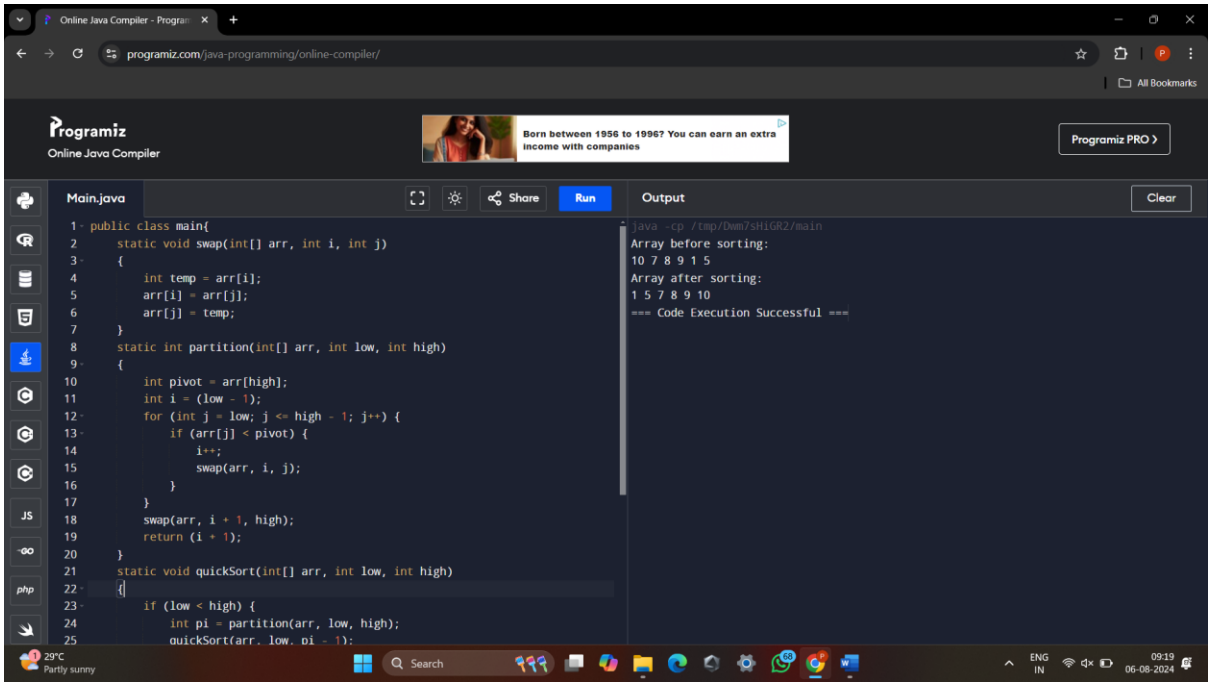
Classwork

1. Quick Sort

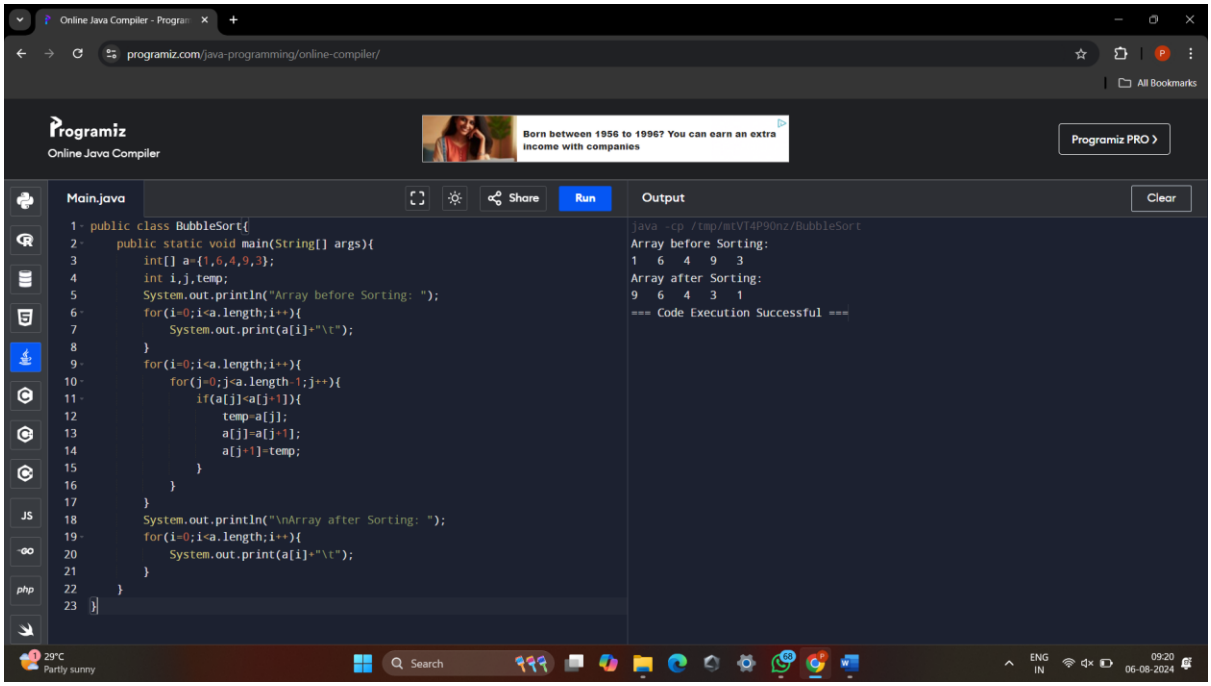
```
public class main{
   static void swap(int[] arr, int i, int j)
   {
      int temp = arr[i];
      arr[i] = arr[j];
      arr[j] = temp;
   }
   static int partition(int[] arr, int low, int high)
   {
      int pivot = arr[high];
      int i = (low - 1);
      for (int j = low; j <= high - 1; j++) {
         if (arr[j] < pivot) {
            i++;
            swap(arr, i, j);
         }
      }
      swap(arr, i + 1, high);
      return (i + 1);
   }
   static void quickSort(int[] arr, int low, int high)
   {
      if (low < high) {
         int pi = partition(arr, low, high);
         quickSort(arr, low, pi - 1);
         quickSort(arr, pi + 1, high);
      }
   }
```

```
    public static void printArr(int[] arr)
    {
        for (int i = 0; i < arr.length; i++) {
            System.out.print(arr[i] + " ");
        }
    }
    public static void main(String[] args)
    {
        int[] arr = { 10, 7, 8, 9, 1, 5 };
        int N = arr.length;
        System.out.println("Array before sorting:");
        printArr(arr);
        quickSort(arr, 0, N - 1);
        System.out.println("\nArray after sorting:");
        printArr(arr);
    }
}
```



