Array Related Problem Solving Solution

1.   Write a Java Programme To Find the Sum

Input:

```java
class Array {
   public static void main(String[] args) {

      int [] number = new int [5];

      number [0] = 10;
      number [1] = 20;
      number [2] = 30;
      number [3] = 40;
      number [4] = 50;

      int sum = number [0] + number [1] +  number [2]  + number [3] +
      number [4] ;


    System.out.println("sum ="+sum) ;

    int len = number.length;


    System.out.println("Array = "+len);


   }
}
```

Output:

```
java -cp /tmp/gYDPrUseHp/Array
sum =150
Array = 5

=== Code Execution Successful ===
```

2. Write a Java Programme To Find the Sum & Average.

Input:

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

     Scanner input = new Scanner(System.in);

     double [] number = new double [5];
     double sum = 0;

    System.out.println("Enter any Five Number : ") ;

     for (int i =0 ; i < number.length ; i++){
        number [i] =  input.nextDouble();
     }
        for (int i =0 ; i < number.length ; i++){
          sum = sum + number [i];

        }

        System.out.println("sum ="+sum) ;
        double avg = sum / 5;
        System.out.println("Average :"+avg);


   }
}
```

Output:

```
Output

java -cp /tmp/yBPbtNJWEw/Array
Enter any Five Number :
23 24 25 26 27 28
sum =125.0
Average :25.0

=== Code Execution Successful ===
```

3.Write a Java Programme To Find Maximum & Minimum Vaule.
Input:
import java.util.Scanner;
class Array {
   public static void main(String[] args) {

      Scanner input = new Scanner(System.in);

      double [] number = new double [5];
      double sum = 0;

    System.out.println("Enter any Five Number : ") ;

    for (int i =0 ; i < number.length ; i++){
       number [i] = input.nextDouble();
    }
       for (int i =0 ; i < number.length ; i++){
         sum = sum + number [i];

      }

        System.out.println("sum ="+sum) ;
        double avg = sum / 5;
        System.out.println("Average :"+avg);

        double max = number [0];
        double min = number [0];

```java
        for (int i =1; i < 5 ; i++){


        if (max<number[i]){

           max = number[i];
        }

        if (min<number[i]){
           min = number[i];

        }


        System.out.println("Maximum :"+max);
        System.out.println("Minimum :"+min);

        }

    }
}
```

Output:
```
java -cp /tmp/YH4ZDKNOUn/Array
Enter any Five Number :
23 24 25 26 27 28
sum =125.0
Average :25.0
Maximum :24.0
Minimum :24.0
Maximum :25.0
Minimum :25.0
Maximum :26.0
Minimum :26.0
Maximum :27.0
Minimum :27.0

=== Code Execution Successful ===
```

4.Write a Java Programme to find the each loop.

Input:

```java
class Array {
    public static void main(String[] args) {

        int[] num = {10,20,30,40,50,60,70,80.90,100};
        int sum = 0 ;

        for (int x:num){
            sum = sum + x;
        }
        System.out.println(sum);


    }
```

}

Output:

5.Write a Java Programme to find the working day.

```java
import java.util.Scanner;

/*
 * Assigment 18 (Print the day name)
 * declare an array of weekdays
 * User will give a day number you have to print the equivalent day name
 *
 * Example 1
 * input-> Enter day number (1-7) : 1
 * output-> Monday
 *
 * Example 2
 * input-> Enter day number (1-7) : 3
 * output-> Wednesday
 */

public class Assignment18 {
    public static void main(String[] args) {

        try (Scanner input = new Scanner(System.in)) {


        }
    }
}
```

Input:
```java
import java.util.Scanner;
class array{
public static void main(String[] args) {
    int[] num = new int[7];

    Scanner input = new Scanner(System.in);

    for (int i = 0; i < num.length; i++) {
        System.out.print("Enter day number (1-7): ");
        num[i] = input.nextInt();

        if (num[i] == 1) {
            System.out.println("Monday");
        } else if (num[i] == 2) {
            System.out.println("Tuesday");
        } else if (num[i] == 3) {
            System.out.println("Wednesday");
        } else if (num[i] == 4) {
            System.out.println("Thursday");
        } else if (num[i] == 5) {
            System.out.println("Friday");
        } else if (num[i] == 6) {
            System.out.println("Saturday");
        } else if (num[i] == 7) {
            System.out.println("Sunday");
        } else {
            System.out.println("Invalid day number. Please enter a number between 1 and 7.");
            i--;  // Decrement i to re-enter the correct day number
        }
    }
}
}
```

Output:

6. Write a Java Programme 2D Array.
Input:

