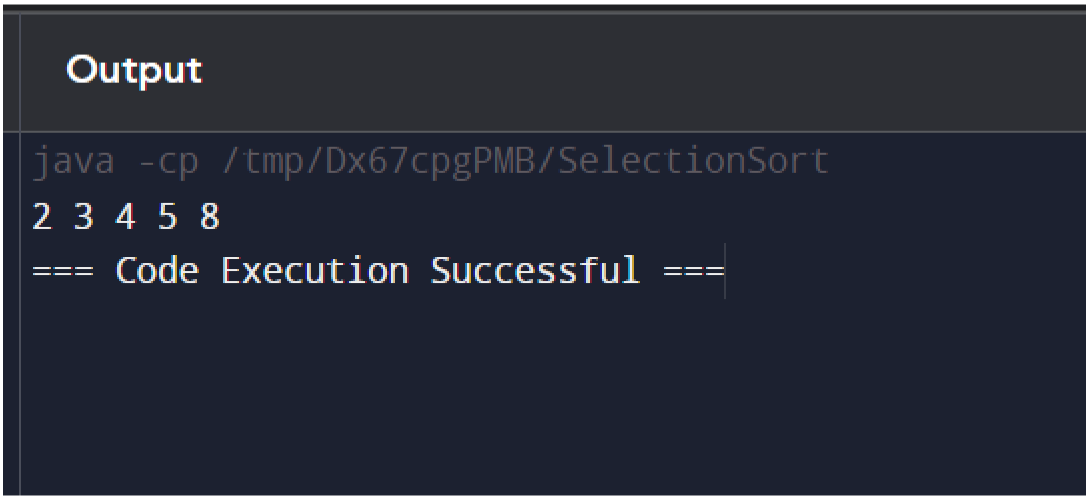
1. Selection sort

CODE:

```
public class SelectionSort {
    public static void main(String[] args) {
        int[] arr = {5, 3, 8, 4, 2};
        selectionSort(arr);
        for (int num : arr) System.out.print(num + " ");
    }

    private static void selectionSort(int[] arr) {
        for (int i = 0; i < arr.length; i++) {
            int minIndex = i;
            for (int j = i + 1; j < arr.length; j++)
                if (arr[j] < arr[minIndex]) minIndex = j;
            int temp = arr[i];
            arr[i] = arr[minIndex];
            arr[minIndex] = temp;
        }
    }
}
```

OUTPUT:



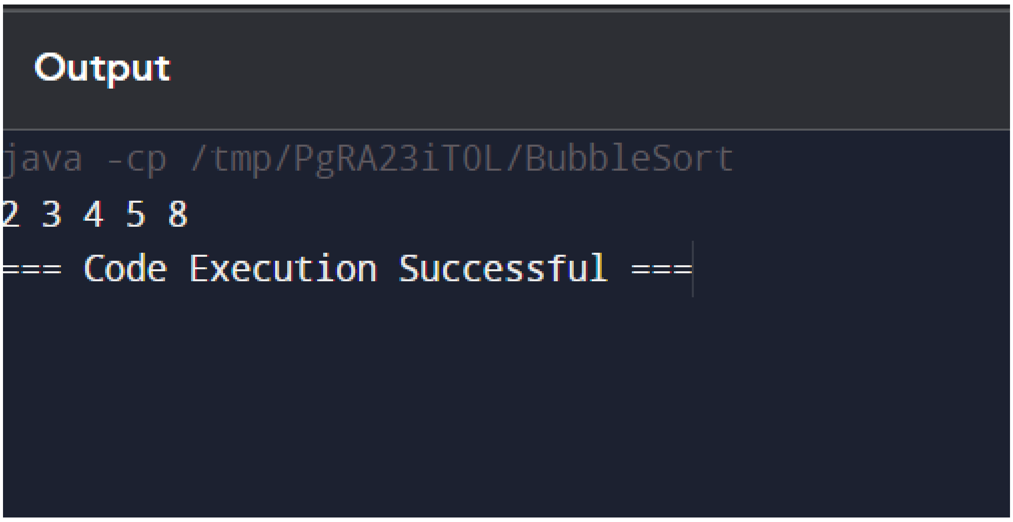
```
java -cp /tmp/Dx67cpgPMB/SelectionSort
2 3 4 5 8
=== Code Execution Successful ===
```

2. Bubble sort

CODE:

```
public class BubbleSort {
    public static void main(String[] args) {
        int[] arr = {5, 3, 8, 4, 2};
        bubbleSort(arr);
        for (int num : arr) System.out.print(num + " ");
    }
    private static void bubbleSort(int[] arr) {
        for (int i = 0; i < arr.length - 1; i++)
            for (int j = 0; j < arr.length - 1 - i; j++)
                if (arr[j] > arr[j + 1]) {
                    int temp = arr[j];
                    arr[j] = arr[j + 1];
                    arr[j + 1] = temp;
                }
    }
}
```

OUTPUT:



