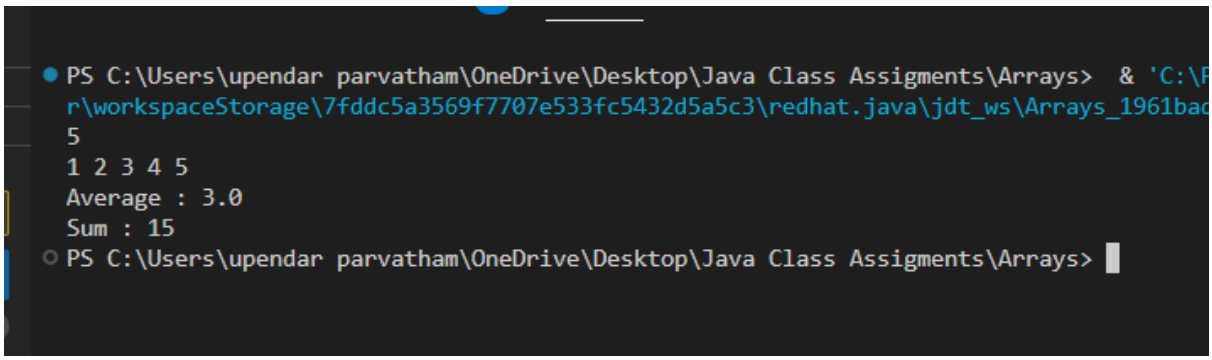
PARVATHAM RAM CHARAN

ASSIGNMENT 5

1. Program to find sum and avg. of array elements

```
import java.util.*;
public class Sum_Avg {
   public static void main(String[] args){
      Scanner scanner = new Scanner(System.in);
      int  n = scanner.nextInt();
      int[] arr  = new int[n];
      for(int i  =0 ; i < n;i++){
         arr[i]= scanner.nextInt();
      }
      int sum = 0;
      for(int i = 0 ;i < n ;i++){
         sum += arr[i];
      }
      double avg = sum/n;
      System.out.println("Average : "+avg);
      System.out.println("Sum : "+sum);
   }
}
```

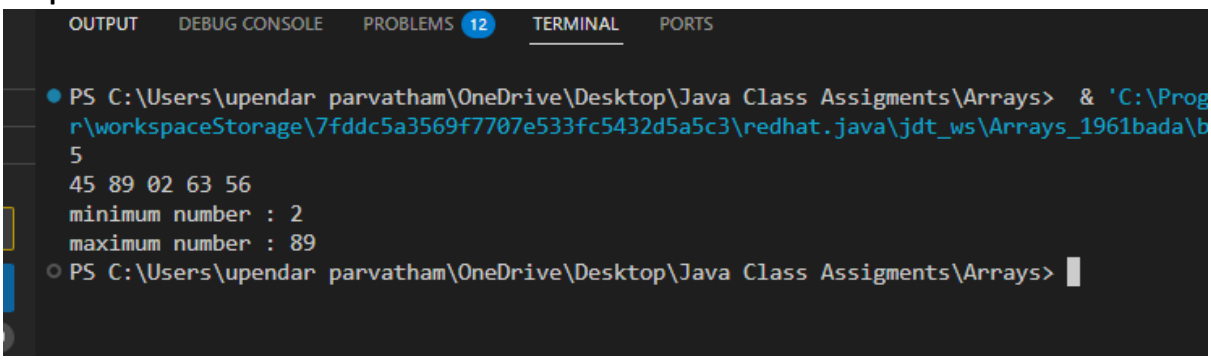
Output:



2. **Program to find min and max of array elements**

```
import java.util.*;
public class min_max {
   public static void main(String[] args){
      Scanner scanner = new Scanner(System.in);
      int n = scanner.nextInt();
      int[] arr  = new int[n];
      for(int i =0 ; i < n;i++){
         arr[i]= scanner.nextInt();
      }
      int min = Integer.MAX_VALUE;
      int max =Integer.MIN_VALUE;
      for(int i =0 ;i < n ;i++){
        if( arr[i] > max){
           max = arr[i];
        }
        if(arr[i] < min){
         min = arr[i];
        }
      }
      System.out.println("minimum number : "+min);
      System.out.println("maximum number : "+max);
   }
}
```

