TASK 1: Access and print the element at a given index in an array.

AIM : To access and print the element present at a given index in an array.

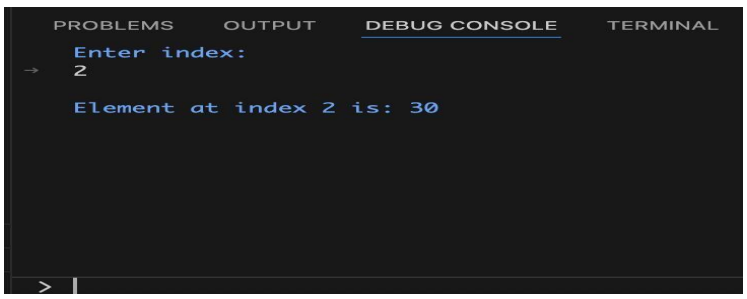
ALGORITHM;

1. Start
2. Declare and initialize an array
3. Read the index value
4. Check if index is valid (0 ≤ index < array length)
5. Print the element at that index
6. Stop

PROGRAM:

```
import java.util.Scanner;

public class AccessElement {

   public static void main(String[] args)

       { int[] arr = {10, 20, 30, 40, 50};

       Scanner sc = new Scanner(System.in);

       System.out.print("Enter index: "):

        int index = sc.nextInt();

       if (index >= 0 && index < arr.length) {

          System.out.println("Element at index " + index + " is: " + arr[index]);

       } else {

          System.out.println("Invalid index");} } }
```

OUTPUT:



RESULT: Thus is an java program to access and print the element present at a given index in an array has been done successfully

TASK 2: Search for a given element in a sorted array using Binary Search

AIM : To search an element in a sorted array using Binary Search technique.

ALGORITHM;

1. Start
2. Declare a sorted array
3. Read the element to search
4. Set `low = 0` and `high = n - 1 and` Find `mid = (low + high) / 2`
5. If element == arr[mid], print position
6. If element < arr[mid], set `high = mid - 1 then` Else set `low = mid +`
7. Repeat until `low > high then` If not found, print "Element not found"
8. Stop

PROGRAM:

```
import java.util.Scanner;

public class BinarySearch {

   public static void main(String[] args)

       { int[] arr = {5, 10, 15, 20, 25, 30};

       Scanner sc = new Scanner(System.in);

System.out.print("Enter element to search: ");

       int key = sc.nextInt();

       int low = 0, high = arr.length - 1;

       boolean found = false;

          while (low <= high) {

          int mid = (low + high) / 2;if (arr[mid] == key)

             { System.out.println("Element found at index: " + mid);

             found = true;

             break;

          } else if (key < arr[mid])

             { high = mid - 1;

          } else {

             low = mid + 1;

          }
```

```
        }


        if (!found) {

            System.out.println("Element not found");

        }

    }

}
```

OUTPUT:

RESULT: Thus is an java program to search an element in a sorted array using Binary Search technique.has been done successfully

TASK 3: Find the maximum element in an array of n integers

AIM : To find the maximum element in an array.

ALGORITHM;

1. Start
2. Declare and initialize array
3. Set `max = arr[0]`
4. Compare each element with `max`
5. If element > max, update max
6. Print max value
7. Stop

PROGRAM:

```
import java.util.Scanner;

public class MaxElement {

   public static void main(String[] args)

       { int[] arr = {12, 45, 7, 89, 34};

       int max = arr[0];

        for (int i = 1; i < arr.length; i++)

          { if (arr[i] > max) {

              max = arr[i]:}

       }  System.out.println("Maximum element is: " + max)

} }
```

OUTPUT:

RESULT: Thus is an java program to search an element in a sorted array using Binary Search technique.has been done successfully

TASK 4: Find the Kth smallest element in an array

AIM : To Find the Kth smallest element in an array

ALGORITHM;

1. Start
2. Declare array and value of K
3. Sort the array
4. The Kth smallest element is at index `K - 1`
5. Print the element
6. Stop

PROGRAM:

```
import java.util.Arrays;

import java.util.Scanner;

public class KthSmallest {

   public static void main(String[] args)

      { int[] arr = {7, 10, 4, 3, 20, 15};

      Scanner sc = new Scanner(System.in);

      System.out.print("Enter K: ");

      int k = sc.nextInt();

      Arrays.sort(arr);

      if (k > 0 && k <= arr.length) { System.out.println(k + "th smallest element is: " + arr[k - 1]);

      } else {      System.out.println("Invalid value of K")}}}
```

