

Q3) WAP to print the array elements in reverse order. (user input)

```
int []arr = new int[5];

    0    1    2    3    4
arr ——— 

|              |   |   |   |   |
|--------------|---|---|---|---|
| <del>0</del> | 0 | 0 | 0 | 0 |
|--------------|---|---|---|---|



package com.ravi.basic;

import java.util.Arrays;
import java.util.InputMismatchException;
import java.util.Scanner;

//print the array elements in reverse order.(user input)

public class ArrayEx3
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        try(sc)
        {
            System.out.print("Enter the size of the array :");
            int size = sc.nextInt();

            int []arr = new int[size];

            //Initialize the array element
            for(int i=0; i<arr.length; i++) // i=0; i<5; i++
            {
                System.out.print("Enter the element of array at "+i+" position :");
                arr[i] = sc.nextInt();
            }

            //Printing the original Array data
            System.out.println("Original Array Data :");
            System.out.println(Arrays.toString(arr));

            System.out.println("Array Data in reverse Order :");

            for(int i=arr.length-1; i>=0; i--)
            {
                System.out.println(arr[i]);
            }
        }
        catch(InputMismatchException e)
        {
            System.err.println("Input is Invalid");
        }
        catch(NegativeArraySizeException e)
        {
            System.err.println("Array size must be a positive integer");
        }
        catch(Exception e)
        {
            System.err.println("General Exception");
        }
    }
}
```

Q4) WAP to find the the sum of all elements of the array.

```
package com.ravi.basic;

//WAP to find the the sum of all elements of the array.

public class ArrayEx4
{
    public static void main(String[] args)
    {
        int []arr = {10,20,30,40,50};

        int sum = 0;

        for(int x : arr)
        {
            sum = sum + x;
        }

        System.out.println("Sum is :"+sum);
    }
}
```

Q5) WAP to calculate the student marks and find out the average.

```
package com.ravi.basic;

import java.util.InputMismatchException;
import java.util.Scanner;

public class ArrayEx5
{
    public static void main(String [] args)
    {
        Scanner sc = new Scanner(System.in);
        try(sc)
        {
            System.out.print("How Many Subjects: ");
            int noOfSubject = sc.nextInt(); //5

            int []marks = new int[noOfSubject];

            //Initialize the array variable
            for(int i=0; i<marks.length; i++)
            {
                System.out.print("Enter Marks :");
                marks[i] = sc.nextInt();
            }

            //Adding the marks of the Student
            int total = 0;

            for(int x : marks)
                total = total + x;

            System.out.println("The total Marks is :"+total);

            double average = total/noOfSubject;

            System.out.println("Average is :"+average);
        }
        catch(InputMismatchException e)
        {
            e.printStackTrace();
        }
        catch(Exception e)
        {
            e.printStackTrace();
        }
    }
}
```

Q6) WAP to find the minimum element in the Array (Stream also)

```
package com.ravi.basic;

import java.util.InputMismatchException;
import java.util.Scanner;

//find the minimum element in the Array

class FindMinimum
{
    public static void minValue(int []arr) // 9 7 5 2
    {
        int min = arr[0]; //min = 2

        for(int i=1; i<arr.length; i++)
        {
            if(min > arr[i]) //5 > 2
            {
                min = arr[i];
            }
        }
        System.out.println("Minimum value of the array is :"+min);
    }
}

public class ArrayEx6
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        try(sc)
        {
            System.out.print("Enter the size of the array :");
            int size = sc.nextInt();

            int []arr = new int[size];

            //Initialize the array element
            for(int i=0; i<size; i++)
            {
                System.out.print("Enter the element of array at "+i+" position :");
                arr[i] = sc.nextInt();
            }

            FindMinimum.minValue(arr);
        }
        catch(NegativeArraySizeException e)
        {
            System.err.println("Array size must be positive integer :");
        }
        catch(InputMismatchException e)
        {
            System.err.println("Input is Invalid :");
        }
    }
}
```

Q7) WAP to find the maximum element in the Array.

```
package com.ravi.basic;

import java.util.InputMismatchException;
import java.util.Scanner;

//find the maximum element in the Array.
class FindMax
{
    public static void maxValue(int arr[])
    {
        int max = arr[0];

        for(int i=1; i<arr.length; i++)
        {
            if(max < arr[i])
            {
                max = arr[i];
            }
        }
        System.out.println("Maximum element in the array is :"+max);
    }
}

public class ArrayEx7
{
    public static void main(String args[])
    {
        int []val = null;
        Scanner sc = new Scanner(System.in);
        try(sc)
        {
            System.out.print("How Many Values you want :");

            int n = sc.nextInt(); // n=5
            val = new int[n];

            //Initializing the array variable
            for(int i=0; i<n; i++)
            {
                System.out.print("Enter Value of an array at "+i+" position :");
                val[i] = sc.nextInt();
            }
        }
        catch(InputMismatchException e)
        {
            System.err.println("Input is not in a proper format");
        }
        catch(Exception e)
        {
            e.printStackTrace();
        }
        FindMax.maxValue(val);
    }
}
```

Q8) WAP to modify the value of an array.[Change Array Element]

val

arr

modifyArray

0	1	2	3	4
0	0	0	0	0
100	200	30	40	50

```
package com.ravi.basic;

import java.util.Arrays;
import java.util.InputMismatchException;
import java.util.Scanner;

class ChangeArrayElement
{
    public static int[] modifyArray(int []arr)
    {
        arr[0] = 100;
        arr[1] = 200;

        return arr;
    }
}

public class ArrayEx8
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        try(sc)
        {
            System.out.print("Enter the size of the array :");
            int size = sc.nextInt();

            int []val = new int[size];

            //Initialize the array element
            for(int i=0; i<val.length; i++)
            {
                System.out.print("Enter the element of array at "+i+" position :");
                val[i] = sc.nextInt();
            }

            //Printing the original Array data
            System.out.println("Original Array Data :");
            System.out.println(Arrays.toString(val));

            int[] modifyArray = ChangeArrayElement.modifyArray(val);
            System.out.println("Modified Array Data :");
            System.out.println(Arrays.toString(modifyArray));


            System.out.println("Printing again Original Array Data :");
            System.out.println(Arrays.toString(val));
        }
        catch(InputMismatchException e)
        {
            System.err.println("Input is Invalid");
        }
        catch(NegativeArraySizeException e)
        {
            System.err.println("Array size must be a positive integer");
        }
        catch(Exception e)
        {
            System.err.println("General Exception");
        }
    }
}
```

Note : From the above program, It is clear that Arrays are created in HEAP MEMORY and If we modify the array element then Original object will be modified.

Q9) WAP to create Customer array to hold multiple customer Object(Manual insertion)

Customer cust[] = new Customer[4];

cust

0	1	2	3
			
[444 Scott]	[333 Zuber]	[222 Aryan]	[111 Raj]

Here we have 4 customer objects.

```
package com.ravi.basic;

//Create Customer array to hold multiple customer Object(Manual insertion)

record Customer(Integer id, String name)
{
}

public class ArrayEx9
{
    public static void main(String[] args)
    {
        Customer customers[] = new Customer[4];

        customers[0] = new Customer(444, "Scott");
        customers[1] = new Customer(333, "Zuber");
        customers[2] = new Customer(222, "Aryan");
        customers[3] = new Customer(111, "Raj");

        System.out.println("Retrieving the Customer Object :");

        for(Customer customer : customers)
        {
            System.out.println(customer);
        }
    }
}
```