```java
class  Array {
   public static void main(String[] args) {

    int [] [] number =  new int [2] [3];

    number [0] [0] = 10;
    number [0] [1] = 20;
    number [0] [2] = 30;
    number [1] [0] = 40;
    number [1] [1] = 50;
    number [1] [2] = 60 ;
```

```java
        for (int row = 0; row<2; row++){
          for (int col =0 ; col < 3 ; col++){

          System.out.print(" "+number[row][col]);



          }

          System.out.println();



      }

    }
}
```

Output :

```
java -cp /tmp/eeVafuKLUb/Array
 10 20 30
 40 50 60

=== Code Execution Successful ===
```

7. Write a Java Programme Array Matrix.
Input:

```java
package basicjava;
import java.util.Scanner;
public class Array3 {

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

    int [] [] A = new int [2] [3];
    int [] [] B =  new int [2] [3];


     System.out.println("Enter elements for A matrix : " );
```

```java
for (int row =0 ;  row<2;  row++){

  for (int col =0; col<3; col++){

   System.out.printf("A [%d] [%d] = ",row,col);

  A [row][col] = input.nextInt();
}
}


   System.out.println("Enter elements for B matrix");


for (int row =0 ;  row<2;  row++){

  for (int col =0; col<3; col++){

   System.out.printf("B [%d] [%d] = " , row,col);

   B [row][col] = input.nextInt();

 }
}

  System.out.println("A = " );
 for (int row = 0 ; row <2 ; row++){
  for (int col = 0 ; col <3; col++){

   System.out.print(" " +A [row] [col]);

  }
  System.out.println();

 }


System.out.println("B = " );
```

```java
for (int row = 0 ; row <2 ; row++){
  for (int col = 0 ; col <3; col++){

   System.out.print(" " +B [row] [col]);


  }
  System.out.println();


 }


}


Output :
```

```
Enter elements for A matrix :
A [0] [0] = 11
A [0] [1] = 12
A [0] [2] = 13
A [1] [0] = 14
A [1] [1] = 15
A [1] [2] = 16
Enter elements for B matrix
B [0] [0] = 17
B [0] [1] = 18
B [0] [2] = 19
B [1] [0] = 20
B [1] [1] = 21
B [1] [2] = 22
A =
 11 12 13
 14 15 16
B =
 17 18 19
 20 21 22
```

8. Write a Java Programme to Addition Array Matrix.
Input :
package basicjava;
import java.util.Scanner;
public class Array3 {

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

```java
int [] [] A = new int [2] [3];
int [] [] B =  new int [2] [3];


System.out.println("Enter elements for A matrix : " );


for (int row =0 ;  row<2;  row++){

  for (int col =0; col<3; col++){

   System.out.printf("A [%d] [%d] = ",row,col);

  A [row][col] = input.nextInt();
}
}


   System.out.println("Enter elements for B matrix");


for (int row =0 ;  row<2;  row++){

  for (int col =0; col<3; col++){

   System.out.printf("B [%d] [%d] = " , row,col);

   B [row][col] = input.nextInt();

 }
}

  System.out.println("A = " );
  for (int row = 0 ; row <2 ; row++){
   for (int col = 0 ; col <3; col++){

   System.out.print(" " +A [row] [col]);

   }
   System.out.println();
```

```java
      }

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

      System.out.println("B = " );
       for (int row = 0 ; row <2 ; row++){
        for (int col = 0 ; col <3; col++){

        System.out.print(" " +B [row] [col]);

        }
        System.out.println();

       }

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

      System.out.print(" A+B = " );

      for (int row = 0 ; row <2 ; row++){
         for (int col = 0 ; col <3; col++){

          System.out.print("\t "+ A [row] [col] + B [row] [col] );

         }
       }
        System.out.println();

    }

}
```

Output:

```
Enter elements for A matrix :
A [0] [0] = 11
A [0] [1] = 12
A [0] [2] = 13
A [1] [0] = 14
A [1] [1] = 15
A [1] [2] = 16
Enter elements for B matrix
B [0] [0] = 17
B [0] [1] = 1
B [0] [2] = 12
B [1] [0] = 13
B [1] [1] = 12
B [1] [2] = 32
A =
  11 12 13
  14 15 16




