Source Code:

a. Array implementation to find out sum, average , minimum and maximum elements present in the array.

```
import java.util.Scanner;
public class AvgSumMinMax {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);

      // Get the size of the array from the user
      System.out.print("Enter the size of the array: ");
      int size = scanner.nextInt();

      // Create the array
      int[] numbers = new int[size];

      // Get the values for the array from the user
      System.out.println("Enter " + size + " integers:");
      for (int i = 0; i < size; i++) {
         numbers[i] = scanner.nextInt();
      }

      // Calculate the sum of the elements in the array
      int sum = 0;
      for (int i = 0; i < size; i++) {
         sum += numbers[i];
      }

      // Calculate the average of the elements in the array
      double average = (double) sum / size;

      // Find the minimum element in the array
      int min = numbers[0];
      for (int i = 1; i < size; i++) {
         if (numbers[i] < min) {
            min = numbers[i];
         }
      }

      // Find the maximum element in the array
      int max = numbers[0];
      for (int i = 1; i < size; i++) {
         if (numbers[i] > max) {
            max = numbers[i];
         }
      }
      // Print out the results
      System.out.println("Sum: " + sum);
      System.out.println("Average: " + average);
      System.out.println("Minimum: " + min);
```

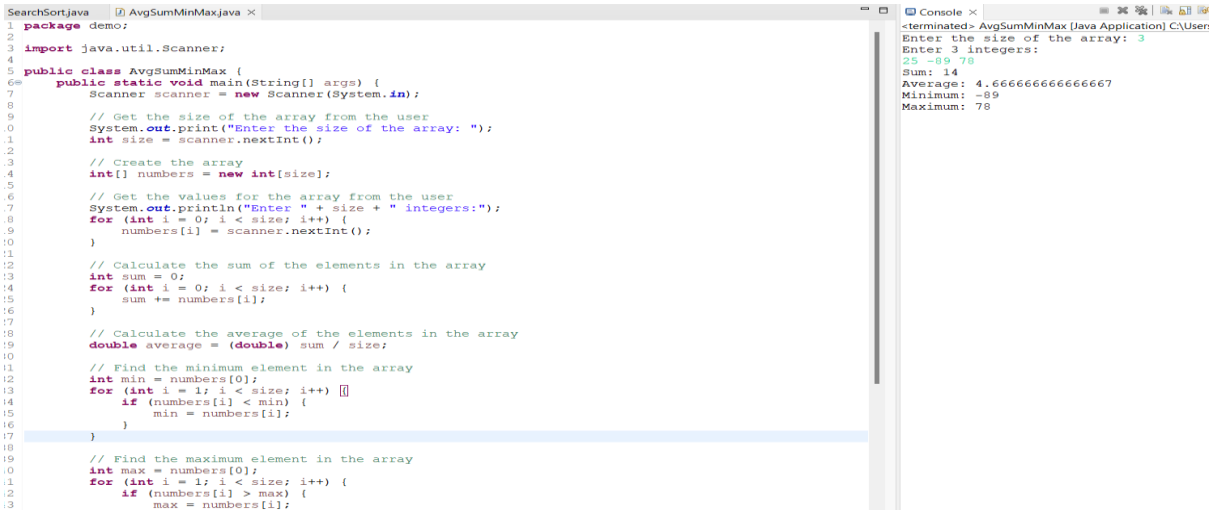
```
        System.out.println("Maximum: " + max);

    }
}
```