OUTPUT:

RESULT: Thus is an java program to Find the Kth smallest element in an array.has been done successfully

TASK 5: Print all possible pairs of elements from an array

AIM : To Print all possible pairs of elements from an array

ALGORITHM;

1. Start
2. Declare and initialize array
3. Use two nested loops
4. First loop from `i = 0` to `n-1`
5. Second loop from `j = i+1` to `n-1`
6. Print `(arr[i], arr[j])`
7. Stop

PROGRAM:

```
import java.util.Scanner;

public class ArrayPairs {

   public static void main(String[] args)

     { int[] arr = {1, 2, 3, 4};

     System.out.println("All possible pairs:");

     for (int i = 0; i < arr.length; i++) {

          for (int j = i + 1; j < arr.length; j++)

             { System.out.println("(" + arr[i] + ", " + arr[j] + ")");}}

}}
```

OUTPUT:

RESULT: Thus is an java program to print all possible pairs of elements from an array.has been done successfully

TASK6: : Digit Sum opt sum of even or odd digits

AIM:To find the sum of either even digits or odd digits of a given number based on user choice.

ALGORITHM:

1. Start
2. Read a number `n`
3. Read option (`1` for even digits, `2` for odd digits
4. Initialize `sum = 0`
5. While `n > 0`

- Get digit `d = n % 1`
- If option = 1 and `d` is even, add to sum
- If option = 2 and `d` is odd, add to sum
- Update `n = n / 10`

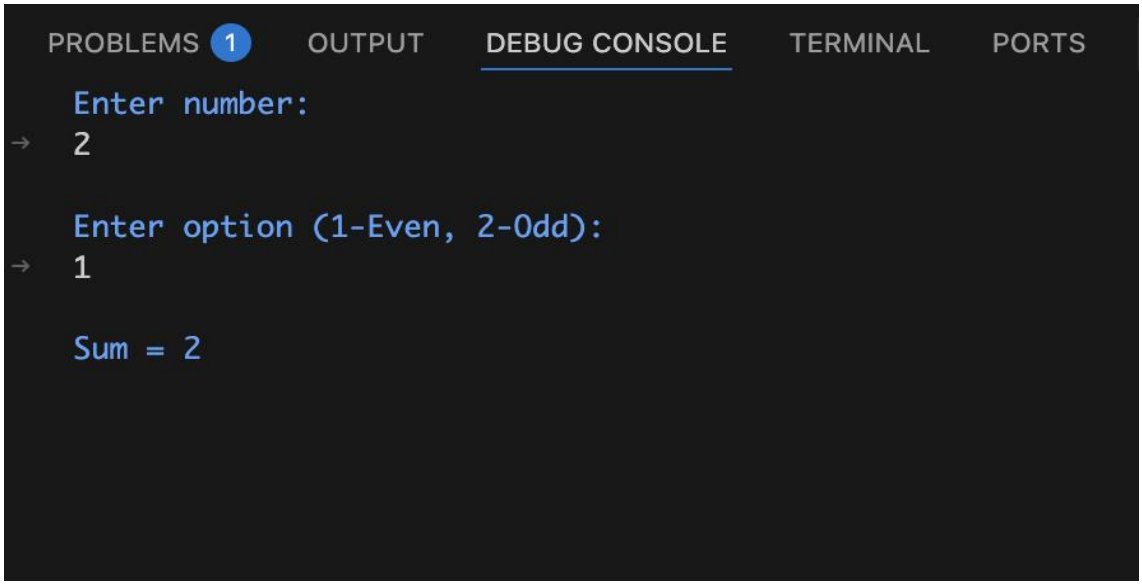
6. Print sum
7. Stop

PROGRAM:

```
import java.util.Scanner;

public class DigitSum {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

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

        int n = sc.nextInt();

        System.out.print("Enter option (1-Even, 2-Odd): ");

        int opt = sc.nextInt();

            int sum = 0, digit;

           while (n > 0) {

           digit = n % 10;

             if (opt == 1 && digit % 2 == 0)

               sum += digit;

           else if (opt == 2 && digit % 2 != 0)

               sum += digit;



           n = n / 10;
```

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

OUTPUT:



RESULT: Thus is an java program to find the sum of either even digits or odd digits of a given number based on user choice has been done successfully

TASK 7 : Nth Fibonacci Number

AIM:To find the Nth Fibonacci number.