B =
  17 1 12
  13 12 32




  A+B =    1117      121      1312      1413      1512      1632
BUILD SUCCESSFUL (total time: 25 seconds)
```

Sum of diagonal, upper and lower triangle elements

	col = 0	col = 1	col = 2
row = 0	1	2	3
row = 1	4	5	6
row = 2	7	8	9

Sum of diagonal elements = 1 + 5 + 9 = 15

Sum of upper triangle elements = 2 + 3 + 6 = 11

Sum of lower triangle elements = 4 + 7 + 8 = 19

9. Write a Java Programme to Diagonal Matrix.
Input:

```
package basicjava;

import java.util.Scanner;
public class Matrix {

    public static void main(String [] args){
        Scanner input =  new Scanner (System.in);
        int [] [] A = new int [3] [3];
        int sumofDiagonalElements = 0;
        int sumofUpperElements = 0;
        int sumoflowerElements = 0;

        for (int row =0 ;  row<3;  row++){

        for (int col =0; col<3; col++){
```

```java
            A [row][col] = input.nextInt();
               }
          }
        for (int row =0 ;  row<3;  row++){

        for (int col =0; col<3; col++){


           if (row==col)
           {

              sumofDiaogonalElements = sumofDiaogonalElements +  A[row] [col];


           }

           if(row<col)
           {
               sumofUpperElements = sumofUpperElements + A[row] [col];


           }

           if (row>col)
           {

              sumofLowerElements = sumoflowerElements + A[row] [col];



           }
           }

        }

    System.out.println("Sum        of        diaogonal        elements        : "+sumofDiaogonalElements);
    System.out.println("Sum of upper elements : "+sumofUpperElements);
    System.out.println("Sum of lower elements : "+sumofLowerElements);
```

}

}

Output:

```
run:
1 2 3
4 5 6
7 8 9
Sum of diagonal elements : 15
Sum of upper elements : 11
Sum of lower elements : 19
BUILD SUCCESSFUL (total time: 9 seconds)
```

10.   Write a Java Programme to find output programme Matrix.
Input:
```java
public class Matrix {
public static void main (String [] args ){

 int [] [] number =  new int [4] [5];

 int k = 0 ;

 for (int i  = 0; i<4; i++){

   for (int j =0; j<5; j++){

  number [i] [j] = k;
     k++;

   }

 }
```

```java
    for (int  i = 0; i<4; i++){

   for (int j =0; j<5; j++){

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

   }

   System.out.println();
    }
  }

}
```

Output:
```
java -cp /tmp/7WTDfM1txu/Matrix
 0 1 2 3 4
 5 6 7 8 9
 10 11 12 13 14
 15 16 17 18 19

=== Code Execution Successful ===
```

11.   Write a Java Programme to find output programme 1DMatrix.
Input:

```java
public class Matrix {

   public static void main(String [] args){

      int [] [] number  = new int [4] [];
      int k = 0;


      number [0] = new int [1];
      number [1] = new int [2];
      number [2] = new int [3];
      number [3] = new int [4];
```

```java
        for (int i = 0; i <4; i++){

          for (int j = 0; j<i+1; j++){

            number [i] [j] = k;
            k++;

          }


        for (int i = 0; i <4; i++){

          for (int j = 0; j<i+1; j++){

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

          }
          System.out.println();

      }
    }

  }
```

Output:

```
java -cp /tmp/zEnv9lFh2t/Matrix
0
1 2
3 4 5
6 7 8 9

=== Code Execution Successful ===
```

12.Write a Java Programme to find Ascending & Descending
Input:
```java
import java.util.Arrays;
public class Array {
    public static void main(String [] args){
      int [] number  = {1,2,3,4,-9,-6};
      Arrays.sort(number);
```

```java
    System.out.print("Ascending : ");
    for (int i = 0 ; i < 5 ; i++){

        System.out.print(" "+number[i]);
    }
    System.out.println();

    System.out.print("Descending : ");
    for (int i = 4 ; i>=4 ; i--){

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


    System.out.println();

    String[] names = {"Lubaba","Samira","Nafisa","Zafir"};