Output:

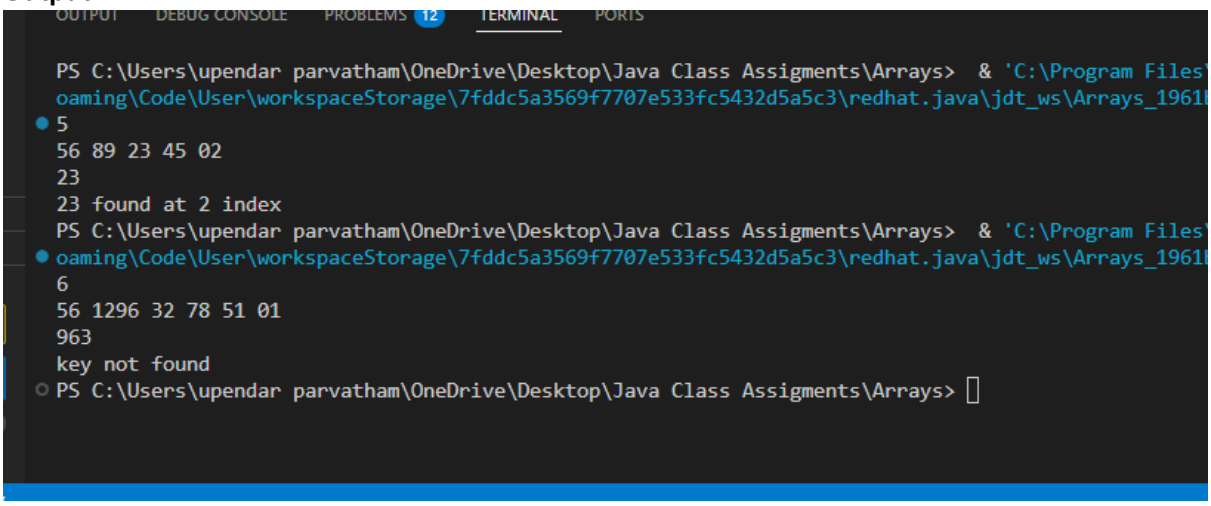


3. **Program to search an element in array**

```
import java.util.*;
public class search {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      int n = scanner.nextInt();
      int[] arr = new int[n];
      for(int i = 0; i < n ;i++){
         arr[i]= scanner.nextInt();
```

```
        }
        int key = scanner.nextInt();
        for(int i =0 ;i < n ;i++){
            if(arr[i]==key){
                System.out.println(key+" found at "+ i+ " index");
                return;
            }
        }
        System.out.println("key not found");
    }
}
```

Output:

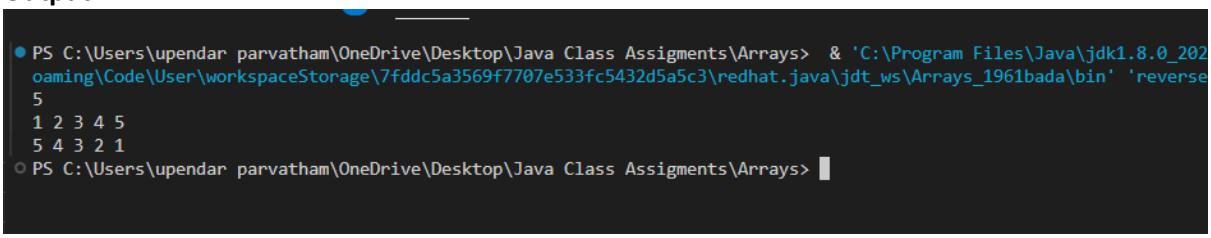


4. **Program to reverse elements an array**

```
import java.util.*;
public class reverse {
    public static void reverse(int[] arr){
        int n =arr.length;
        int t = n >> 1;
        for(int i = 0 ;i < t ;i++){
            int temp =arr[i];
            arr[i] = arr[n-i-1];
            arr[n-i-1]=temp;
        }
    }
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int n = scanner.nextInt();
        int[] arr = new int[n];
        for(int i =0 ; i < n ;i++){
            arr[i]= scanner.nextInt();
        }
```

```
        reverse(arr);
        for(int i =0 ; i < n;i++){
           System.out.print(arr[i]+" ");
        }
      }
    }
```

Output:

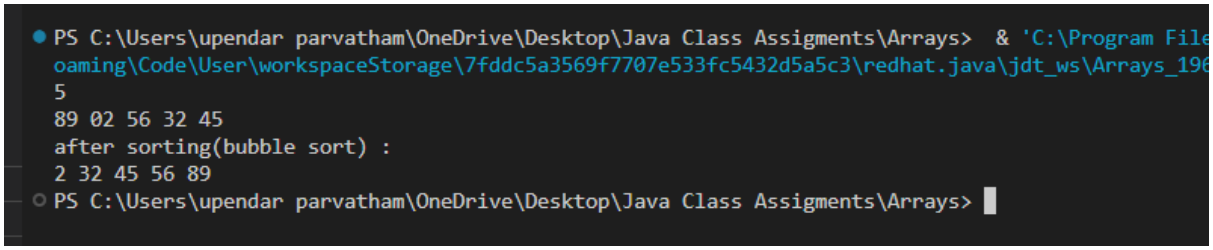


5. **Program to find sort an array**

```
    //bubble sort
import java.util.*;
public class sort {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      int n = scanner.nextInt();
      int[] arr = new int[n];
      for(int i =0 ; i <  n ;i++){
         arr[i]= scanner.nextInt();
      }
      for(int i= 0 ;i < n-1;i++){
         for(int  j =0 ; j < n-i-1;j++){
            if( arr[j] > arr[j+1]){
               int temp =arr[j];
               arr[j]=arr[j+1];
               arr[j+1]= temp;
            }
         }
      }
```

```
        System.out.println("after sorting(bubble sort) : ");
        for(int i =0 ; i < n  ;i++){
            System.out.print(arr[i]+" ");
        }

    }
}
```

Output:



6. Program to find sum of sqaures of odd index values

```
//Program to find sum of sqaures of odd index values
import java.util.*;
public class sum_squares {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int n = scanner.nextInt();
        int[] arr = new int[n];
        for(int i =0 ; i < n;i++){
            arr[i]= scanner.nextInt();
        }
        int sum =0 ,sqaure=0;
        for(int i =1; i < n;i=i+2){
            sqaure = arr[i]*arr[i];
            sum += sqaure;
        }
        System.out.println(sum);
    }
}
```

Output:

```
OUTPUT  DEBUG CONSOLE  PROBLEMS 12  TERMINAL  PORTS

PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assigments\Arrays>  & 'C:\Program Files\Java\jdk1.8
oaming\Code\User\workspaceStorage\7fddc5a3569f7707e533fc5432d5a5c3\redhat.java\jdt_ws\Arrays_1961bada\bin' 's
5
12 56 89 32 41
4160
PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assigments\Arrays>
```

7. Program to find sum of first and second halfs of an array

```
//Program to find sum of first and second halfs of an array
import java.util.*;
public class sum_half {
   public static void main(String[] args) {
      Scanner scanner =new Scanner(System.in);
      int n  = scanner.nextInt();
      int[] arr = new int[n];
      for(int i =0 ;i < n ;i++){
         arr[i]= scanner.nextInt();
      }
      int t = n/2;
      int sum1=0,sum2=0;
      for(int i =0 ; i < t;i++){
         sum1 += arr[i];
      }
      for(int i = t ; i < n;i++){
         sum2 += arr[i];
      }
      System.out.println("sum of first half : "+sum1);
      System.out.println("Sum of second half : "+sum2);
   }
}
```

