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III- ACSAD

Activity II - PROLANG

JAVA

```java
import java.util.Scanner;

public class SearchAndBubbleSort {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int[] nums;

        while (true) {
            try {
                System.out.print("Enter number of elements (must be at least 3): ");
                int size = Integer.parseInt(scanner.nextLine());
                if (size < 3) {
                    System.out.println("Please enter at least 3 elements.");
                    continue;
                }
                nums = new int[size];

                System.out.println("Enter the elements:");
                for (int i = 0; i < size; i++) {
                    while (true) {
                        try {
                            nums[i] = Integer.parseInt(scanner.nextLine());
                            break;
                        } catch (NumberFormatException e) {
                            System.out.println("Invalid input. Enter integers only.");
                        }
                    }
                }
                break;
            } catch (NumberFormatException e) {
                System.out.println("Invalid input. Enter integers only.");
            }
        }

        bubbleSort(nums);
```

```java
        System.out.println("Sorted array:");
        for (int num : nums) {
            System.out.print(num + " ");
        }
        System.out.println();

        int target;

        while (true) {
            try {
                System.out.print("Enter number to search: ");
                target = Integer.parseInt(scanner.nextLine());
                break;
            } catch (NumberFormatException e) {
                System.out.println("Invalid input. Enter an integer only.");
            }
        }

        int index = binarySearch(nums, target);

        if (index != -1) {
            System.out.println("Number found at index " + index);
        } else {
            System.out.println("Number not found.");
        }

        scanner.close();
    }

    public static void bubbleSort(int[] arr) {
        int len = arr.length;
        for (int i = 0; i < len - 1; i++) {
            for (int j = 0; j < len - i - 1; j++) {
                if (arr[j] > arr[j + 1]) {
                    int temp = arr[j];
                    arr[j] = arr[j + 1];
                    arr[j + 1] = temp;
                }
            }
        }
    }

    public static int binarySearch(int[] arr, int target) {
```

```java
        int low = 0;
        int high = arr.length - 1;
        while (low <= high) {
            int mid = low + (high - low) / 2;
            if (arr[mid] == target) {
                return mid;
            } else if (arr[mid] < target) {
                low = mid + 1;
            } else {
                high = mid - 1;
            }
        }
        return -1;
    }
}
```

Main.java | Output | ▷

```
java -cp /tmp/XLYIgZq4co/SearchAndBubbleSort
Enter number of elements (must be at least 3
    ): 5
Enter the elements:
3
4
2
1
5
Sorted array:
1 2 3 4 5
Enter number to search: 4
Number found at index 3

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

SCALA

```scala
import scala.io.StdIn.readInt

object BubbleSortProgram {

  def bubbleSort(arr: Array[Int]): Unit = {
    val n = arr.length

    for (i <- 0 until n - 1) {
      var swapped = false

      for (j <- 0 until n - i - 1) {
        if (arr(j) > arr(j + 1)) {
          val temp = arr(j)
          arr(j) = arr(j + 1)
          arr(j + 1) = temp
          swapped = true
        }
      }

      if (!swapped) {
        return
      }
    }
  }

  def binarySearch(arr: Array[Int], target: Int): Int = {
    var left = 0
    var right = arr.length - 1

    while (left <= right) {
      val mid = left + (right - left) / 2

      if (arr(mid) == target) {
        return mid
      } else if (arr(mid) < target) {
        left = mid + 1
      } else {
        right = mid - 1
      }
```

```scala
    }

    -1
  }

  def main(args: Array[String]): Unit = {
    println("Enter the number of elements in the array:")
    val numElements = readInt()

    val arr = new Array[Int](numElements)
    println("Enter the elements of the array:")
    for (i <- 0 until numElements) {
      arr(i) = readInt()
    }

    println("Unsorted array: " + arr.mkString(", "))

    bubbleSort(arr)

    println("Sorted array: " + arr.mkString(", "))

    println("Enter a value to search for in the sorted array:")
    val target = readInt()

    val index = binarySearch(arr, target)

    if (index != -1) {
      println(s"Value $target found at index $index in the sorted array.")
    } else {
      println(s"Value $target not found in the sorted array.")
    }
  }
}
```

3
9
7

Output:

Enter the number of elements in the array:
Enter the elements of the array:
Unsorted array: 7, 2, 8, 3, 9
Sorted array: 2, 3, 7, 8, 9
Enter a value to search for in the sorted arr
Value 7 found at index 2 in the sorted array.