

<b>Ex. No. 2</b>	<b>Implementation of Arrays</b>
<b>Date of Exercise</b>	01-12-2017

## Aim:

To develop Java programs for the following problems:

1. Write a Java program to print summation of odd numbers and even numbers in an array.
2. Write a Java program to merge two arrays into third array.

Note:

Declare three one dimensional array.

Get input for first two arrays from user.

Use any loop (for/while) to merge first two arrays into third array.

3. Write a java program to sort the array and find second minimum and second maximum value in an array.
4. Write a java program to find common elements between two arrays.
5. Write a java program to sum of diagonal of matrix (multidimensional array).

## Algorithm:

### 1.To print summation of odd numbers and even numbers in an array.

- 1) Start.
- 2) Declare three integer variables i, sumev=0 and sumod=0.Also declare an integer array.
- 3) Get the array elements from the user using scanner class.
- 4) Initialize a for loop which starts from i = 0 till i < 5.
- 5) Inside the loop, using if check whether a[i] % 2==0, if it is so add that number to sumev, else add it to sumod.
- 6) Display the result.
- 7) End.

### Source Code:

```
package exp2;

import java.util.Scanner;

public class arrsum {

    public static void main(String[] args) {

        int i;

        int sumev=0;

        int sumod=0;

        int a[]=new int[5];

        Scanner s=new Scanner(System.in);

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

        for(i=0;i<5;i++){

            a[i]=s.nextInt();

        }

        System.out.println();

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

        for(i=0;i<5;i++){

            System.out.print(a[i]);

            System.out.print(" ");

        }

        System.out.println();

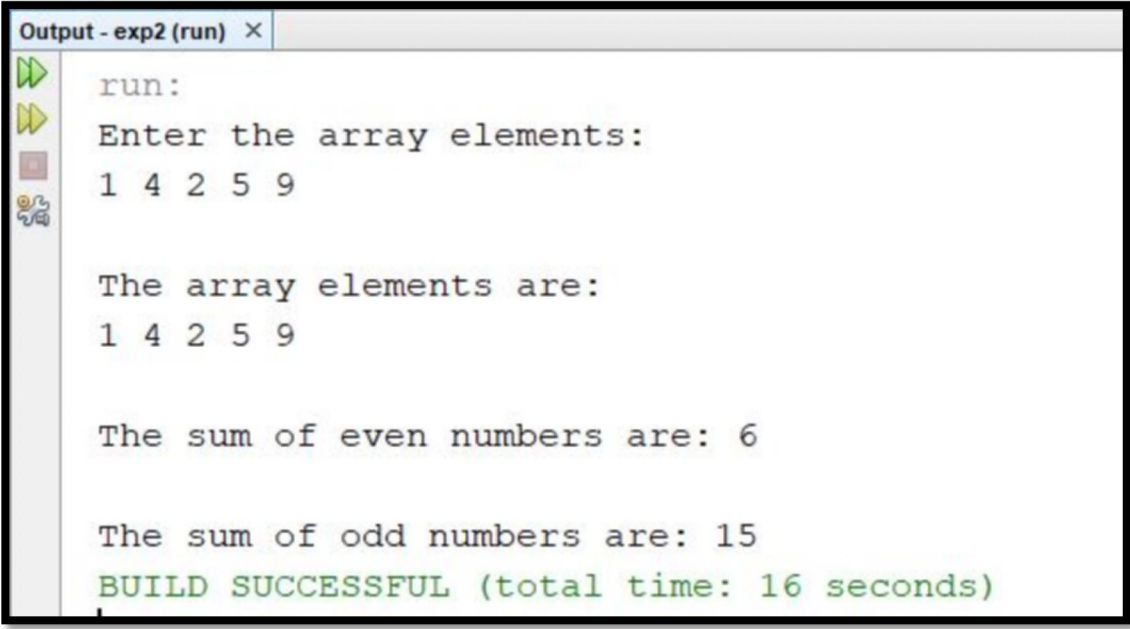
        for(i=0;i<5;i++)

        {

            if(a[i]%2==0)
```

```
        sumev+=a[i];  
    else  
        sumod+=a[i];  
    }  
    System.out.println();  
    System.out.println("The sum of even numbers are: "+sumev);  
    System.out.println();  
    System.out.println("The sum of odd numbers are: "+sumod);  
    }  
}
```