Output:

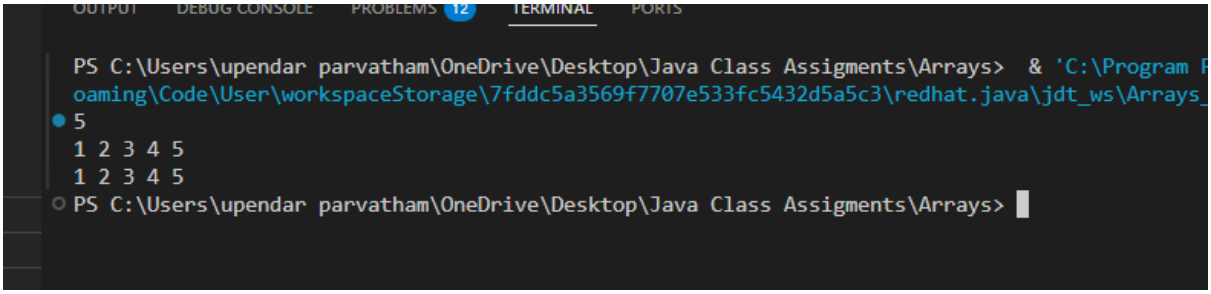
```
OUTPUT  DEBUG CONSOLE  PROBLEMS 12  TERMINAL  PORTS

PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assigments\Arrays>  & 'C:\Program F
oaming\Code\User\workspaceStorage\7fddc5a3569f7707e533fc5432d5a5c3\redhat.java\jdt_ws\Arrays_
10
1 2 3 4 5 6 7 8 9 10
sum of first half : 15
Sum of second half : 40
PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assigments\Arrays>
```

8. Program to read and print array elements

```
import java.util.*;
public class read_print {
```

```
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int n = scanner.nextInt();
        int[] arr = new int[n];
        for(int i=0  ; i < n ;i++){
            arr[i]= scanner.nextInt();
        }
        for(int i =0 ; i < n ;i++){
            System.out.print(arr[i]+" ");
        }
    }
}
```

Output:

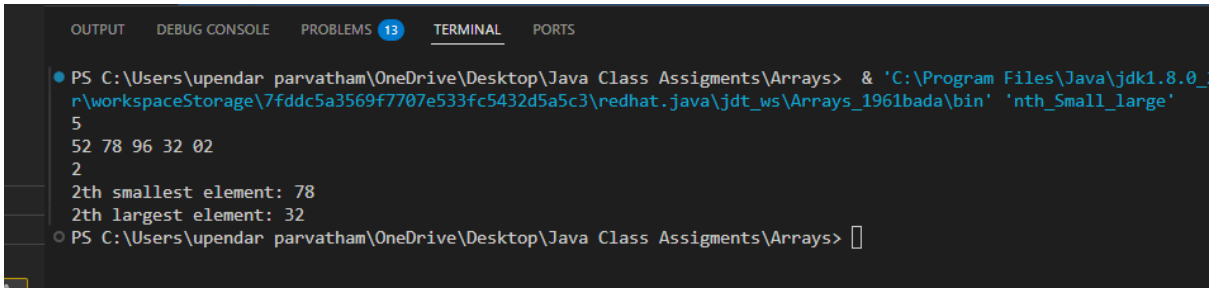


9. Program to find nth largest / smallest element in array

```
//Program to find nth largest / smallest element in array
import java.util.*;
public class nth_Small_large {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int n = scanner.nextInt();
        int[] arr = new int[n];
        for(int i =0 ; i < n ;i++){
            arr[i]= scanner.nextInt();
        }
        Arrays.sort(arr);
        int k =scanner.nextInt();
        int nthSmallest = arr[n-k];
        int nthLargest= arr[k-1];
```

```
        System.out.println(k + "th smallest element: " + nthSmallest);
        System.out.println(k + "th largest element: " + nthLargest);
    }
}
```

