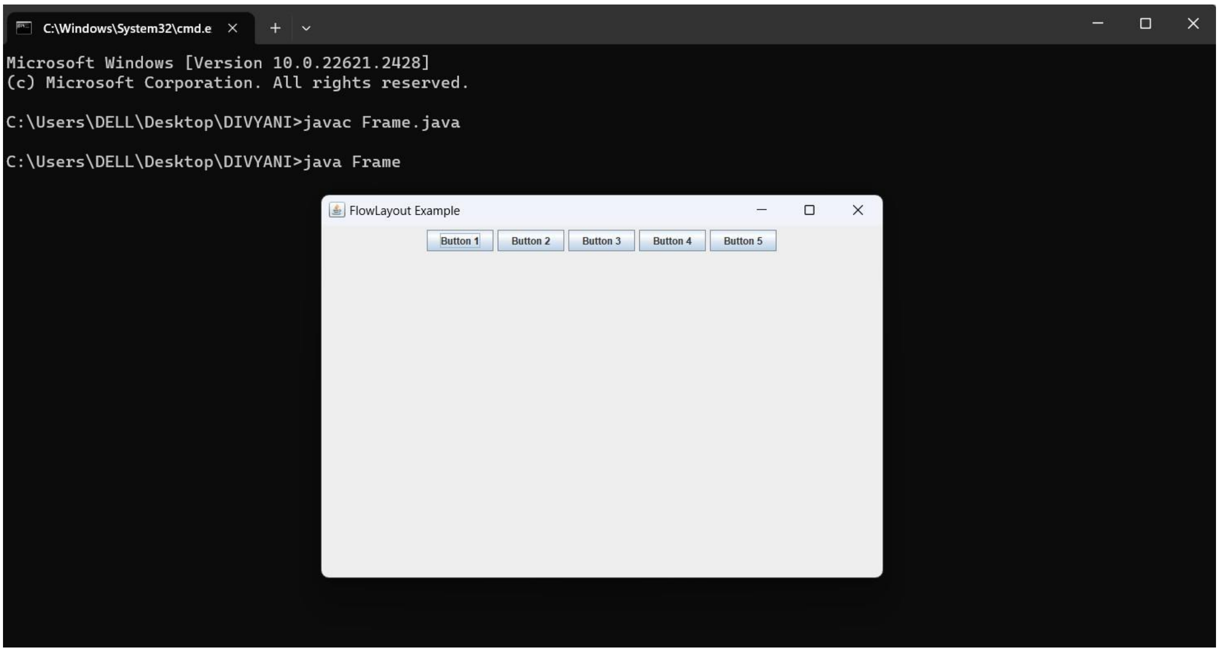
```
C:\Users\DELL\Desktop\DIVYANI>javac Question28.java

C:\Users\DELL\Desktop\DIVYANI>java Question28
```

Question 30: WAP to make FlowLayout.

Solution:

```
import java.awt.*; import
javax.swing.*; public class
FlowLayoutExample {  public static
void main(String[] args) {
 // Create a JFrame
 JFrame frame = new JFrame("FlowLayout Example");
frame.setSize(400, 150);
 // Create a JPanel with FlowLayout
JPanel panel = new JPanel();
panel.setLayout(new FlowLayout());  //
Add buttons to the panel
panel.add(new JButton("Button 1"));
panel.add(new JButton("Button 2"));
panel.add(new JButton("Button 3"));
panel.add(new JButton("Button 4"));
panel.add(new JButton("Button 5"));
// Add the panel to the frame
frame.add(panel);
 // Set default close operation and make the frame visible
frame.setDefaultCloseOperation(WindowConstants.EXIT_ON_CLOSE);
 frame.setVisible(true);
 }
}
```

Output:



```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\Desktop\DIVYANI>javac Frame.java

C:\Users\DELL\Desktop\DIVYANI>java Frame
```

Question 31: WAP to run a Calculator.

Solution:

```
import javax.swing.*; import
java.awt.*; import
java.awt.event.ActionEvent; import
java.awt.event.ActionListener;

 public class Calculator implements ActionListener {
    JFrame frame;
    JTextField textfield;
    JButton[] numberButtons = new JButton[10];
    JButton[] functionButtons = new JButton[9];
    JButton addButton, subButton, mulButton, divButton;
    JButton decButton, equButton, delButton, clrButton, negButton;
    JPanel panel;

    Font myFont = new Font("Ink Free", Font.BOLD, 38);

    double num1 = 0, num2 = 0, result = 0;

    char operator;

    Calculator() {
        frame = new JFrame("Calculator");
frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frame.setSize(420, 550);
frame.setLayout(null);

        textfield = new JTextField();
        textfield.setBounds(50, 25, 300, 50);
textfield.setFont(myFont);        textfield.setEditable(false);

        addButton = new JButton("+");
subButton = new JButton("-");
mulButton = new JButton("*");
divButton = new JButton("/");        decButton
= new JButton(".");        equButton = new
```

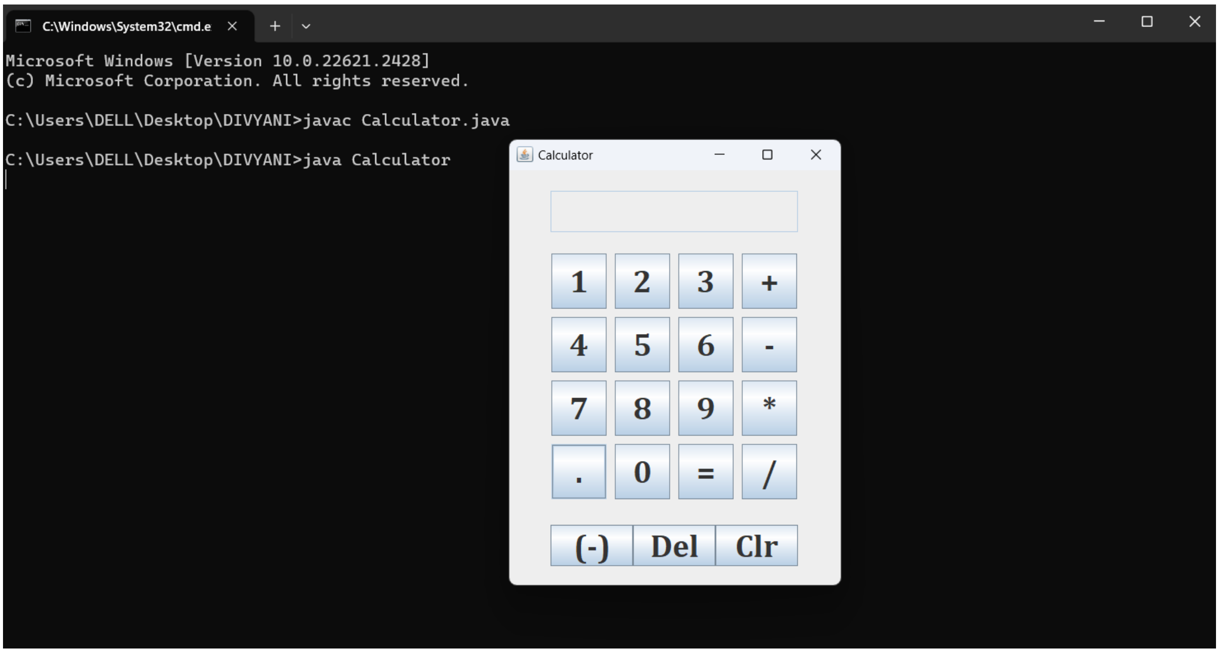
```
JButton("=");        delButton = new
JButton("Del");        clrButton = new
JButton("Clr");        negButton = new
JButton("(-)");

        functionButtons[0] = addButton;
functionButtons[1] = subButton;
functionButtons[2] = mulButton;
functionButtons[3] = divButton;
functionButtons[4] = decButton;
functionButtons[5] = equButton;
functionButtons[6] = delButton;
functionButtons[7] = clrButton;        functionButtons[8]
= negButton;

        for (int i = 0; i < 9; i++) {
            functionButtons[i].addActionListener(this);
functionButtons[i].setFont(myFont);
            functionButtons[i].setFocusable(false);
        }

        for (int i = 0; i < 10; i++) {
           numberButtons[i] = new JButton(String.valueOf(i));
numberButtons[i].addActionListener(this);
numberButtons[i].setFont(myFont);            numberButtons[i].setFocusable(false);
        }

        negButton.setBounds(50, 430, 100, 50);
delButton.setBounds(150, 430, 100, 50);        clrButton.setBounds(250,
430, 100, 50);
```

```
    panel = new JPanel();
panel.setBounds(50, 100, 300, 300);
panel.setLayout(new GridLayout(4, 4, 10, 10));

    // Add buttons to the panel
panel.add(numberButtons[1]);
panel.add(numberButtons[2]);
panel.add(numberButtons[3]);
panel.add(addButton);
panel.add(numberButtons[4]);
panel.add(numberButtons[5]);
panel.add(numberButtons[6]);      panel.add(subButton);
panel.add(numberButtons[7]);
panel.add(numberButtons[8]);
    panel.add(numberButtons[9]); panel.add(mulButton);
    panel.add(decButton);
    panel.add(numberButtons[0]);
    panel.add(equButton);      panel.add(divButton);

    frame.add(panel);
frame.add(negButton);
frame.add(delButton);
frame.add(clrButton);
frame.add(textfield);

    frame.setVisible(true);
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
  }

  @Override    public void
actionPerformed(ActionEvent e) {
    for (int i = 0; i < 10; i++) {
       if (e.getSource() == numberButtons[i]) {
textfield.setText(textfield.getText() + i);

       }
     }

     if (e.getSource() == decButton) {            if
(!textfield.getText().contains(".")) {
textfield.setText(textfield.getText() + ".");

       }
     }

     if (e.getSource() == addButton) {            num1 =
Double.parseDouble(textfield.getText());

      operator = '+';
textfield.setText("");

     }

     if (e.getSource() == subButton) {            num1 =
Double.parseDouble(textfield.getText());

       operator = '-';
textfield.setText("");

     }

     if (e.getSource() == mulButton) {            num1 =
Double.parseDouble(textfield.getText());

       operator = '*';
textfield.setText("");

     }

     if (e.getSource() == divButton) {            num1 =
Double.parseDouble(textfield.getText());

       operator = '/';
textfield.setText("");
```

```
        }

        if (e.getSource() == equButton) {            num2 =
Double.parseDouble(textfield.getText());

            switch (operator) {
                case '+':
                    result = num1 + num2;
                    break;
case '-':
                    result = num1 - num2;
                    break;
case '*':
                    result = num1 * num2;
                    break;
case '/':
                    if (num2 != 0) {
result = num1 / num2;
                    } else {
                        textfield.setText("Error");
                        return;
}
                    break;
            }

            textfield.setText(String.valueOf(result));
num1 = result;
        }

        if (e.getSource() == clrButton) {
textfield.setText("");
        }

        if (e.getSource() == delButton) {
String currentText = textfield.getText();
```

```
if (!currentText.isEmpty()) {

textfield.setText(currentText.substring(0,

currentText.length() - 1));

            }
        }

        if (e.getSource() == negButton) {            double currentValue =

Double.parseDouble(textfield.getText());

textfield.setText(String.valueOf(-currentValue));

        }

    }


    public static void main(String[] args) {

new Calculator();

    }

}


/*

    <applet code = "AppletDec" width=500  height= 500></applet>

 */
```

Output:

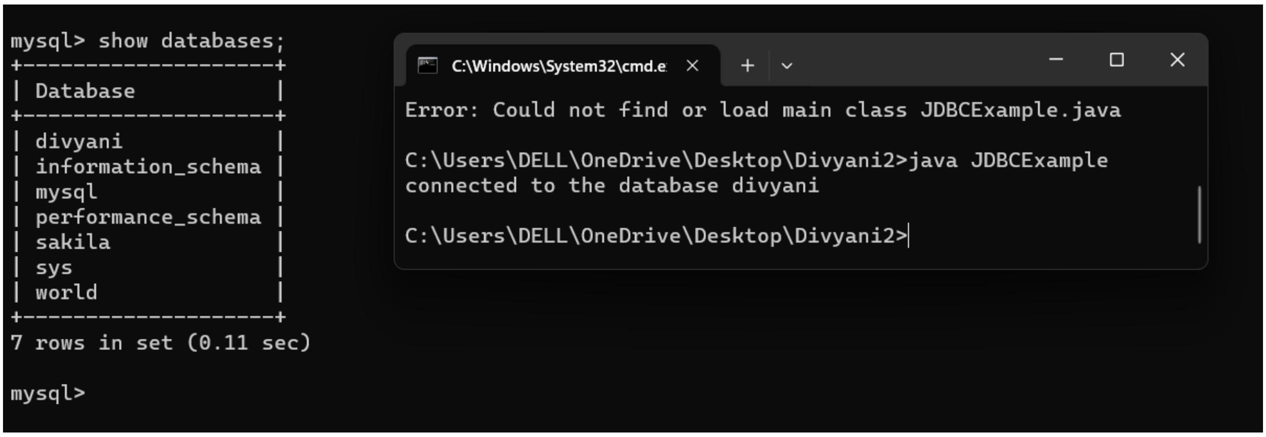


```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\Desktop\DIVYANI>javac Calculator.java

C:\Users\DELL\Desktop\DIVYANI>java Calculator
```

INDEX

1. WAP to establish a connection with jdbc

```
    import java.sql.*;
    public class JDBCExample{
        public static void main(String[] args){
        // creates connection objects
        Connection conn1=null;
        try{
            //connect way
            String url="jdbc:mysql://localhost:3306/divyani";
         String user="root";
            String password="Divyani@123";
            conn1=DriverManager.getConnection(url,user,password);
        if(conn1!=null){
        System.out.println("connected to the database student");
            }

             }

            catch(SQLException ex){
            System.out.println("an error occured");
        }

      }
}
```



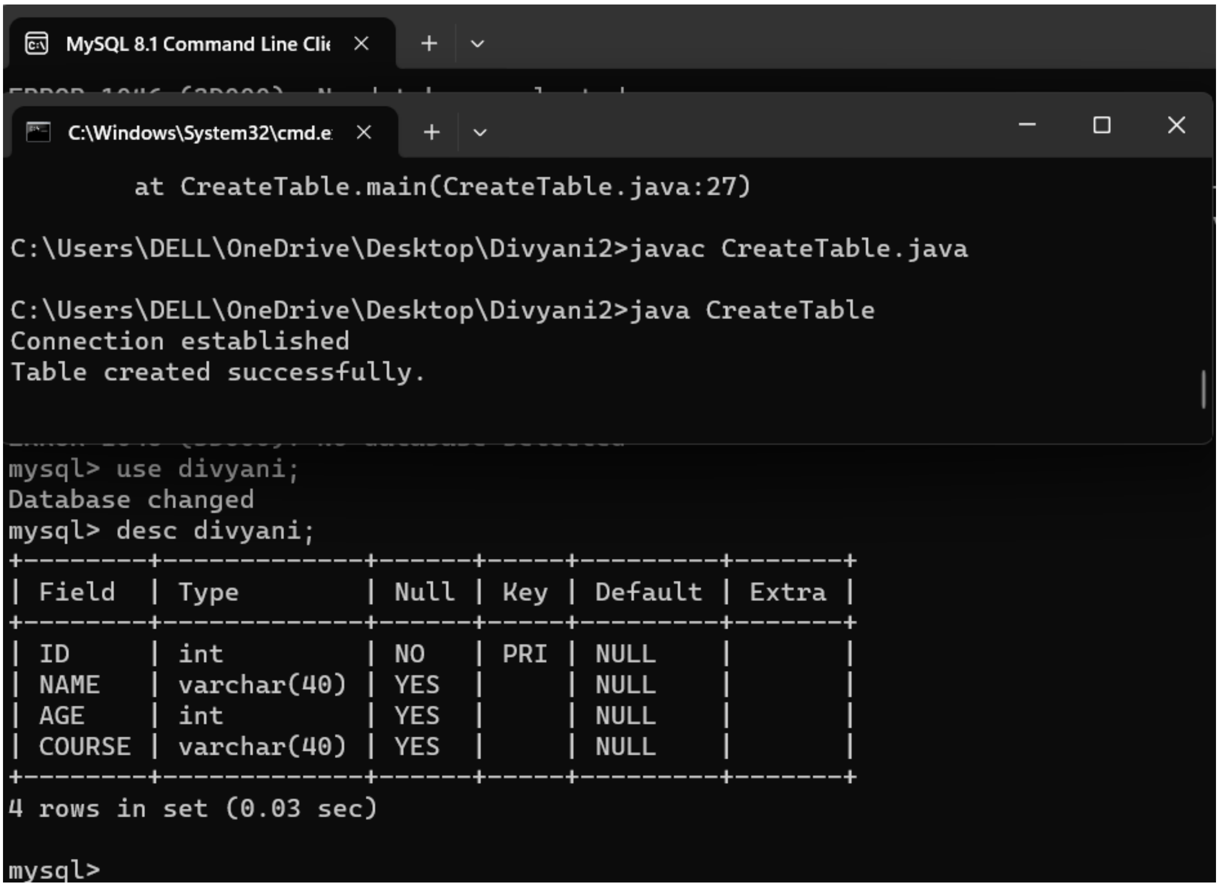
```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| divyani            |
| information_schema |
| mysql              |
| performance_schema |
| sakila             |
| sys                |
| world              |
+--------------------+
7 rows in set (0.11 sec)

mysql>
```

```
Error: Could not find or load main class JDBCExample.java

C:\Users\DELL\OneDrive\Desktop\Divyani2>java JDBCExample
connected to the database divyani

C:\Users\DELL\OneDrive\Desktop\Divyani2>
```