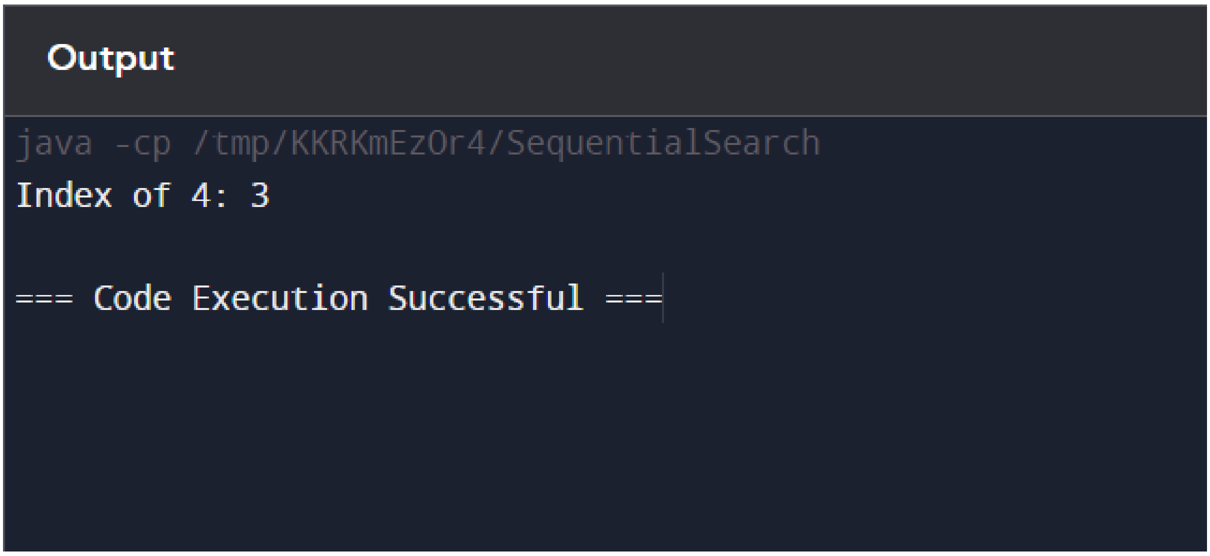
```
java -cp /tmp/PgRA23iTOL/BubbleSort
2 3 4 5 8
=== Code Execution Successful ===
```

3. Linear search

CODE:

```
public class SequentialSearch {
    public static void main(String[] args) {
        int[] arr = {5, 3, 8, 4, 2};
        int target = 4;
        int index = sequentialSearch(arr, target);
        System.out.println("Index of " + target + ": " + index);
    }
    private static int sequentialSearch(int[] arr, int target) {
        for (int i = 0; i < arr.length; i++) {
            if (arr[i] == target) return i;
        }
        return -1;
    }
}
```

OUTPUT:



```
java -cp /tmp/KKRKmEzOr4/SequentialSearch
Index of 4: 3

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

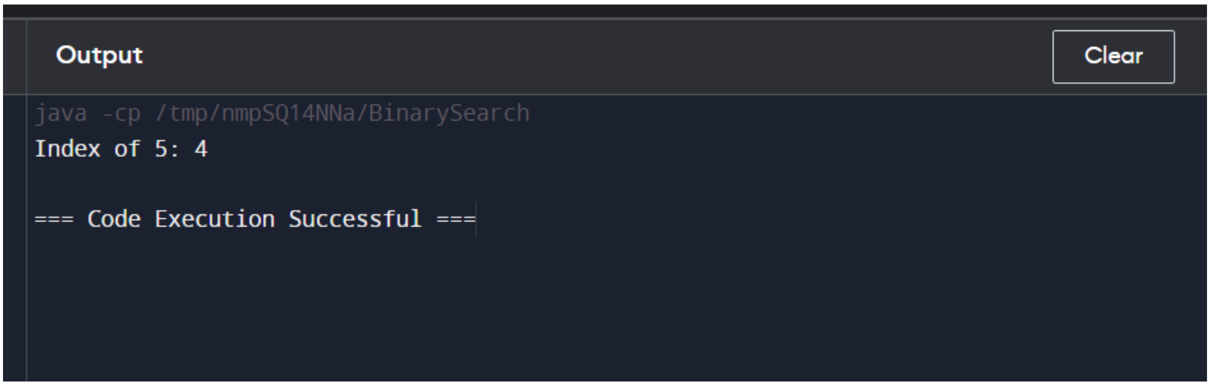
4. Binary search

CODE:

```
public class BinarySearch {
   public static void main(String[] args) {
      int[] arr = {1, 2, 3, 4, 5, 6, 7, 8, 9};
      int target = 5;
      int index = binarySearch(arr, target);
      System.out.println("Index of " + target + ": " + index);
   }

   private static int binarySearch(int[] arr, int target) {
      int left = 0, right = arr.length - 1;
      while (left <= right) {
         int mid = left + (right - left) / 2;
         if (arr[mid] == target) return mid;
         if (arr[mid] < target) left = mid + 1;
         else right = mid - 1;
      }
      return -1; // Target not found
   }
}
```

OUTPUT:



```
java -cp /tmp/nmpSQ14NNa/BinarySearch
Index of 5: 4

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