Output:

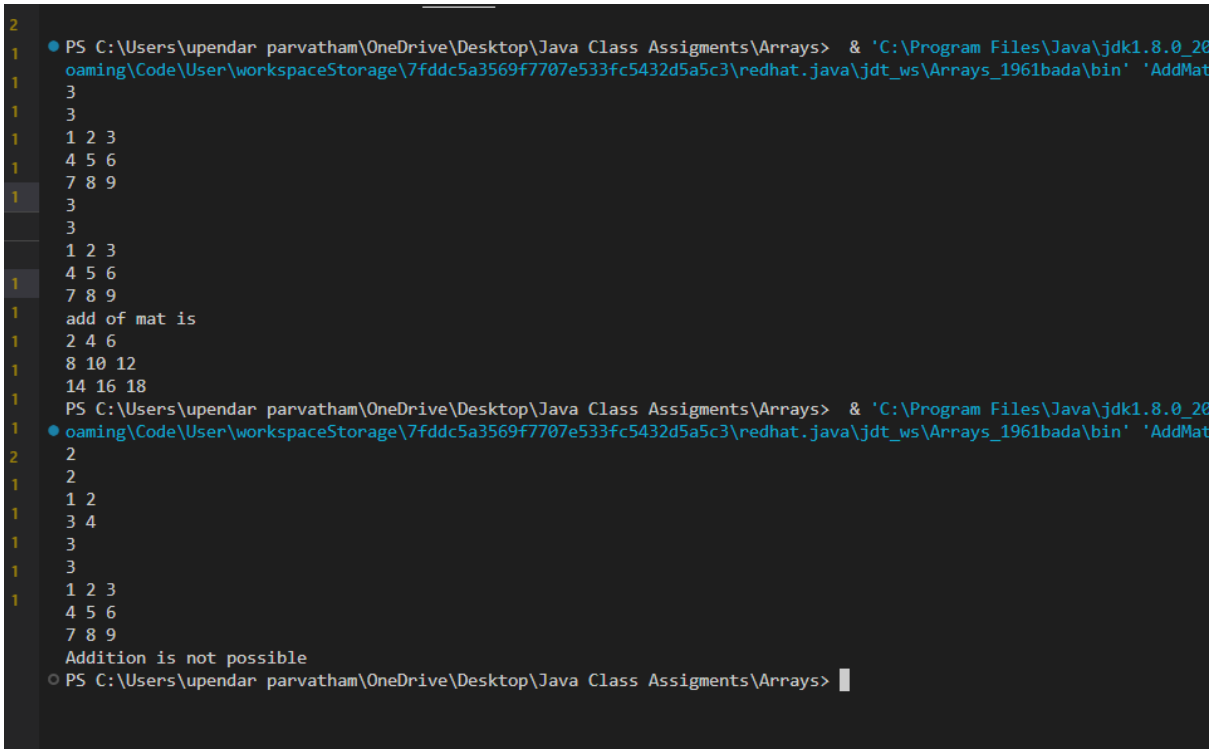


10. Program to add two matrices

```
//addition of matrix
import java.util.*;

public class AddMat {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int rows1 = scanner.nextInt();
        int cols1 = scanner.nextInt();

        int[][] arr1 = new int[rows1][cols1];

        for (int i = 0; i < rows1; i++) {
            for (int j = 0; j < cols1; j++) {
                arr1[i][j] = scanner.nextInt();
            }
        }
        int rows2 = scanner.nextInt();
```

```
        int cols2 = scanner.nextInt();
        int[][] arr2 = new int[rows2][cols2];
        for (int i = 0; i < rows2; i++) {
            for (int j = 0; j < cols2; j++) {
                arr2[i][j] = scanner.nextInt();
            }
        }

        if (rows1 == rows2 && cols1 == cols2) {
            int[][] arr3 = new int[rows1][cols1];
            for (int i = 0; i < rows1; i++) {
                for (int j = 0; j < cols1; j++) {
                    arr3[i][j] = arr1[i][j] + arr2[i][j];
                }
            }
            System.out.println("add of mat is");
            for (int i = 0; i < rows1; i++) {
                for (int j = 0; j < cols1; j++) {
                    System.out.print(arr3[i][j] + " ");
                }
                System.out.println();
            }

        } else {
            System.out.print("Addition is not possible");
        }

    }
}
```