2. **Bubble Sort**

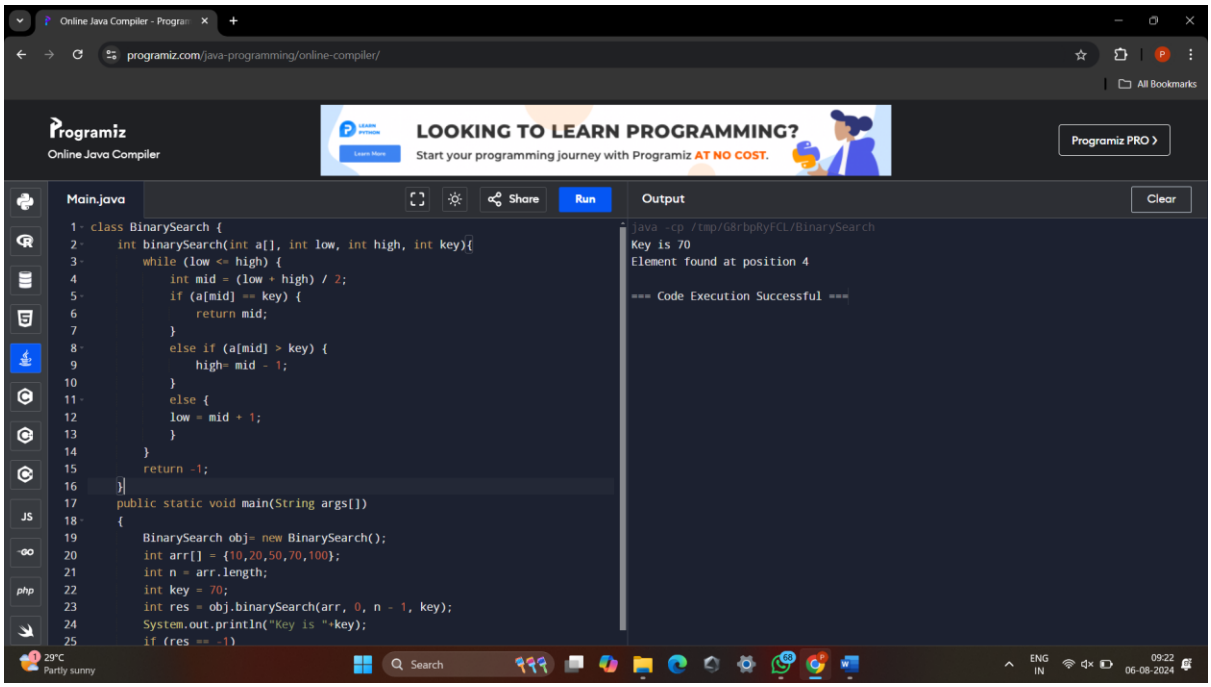
```
public class BubbleSort{
   public static void main(String[] args){
      int[] a={1,6,4,9,3};
      int i,j,temp;
      System.out.println("Array before Sorting: ");
      for(i=0;i<a.length;i++){
         System.out.print(a[i]+"\t");
      }
      for(i=0;i<a.length;i++){
         for(j=0;j<a.length-1;j++){
            if(a[j]<a[j+1]){
               temp=a[j];
               a[j]=a[j+1];
               a[j+1]=temp;
            }
         }
      }
      System.out.println("\nArray after Sorting: ");
      for(i=0;i<a.length;i++){
         System.out.print(a[i]+"\t");
      }
   }
}
```



