

IWP LAB 11**QUESTION 1**

Find the smallest and largest in an array

CODE

```
package iwpLab;

import java.io.*;

public class SmallAndLarge {

    void smallestAndLargest() throws IOException {

        int numArray[]; numArray = new int[20];

        int smallest = 9999; int large = -9999; int num;

        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));

        System.out.println("Enter the no of elements in the array : ");

        int n = Integer.parseInt(br.readLine());

        System.out.println("Enter the elements of the array : ");

        for(int i = 0; i < n; i++) {

            num = Integer.parseInt(br.readLine()); numArray[i] = num;

            if (num > large)

                large = num;

            if(num < smallest)

                smallest = num;

        }

        System.out.println("The array elements are : ");

        for(int i = 0; i < n; i++)

            System.out.print(numArray[i] + " ");

        System.out.println("\n");

        System.out.println("The largest is : " + large);

        System.out.println("Smallest no is : " + smallest);

    }

    public static void main(String[] args) throws Exception {

        SmallAndLarge obj = new SmallAndLarge();

        obj.smallestAndLargest();

    }

}
```

OUTPUT

```

iwpLab.SmallAndLarge > smallestAndLargest > for (int i = 0; i < n; i++) >
Output - iwpLab (run) X
run:
Enter the no of elements in the array :
8
Enter the elements of the array :
20
12
68
39
76
23
90
-21
The array elements are :
20 12 68 39 76 23 90 -21

The largest is : 90
Smallest no is : -21
BUILD SUCCESSFUL (total time: 25 seconds)

```

QUESTION 2

Find and print the numbers from an array whether it is an odd /even.

CODE

```

package iwpLab;

import java.io.*;

public class EvenAndOdd {

    void printOddEven() throws IOException {

        System.out.println("No of elements in the array : ");

        InputStreamReader r = new InputStreamReader(System.in);

        BufferedReader br=new BufferedReader(r);

        int n = Integer.parseInt(br.readLine());

        int[] numArray; numArray = new int[n];

        int element;

        System.out.println("Enter the array elements : ");

        for(int i = 0; i < n; i++) {

            element = Integer.parseInt(br.readLine());

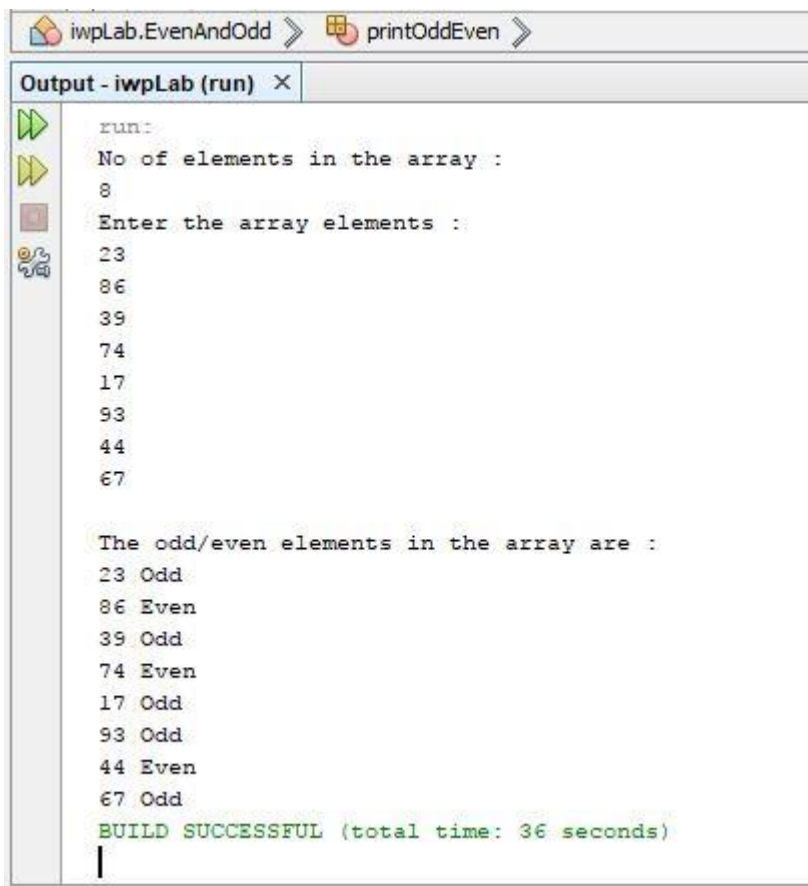
            numArray[i] = element;

        }
    }
}