2. WAP to create a table

```
import java.sql.*;

public class Createtable{
        public static void main(String[] args){
        try{
                Connection
conn=DriverManager.getConnection("jdbc:mysql://localhost:3306/divyani","root"Div
yani@123");
        if(conn!=null){
        System.out.println("connection established");
                }
        else{
        System.out.println("connection not established");
                }

                Statement stmt=conn.createStatement();
                String sql="CREATE TABLE divyani"+
                          "(ID INT NOT NULL,"+
                           "NAME VARCHAR(40),"+
                           "AGE INT,"+
                           "PRIMARY KEY(ID))";
                stmt.executeUpdate(sql);
                System123

                        }
```

OUTPUT:



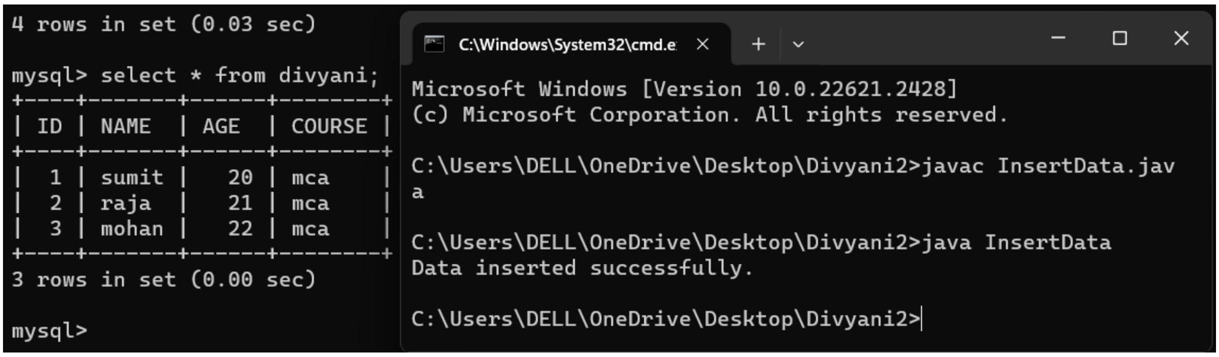
```
        at CreateTable.main(CreateTable.java:27)

C:\Users\DELL\OneDrive\Desktop\Divyani2>javac CreateTable.java

C:\Users\DELL\OneDrive\Desktop\Divyani2>java CreateTable
Connection established
Table created successfully.
```

```
ERROR 1046 (3D000): No database selected
ERROR 1046 (3D000): No database selected
mysql> use divyani;
Database changed
mysql> desc divyani;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| ID     | int         | NO   | PRI | NULL    |       |
| NAME   | varchar(40) | YES  |     | NULL    |       |
| AGE    | int         | YES  |     | NULL    |       |
| COURSE | varchar(40) | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
4 rows in set (0.03 sec)

mysql>
```

3: WAP to insert the data into table

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;
import java.sql.Statement;

public class InsertData {
    public static void main(String[] args) {
        String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";
        String user = "root";
        String password = "Divyani@123";

        try (Connection conn = DriverManager.getConnection(jdbcUrl, user, password);
             Statement stmt = conn.createStatement()) {

            String sql1 = "INSERT INTO divyani (NAME, AGE, COURSE, ID) VALUES ('sumit', 20, 'mca', 1)";
            stmt.executeUpdate(sql1);

            String sql2 = "INSERT INTO divyani (NAME, AGE, COURSE, ID) VALUES ('raja', 21, 'mca', 2)";
            stmt.executeUpdate(sql2);

            String sql3 = "INSERT INTO divyani (NAME, AGE, COURSE, ID) VALUES ('mohan', 22, 'mca', 3)";
            stmt.executeUpdate(sql3);

            System.out.println("Data inserted successfully.");
        } catch (SQLException e) {
            System.out.println("An error occurred.");
            e.printStackTrace();
        }
    }
}
```

OUTPUT:



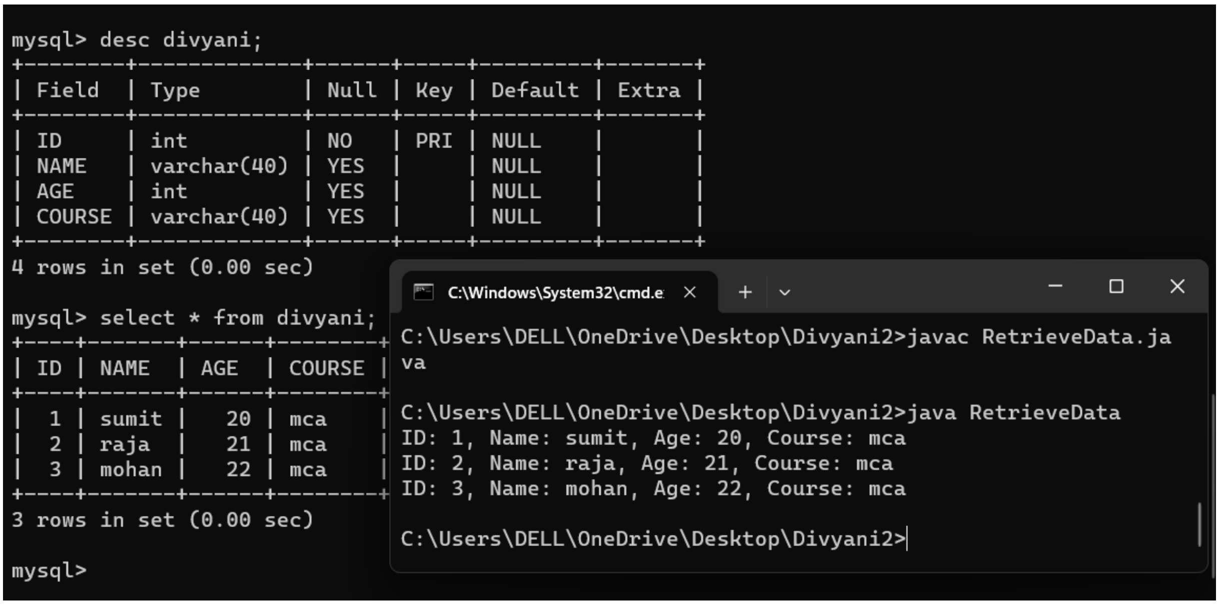
```
4 rows in set (0.03 sec)

mysql> select * from divyani;
+----+-------+------+--------+
| ID | NAME  | AGE  | COURSE |
+----+-------+------+--------+
|  1 | sumit |   20 | mca    |
|  2 | raja  |   21 | mca    |
|  3 | mohan |   22 | mca    |
+----+-------+------+--------+
3 rows in set (0.00 sec)

mysql>
```

```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\Divyani2>javac InsertData.jav
a

C:\Users\DELL\OneDrive\Desktop\Divyani2>java InsertData
Data inserted successfully.

C:\Users\DELL\OneDrive\Desktop\Divyani2>
```

4. WAP to Retrieve Data from table

```
import java.sql.*;
public class RetrieveData {
    public static void main(String[] args) {
        String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";
        String user = "root";
        String password = "Divyani@!23";

        try (Connection conn = DriverManager.getConnection(jdbcUrl, user, password);
             Statement stmt = conn.createStatement()) {

            String sql = "SELECT * FROM divyani";
            ResultSet rs = stmt.executeQuery(sql);

            while (rs.next()) {
                System.out.println("ID: " + rs.getInt(1) + ", Name: " + rs.getString(2) + ", Age: " +
rs.getInt(3) + ", Course: " + rs.getString(4));
            }
        } catch (SQLException e) {
            System.out.println("An error occurred.");
            e.printStackTrace();
        }
    }
}
```

OUTPUT:



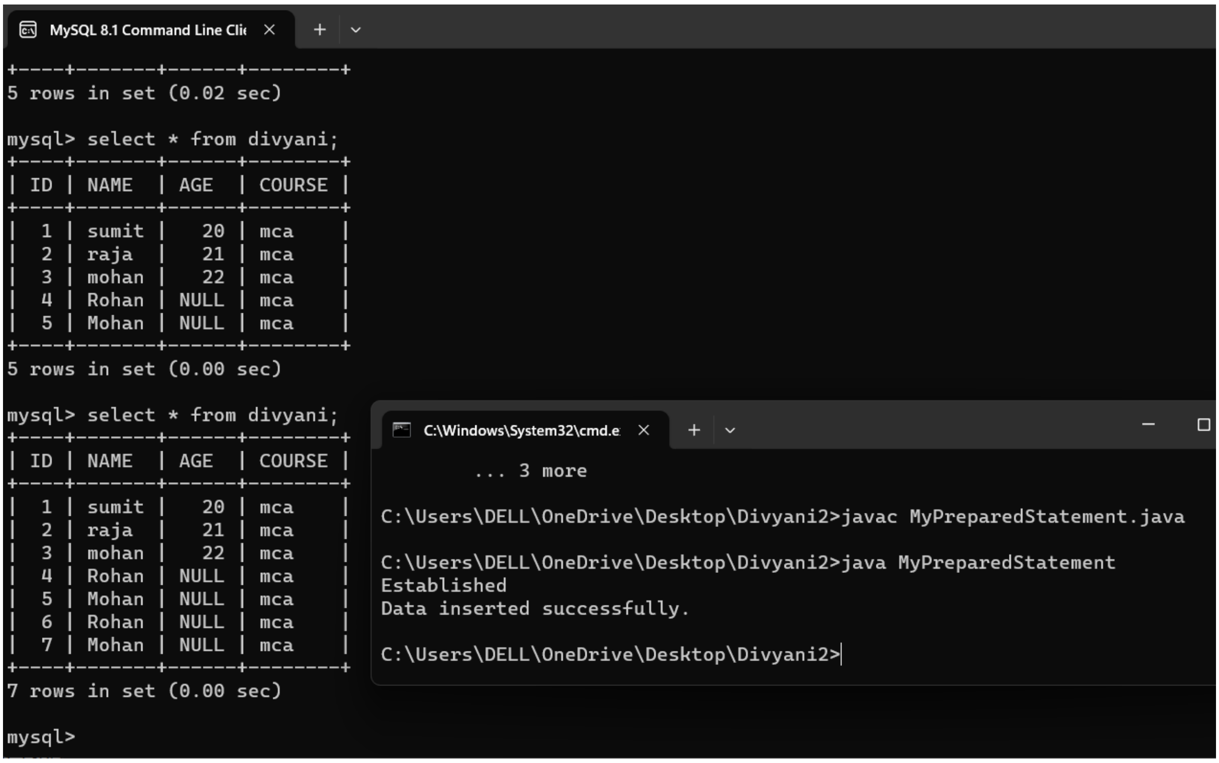
```
mysql> desc divyani;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| ID     | int         | NO   | PRI | NULL    |       |
| NAME   | varchar(40) | YES  |     | NULL    |       |
| AGE    | int         | YES  |     | NULL    |       |
| COURSE | varchar(40) | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)

mysql> select * from divyani;
+----+-------+------+--------+
| ID | NAME  | AGE  | COURSE |
+----+-------+------+--------+
|  1 | sumit |   20 | mca    |
|  2 | raja  |   21 | mca    |
|  3 | mohan |   22 | mca    |
+----+-------+------+--------+
3 rows in set (0.00 sec)

mysql>
```

```
C:\Users\DELL\OneDrive\Desktop\Divyani2>javac RetrieveData.ja
va

C:\Users\DELL\OneDrive\Desktop\Divyani2>java RetrieveData
ID: 1, Name: sumit, Age: 20, Course: mca
ID: 2, Name: raja, Age: 21, Course: mca
ID: 3, Name: mohan, Age: 22, Course: mca

C:\Users\DELL\OneDrive\Desktop\Divyani2>
```

5. WAP to show prepared statement

```
import java.sql.*;
public class Prepared {
    public static void main(String[] args) {
        String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";
        String user = "root";
        String password = "Divyani@123";

        try (Connection conn = DriverManager.getConnection(jdbcUrl, user, password)) {
            System.out.println(conn != null ? "Established" : "Not");

            String sql = "INSERT INTO divyani (id, name, course) VALUES " +
                    "(4, 'Rohan', 'mca')," +
                    "(5, 'Mohan', 'mca')";
            PreparedStatement pstmt = conn.prepareStatement(sql);
            pstmt.executeUpdate();

            System.out.println("Data inserted successfully.");
        } catch (SQLException e) {
            System.out.println("An error occurred.");
            e.printStackTrace();
        }
    }
}
```

OUTPUT:



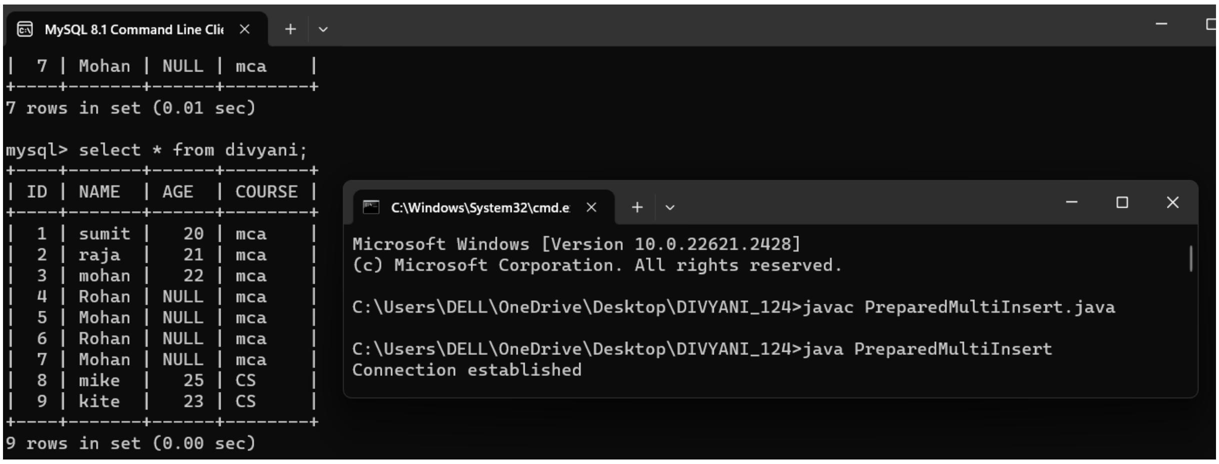
```
+----+-------+------+--------+
5 rows in set (0.02 sec)

mysql> select * from divyani;
+----+-------+------+--------+
| ID | NAME  | AGE  | COURSE |
+----+-------+------+--------+
|  1 | sumit |   20 | mca    |
|  2 | raja  |   21 | mca    |
|  3 | mohan |   22 | mca    |
|  4 | Rohan | NULL | mca    |
|  5 | Mohan | NULL | mca    |
+----+-------+------+--------+
5 rows in set (0.00 sec)

mysql> select * from divyani;
+----+-------+------+--------+
| ID | NAME  | AGE  | COURSE |
+----+-------+------+--------+
|  1 | sumit |   20 | mca    |
|  2 | raja  |   21 | mca    |
|  3 | mohan |   22 | mca    |
|  4 | Rohan | NULL | mca    |
|  5 | Mohan | NULL | mca    |
|  6 | Rohan | NULL | mca    |
|  7 | Mohan | NULL | mca    |
+----+-------+------+--------+
7 rows in set (0.00 sec)

mysql>
```

```
        ... 3 more

C:\Users\DELL\OneDrive\Desktop\Divyani2>javac MyPreparedStatement.java

C:\Users\DELL\OneDrive\Desktop\Divyani2>java MyPreparedStatement
Established
Data inserted successfully.