3. Binary Search

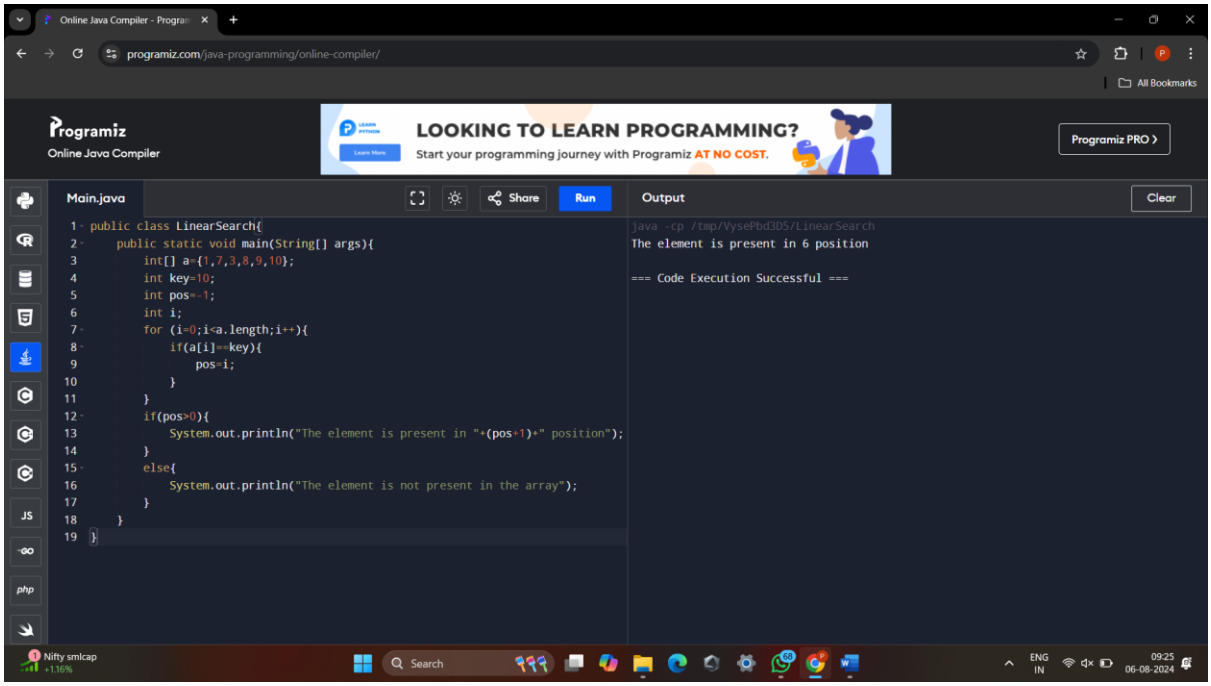
```
class BinarySearch {
        int binarySearch(int a[], int low, int high, int key){
                while (low <= high) {
                        int mid = (low + high) / 2;
                        if (a[mid] == key) {
                                return mid;
                        }
                        else if (a[mid] > key) {
                                high= mid - 1;
                        }
                        else {
                        low = mid + 1;
                        }
                }
                return -1;
        }
```

```
    public static void main(String args[])
    {
        BinarySearch obj= new BinarySearch();
        int arr[] = {10,20,50,70,100};
        int n = arr.length;
        int key = 70;
        int res = obj.binarySearch(arr, 0, n - 1, key);
        System.out.println("Key is "+key);
        if (res == -1)
            System.out.println("Element not present");
        else
            System.out.println("Element found at position "+ (res+1));
    }
}
```



4. **Linear Search**

```
public class LinearSearch{
   public static void main(String[] args){
      int[] a={1,7,3,8,9,10};
      int key=10;
      int pos=-1;
      int i;
      for (i=0;i<a.length;i++){
         if(a[i]==key){
            pos=i;
         }
      }
      if(pos>0){
         System.out.println("The element is present in "+(pos+1)+" position");
      }
      else{
         System.out.println("The element is not present in the array");
      }
   }
}
```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Main.java
Share
Run
Output
Clear
1 public class LinearSearch{
2 public static void main(String[] args){
3 int[] a={1,7,3,8,9,10};
4 int key=10;
5 int pos=-1;
6 int i;
7 for (i=0;i<a.length;i++){
8 if(a[i]==key){
9 pos=i;
10 }
11 }
12 if(pos>0){
13 System.out.println("The element is present in "+(pos+1)+" position");
14 }
15 else{
16 System.out.println("The element is not present in the array");
17 }
18 }
19 }
java -cp /tmp/VysePbd3D5/LinearSearch
The element is present in 6 position
=== Code Execution Successful ===
Nifty smlcap
+1.16%
Search
ENG
IN
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