Output:



11. Program to multiply two matrices

```
import java.util.*;

public class MulMat {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      int r1 = scanner.nextInt();
      int c1 = scanner.nextInt();
      int[][] arr1 = new int[r1][c1];
      for (int i = 0; i < r1; i++) {
         for (int j = 0; j < c1; j++) {
            arr1[i][j] = scanner.nextInt();
         }
      }
      int r2 = scanner.nextInt();
      int c2 = scanner.nextInt();
      int[][] arr2 = new int[r2][c2];
      for (int i = 0; i < r2; i++) {
         for (int j = 0; j < c2; j++) {
            arr2[i][j] = scanner.nextInt();
         }
      }
      if (c1 == r2) {
         int[][] arr3 = new int[r2][c2];
```

```
        for (int i = 0; i < r1; i++) {
            for (int j = 0; j < c2; j++) {
                arr3[i][j] = 0;
                for (int k = 0; k < c1; k++) { // k < r2
                    arr3[i][j] += arr1[i][k] * arr2[k][j];
                }
            }
        }
        // printing
        for (int i = 0; i < arr3.length; i++) {
            for (int j = 0; j < arr3[0].length; j++) {
                System.out.print(arr3[i][j] + " ");
            }
            System.out.println();
        }
    } else {
        System.out.println("multiplication not possible");
    }

  }
}
```

Output:

```
r\workspaceStorage\7fddc5a3569f7707e533fc5432d5a5c3\redhat.java\jdt_ws\Arrays_1961bada\bin' 'MulMat'
3
3
1 2 3
4 5 6
7 8 9
3
2
1 2
3 4
5 6
22 28
49 64
76 100
PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assigments\Arrays>  & 'C:\Program Files\Java\jdk1.8.0_2
r\workspaceStorage\7fddc5a3569f7707e533fc5432d5a5c3\redhat.java\jdt_ws\Arrays_1961bada\bin' 'MulMat'
2
2
1 2
3 4
3
2
1 2
3 4
5 6
multiplication not possible
PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assigments\Arrays>
```

12. Program to find sum of diagnal elemnts

```
import java.util.*;

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

```
        Scanner scanner = new Scanner(System.in);
        int r = scanner.nextInt();
        int c = scanner.nextInt();
        int[][] arr = new int[r][c];
        for (int i = 0; i < r; i++) {
            for (int j = 0; j < c; j++) {
                arr[i][j] = scanner.nextInt();
            }
        }
        if (r == c) {
            int sum1 = 0, sum2 = 0;
            for (int i = 0; i < r; i++) {
                sum1 += arr[i][i];
                sum2 += arr[i][r - i - 1];
            }

            System.out.println("Diagonal sums is " + sum1 + " , " + sum2);
        } else {
            System.out.println("for this matrix No diagonal possible");
        }
    }
}
```

Output:

```
PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assigments\Arrays>  & 'C:\Program
r\workspaceStorage\7fddc5a3569f7707e533fc5432d5a5c3\redhat.java\jdt_ws\Arrays_1961bada\bin'
4
4
1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
Diagonal sums is 34 , 34
PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assigments\Arrays>  & 'C:\Program
r\workspaceStorage\7fddc5a3569f7707e533fc5432d5a5c3\redhat.java\jdt_ws\Arrays_1961bada\bin'
3
2
1 2
3 4
5 6
for this matrix No diagonal possible
PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assigments\Arrays>
```