### Input & Output:



```
Output - exp2 (run) ×  
run:  
Enter the array elements:  
1 4 2 5 9  
  
The array elements are:  
1 4 2 5 9  
  
The sum of even numbers are: 6  
  
The sum of odd numbers are: 15  
BUILD SUCCESSFUL (total time: 16 seconds)
```

## Algorithm:

### 2.To merge two arrays into third array.

- 1) Start.
- 2) Read two arrays from the user and third array to display the merged array.
- 3) Initialize two for loops and pass the values to the third array.
- 4) Display the result.
- 5) End.

## Source Code:

```
package exp2;

import java.util.Scanner;

public class mergearr {

    public static void main(String args[]){

        int i;

        int a[]=new int[5];

        int b[]=new int[5];

        int c[]=new int[10];

        Scanner s=new Scanner(System.in);

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

        for(i=0;i<5;i++)

        {

            a[i]=s.nextInt();

        }

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

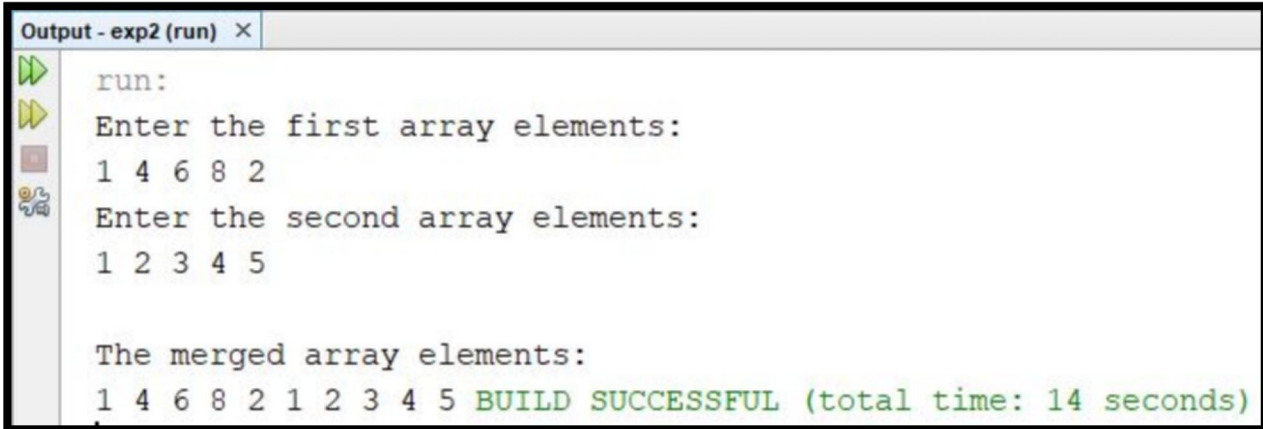
        for(i=0;i<5;i++){

            b[i]=s.nextInt(); }

        System.out.println();
```

```
for(i=0;i<5;i++){  
    c[i]=a[i];}  
  
int j;  
  
for(j=0,i=5;i<10;j++,i++){  
    if(j==5)  
        break;  
    c[i]=b[j];}  
  
System.out.println("The merged array elements: ");  
  
for(i=0;i<10;i++){  
    System.out.print(c[i]);  
    System.out.print(" ");  
}}}
```

### Input & Output:



```
Output - exp2 (run) x  
run:  
Enter the first array elements:  
1 4 6 8 2  
Enter the second array elements:  
1 2 3 4 5  
  
The merged array elements:  
1 4 6 8 2 1 2 3 4 5 BUILD SUCCESSFUL (total time: 14 seconds)
```

## Algorithm:

### 3.To sort the array and find second minimum and second maximum value in an array.

- 1) Start.
- 2) Declare an array and get the array elements from the user. Initialize a variable count=0.
- 3) Initialize a for loop from i=0 till i<5 and another for loop from j=1 till j<5.
- 4) Inside the loop check if a[i] > a[j], if it is so swap a[i] and a[j].
- 5) Display the sorted elements.
- 6) To display the second minimum print a[3] and for second maximum value print a[1].
- 7) End.