```

```
System.out.println("\nThe odd/even elements in the array are :");  
for(int i=0;i<n;i++) {  
    if((numArray[i] % 2) == 0)  
        System.out.println(numArray[i] + " Even");  
    else  
        System.out.println(numArray[i] + " Odd");  
}  
}  
  
public static void main(String[] args) throws IOException {  
    EvenAndOdd obj = new EvenAndOdd();  
    obj.printOddEven();  
}  
}
```

OUTPUT



```
run:  
No of elements in the array :  
8  
Enter the array elements :  
23  
86  
39  
74  
17  
93  
44  
67  
  
The odd/even elements in the array are :  
23 Odd  
86 Even  
39 Odd  
74 Even  
17 Odd  
93 Odd  
44 Even  
67 Odd  
BUILD SUCCESSFUL (total time: 36 seconds)
```

QUESTION 3

Find the simple subtraction of two matrices.

CODE

```
package iwpLab;

import java.io.*;

public class Matrix {

    void matrixSubtract() throws IOException {

        InputStreamReader r=new InputStreamReader(System.in);

        BufferedReader br = new BufferedReader(r);

        int rows; int columns;

        System.out.println("Number of rows in matrices : ");

        rows = Integer.parseInt(br.readLine());

        System.out.println("Number of columns in matrices : ");

        columns = Integer.parseInt(br.readLine());

        int[][] numArray1; numArray1 = new int[rows][columns];

        int[][] numArray2; numArray2 = new int[rows][columns];

        int element; int i, j;

        System.out.println("\nEnter MATRIX 1 elements : ");

        for(i = 0; i < rows; i++) {

            for(j = 0; j < columns; j++) {

                element = Integer.parseInt(br.readLine());

                numArray1[i][j] = element;

            }

        }

        System.out.println("\nEnter MATRIX 2 elements : ");

        for(i = 0; i < rows; i++) {

            for(j = 0; j < columns; j++) {

                element = Integer.parseInt(br.readLine());

                numArray2[i][j] = element;

            }

        }

        System.out.println("\nResult of Matrix 1 - Matrix 2 : ");

        for(i = 0; i < rows; i++) {
```

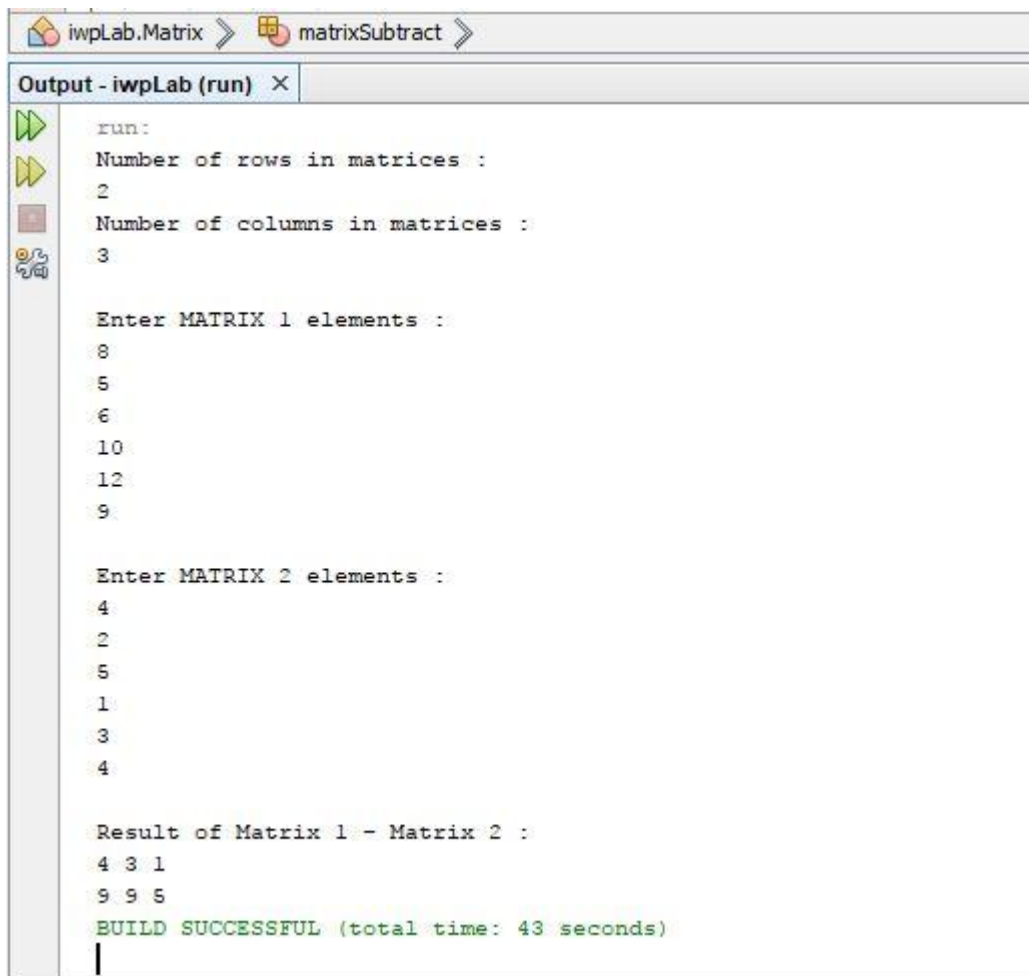
```

    for(j = 0; j < columns; j++) {
        System.out.print(numArray1[i][j]-numArray2[i][j]+" ");
    }
    System.out.print("\n");
}
}

public static void main(String[] args) throws IOException {
    Matrix obj = new Matrix();
    obj.matrixSubtract();
}
}

