TASK 2: ARRAY MANIPULATION

AIM

To write a Java program that calculates the prefix sum of an array, where each element in the prefix sum array is the sum of all elements from index 0 to i.

ALGORITHM

1. Start the program.
2. Read the size of the array N.
3. Read N elements into the array.
4. Create another array prefixSum of the same size.
5. Set prefixSum[0] = arr[0].
6. Traverse the array from index 1 to N-1:
    - Compute prefixSum[i] = prefixSum[i-1] + arr[i].
7. Display the prefix sum array.
8. Stop the program.

PROGRAM

```
import java.util.Scanner;

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

      System.out.print("Enter the size of the array: ");
      int N = sc.nextInt();

      int[] arr = new int[N];
      int[] prefixSum = new int[N];

      System.out.println("Enter the array elements:");
      for (int i = 0; i < N; i++) {
         arr[i] = sc.nextInt();
      }

      // Calculate prefix sum
```

```
        prefixSum[0] = arr[0];
        for (int i = 1; i < N; i++) {
            prefixSum[i] = prefixSum[i - 1] + arr[i];
        }

        // Display prefix sum array
        System.out.println("Prefix Sum Array:");
        for (int num : prefixSum) {
            System.out.print(num + " ");
        }
    }
}
```

OUTPUT

Enter the size of the array: 5

Enter the array elements:

10 20 10 5 15

Prefix Sum Array:

10 30 40 45 60

RESULT

Thus, the Java program successfully computes the prefix sum array by adding elements from the beginning of the array up to each index.