## Source Code:

```
package exp2;

import java.util.Scanner;

public class sortarr {

    public static void main(String[] args) {

        int temp;

        int i, j;

        int a[]=new int[5];

        Scanner s=new Scanner(System.in);

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

        for(i=0;i<5;i++){

            a[i]=s.nextInt();

        }

        System.out.println();

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

        for(i=0;i<5;i++)

        {

            System.out.print(a[i]);
```

```
        System.out.print(" ");
    }

    System.out.println();

    int count=0;
    for(i=0; i<5; i++)
    {
        for(j=i; j<5; j++)
        {
            if(a[i] > a[j])
            {
                temp=a[i];
                a[i]=a[j];
                a[j]=temp;
            }
        }
    }

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

    for(i=0;i<5;i++)
    {
        System.out.print(a[i]);

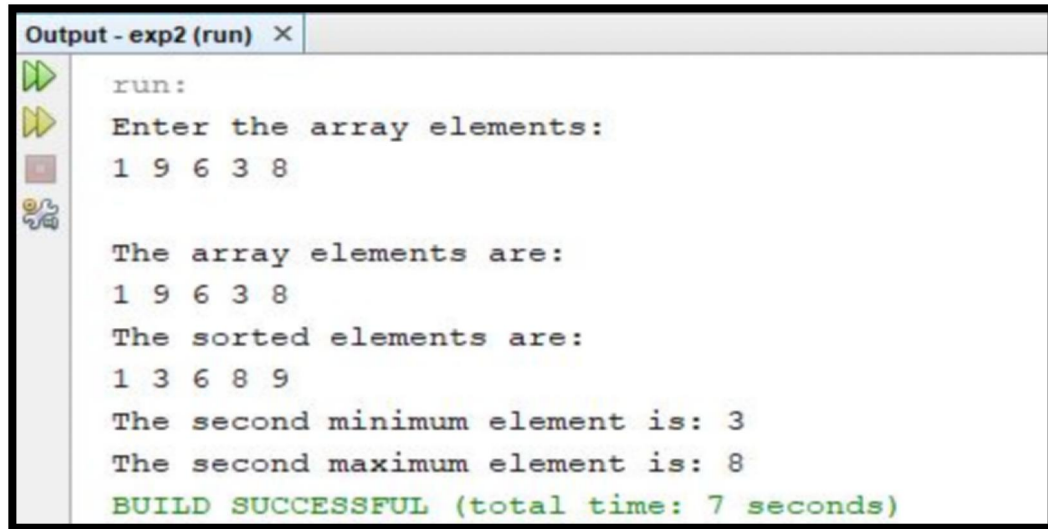
        System.out.print(" ");
    }

    System.out.println();

    System.out.println("The second minimum element is: "+a[1]);
    System.out.println("The second maximum element is: "+a[3]);
}
```

}

### Input & Output:



The screenshot shows a Java IDE output window titled "Output - exp2 (run) x". The output text is as follows:

```
run:
Enter the array elements:
1 9 6 3 8

The array elements are:
1 9 6 3 8
The sorted elements are:
1 3 6 8 9
The second minimum element is: 3
The second maximum element is: 8
BUILD SUCCESSFUL (total time: 7 seconds)
```



## Algorithm:

### 4.To to find common elements between two arrays.

- 1) Start.
- 2) Initialize two arrays and get the input from the user. Declare a variable cnt and initialize it as 0.
- 3) Initialize two for loops from i=0,j=0 till i<5,j<5.
- 4) Inside the loop, check if a[i]=b[j],if so increment cnt and display the element.
- 5) Then check if cnt==0, if it is so display “No common elements found”.
- 6) End.