C:\Users\DELL\OneDrive\Desktop\Divyani2>
```

6. prepared statement for multiple records

```
import java.sql.*;
public class PreparedMultiInsert {
   public static void main(String[] args) {
      String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";
      String user = "root";
      String password = "Divyani@123";

      try (Connection conn = DriverManager.getConnection(jdbcUrl, user, password)) {
         System.out.println(conn != null ? "Connection established" : "Connection not established");

         String sql = "INSERT INTO student (id, name, course, age) VALUES (?, ?, ?, ?)";
         PreparedStatement pstmt = conn.prepareStatement(sql);

         int[] ids = {7, 8, 9};
         String[] names = {"mike", "mike", "kite"};
         String[] courses = {"CS", "CS", "CS"};
         int[] ages = {24, 25, 23};

         for (int i = 0; i < ids.length; i++) {
            pstmt.setInt(1, ids[i]);
            pstmt.setString(2, names[i]);
            pstmt.setString(3, courses[i]);
            pstmt.setInt(4, ages[i]);
            pstmt.addBatch();
         }

         int[] result = pstmt.executeBatch();

         System.out.println("Number of rows inserted: " + result.length);
      } catch (SQLException e) {
         System.out.println("An error occurred.");
         e.printStackTrace();
      }
   }
}
```

OUTPUT:



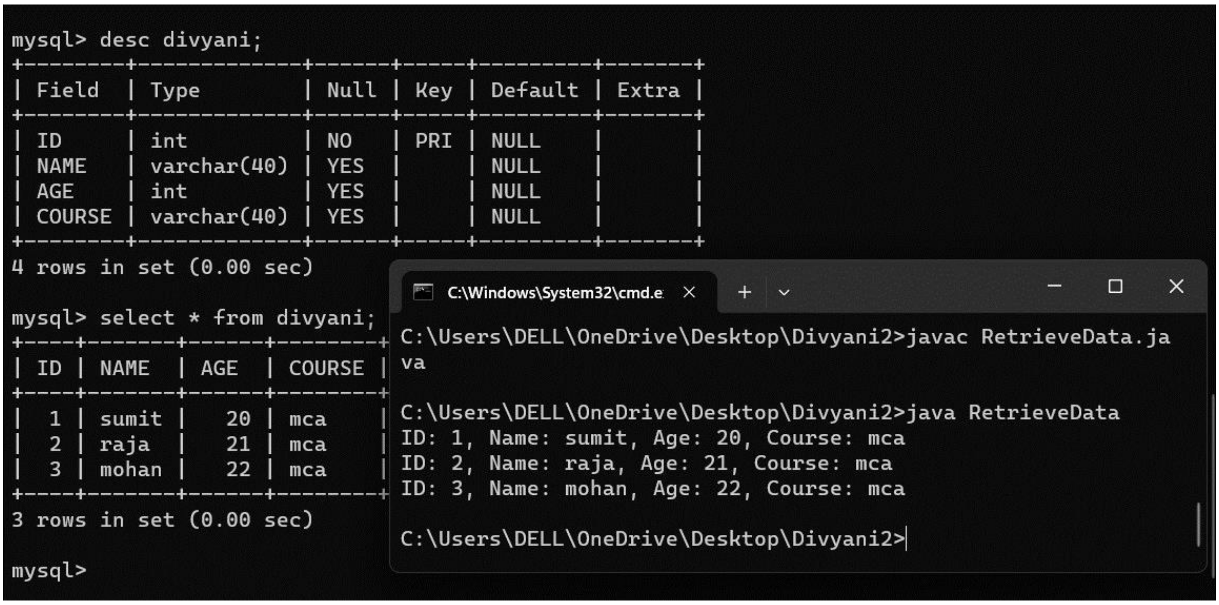
```
|  7 | Mohan | NULL | mca    |
+----+-------+------+--------+
7 rows in set (0.01 sec)

mysql> select * from divyani;
+----+-------+------+--------+
| ID | NAME  | AGE  | COURSE |
+----+-------+------+--------+
|  1 | sumit |   20 | mca    |
|  2 | raja  |   21 | mca    |
|  3 | mohan |   22 | mca    |
|  4 | Rohan | NULL | mca    |
|  5 | Mohan | NULL | mca    |
|  6 | Rohan | NULL | mca    |
|  7 | Mohan | NULL | mca    |
|  8 | mike  |   25 | CS     |
|  9 | kite  |   23 | CS     |
+----+-------+------+--------+
9 rows in set (0.00 sec)
```

```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac PreparedMultiInsert.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>java PreparedMultiInsert
Connection established
```

7. WAP to Retrieve Data from tabLe

```
import java.sql.*;
public class RetrieveData {
   public static void main(String[] args) {
      String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";
      String user = "root";
      String password = "123456";

      try (Connection conn = DriverManager.getConnection(jdbcUrl, user, password);
          Statement stmt = conn.createStatement()) {

         String sql = "SELECT * FROM divyani";
         ResultSet rs = stmt.executeQuery(sql);

         while (rs.next()) {
            System.out.println("ID: " + rs.getInt(1) + ", Name: " + rs.getString(2) + ", Age: " +
rs.getInt(3) + ", Course: " + rs.getString(4));
         }
      } catch (SQLException e) {
         System.out.println("An error occurred.");
         e.printStackTrace();
      }
   }
}
```

OUTPUT:



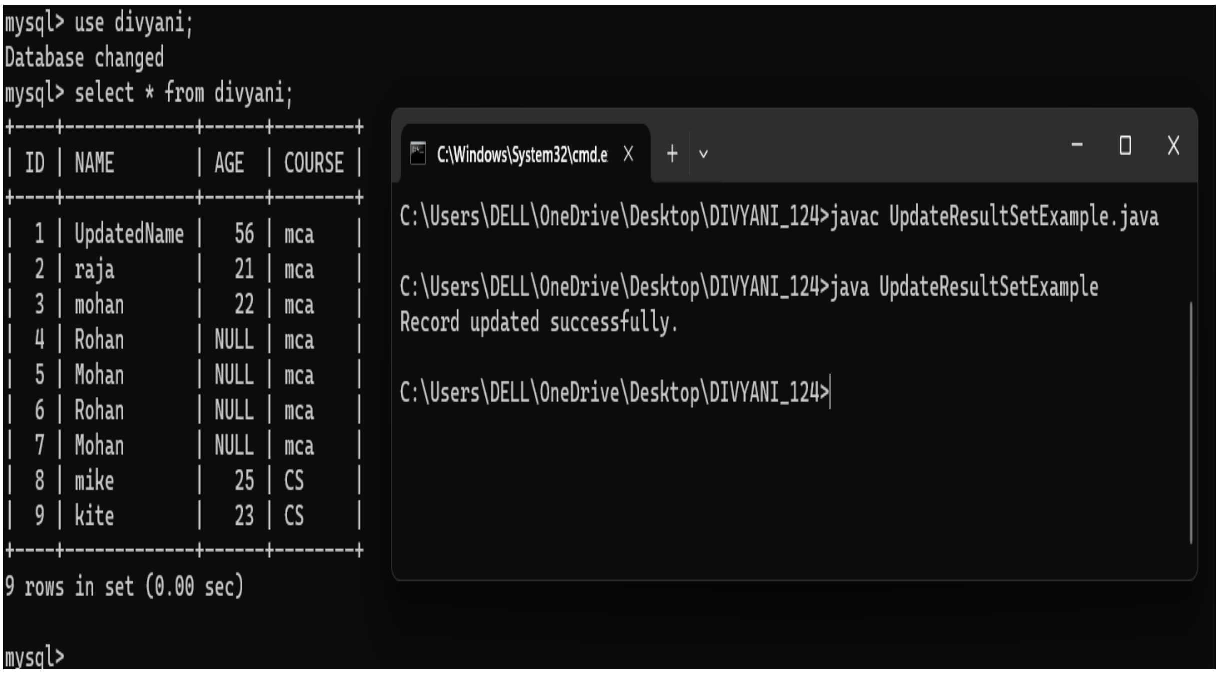
```
mysql> desc divyani;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| ID     | int         | NO   | PRI | NULL    |       |
| NAME   | varchar(40) | YES  |     | NULL    |       |
| AGE    | int         | YES  |     | NULL    |       |
| COURSE | varchar(40) | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)

mysql> select * from divyani;
+----+-------+------+--------+
| ID | NAME  | AGE  | COURSE |
+----+-------+------+--------+
|  1 | sumit |   20 | mca    |
|  2 | raja  |   21 | mca    |
|  3 | mohan |   22 | mca    |
+----+-------+------+--------+
3 rows in set (0.00 sec)

mysql>
```

```
C:\Users\DELL\OneDrive\Desktop\Divyani2>javac RetrieveData.ja
va

C:\Users\DELL\OneDrive\Desktop\Divyani2>java RetrieveData
ID: 1, Name: sumit, Age: 20, Course: mca
ID: 2, Name: raja, Age: 21, Course: mca
ID: 3, Name: mohan, Age: 22, Course: mca

C:\Users\DELL\OneDrive\Desktop\Divyani2>
```

9: WAP to update result set.

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.sql.Statement;
public class UpdateResultSetExample {
 public static void main(String[] args) {
 String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";
 String user = "root";
 String password = "Divyani@123";
 try (Connection conn = DriverManager.getConnection(jdbcUrl, user, password);
 Statement stmt = conn.createStatement(ResultSet.TYPE_SCROLL_SENSITIVE,
ResultSet.CONCUR_UPDATABLE)) {
 String sql = "SELECT * FROM divyani WHERE id = 1";
 ResultSet rs = stmt.executeQuery(sql);
 if (rs.next()) {
 // Update the record
 rs.updateString("name", "UpdatedName");
 rs.updateInt("age", 56);
 rs.updateRow();
 System.out.println("Record updated successfully.");
 } else {
 System.out.println("Record not found.");
 }
 } catch (SQLException e) {
 System.out.println("An error occurred.");
 e.printStackTrace();
 }
 }
}
```

OUTPUT:

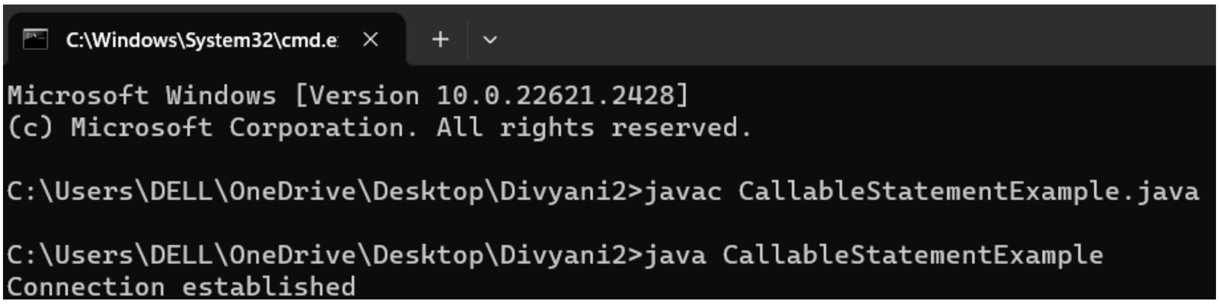


```
mysql> use divyani;
Database changed
mysql> select * from divyani;
+----+-------------+------+--------+
| ID | NAME        | AGE  | COURSE |
+----+-------------+------+--------+
|  1 | UpdatedName |   56 | mca    |
|  2 | raja        |   21 | mca    |
|  3 | mohan       |   22 | mca    |
|  4 | Rohan       | NULL | mca    |
|  5 | Mohan       | NULL | mca    |
|  6 | Rohan       | NULL | mca    |
|  7 | Mohan       | NULL | mca    |
|  8 | mike        |   25 | CS     |
|  9 | kite        |   23 | CS     |
+----+-------------+------+--------+
9 rows in set (0.00 sec)

mysql>
```

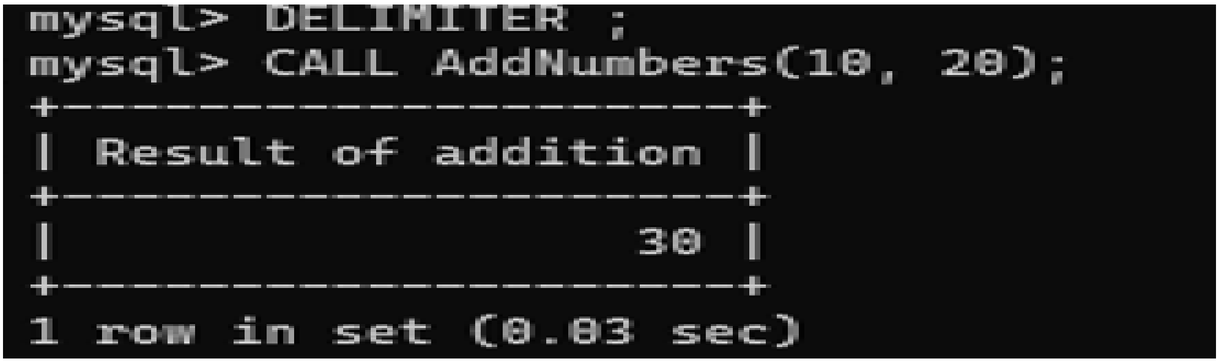
```
C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac UpdateResultSetExample.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>java UpdateResultSetExample
Record updated successfully.

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>
```

9 : Wap for CallableStatementExample

```
import java.sql.*;
public class CallableStatementExample {
 public static void main(String[] args) {
 String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";
 String user = "root";
 String password = "Divyani@123";
 try (Connection conn = DriverManager.getConnection(jdbcUrl, user, password)) {
 System.out.println(conn != null ? "Connection established" : "Connection not 
established");

 CallableStatement callableStmt = conn.prepareCall("{CALL AddNumbers(?, ?)}");
 callableStmt.setInt(1, 10);
 callableStmt.setInt(2, 20);
 boolean hasResults = callableStmt.execute();
 if (hasResults) {
 ResultSet rs = callableStmt.getResultSet();
 while (rs.next()) {
 int result = rs.getInt(1);
 System.out.println("Result of addition: " + result);
 }
 }
 } catch (SQLException e) {
 System.out.println("An error occurred.");
 e.printStackTrace();
 }
 }
}
```



```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\Divyani2>javac CallableStatementExample.java

C:\Users\DELL\OneDrive\Desktop\Divyani2>java CallableStatementExample
Connection established
```