    Arrays.sort(names);
    for (int i =0; i < 4; i++){
        System.out.print(names[i] + " ");

    }
    System.out.println();

    for (int i =3 ; i>=0 ; i--){

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



}

}


    Output:
```

```
Ascending :   -9 -6 1 2 3
Descending :   3
Lubaba Nafisa Samira Zafir
Zafir Samira Nafisa Lubaba
=== Code Execution Successful ===
```

Array vs ArrayList

Array	ArrayList
1. Not Resizable	1. Resizable
2.for, for each loop	2. for each loop, iterator
3. Fast	3. Slow
4. array.length	4. array.size( )

12.   Write a Java Programme to find Array List.
Input:
import java.util.ArrayList;

public class Array {

   public static void main(String [] args){

   ArrayList<Integer> number = new ArrayList<Integer>();
    System.out.println("size = "+number.size());

   number.add(10);
   number.add(20);
   number.add(30);
   number.add(3,40);

   System.out.println("ArrayList contains :"+number);

```java
        System.out.println();
        System.out.println("size = "+number.size());

        number.remove(2);
        System.out.println("After removing Array of Index");



    }
}
```

Output:

```
size = 0
ArrayList contains :[10, 20, 30, 40]

size = 4
After removing Array of Index

=== Code Execution Successful ===
```

13.   Write a Java Programme to check aaray list of index.
Input:
import java.util.ArrayList;

public class Array {

    public static void main(String [] args){

    ArrayList<Integer> number = new ArrayList<Integer>();
     System.out.println("size = "+number.size());

    number.add(10);
    number.add(20);
    number.add(30);

```java
        number.add(3,40);


        System.out.println("ArrayList contains :"+number);
        System.out.println();
        System.out.println("size = "+number.size());

        boolean check = number.isEmpty();
        System.out.println("array list empty :"+check);


        boolean contain = number.contains(30);
        System.out.println("30 is in the list :"+contain);


        int pos = number.indexof(40);
        System.out.println("The index of 40 is : "+pos);

        number.set (3, 40);
        System.out.println("after setting : "+number);




    }
}
```

Output:

```
run:
size = 0
ArrayList contains : [10, 20, 30, 40]

size = 4
arraylist empty : false
30 is in the list : true
The index of 40 is : 3
after setting : [10, 20, 30, 50]
BUILD SUCCESSFUL (total time: 0 seconds)
```

Some methods related to ArrayList

3

- size( )
- add( )
- remove( )
- removeAll( )
- clear( )
- isEmpty( )
- contains( )

- indexOf()
- set()
- get()
- equals( )
- addAll( )

14.	Write a Java Programme to check Arraylist.
Input:

import java.util.ArrayList;

public class Array {

    public static void main(String [] args){

    ArrayList<Integer> number1 = new ArrayList<Integer>();
    ArrayList<Integer> number2 = new ArrayList<Integer>();
    ArrayList<Integer> number3 = new ArrayList<Integer>();
     number1.add(10);
     number1.add(20);
     number1.add(30);
     number1.add(40);

    System.out.println("Number 1 = "+number1);

```java
        number2.add(10);
        number2.add(20);
        number2.add(30);
        number2.add(40);

        System.out.println("Number 2 = "+number2);



        number3.addAll(number1);

        System.out.println("Number 3 = "+number3);


        boolean result = number1.equals(number2);
        System.out.println("number1 == number2 : "+result);


         result = number1.equals(number3);
        System.out.println("number1 == number3 : "+result);




    }
}
```

Output:

```
java -cp /tmp/e7613Zrr94/Array
Number 1  = [10, 20, 30, 40]
Number 2 = [10, 20, 30, 40]
Number 3 = [10, 20, 30, 40]
number1 == number2 : true
number1 == number3 : true

=== Code Execution Successful ===
```

15.   Write a Java Programme to check Sorting Array.
Input:
import java.util.ArrayList;

public class Array {

    public static void main(String [] args){

    ArrayList<Integer> number = new ArrayList<Integer>();

     number.add(10);
     number.add(-3);
     number.add(90);
     number.add(80);
     number.add(50);

    System.out.println("before sorting :"+number);

     System.out.println("after sorting :"+number);

}

}

Output:

```
before sorting  :[10, -3, 90, 80, 50]
after sorting   :[10, -3, 90, 80, 50]

=== Code Execution Successful ===
```