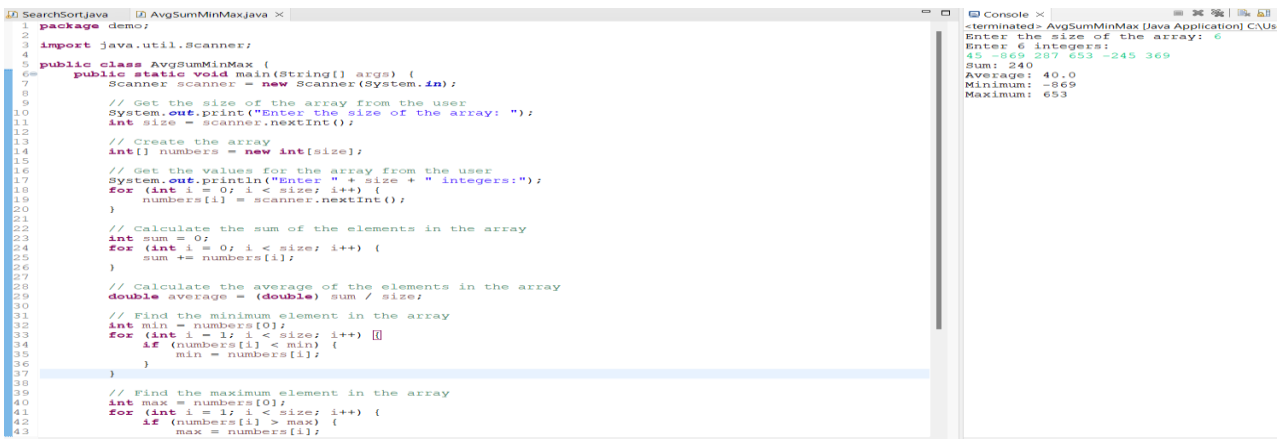
b. Array implementation using bubble sort and searching techniques.

```
import java.util.Scanner;
public class SearchSort {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        // Get the size of the array from the user
        System.out.print("Enter the size of the array: ");
        int size = scanner.nextInt();
        // Create the array
        int[] numbers = new int[size];
        // Get the values for the array from the user
        System.out.println("Enter " + size + " integers:");
        for (int i = 0; i < size; i++) {
            numbers[i] = scanner.nextInt();
        }
        // Print out the unsorted array
        System.out.print("Unsorted array: ");
        for (int i = 0; i < size; i++) {
            System.out.print(numbers[i] + " ");
        }
        System.out.println();

        // Sort the array using bubble sort
        for (int i = 0; i < size - 1; i++) {
            for (int j = 0; j < size - i - 1; j++) {
                if (numbers[j] > numbers[j + 1]) {
                    int temp = numbers[j];
                    numbers[j] = numbers[j + 1];
                    numbers[j + 1] = temp;
                }
            }
        }
        // Print out the sorted array
        System.out.print("Sorted array: ");
        for (int i = 0; i < size; i++) {
            System.out.print(numbers[i] + " ");
        }
        System.out.println();

        // Get a value to search for from the user
        System.out.print("Enter a value to search for: ");
        int searchValue = scanner.nextInt();

        // Perform a linear search to find the value
```

```
        int index = -1;
        for (int i = 0; i < size; i++) {
            if (numbers[i] == searchValue) {
                index = i;
                break;
            }
        }

        // Print out the search results
        if (index != -1) {
            System.out.println("Found " + searchValue + " at index " + index);
        } else {
            System.out.println("Did not find " + searchValue);
        }

    }
}
```

Outputs:





*SearchSort.java

```java
package demo;
import java.util.Scanner;
public class SearchSort {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        // Get the size of the array from the user
        System.out.print("Enter the size of the array: ");
        int size = scanner.nextInt();
        // Create the array
        int[] numbers = new int[size];
        // Get the values for the array from the user
        System.out.println("Enter " + size + " integers:");
        for (int i = 0; i < size; i++) {
            numbers[i] = scanner.nextInt();
        }
        // Print out the unsorted array
        System.out.print("Unsorted array: ");
        for (int i = 0; i < size; i++) {
            System.out.print(numbers[i] + " ");
        }
        System.out.println();

        // Sort the array using bubble sort
        for (int i = 0; i < size - 1; i++) {
            for (int j = 0; j < size - i - 1; j++) {
                if (numbers[j] > numbers[j + 1]) {
                    int temp = numbers[j];
                    numbers[j] = numbers[j + 1];
                    numbers[j + 1] = temp;
                }
            }
        }
        // Print out the sorted array
        System.out.print("Sorted array: ");
        for (int i = 0; i < size; i++) {
            System.out.print(numbers[i] + " ");
        }
        System.out.println();

        // Get a value to search for from the user
        System.out.print("Enter a value to search for: ");
        int searchValue = scanner.nextInt();

```

Console

```
<terminated> SearchSort [Java Application] C:\Users\Administrator\.p2\
Enter the size of the array: 5
Enter 5 integers:
78 795 8645 25469 7
Unsorted array: 78 795 8645 25469 7
Sorted array: 7 78 795 8645 25469
Enter a value to search for: 8645
Found 8645 at index 3
```

SearchSort.java

```java
package demo;
import java.util.Scanner;
public class SearchSort {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        // Get the size of the array from the user
        System.out.print("Enter the size of the array: ");
        int size = scanner.nextInt();
        // Create the array
        int[] numbers = new int[size];
        // Get the values for the array from the user
        System.out.println("Enter " + size + " integers:");
        for (int i = 0; i < size; i++) {
            numbers[i] = scanner.nextInt();
        }
        // Print out the unsorted array
        System.out.print("Unsorted array: ");
        for (int i = 0; i < size; i++) {
            System.out.print(numbers[i] + " ");
        }
        System.out.println();

        // Sort the array using bubble sort
        for (int i = 0; i < size - 1; i++) {
            for (int j = 0; j < size - i - 1; j++) {
                if (numbers[j] > numbers[j + 1]) {
                    int temp = numbers[j];
                    numbers[j] = numbers[j + 1];
                    numbers[j + 1] = temp;
                }
            }
        }
        // Print out the sorted array
        System.out.print("Sorted array: ");
        for (int i = 0; i < size; i++) {
            System.out.print(numbers[i] + " ");
        }
        System.out.println();

        // Get a value to search for from the user
        System.out.print("Enter a value to search for: ");
        int searchValue = scanner.nextInt();

```

Console

```
<terminated> SearchSort [Java Application] C:\Users\Administrator\.
Enter the size of the array: 6
Enter 6 integers:
145 48 2698 258 359 -758
Unsorted array: 145 48 2698 258 359 -758
Sorted array: -758 48 145 258 359 2698
Enter a value to search for: 486
Did not find 486
```