```

OUTPUT



The screenshot shows an IDE window with two tabs: 'iwpLab.Matrix' and 'matrixSubtract'. The 'Output - iwpLab (run)' window is active, displaying the following text:

```

run:
Number of rows in matrices :
2
Number of columns in matrices :
3

Enter MATRIX 1 elements :
8
5
6
10
12
9

Enter MATRIX 2 elements :
4
2
5
1
3
4

Result of Matrix 1 - Matrix 2 :
4 3 1
9 9 5
BUILD SUCCESSFUL (total time: 43 seconds)

```

QUESTION 4

Calculate area of a rectangle class with member variables and member functions using Java. Get the inputs from the user at run time.

CODE

```
package iwpLab;

import java.io.*;

public class RectangleArea {

    void findArea() throws IOException
    {
        double length;

        double breadth;

        double area;

        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));

        System.out.println("Enter the length of the rectangle : ");

        length = Double.parseDouble(br.readLine());

        System.out.println("Enter the breadth of the rectangle : ");

        breadth = Double.parseDouble(br.readLine());

        area = length*breadth;

        System.out.println("The area of the rectangle is : " + area);

    }

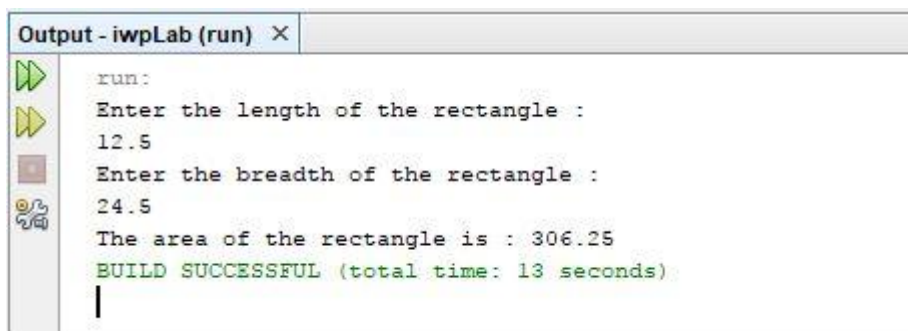
    public static void main(String[] args) throws Exception {

        RectangleArea obj = new RectangleArea();

        obj.findArea();

    }

}
```

OUTPUT

```
Output - iwpLab (run) X
run:
Enter the length of the rectangle :
12.5
Enter the breadth of the rectangle :
24.5
The area of the rectangle is : 306.25
BUILD SUCCESSFUL (total time: 13 seconds)
```

QUESTION 5

Using inheritance, calculate the netpay using Java. The base class called 'addon' has a member data as 'bonus'. Create a class 'employee' that inherits 'addon' along with the following fields: Name, Id, salary and Total pay as member function.