## Source Code:

```
package exp2;

import java.util.Scanner;

public class commonarr {

    public static void main(String[] args) {

        int i, j;

        int a[]=new int[5];

        int b[]=new int[5];

        Scanner s=new Scanner(System.in);

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

        for(i=0;i<5;i++)

        {

            a[i]=s.nextInt();

        }

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

        for(i=0;i<5;i++)

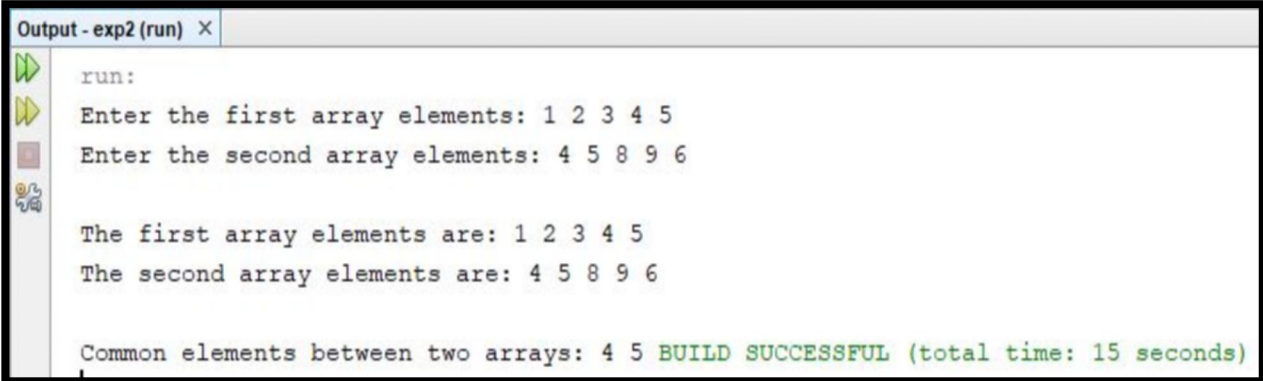
        {

            b[i]=s.nextInt();
```

```
}  
  
System.out.println("");  
  
System.out.print("The first array elements are: ");  
for(i=0;i<5;i++)  
{  
    System.out.print(a[i]);  
    System.out.print(" ");  
}  
  
System.out.println("");  
  
System.out.print("The second array elements are: ");  
for(i=0;i<5;i++)  
{  
    System.out.print(b[i]);  
    System.out.print(" ");  
}  
  
System.out.println();  
  
System.out.println("");  
  
int cnt=0;  
  
System.out.print("Common elements between two arrays: ");  
for(i=0;i<5;i++)  
{  
    for(j=0;j<5;j++)  
    {  
        if(a[i]==b[j])  
        {
```

```
        cnt++;  
  
        System.out.print(a[i]);  
  
        System.out.print(" ");  
  
    }  
  
}  
  
}  
  
if(cnt==0)  
    System.out.println("Not Found!!!");  
  
}
```

### Input & Output:



```
Output - exp2 (run) x  
run:  
Enter the first array elements: 1 2 3 4 5  
Enter the second array elements: 4 5 8 9 6  
  
The first array elements are: 1 2 3 4 5  
The second array elements are: 4 5 8 9 6  
  
Common elements between two arrays: 4 5 BUILD SUCCESSFUL (total time: 15 seconds)
```

### Algorithm:

#### 5.To find the sum of diagonal of matrix (multidimensional array).

- 1) Start.
- 2) Initialize two-dimensional array and get the number of rows and column from the user.
- 3) Get the array elements from the user.
- 4) Initialize two variables sum1=0 and sum2=0, initialize a for loop j=0 till j<a.length and calculate the sum1 as sum1 +=a[j][j].
- 5) Now, initialize k=a.length-1, then initialize another for loop from j=0 till j<a.length and if k>=0 calculate sum2 as sum2 +=a[j][k], then decrement k inside the loop.
- 6) Display the result as sum1 and sum2.
- 7) End.