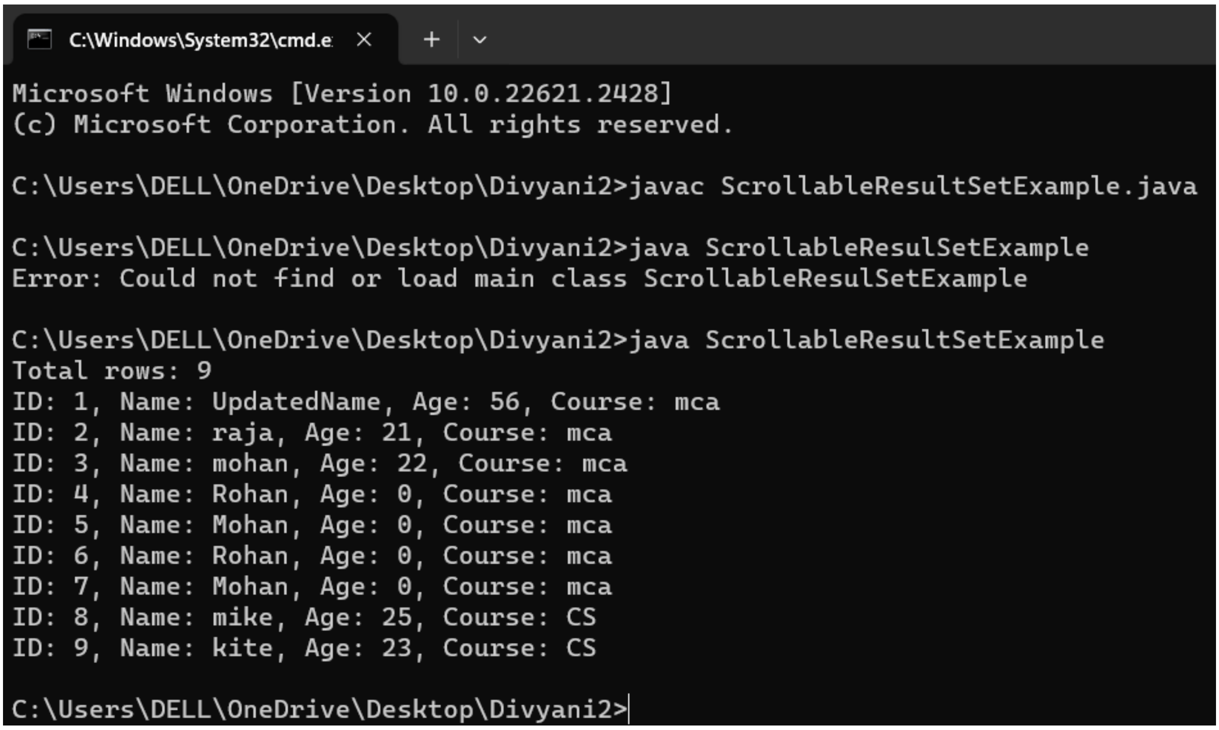


```
mysql> DELIMITER ;
mysql> CALL AddNumbers(10, 20);
+--------------------+
| Result of addition |
+--------------------+
|                 30 |
+--------------------+
1 row in set (0.03 sec)
```

10 : Wap for scrollable Result set.

```
import java.sql.*;
public class ScrollableResultSetExample {
    public static void main(String[] args) {
        String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";
        String user = "root";
        String password = "Divyani@123";

        try (Connection conn = DriverManager.getConnection(jdbcUrl, user, password);
             Statement stmt = conn.createStatement(ResultSet.TYPE_SCROLL_INSENSITIVE,
ResultSet.CONCUR_READ_ONLY)) {

            String sql = "SELECT * FROM divyani";
            ResultSet rs = stmt.executeQuery(sql);

            rs.last();
            int rowCount = rs.getRow();
            System.out.println("Total rows: " + rowCount);

            rs.beforeFirst();

            while (rs.next()) {
                int id = rs.getInt("id");
                String name = rs.getString("name");
                int age = rs.getInt("age");
                String course = rs.getString("course");

                System.out.println("ID: " + id + ", Name: " + name + ", Age: " + age + ", Course: " +
course);
            }

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

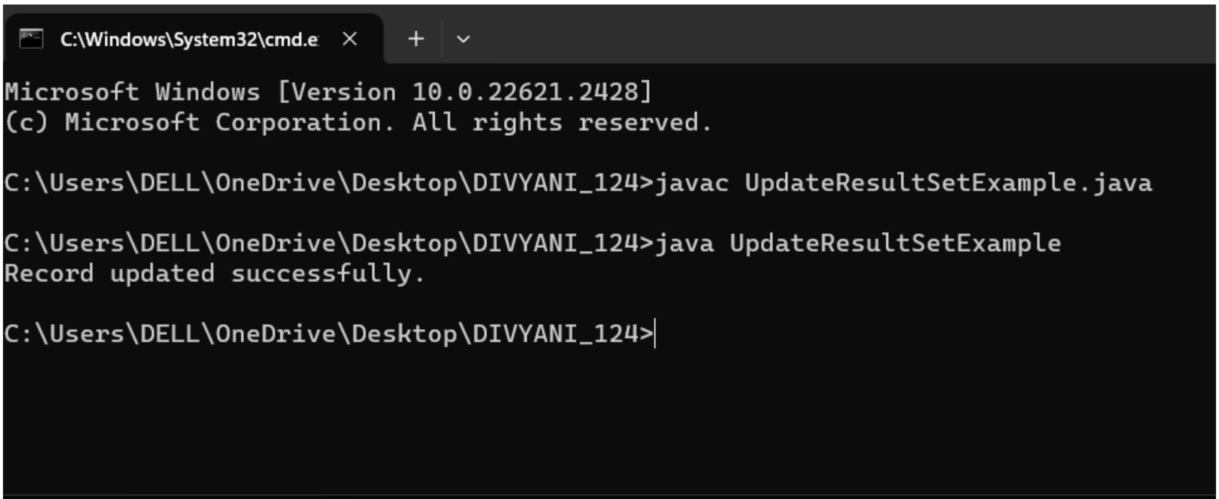
OUTPUT:



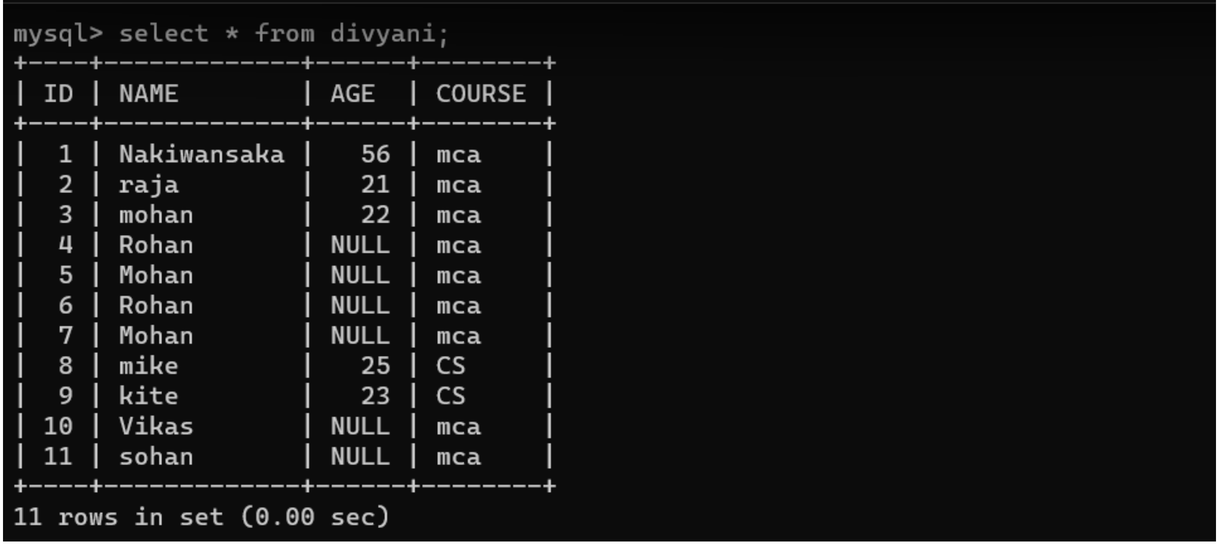
```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\Divyani2>javac ScrollableResultSetExample.java

C:\Users\DELL\OneDrive\Desktop\Divyani2>java ScrollableResulSetExample
Error: Could not find or load main class ScrollableResulSetExample

C:\Users\DELL\OneDrive\Desktop\Divyani2>java ScrollableResultSetExample
Total rows: 9
ID: 1, Name: UpdatedName, Age: 56, Course: mca
ID: 2, Name: raja, Age: 21, Course: mca
ID: 3, Name: mohan, Age: 22, Course: mca
ID: 4, Name: Rohan, Age: 0, Course: mca
ID: 5, Name: Mohan, Age: 0, Course: mca
ID: 6, Name: Rohan, Age: 0, Course: mca
ID: 7, Name: Mohan, Age: 0, Course: mca
ID: 8, Name: mike, Age: 25, Course: CS
ID: 9, Name: kite, Age: 23, Course: CS

C:\Users\DELL\OneDrive\Desktop\Divyani2>
```

11:- Write a program for Update changes(result set).

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.sql.Statement;
public class UpdateResultSetExample {
   public static void main(String[] args) {
      String jdbcUrl = "jdbc:mysql://localhost:3306/divyani"; // Update the database name
      String user = "root";
      String password = "Divyani@123";
try (Connection conn = DriverManager.getConnection(jdbcUrl, user, password);
           Statement stmt = conn.createStatement(ResultSet.TYPE_SCROLL_SENSITIVE,
ResultSet.CONCUR_UPDATABLE)) {
    String sql = "SELECT * FROM divyani WHERE ID = 1"; // Update the table name and
condition
         ResultSet rs = stmt.executeQuery(sql);
 if (rs.next()) {
            // Update the record
 rs.updateString("NAME", "Nakiwansaka"); // Update column names
            rs.updateInt("AGE", 56); // Update column names
            rs.updateString("COURSE", "mca"); // Update column names
            rs.updateRow();
            System.out.println("Record updated successfully.");
         } else {
 System.out.println("Record not found.");
         }
 } catch (SQLException e) {
         System.out.println("An error occurred.");
         e.printStackTrace();
      }
   }
}
```



```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac UpdateResultSetExample.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>java UpdateResultSetExample
Record updated successfully.

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>
```

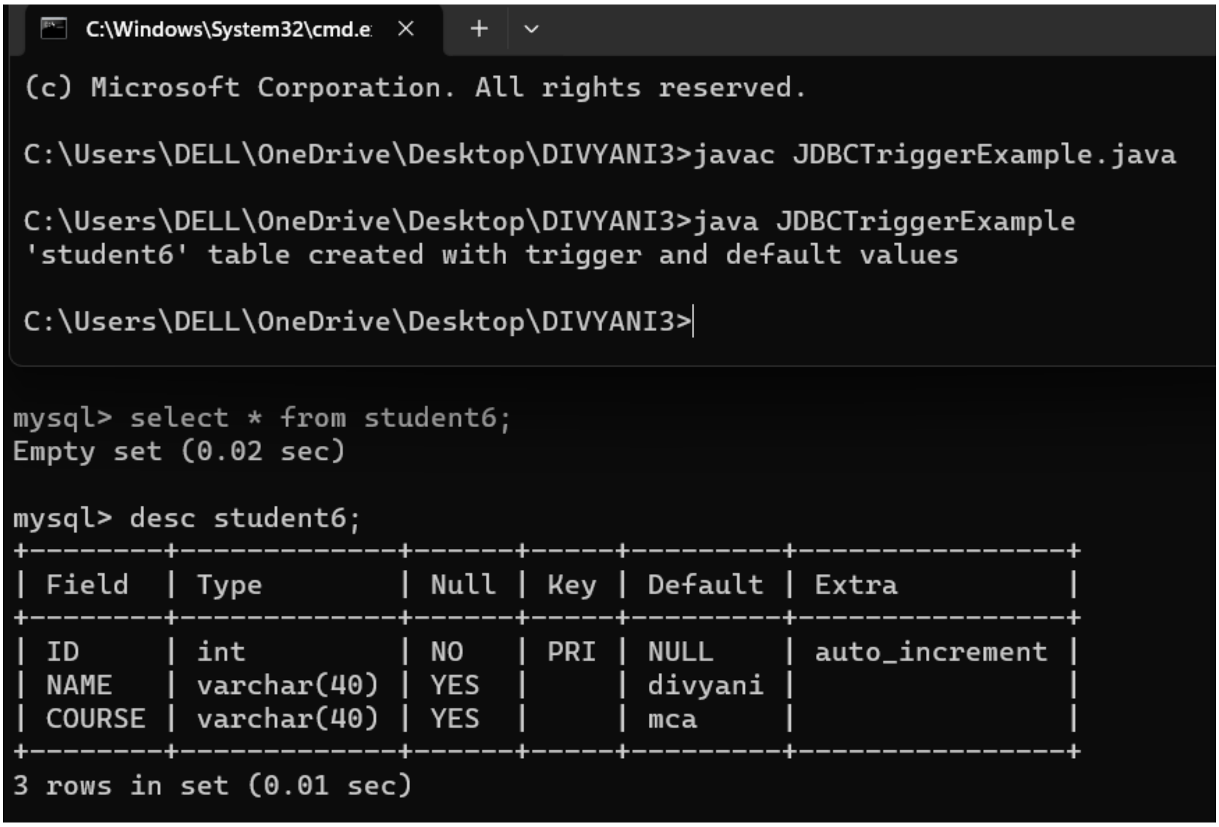


```
mysql> select * from divyani;
+----+-------------+------+--------+
| ID | NAME        | AGE  | COURSE |
+----+-------------+------+--------+
|  1 | Nakiwansaka |   56 | mca    |
|  2 | raja        |   21 | mca    |
|  3 | mohan       |   22 | mca    |
|  4 | Rohan       | NULL | mca    |
|  5 | Mohan       | NULL | mca    |
|  6 | Rohan       | NULL | mca    |
|  7 | Mohan       | NULL | mca    |
|  8 | mike        |   25 | CS     |
|  9 | kite        |   23 | CS     |
| 10 | Vikas       | NULL | mca    |
| 11 | sohan       | NULL | mca    |
+----+-------------+------+--------+
11 rows in set (0.00 sec)
```

12: Create trigger using JDBC

```
//ans
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;
import java.sql.Statement;

public class JDBCTriggerExample {
    public static void main(String[] args) {
        String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";
        String user = "root";
        String password = "Divyani@123";

        try (Connection connection = DriverManager.getConnection(jdbcUrl, user, password);
             Statement statement = connection.createStatement()) {

            // Create the 'student6' table with default values
            String createTableSQL = "CREATE TABLE IF NOT EXISTS student6 ("
                    + "ID INT AUTO_INCREMENT PRIMARY KEY,"
                    + "NAME VARCHAR(40) DEFAULT 'divyani',"
                    + "COURSE VARCHAR(40) DEFAULT 'mca');";
            statement.execute(createTableSQL);

            // Create a trigger to insert values into the 'student6' table
            String createTriggerSQL = "CREATE TRIGGER insert_student6_trigger "
                    + "BEFORE INSERT ON student6 "
                    + "FOR EACH ROW "
                    + "BEGIN "
                    + "SET NEW.NAME = 'AASHI'; "
                    + "SET NEW.COURSE = 'mca'; "
                    + "END;";
            statement.execute(createTriggerSQL);

            System.out.println("'student6' table created with trigger and default values");

        } catch (SQLException e) {
            e.printStackTrace();
        }
    }
}
```

OUTPUT:



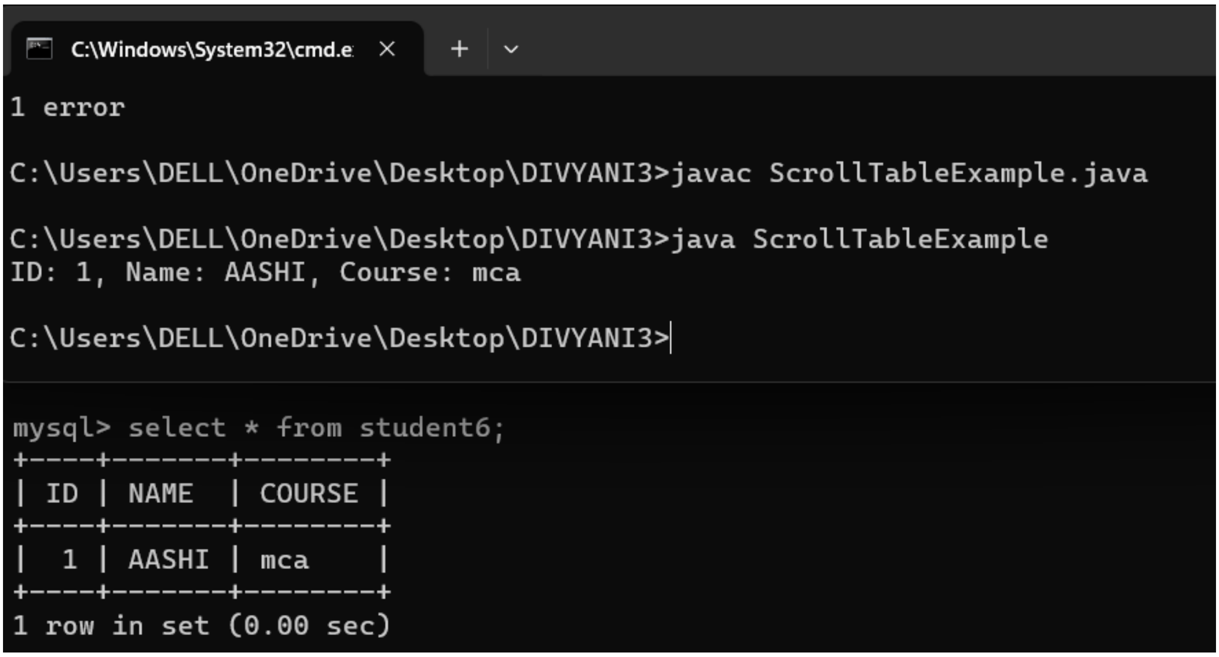
```
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\DIVYANI3>javac JDBCTriggerExample.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI3>java JDBCTriggerExample
'student6' table created with trigger and default values

C:\Users\DELL\OneDrive\Desktop\DIVYANI3>
```

```
mysql> select * from student6;
Empty set (0.02 sec)

mysql> desc student6;
+--------+-------------+------+-----+---------+----------------+
| Field  | Type        | Null | Key | Default | Extra          |
+--------+-------------+------+-----+---------+----------------+
| ID     | int         | NO   | PRI | NULL    | auto_increment |
| NAME   | varchar(40) | YES  |     | divyani |                |
| COURSE | varchar(40) | YES  |     | mca     |                |
+--------+-------------+------+-----+---------+----------------+
3 rows in set (0.01 sec)
```

13. Scroll table without using scrollable resultset

```
import java.sql.*;
import java.util.*;

public class ScrollTableExample {
   public static void main(String[] args) {
      String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";
      String user = "root";
      String password = "Divyani@123";

      try (Connection connection = DriverManager.getConnection(jdbcUrl, user, password);
          Statement statement = connection.createStatement()) {
         String selectQuery = "SELECT * FROM student9"; // Table name: student9

         ResultSet resultSet = statement.executeQuery(selectQuery);

         List<String> rows = new ArrayList<>();

         while (resultSet.next()) {
            // Process the current row
            int id = resultSet.getInt("ID");
            String name = resultSet.getString("NAME");
            String course = resultSet.getString("COURSE");

            String row = "ID: " + id + ", Name: " + name + ", Course: " + course;
            rows.add(row);
         }

         // Now you have all rows in the 'rows' List, and you can iterate through it
         for (String row : rows) {
            System.out.println(row);
         }

         // Close both the ResultSet and the Statement explicitly
         resultSet.close();
         statement.close();
      } catch (SQLException e) {
         e.printStackTrace();
      }
   }
}
```

OUTPUT:



```
1 error

C:\Users\DELL\OneDrive\Desktop\DIVYANI3>javac ScrollTableExample.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI3>java ScrollTableExample
ID: 1, Name: AASHI, Course: mca

C:\Users\DELL\OneDrive\Desktop\DIVYANI3>
```

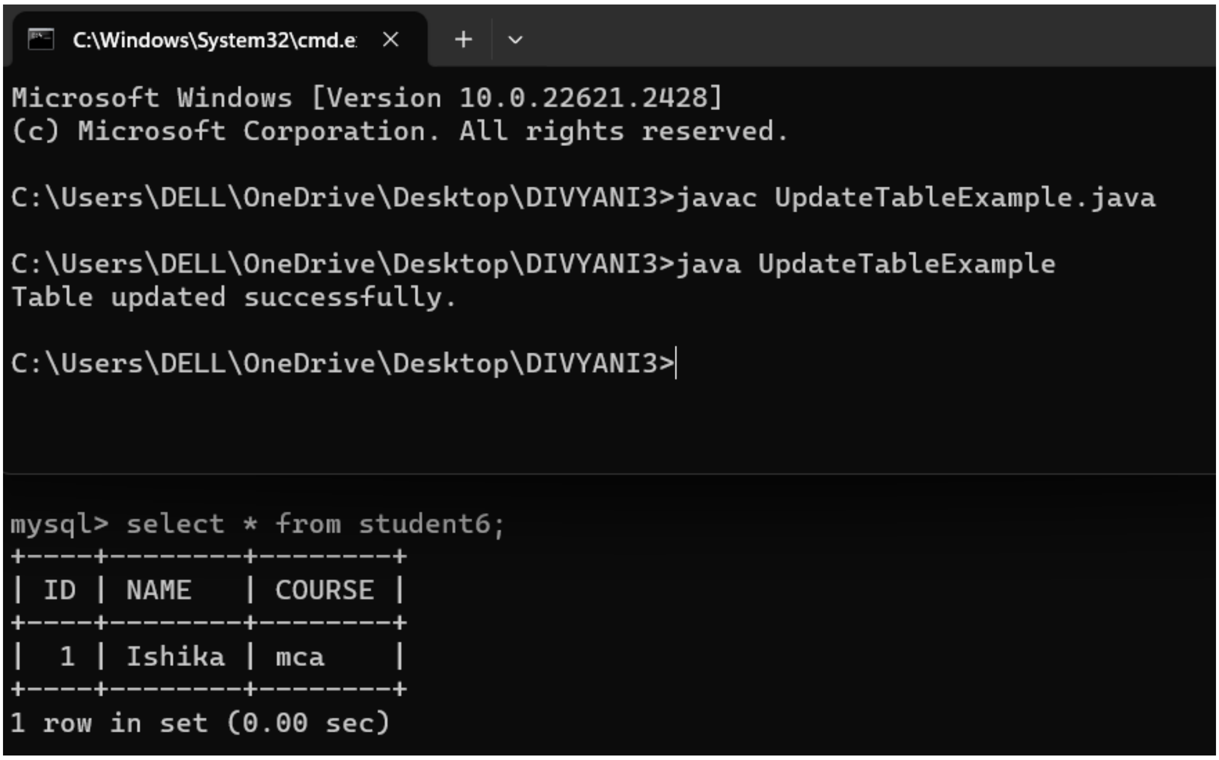
```
mysql> select * from student6;
+----+-------+--------+
| ID | NAME  | COURSE |
+----+-------+--------+
|  1 | AASHI | mca    |
+----+-------+--------+
1 row in set (0.00 sec)
```

14 : Update table without using updatable resultset

Code :

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;
import java.sql.Statement;

public class UpdateTableExample {
    public static void main(String[] args) {
        String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";
        String user = "root";
        String password = "Divyani@123";

        try (Connection connection = DriverManager.getConnection(jdbcUrl, user, password);
             Statement statement = connection.createStatement()) {

            String updateSQL = "UPDATE student6 SET NAME = 'Ishika', COURSE = 'mca' WHERE
ID = 1";
            int rowsAffected = statement.executeUpdate(updateSQL);

            if (rowsAffected > 0) {
                System.out.println("Table updated successfully.");
            } else {
                System.out.println("No rows updated.");
            }

        } catch (SQLException e) {
            e.printStackTrace();
        }
    }
}
```

OUTPUT:



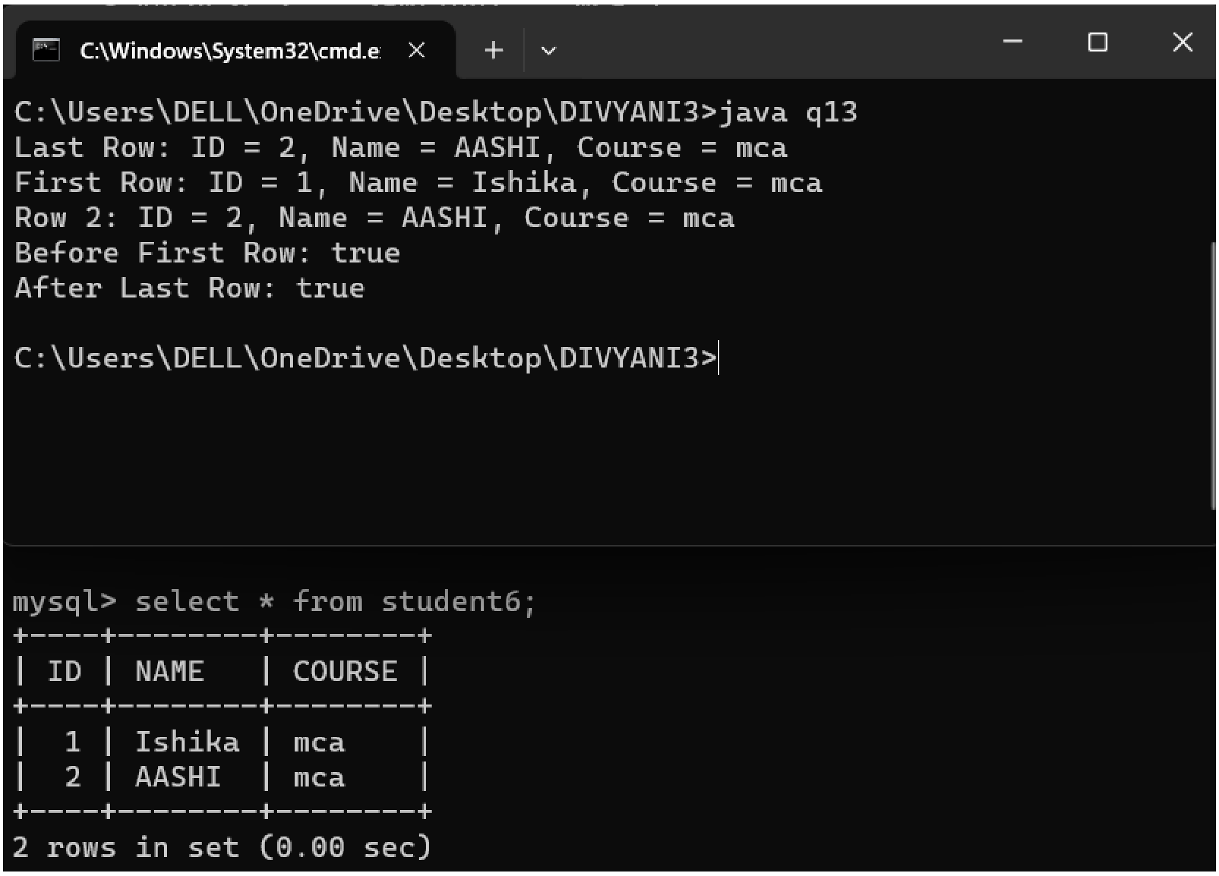
```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\DIVYANI3>javac UpdateTableExample.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI3>java UpdateTableExample
Table updated successfully.

C:\Users\DELL\OneDrive\Desktop\DIVYANI3>
```

```
mysql> select * from student6;
+----+--------+--------+
| ID | NAME   | COURSE |
+----+--------+--------+
|  1 | Ishika | mca    |
+----+--------+--------+
1 row in set (0.00 sec)
```

15. Scrollable result set(rs.beforeFirst(), rs.afterLast(),....)

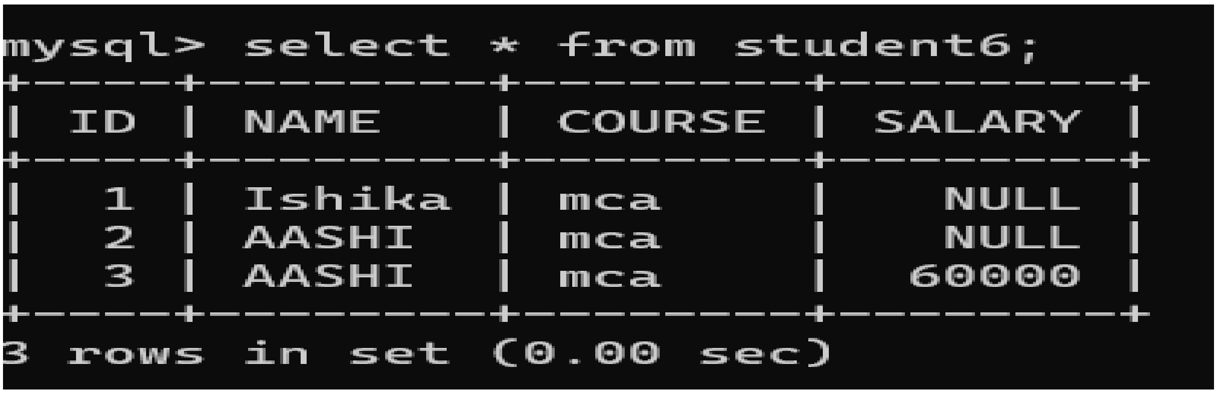
```
import java.sql.*;

public class q13 {

    public static void main(String[] args) {

        String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";

        String user = "root";

        String password = "Divyani@123";

try (Connection connection = DriverManager.getConnection(jdbcUrl, user, password);

             Statement statement =
connection.createStatement(ResultSet.TYPE_SCROLL_SENSITIVE,
ResultSet.CONCUR_READ_ONLY)) {

  String selectQuery = "SELECT * FROM student6"; // Table name: student9

ResultSet resultSet = statement.executeQuery(selectQuery);

resultSet.last();

            System.out.println("Last Row: ID = " + resultSet.getInt("ID") + ", Name = " +
resultSet.getString("NAME") + ", Course = " + resultSet.getString("COURSE"));

 resultSet.first();

            System.out.println("First Row: ID = " + resultSet.getInt("ID") + ", Name = " +
resultSet.getString("NAME") + ", Course = " + resultSet.getString("COURSE"));

resultSet.absolute(2);

            System.out.println("Row 2: ID = " + resultSet.getInt("ID") + ", Name = " +
resultSet.getString("NAME") + ", Course = " + resultSet.getString("COURSE"));
resultSet.beforeFirst();

            System.out.println("Before First Row: " + resultSet.isBeforeFirst());
resultSet.afterLast();

            System.out.println("After Last Row: " + resultSet.isAfterLast());

        } catch (SQLException e) {

            e.printStackTrace();

        }

    }

}
```

OUTPUT:



```
C:\Users\DELL\OneDrive\Desktop\DIVYANI3>java q13
Last Row: ID = 2, Name = AASHI, Course = mca
First Row: ID = 1, Name = Ishika, Course = mca
Row 2: ID = 2, Name = AASHI, Course = mca
Before First Row: true
After Last Row: true

