

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);
}
}

```

The screenshot shows a web browser window with the URL `programiz.com/java-programming/online-compiler/`. The page features the Programiz logo and a banner for "Programiz PRO". The main content area is divided into two panels: "Main.java" on the left and "Output" on the right. The "Main.java" panel contains the following code:

```

1 public class main{
2     static void swap(int[] arr, int i, int j)
3     {
4         int temp = arr[i];
5         arr[i] = arr[j];
6         arr[j] = temp;
7     }
8     static int partition(int[] arr, int low, int high)
9     {
10        int pivot = arr[high];
11        int i = (low - 1);
12        for (int j = low; j <= high - 1; j++) {
13            if (arr[j] < pivot) {
14                i++;
15                swap(arr, i, j);
16            }
17        }
18        swap(arr, i + 1, high);
19        return (i + 1);
20    }
21    static void quickSort(int[] arr, int low, int high)
22    {
23        if (low < high) {
24            int pi = partition(arr, low, high);
25            quickSort(arr, low, pi - 1);

```

The "Output" panel shows the results of the program execution:

```

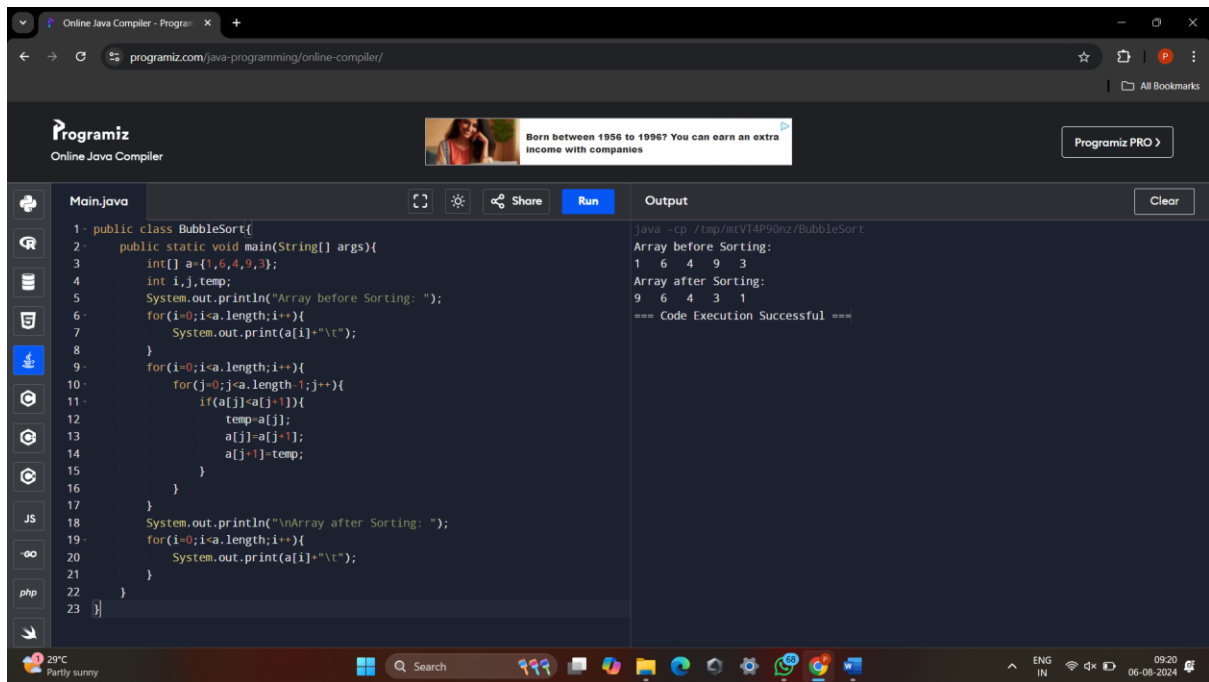
java -cp /tmp/Dwm7SH1GR2/main
Array before sorting:
10 7 8 9 1 5
Array after sorting:
1 5 7 8 9 10
=== Code Execution Successful ===

```

The bottom of the browser window shows a Windows taskbar with the date and time "06-08-2024 09:19".

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));

}
}

```

The screenshot shows a web browser window with the URL `programiz.com/java-programming/online-compiler/`. The page features the Programiz logo and a banner for "LOOKING TO LEARN PROGRAMMING?". Below the banner, there is a code editor with a file named `Main.java`. The code in the editor is as follows:

```

1 class BinarySearch {
2     int binarySearch(int a[], int low, int high, int key){
3         while (low <= high) {
4             int mid = (low + high) / 2;
5             if (a[mid] == key) {
6                 return mid;
7             }
8             else if (a[mid] > key) {
9                 high= mid - 1;
10            }
11            else {
12                low = mid + 1;
13            }
14        }
15        return -1;
16    }
17    public static void main(String args[])
18    {
19        BinarySearch obj= new BinarySearch();
20        int arr[] = {10,20,50,70,100};
21        int n = arr.length;
22        int key = 70;
23        int res = obj.binarySearch(arr, 0, n - 1, key);
24        System.out.println("Key is "+key);
25        if (res == -1)

```

The output window on the right shows the following text:

```

java -cp /tmp/g8rbpRyFCL/BinarySearch
Key is 70
Element found at position 4
=== Code Execution Successful ===

```

The bottom of the browser window shows a Windows taskbar with the date and time as 09:22 on 06-08-2024.

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

Run

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/L.LinearSearch
The element is present in 6 position
=== Code Execution Successful ===

JS

php

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Search

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06-08-2024