ALGORITHM:

1. Start
2. Read value of `n`
3. Initialize `a = 0, b = 1`
4. Repeat from 2 to `n`

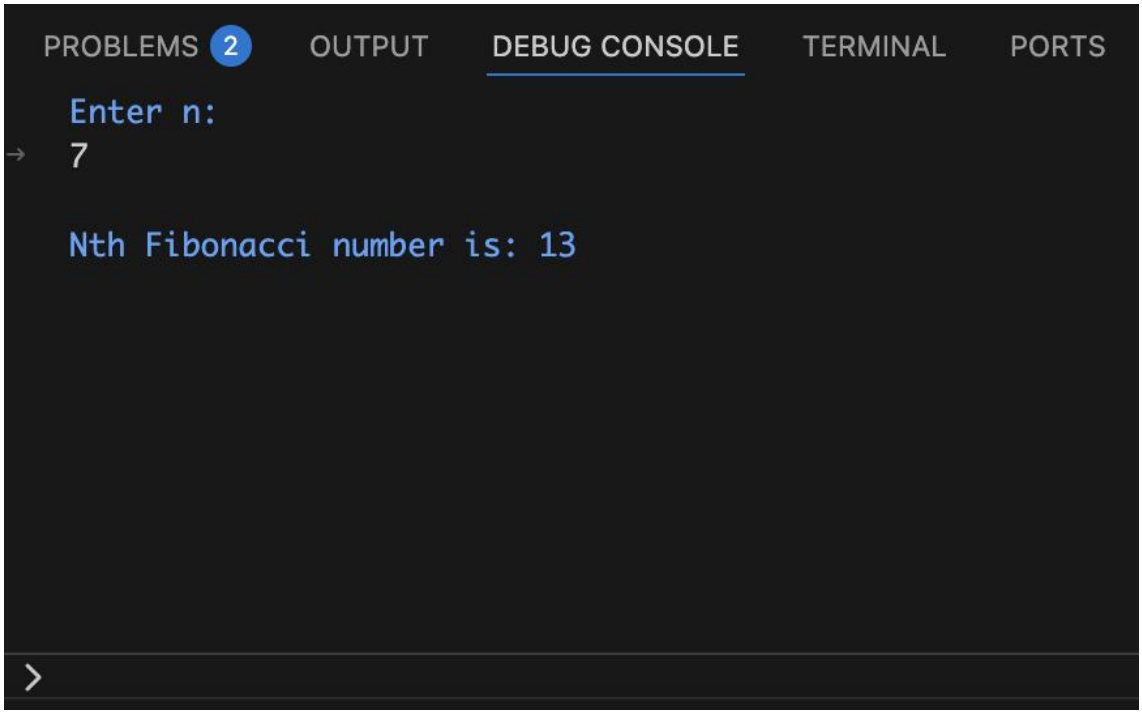
- `c = a + b`
- `a = b, b = c`

5. Print Fibonacci number
6. Stop

PROGRAM :

```
import java.util.Scanner;

public class Fibonacci {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

           System.out.print("Enter n: ");

        int n = sc.nextInt();

        int a = 0, b = 1, c = 0;

        if (n == 0)

         System.out.println(a);

        else if (n == 1)

            System.out.println(b);

        else {

            for (int i = 2; i <= n; i++) {

                c = a + b;

                a = b;

                b = c;

            }

            System.out.println("Nth Fibonacci number is: " + c);}}}
```

OUTPUT:



RESULT: Thus is an java program to find the Nth Fibonacci number.
has been done successfully

TASK 8 : Check Whether a Number is Palindrome

AIM: To check whether a given number is a palindrome.