C:\Users\DELL\OneDrive\Desktop\DIVYANI3>
```

```
mysql> select * from student6;
+----+--------+--------+
| ID | NAME   | COURSE |
+----+--------+--------+
|  1 | Ishika | mca    |
|  2 | AASHI  | mca    |
+----+--------+--------+
2 rows in set (0.00 sec)
```



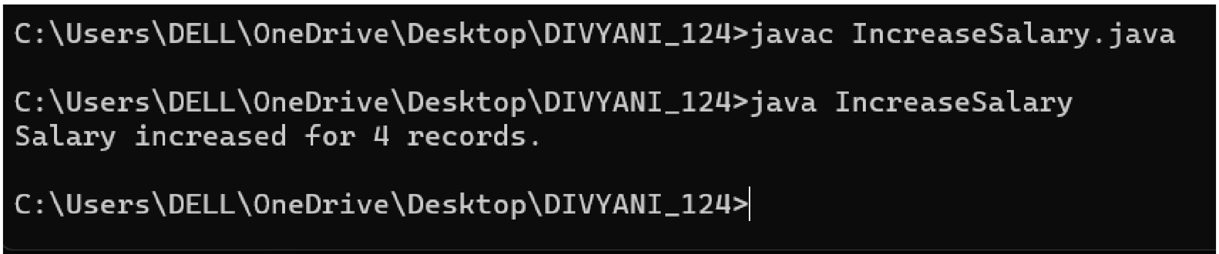
```
mysql> select * from student6;
+----+--------+--------+--------+
| ID | NAME   | COURSE | SALARY |
+----+--------+--------+--------+
|  1 | Ishika | mca    |   NULL |
|  2 | AASHI  | mca    |   NULL |
|  3 | AASHI  | mca    |  60000 |
+----+--------+--------+--------+
3 rows in set (0.00 sec)
```

16. Wap to Increase Salary

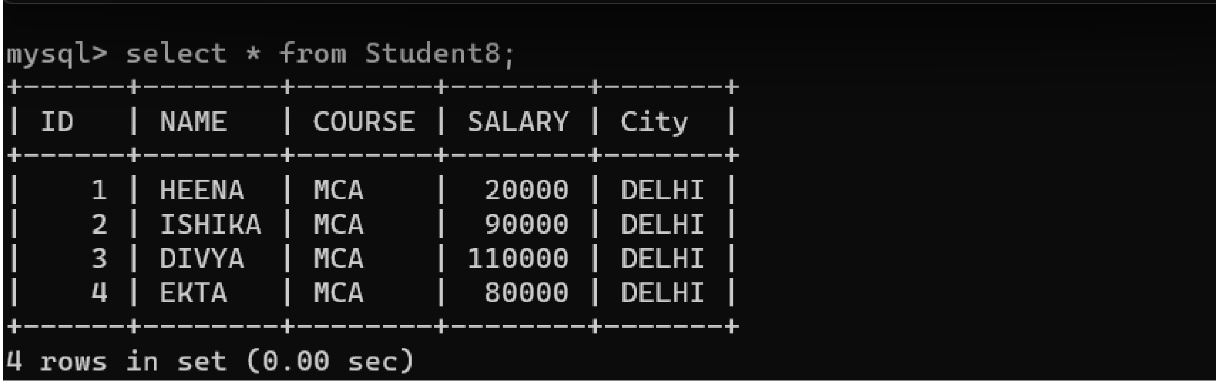
Code :

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;
import java.sql.Statement;

public class IncreaseSalary {
  public static void main(String[] args) {
    String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";
    String user = "root";
    String password = "Divyani@123";

    try (Connection connection = DriverManager.getConnection(jdbcUrl, user, password);
       Statement statement = connection.createStatement()) {


      String updateSQL = "UPDATE Student8 SET salary = salary + 10000 WHERE ID IN
(1,2,3,4)";
      int rowsAffected = statement.executeUpdate(updateSQL);

      if (rowsAffected > 0) {
        System.out.println("Salary increased for " + rowsAffected + " records.");
      } else {
        System.out.println("No records updated.");
      }
    } catch (SQLException e) {
      e.printStackTrace();
    }
  }
}
```

OUTPUT:



```
C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac IncreaseSalary.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>java IncreaseSalary
Salary increased for 4 records.

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>
```



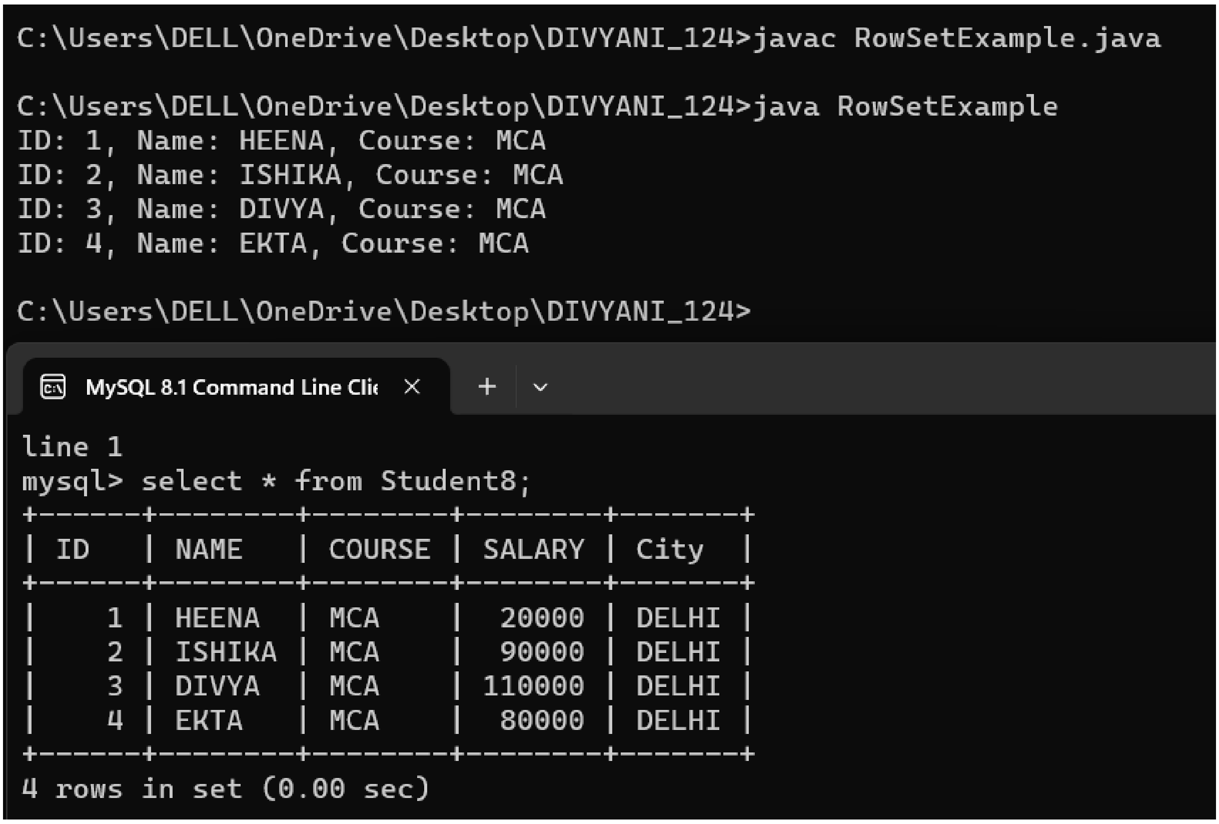
```
mysql> select * from Student8;
+------+--------+--------+--------+-------+
| ID   | NAME   | COURSE | SALARY | City  |
+------+--------+--------+--------+-------+
|    1 | HEENA  | MCA    |  20000 | DELHI |
|    2 | ISHIKA | MCA    |  90000 | DELHI |
|    3 | DIVYA  | MCA    | 110000 | DELHI |
|    4 | EKTA   | MCA    |  80000 | DELHI |
+------+--------+--------+--------+-------+
4 rows in set (0.00 sec)
```

17. Wap For RowSet

Code :

```
import javax.sql.rowset.CachedRowSet;
import javax.sql.rowset.RowSetProvider;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;
public class RowSetExample {
    public static void main(String[] args) {
        String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";
        String user = "root";
        String password = "Divyani@123";

        try (Connection connection = DriverManager.getConnection(jdbcUrl, user, password)) {
            CachedRowSet rowSet = RowSetProvider.newFactory().createCachedRowSet();
            rowSet.setUrl(jdbcUrl);
            rowSet.setUsername(user);
            rowSet.setPassword(password);

            rowSet.setCommand("SELECT * FROM Student8");
            rowSet.execute(connection);

            while (rowSet.next()) {
                int id = rowSet.getInt("ID");
                String name = rowSet.getString("NAME");
                String course = rowSet.getString("COURSE");
                System.out.println("ID: " + id + ", Name: " + name + ", Course: " + course);
            }
        } catch (SQLException e) {
            e.printStackTrace();
        }
    }
}
```

OUTPUT:



```
C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac RowSetExample.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>java RowSetExample
ID: 1, Name: HEENA, Course: MCA
ID: 2, Name: ISHIKA, Course: MCA
ID: 3, Name: DIVYA, Course: MCA
ID: 4, Name: EKTA, Course: MCA

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>
```

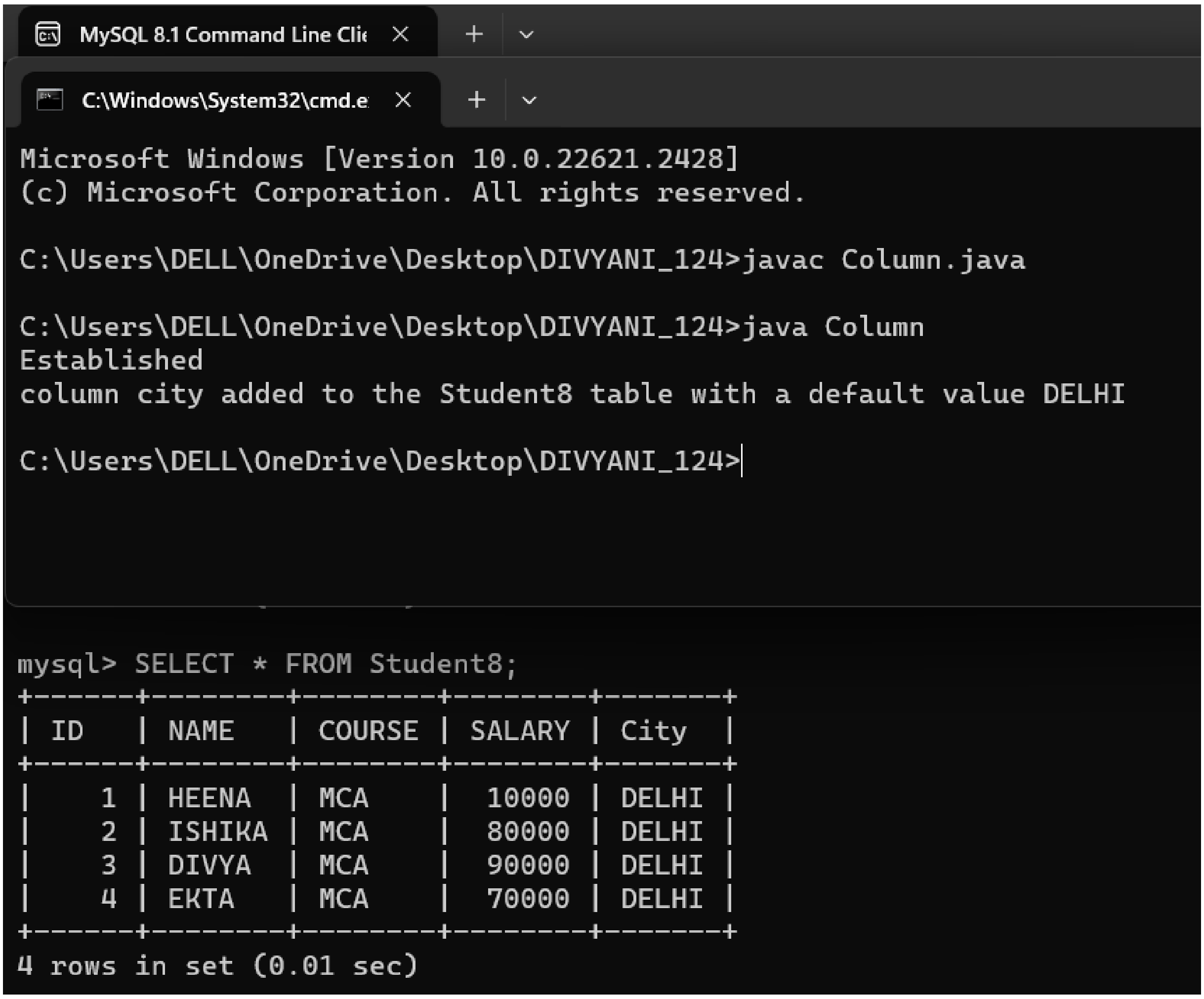
```
line 1
mysql> select * from Student8;
+------+--------+--------+--------+-------+
| ID   | NAME   | COURSE | SALARY | City  |
+------+--------+--------+--------+-------+
|    1 | HEENA  | MCA    |  20000 | DELHI |
|    2 | ISHIKA | MCA    |  90000 | DELHI |
|    3 | DIVYA  | MCA    | 110000 | DELHI |
|    4 | EKTA   | MCA    |  80000 | DELHI |
+------+--------+--------+--------+-------+
4 rows in set (0.00 sec)
```

18 : Add column and default value

Code :

```
import java.sql.*;
import java.io.*;
public class Column {
   public static void main(String[] args){
   try{
   Connection conn = DriverManager.getConnection("jdbc:mysql://localhost:3306/divyani",
"root", "Divyani@123");

          if (conn != null) {
             System.out.println("Established");
          } else {
             System.out.println("Not");
        }
          Statement stmt = conn.createStatement();
          String alterTableSQL = "ALTER TABLE Student8 ADD COLUMN City VARCHAR(30)
DEFAULT 'DELHI’ ";
          stmt.execute(alterTableSQL);
   System.out.println("column city added to the student8 table with a default value noida");
      } catch (Exception e) {
          e.printStackTrace();
      }
   }
}
```

OUTPUT:



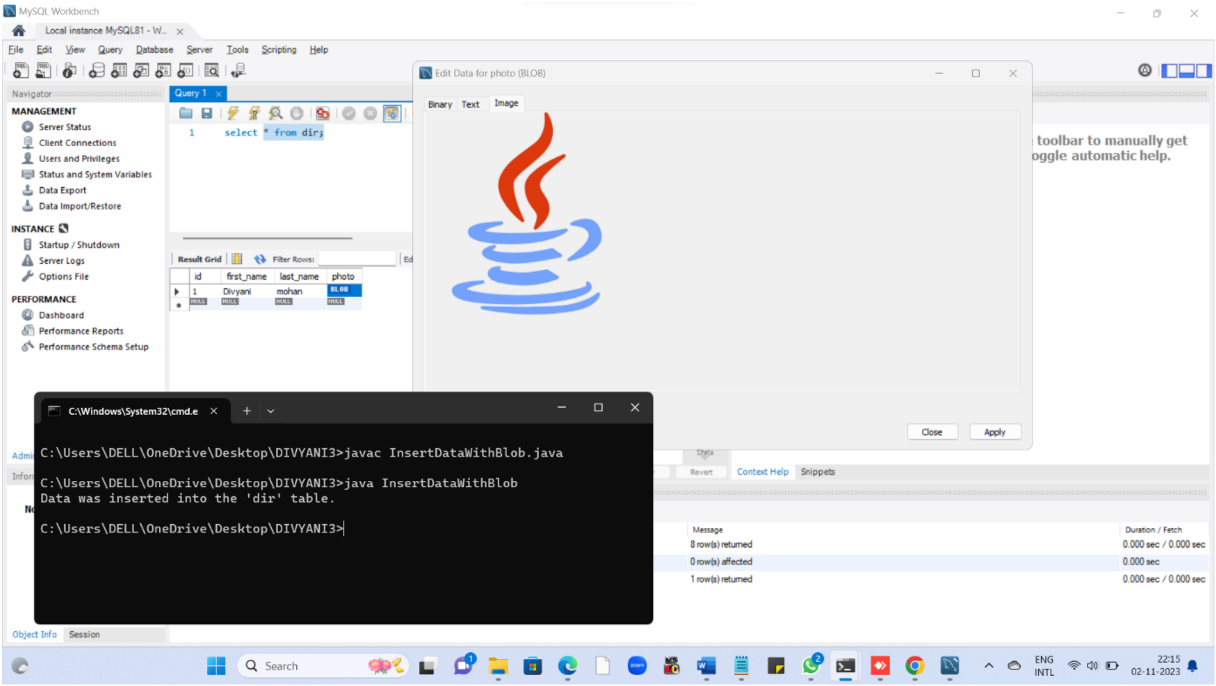
```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac Column.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>java Column
Established
column city added to the Student8 table with a default value DELHI

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>
```

```
mysql> SELECT * FROM Student8;
+------+--------+--------+--------+-------+
| ID   | NAME   | COURSE | SALARY | City  |
+------+--------+--------+--------+-------+
|    1 | HEENA  | MCA    |  10000 | DELHI |
|    2 | ISHIKA | MCA    |  80000 | DELHI |
|    3 | DIVYA  | MCA    |  90000 | DELHI |
|    4 | EKTA   | MCA    |  70000 | DELHI |
+------+--------+--------+--------+-------+
4 rows in set (0.01 sec)
```

Q19. Write a program to insert picture   in a table

Code :

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.SQLException;
import java.io.FileInputStream;
import java.io.IOException;
import java.io.InputStream;

public class insertpic {
    public static void main(String[] args) {
        String jdbcUrl = "jdbc:mysql://localhost:3306/divyani";
        String user = "root"; // Update the username
        String password = "Divyani@123";

        String filepath = " C:\Users\DELL\OneDrive\Desktop.png";

        try {
            Connection conn = DriverManager.getConnection(jdbcUrl, user, password);
            String sql = "INSERT INTO dir (first_name, last_name, photo) VALUES (?, ?, ?)";
            PreparedStatement stmt = conn.prepareStatement(sql);
            stmt.setString(1, "divyani");
            stmt.setString(2, "mohan");


            InputStream inputStream = new FileInputStream(filepath);
            stmt.setBlob(3, inputStream);

            int row = stmt.executeUpdate();
            if (row > 0) {
                System.out.println("Data was inserted into the 'dir' table.");
            }
            conn.close();
        } catch (IOException | SQLException e) {
            e.printStackTrace();
        }
    }
}
```



```
select * from dir;
```

	id	first_name	last_name	photo
▶	1	Divyani	mohan	BLOB
*	NULL	NULL	NULL	NULL

```
C:\Users\DELL\OneDrive\Desktop\DIVYANI3>javac InsertDataWithBlob.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI3>java InsertDataWithBlob
Data was inserted into the 'dir' table.

C:\Users\DELL\OneDrive\Desktop\DIVYANI3>
```

Message	Duration / Fetch
8 row(s) returned	0.000 sec / 0.000 sec
0 row(s) affected	0.000 sec
1 row(s) returned	0.000 sec / 0.000 sec

20. (a)write a program to store file (CLOB) in my sql database using jdbc

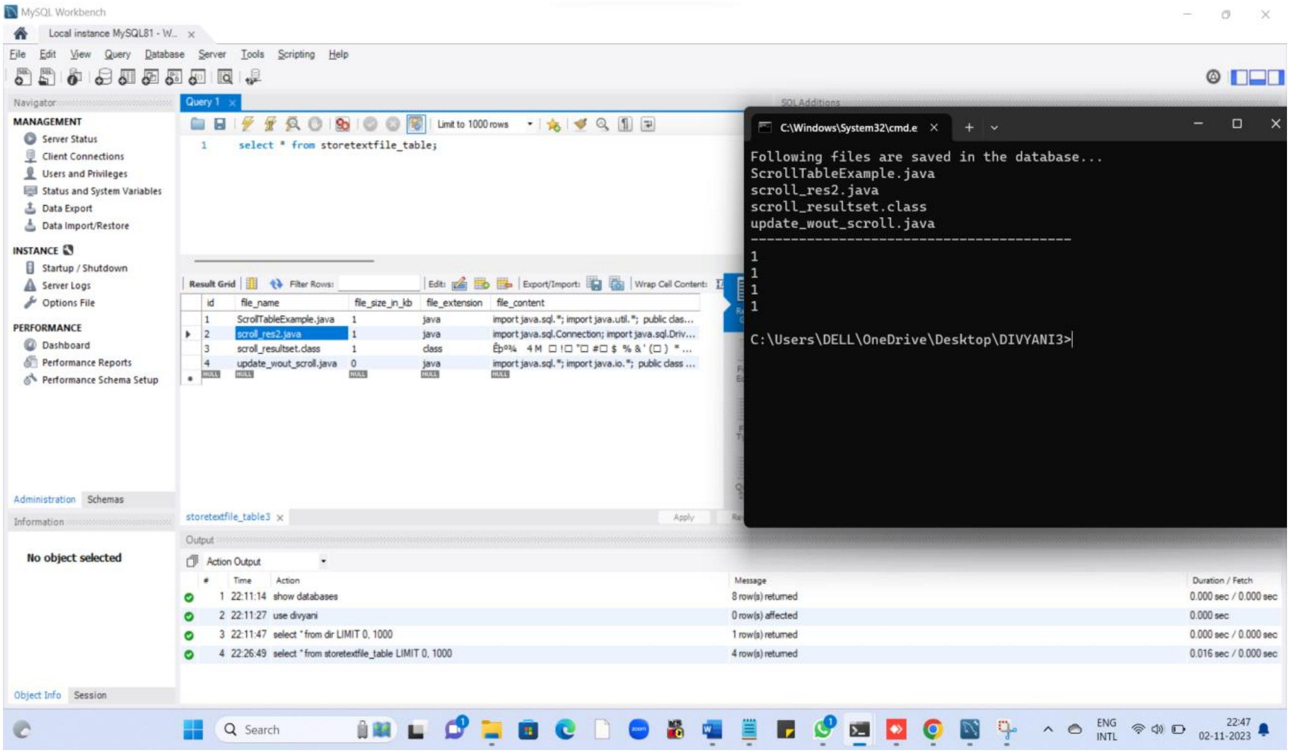
```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;

public class DBUtil {
   private static final String DB_DRIVER_CLASS = "com.mysql.cj.jdbc.Driver";
   private static final String DB_USERNAME = "root";
   private static final String DB_PASSWORD = "123456";
   private static final String DB_URL = "jdbc:mysql://localhost:3306/jdbcdb";

   private static Connection connection = null;

   static {
      try {
         Class.forName(DB_DRIVER_CLASS);
         connection = DriverManager.getConnection(DB_URL, DB_USERNAME,
DB_PASSWORD);
      } catch (ClassNotFoundException | SQLException e) {
         e.printStackTrace();
      }
   }

   public static Connection getConnection() {
      return connection;
   }
}
```

20(b): write a program to store file (CLOB) in my sql database using jdbc

```
import java.io.File;
import java.io.FileReader;
import java.io.IOException;
import java.nio.file.Files;
import java.nio.file.Path;
import java.nio.file.Paths;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.SQLException;
import java.util.List;
import java.util.stream.Collectors;
import java.util.stream.Stream;
public class ClientTest {
   public static void main(String[] args) throws SQLException {
      String SQL = "INSERT INTO storetextfile_table (file_name, file_size_in_kb,
file_extension, file_content) VALUES (?, ?, ?, ?)";
      Path dir = Paths.get("InputFiles");

      String dbUrl = "jdbc:mysql://localhost:3306/aakash";
      String dbUser = "root";
      String dbPassword = "123456";

      try (Connection connection = DriverManager.getConnection(dbUrl, dbUser,
dbPassword);
           PreparedStatement ps = connection.prepareStatement(SQL);
           Stream<Path> list = Files.list(dir)) {

          List<Path> pathList = list.collect(Collectors.toList());
          System.out.println("Following files are saved in the database...");
          for (Path path : pathList) {
             System.out.println(path.getFileName());
             File file = path.toFile();
             String fileName = file.getName();
             long fileLength = file.length();
             long fileLengthInKb = fileLength / 1024;

             ps.setString(1, fileName);
             ps.setLong(2, fileLengthInKb);
             ps.setString(3, fileName.substring(fileName.lastIndexOf(".") + 1));
             ps.setCharacterStream(4, new FileReader(file), fileLength);
```

```
                ps.addBatch();
            }
            System.out.println("----------------------------------------");
            int[] executeBatch = ps.executeBatch();
            for (int i : executeBatch) {
                System.out.println(i);
            }
        } catch (IOException e) {
            e.printStackTrace();
        }
    }
}
```

OUTPUT:



```
select * from storetextfile_table;
```

id	file_name	file_size_in_kb	file_extension	file_content
1	ScrollTableExample.java	1	java	import java.sql.*; import java.util.*; public clas...
2	scroll_res2.java	1	java	import java.sql.Connection; import java.sql.Driv...
3	scroll_resultset.class	1	class	Êþº¾ 4 M □ !□ "□ #□ $ % & ' (□) * ...
4	update_wout_scroll.java	0	java	import java.sql.*; import java.io.*; public class ...
NULL	NULL	NULL	NULL	NULL

```
Following files are saved in the database...
ScrollTableExample.java
scroll_res2.java
scroll_resultset.class
update_wout_scroll.java
----------------------------------------
1
1
1
1


C:\Users\DELL\OneDrive\Desktop\DIVYANI3>
```

#	Time	Action	Message	Duration / Fetch
1	22:11:14	show databases	8 row(s) returned	0.000 sec / 0.000 sec
2	22:11:27	use divyani	0 row(s) affected	0.000 sec
3	22:11:47	select * from dir LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec
4	22:26:49	select * from storetextfile_table LIMIT 0, 1000	4 row(s) returned	0.016 sec / 0.000 sec

Q 21(a) : write a program to store file (BLOB) in my sql database using jdbc

Code :

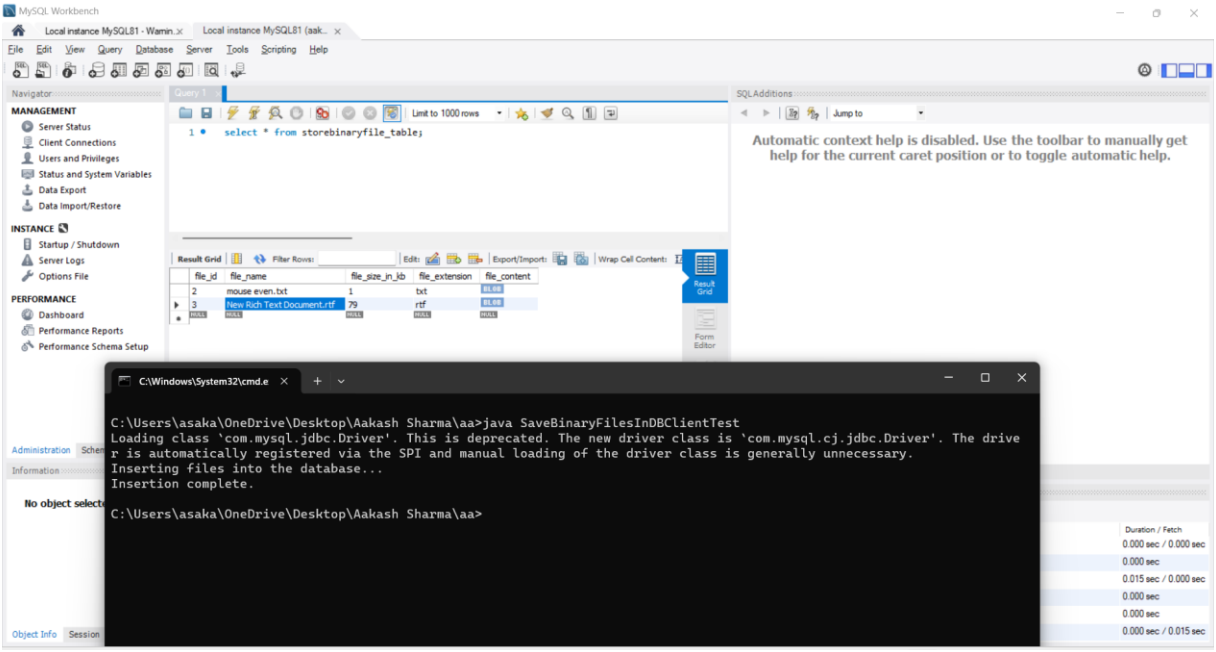
```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;

public class DBUtil {
   private static final String DB_DRIVER_CLASS = "com.mysql.jdbc.Driver"; // Update with
your MySQL driver class
   private static final String DB_USERNAME = "root"; // Update with your database
username
   private static final String DB_PASSWORD = "123456"; // Update with your database
password
   private static final String DB_URL = "jdbc:mysql://localhost:3306/aakash"; // Update
with your database URL

   private static Connection connection = null;

   static {
      try {
         Class.forName(DB_DRIVER_CLASS);
         connection = DriverManager.getConnection(DB_URL, DB_USERNAME,
DB_PASSWORD);
      } catch (ClassNotFoundException | SQLException e) {
         e.printStackTrace();
      }
   }

   public static Connection getConnection() {
      return connection;
   }
}
```

21(b) : write a program to store file (BLOB) in my sql database using jdbc

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;
import java.nio.file.Files;
import java.nio.file.Path;
import java.nio.file.Paths;
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.SQLException;
import java.util.List;
import java.util.stream.Collectors;
import java.util.stream.Stream;

public class SaveBinaryFilesInDBClientTest {
   public static void main(String[] args) {
      saveBinaryFilesInDatabase();
   }

   private static void saveBinaryFilesInDatabase() {
      String SQL = "INSERT INTO storebinaryfile_table (file_name, file_size_in_kb,
file_extension, file_content) VALUES (?, ?, ?, ?)";
      String directoryPath = "InputFiles"; // Update with the path to your files

      try (Connection connection = DBUtil.getConnection();
          PreparedStatement ps = connection.prepareStatement(SQL)) {
         List<Path> pathList;
         try (Stream<Path> list = Files.list(Paths.get(directoryPath))) {
            pathList = list.collect(Collectors.toList());
         }

         System.out.println("Inserting files into the database...");
         for (Path path : pathList) {
            File file = path.toFile();
            String fileName = file.getName();
            long fileLength = file.length();
            long fileLengthInKb = fileLength / 1024;

            ps.setString(1, fileName);
            ps.setLong(2, fileLengthInKb);
            ps.setString(3, fileName.substring(fileName.lastIndexOf(".") + 1));

            FileInputStream fis = new FileInputStream(file);
```

```
        ps.setBinaryStream(4, fis, fileLength);

        ps.executeUpdate();
      }
      System.out.println("Insertion complete.");
    } catch (SQLException | IOException e) {
      e.printStackTrace();
    }
  }
}
```