CODE**Base class : "AddOn"**

```
package iwpLab;

import java.io.*;

import java.io.IOException;

public class AddOn {

    double bonus;

    void setBonus() throws IOException {

        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));

        System.out.println("Enter the bonus for the employee : ");

        bonus = Double.parseDouble(br.readLine());

    }

    public static void main(String[] args) throws Exception {

        AddOn obj = new AddOn();

        obj.setBonus();

    }

}
```

Derived class : "Employee"

```
package iwpLab;

import java.io.*;

public class Employee extends AddOn{

    public void displayEmpInfo() throws IOException {

        String name;

        int id;

        double salary;

        double totalSalary;

        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));

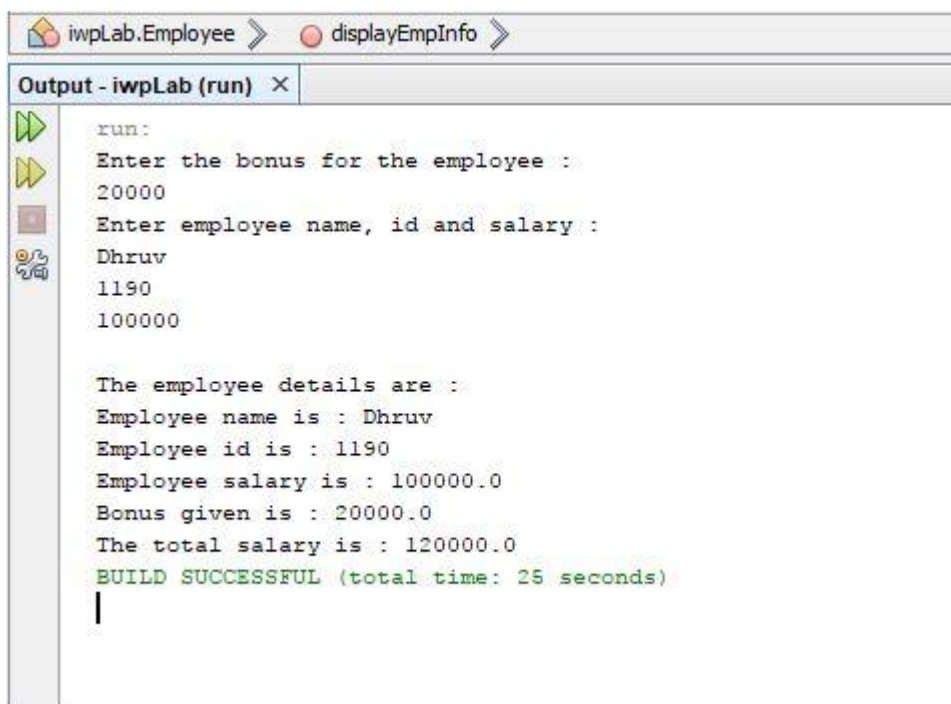
        System.out.println("Enter employee name, id and salary : ");

    }

}
```

```
name = br.readLine();
id = Integer.parseInt(br.readLine());
salary = Double.parseDouble(br.readLine());
totalSalary = salary + bonus;
System.out.println("\nThe employee details are : ");
System.out.println("Employee name is : " + name);
System.out.println("Employee id is : " + id);
System.out.println("Employee salary is : " + salary);
System.out.println("Bonus given is : " + bonus);
System.out.println("The total salary is : " + totalSalary);
}
public static void main(String[] args) throws Exception {
    Employee obj = new Employee();
    obj.setBonus();
    obj.displayEmpInfo();
}
}
```

OUTPUT



```
run:
Enter the bonus for the employee :
20000
Enter employee name, id and salary :
Dhruv
1190
100000

The employee details are :
Employee name is : Dhruv
Employee id is : 1190
Employee salary is : 100000.0
Bonus given is : 20000.0
The total salary is : 120000.0
BUILD SUCCESSFUL (total time: 25 seconds)
```