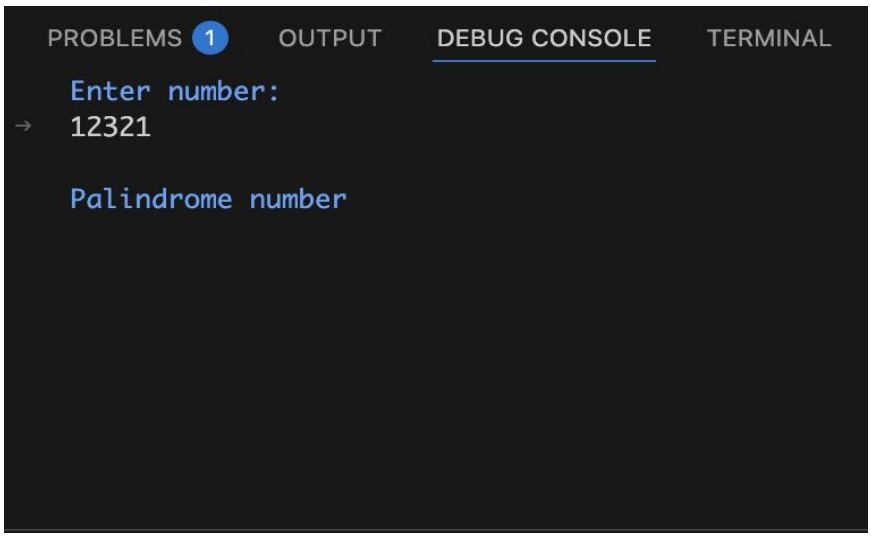
ALGORITHM:

1. Start
2. Read number `n`
3. Store original number
4. Reverse the number
5. Compare reversed number with original
6. Stop

PROGRAM;

```
import java.util.Scanner;

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

      System.out.print("Enter number: ");
      int n = sc.nextInt();

      int original = n, reverse = 0, digit;

      while (n > 0) {
         digit = n % 10;
         reverse = reverse * 10 + digit;
         n = n / 10;
      }

      if (original == reverse)
         System.out.println("Palindrome number");
      else
         System.out.println("Not a palindrome number");
   }
}
```

OUTPUT:



RESULT: Thus is an java program to check whether a given number is a palindrome. has been done successfully

TASK 9 Sum of Last Digit of Two Given Numbers

AIM:To find the sum of the last digits of two given numbers.

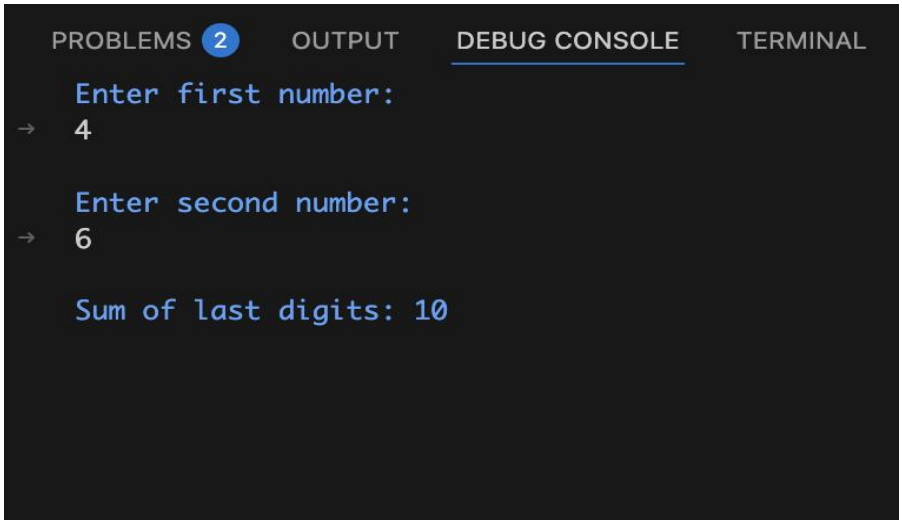
ALGORITHM:

1. Start
2. Read two numbers `a` and `b`
3. Find last digits using `% 10`
4. Add last digits
5. Print sum
6. Stop

PROGRAM

```
import java.util.Scanner;

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

      System.out.print("Enter first number: ");
      int a = sc.nextInt();

      System.out.print("Enter second number: ");
      int b = sc.nextInt();

      int sum = (a % 10) + (b % 10);

      System.out.println("Sum of last digits: " + sum);
   }
}
```

OUTPUT



RESULT: Thus is an java program to find the sum of the last digits of two given numbers. has been done successfully