OUTPUT:



```
select * from storebinaryfile_table;
```

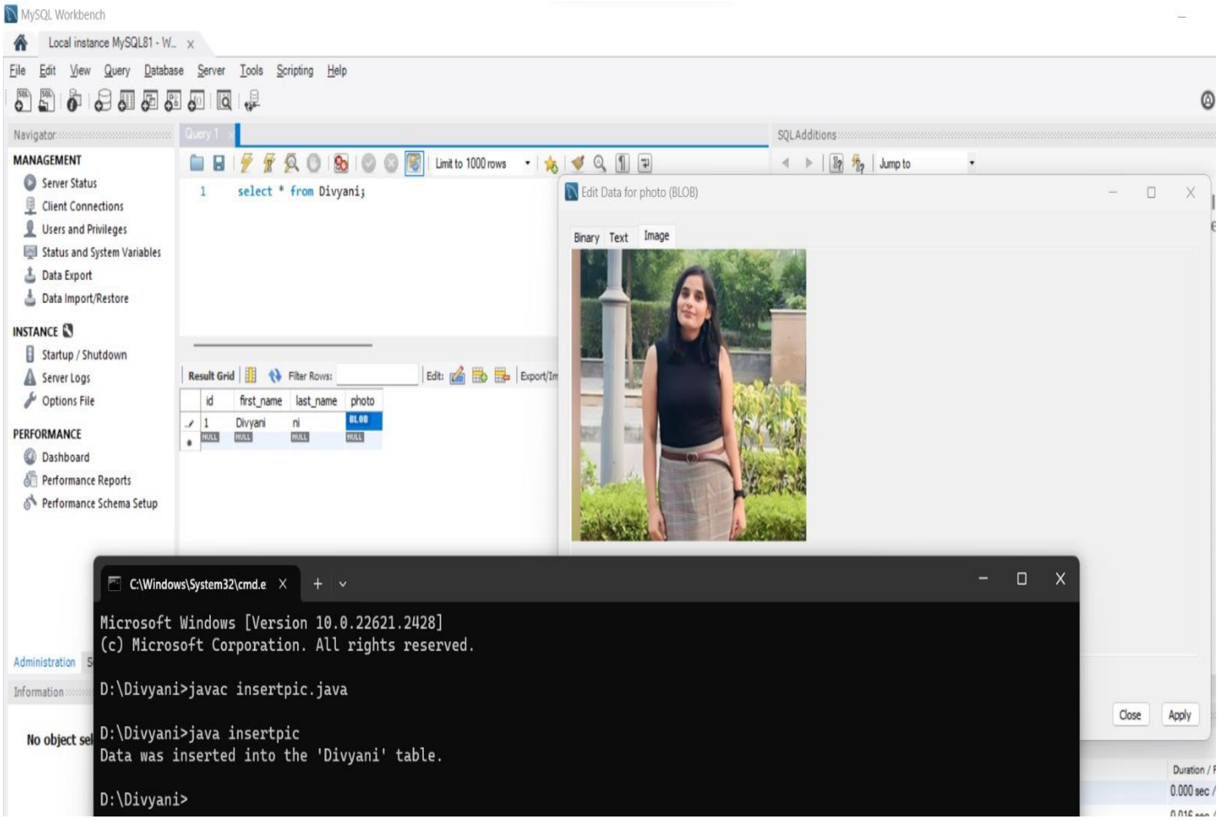
file_id	file_name	file_size_in_kb	file_extension	file_content
2	mouse even.txt	1	txt	BLOB
3	New Rich Text Document.rtf	79	rtf	BLOB
NULL	NULL	NULL	NULL	NULL

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

```
C:\Users\asaka\OneDrive\Desktop\Aakash Sharma\aa>java SaveBinaryFilesInDBClientTest
Loading class `com.mysql.jdbc.Driver'. This is deprecated. The new driver class is `com.mysql.cj.jdbc.Driver'. The drive
r is automatically registered via the SPI and manual loading of the driver class is generally unnecessary.
Inserting files into the database...
Insertion complete.

C:\Users\asaka\OneDrive\Desktop\Aakash Sharma\aa>
```

22. Write a program to insert a picture in my sql database using jdbc.

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.SQLException;
import java.io.FileInputStream;
import java.io.IOException;
import java.io.InputStream;

public class insertpic {
  public static void main(String[] args) {
    String jdbcUrl = "jdbc:mysql://localhost:3306/Divyani";
    String user = "root"; // Update the username
    String password = "Divyani@123";

    String filepath = "D:/Divyani/1234.jpg";

    try {
      Connection conn = DriverManager.getConnection(jdbcUrl, user, password);
      String sql = "INSERT INTO Divyani (first_name, last_name, photo) VALUES (?, ?, ?)";
      PreparedStatement stmt = conn.prepareStatement(sql);
      stmt.setString(1, "Divyani");
      stmt.setString(2, "ni");


      InputStream inputStream = new FileInputStream(filepath);
      stmt.setBlob(3, inputStream);

      int row = stmt.executeUpdate();
      if (row > 0) {
        System.out.println("Data was inserted into the 'Divyani' table.");
      }
      conn.close();
    } catch (IOException | SQLException e) {
      e.printStackTrace();
    }
  }
}
```



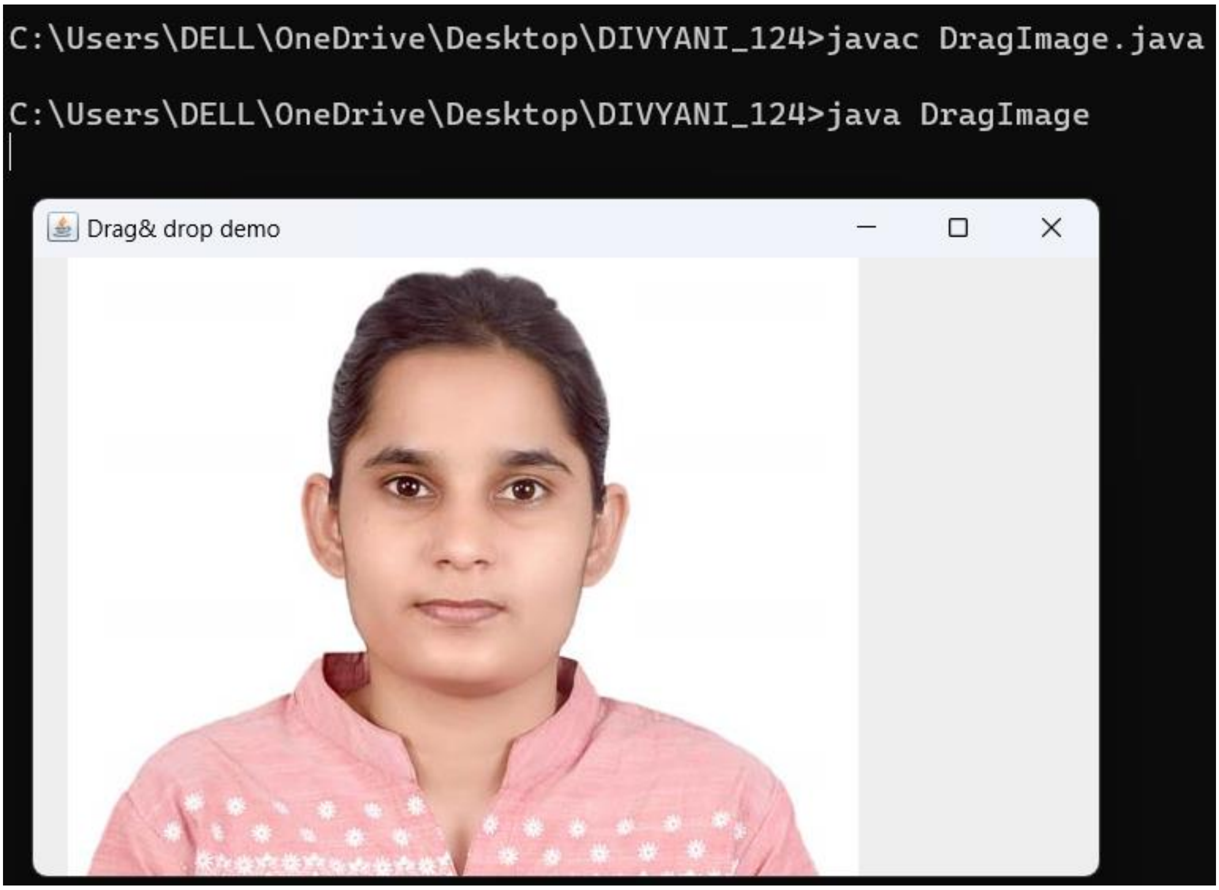
```
select * from Divyani;
```

id	first_name	last_name	photo
1	Divyani	ni	BLOB
NULL	NULL	NULL	NULL

```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

D:\Divyani>javac insertpic.java

D:\Divyani>java insertpic
Data was inserted into the 'Divyani' table.

D:\Divyani>
```

23. Write a program to drag picture.

```
import javax.swing.*;
import java.awt.*;
import java.awt.event.MouseAdapter;
import java.awt.event.MouseEvent;
import java.awt.event.MouseMotionAdapter;

class DragPanel extends JPanel
{
    ImageIcon image = new ImageIcon("Divyani_Photo.jpeg");
    final int WIDTH = image.getIconWidth();
    final int HEIGHT = image.getIconHeight();
    Point imageCorner;
    Point prevPt;

    DragPanel()
    {
        imageCorner = new Point(0, 0);
        ClickListener clickListener = new ClickListener();
        DragListener dragListener = new DragListener();
        this.addMouseListener(clickListener);
        this.addMouseMotionListener(dragListener);
    }

    public void paint(Graphics g)

    {

        super.paintComponent(g);

        image.paintIcon(this,g,(int)imageCorner.getX(),(int)imageCorner.getY());

}

    private class ClickListener extends MouseAdapter

    {

          public void mousePressed(MouseEvent e)

            {

                prevPt = e.getPoint();

            }

    }

     private class DragListener extends MouseMotionAdapter

    {
        public void mouseDragged(MouseEvent e)
        {
            Point currentPt = e.getPoint();
            imageCorner.translate(
            (int) (currentPt.getX() - prevPt.getX()),
            (int) (currentPt.getY() - prevPt.getY()));
            prevPt = currentPt;
            repaint();
        }
    }
}

class MyFrame extends JFrame
{
    DragPanel dragPanel = new DragPanel();

    MyFrame()
    {
        this.add(dragPanel);
        this.setTitle("Drag& drop demo");
        this.setSize(600,600);
        this.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        this.setVisible(true);
    }
}

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

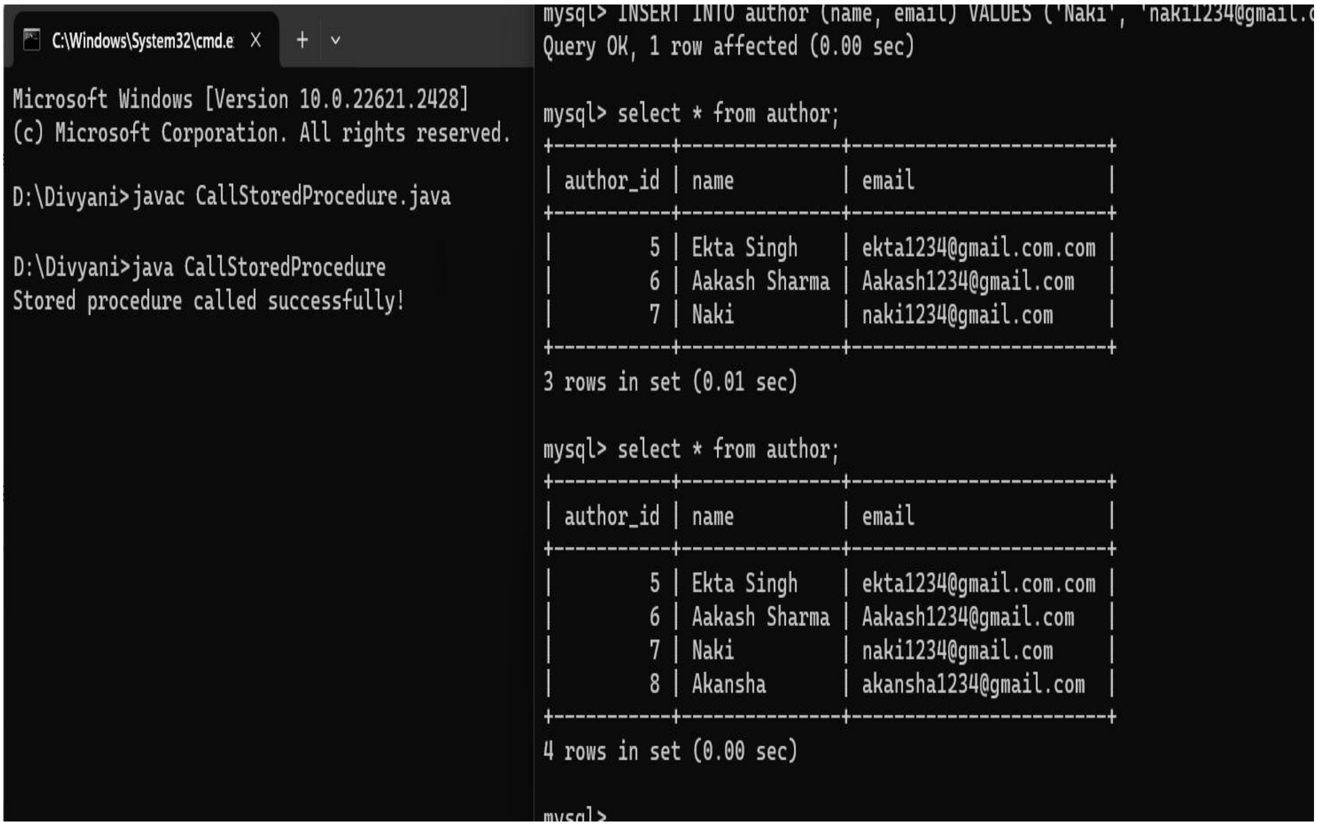


```
C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>javac DragImage.java

C:\Users\DELL\OneDrive\Desktop\DIVYANI_124>java DragImage
```

24. Write a program calling a stored procedure having OUT and INOUT parameters in java.

```
import java.sql.Connection;
import java.sql.CallableStatement;
import java.sql.DriverManager;
import java.sql.SQLException;

public class CallStoredProcedure {
    public static void main(String[] args) {
        String dbURL = "jdbc:mysql://localhost:3306/divyani";
        String user = "root";
        String password = "Divyani@123";

        try {
            Connection conn = DriverManager.getConnection(dbURL, user, password);

            CallableStatement statement = conn.prepareCall("{call create_author(?, ?)}");
            statement.setString(1, "Akansha");
            statement.setString(2, "akansha1234@gmail.com");
            statement.execute();
            statement.close();
            System.out.println("Stored procedure called successfully!");

            conn.close(); // Close the connection after use
        } catch (SQLException ex) {
            ex.printStackTrace();
        }
    }
}
```

Output:



```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

D:\Divyani>javac CallStoredProcedure.java

D:\Divyani>java CallStoredProcedure
Stored procedure called successfully!
```

```
mysql> INSERT INTO author (name, email) VALUES ('Naki', 'naki1234@gmail.c
Query OK, 1 row affected (0.00 sec)

mysql> select * from author;
+-----------+---------------+-------------------------+
| author_id | name          | email                   |
+-----------+---------------+-------------------------+
|         5 | Ekta Singh    | ekta1234@gmail.com.com |
|         6 | Aakash Sharma | Aakash1234@gmail.com    |
|         7 | Naki          | naki1234@gmail.com      |
+-----------+---------------+-------------------------+
3 rows in set (0.01 sec)

mysql> select * from author;
+-----------+---------------+-------------------------+
| author_id | name          | email                   |
+-----------+---------------+-------------------------+
|         5 | Ekta Singh    | ekta1234@gmail.com.com |
|         6 | Aakash Sharma | Aakash1234@gmail.com    |
|         7 | Naki          | naki1234@gmail.com      |
|         8 | Akansha       | akansha1234@gmail.com   |
+-----------+---------------+-------------------------+
4 rows in set (0.00 sec)

mysql>
```