06/08/24

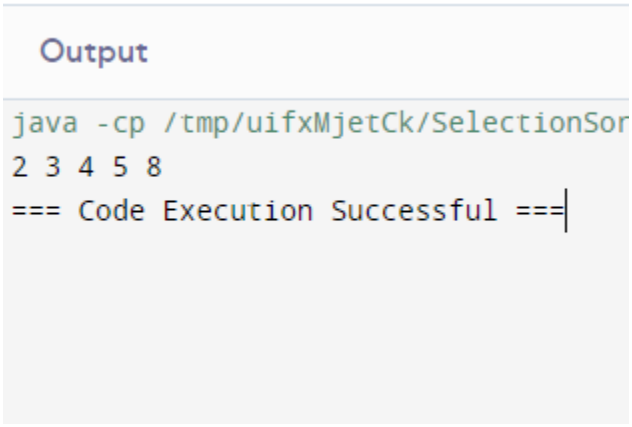
1)Selection sort

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



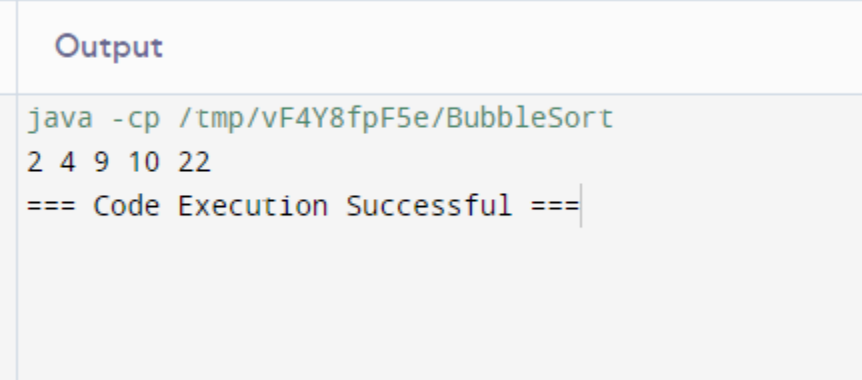
2)Bubble sort

Code

```
public class BubbleSort {
   public static void main(String[] args) {
      int[] arr = {22, 10, 9, 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



3)Binary search

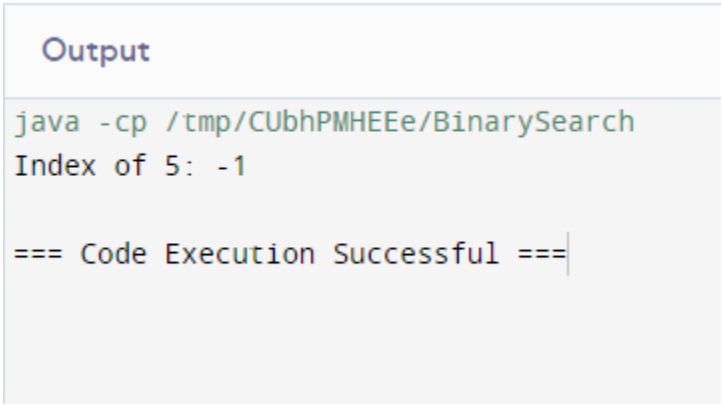
Code

```
public class BinarySearch {
    public static void main(String[] args) {
        int[] arr = {11, 22, 13, 17, 15, 16, 14, 12, 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;
    }
}
```

Output



4)linear search

Code

```
public class SequentialSearch {
    public static void main(String[] args) {
        int[] arr = {19, 13, 18, 24, 42};
        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