### Source Code:

```
package exp2;

import java.util.Scanner;

public class diagsum {

    public static void main(String args[]){

        Scanner scanner = new Scanner (System.in);

        int rows;

        int columns;

        System.out.print("Enter number of rows: ");

        rows = scanner.nextInt();

        System.out.print("Now enter the number of columns: ");

        columns = scanner.nextInt();

        System.out.println("");

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

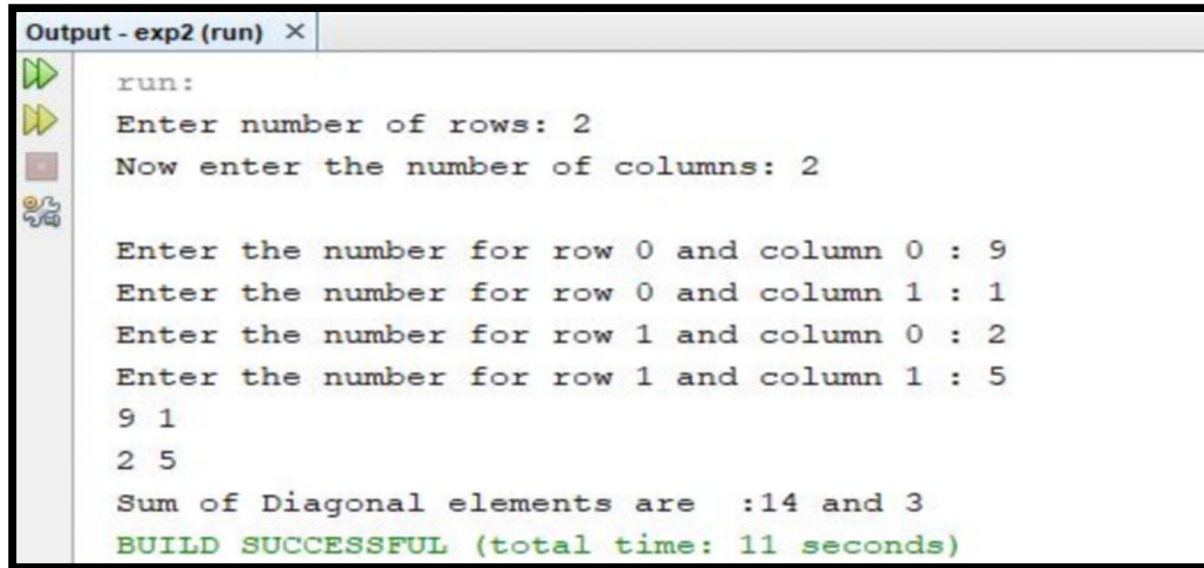
        for (int i = 0; i < rows; i++) {

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

                System.out.print("Enter the number for row " + i + " and column " + j + " : ");
```

```
        a[i][j] = scanner.nextInt();
    }}
    int k=0;
    int j=0;
    int sum1=0,sum2=0;
    for(j=0; j < a.length; j++){
        for(k=0; k < a.length; k++){
            System.out.print(a[j][k] + " ");
            System.out.println();
        }
        for(j=0; j<a.length; j++) {
            sum1=sum1+a[j][j];
        }
        k=a.length-1;
        for(j=0; j<a.length; j++) {
            if(k>=0){
                sum2=sum2+a[j][k];
                k--;
            }
        }
        System.out.println("Sum of Diagonal elements are : " +sum1+ " and "+sum2);
    }
}
```

### Input & Output:

A screenshot of a Java IDE's output window titled "Output - exp2 (run) x". The window contains the following text: "run:", "Enter number of rows: 2", "Now enter the number of columns: 2", "Enter the number for row 0 and column 0 : 9", "Enter the number for row 0 and column 1 : 1", "Enter the number for row 1 and column 0 : 2", "Enter the number for row 1 and column 1 : 5", "9 1", "2 5", "Sum of Diagonal elements are :14 and 3", and "BUILD SUCCESSFUL (total time: 11 seconds)".

```
run:
Enter number of rows: 2
Now enter the number of columns: 2

Enter the number for row 0 and column 0 : 9
Enter the number for row 0 and column 1 : 1
Enter the number for row 1 and column 0 : 2
Enter the number for row 1 and column 1 : 5
9 1
2 5
Sum of Diagonal elements are :14 and 3
BUILD SUCCESSFUL (total time: 11 seconds)
```

### Video URL:

<https://www.youtube.com/watch?v=3mJr1CwWSOs&feature=youtu.be>

### Result:

The program to do the implement array programs is implemented successfully and the output is verified.