

Java, November 17, Lab Activity 6

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Lab Activity-6 [CO2 – 5 Marks]

Deadline 21/11/2021 at 11.59pm for 100%, for 70% at 11.59pm 22/11/2021

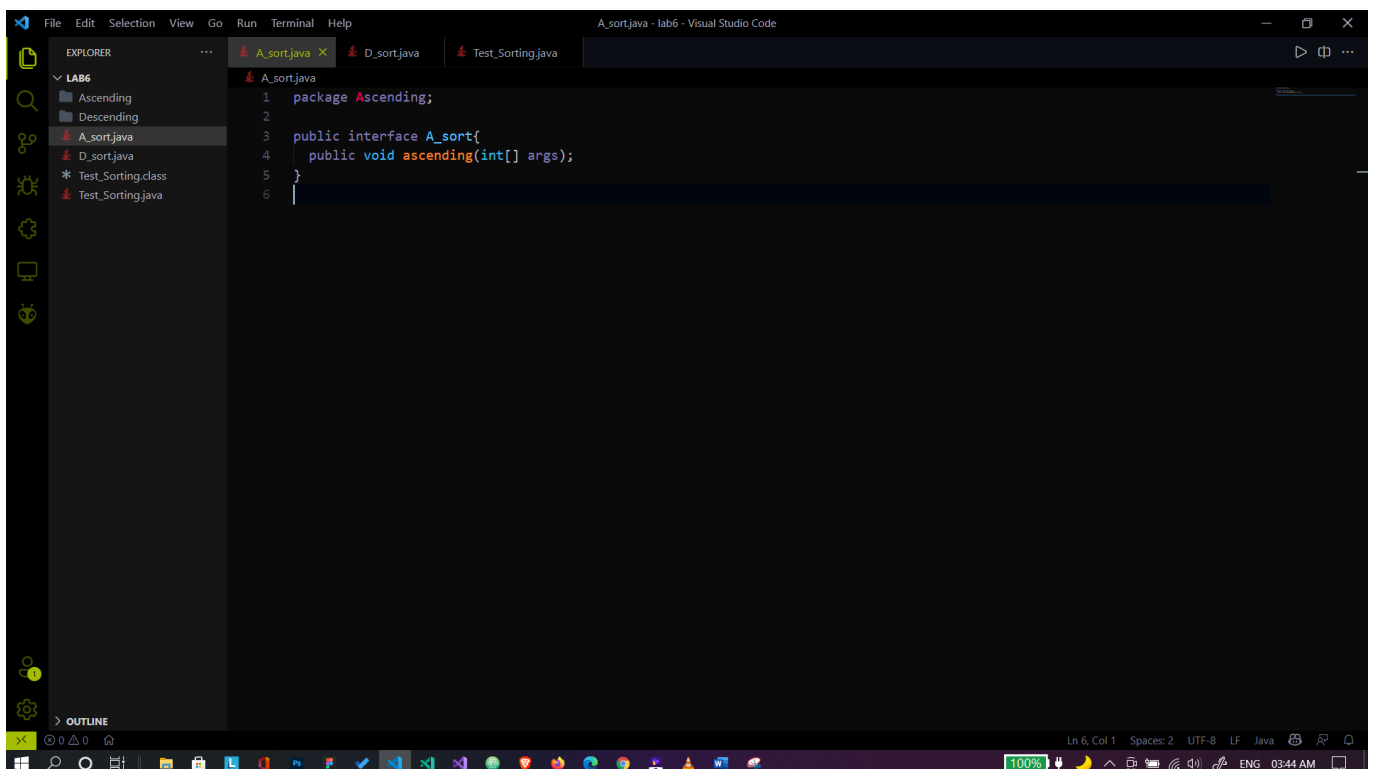
Create "A_sort" interface with one member function(ascending) prototype, that is to perform sorting of the given input array into ascending order in "Ascending" package. Create "D_sort" interface with one member function(descending) prototype, that is to perform sorting of given input array into descending order in "Descending" package. Import A_sort and D_sort to the "Test_Sorting" class and inherit the A_sort and D_sort interface to implement the ascending and descending member function and initiates the object of "Test_Sorting" to test the ascending and descending operation with user inputs.

Solution:

A_sort.java

```
package Ascending;
```

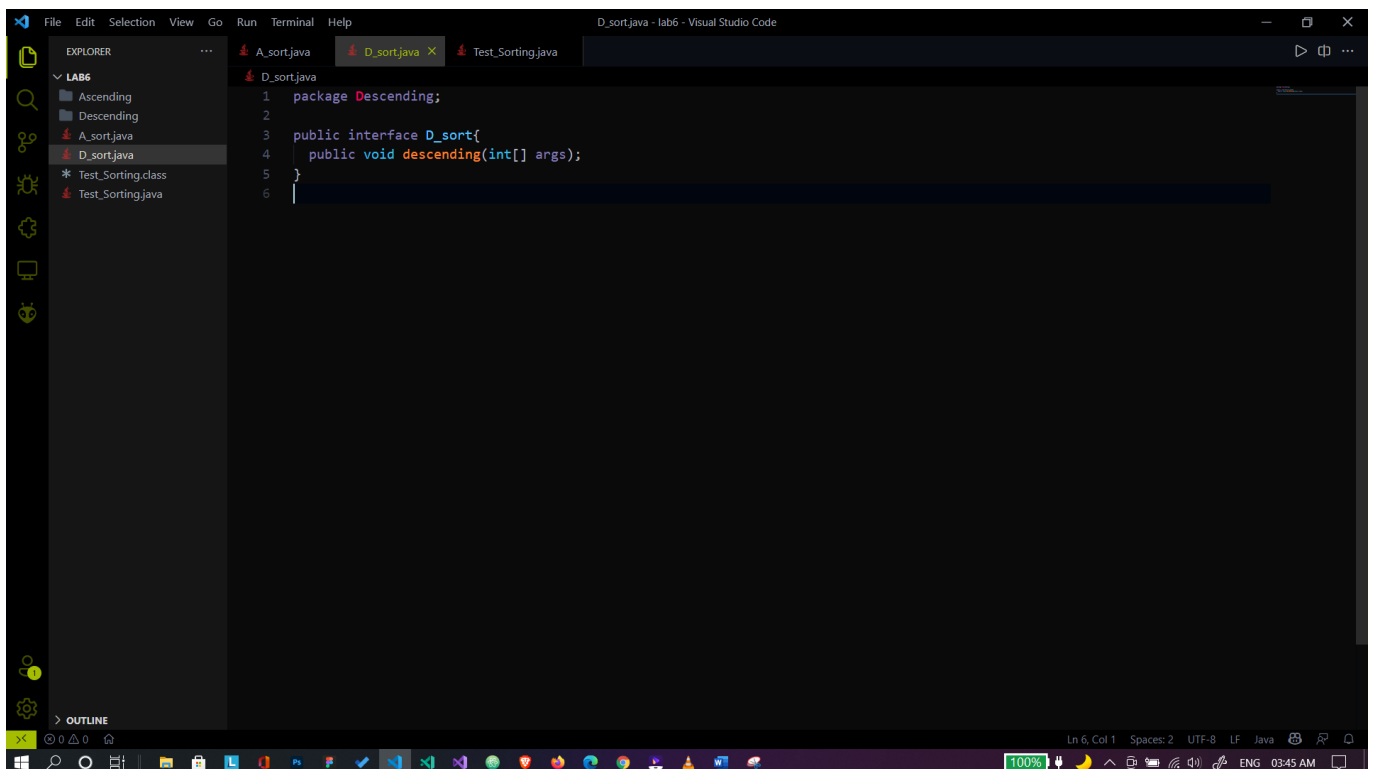
```
public interface A_sort{  
    public void ascending(int[] args);  
}
```



D_sort.java

```
package Descending;

public interface D_sort{
    public void descending(int[] args);
}
```



Test_Sorting.java

```
import java.util.*;

public class Test_Sorting implements Descending.D_sort, Ascending.A_sort{

    public void ascending(int[] args){

        for(int i = 0; i < args.length-1; i++){
            int min = 10000000;
            int tmp = args[i], index = 0;
```

```
        for(int j = i; j < args.length; j++){
            if(args[j] < min) {
                min = args[j];
                index = j;
            }
        }

        args[i] = min;
        args[index] = tmp;
    }
}

public void descending(int[] args){
    for(int i = 0; i < args.length-1; i++){
        int max = -1;
        int tmp = args[i], index = 0;

        for(int j = i; j < args.length; j++){
            if(args[j] > max){
                max = args[j];
                index = j;
            }
        }

        args[i] = max;
        args[index] = tmp;
    }
}

public static void main(String[] args){
    Test_Sorting tSort = new Test_Sorting();
    Scanner sc = new Scanner(System.in);

    System.out.println("Enter the length of the array: ");
    int n;
    n = sc.nextInt();
    sc.nextLine();

    int[] arr = new int[n];

    for(int i = 0; i < n; i++){
        int temp;
        if(i == 0){
```

```
        System.out.println("Enter the " + (i+1) + "st number: ");

        temp = sc.nextInt();
        sc.nextLine();

        arr[i] = temp;
    }
    else if(i == 1){
        System.out.println("Enter the " + (i+1) + "nd number: ");
        temp = sc.nextInt();
        sc.nextLine();

        arr[i] = temp;
    }
    else if(i == 2){
        System.out.println("Enter the " + (i+1) + "rd number: ");
        temp = sc.nextInt();
        sc.nextLine();

        arr[i] = temp;
    }
    else{
        System.out.println("Enter the " + (i+1) + "th number: ");
        temp = sc.nextInt();
        sc.nextLine();

        arr[i] = temp;
    }
}

tSort.ascending(arr);

System.out.println("\nSorted in Ascending Order: ");

for(int i = 0; i < n; i++){
    System.out.print(arr[i] + " ");
}

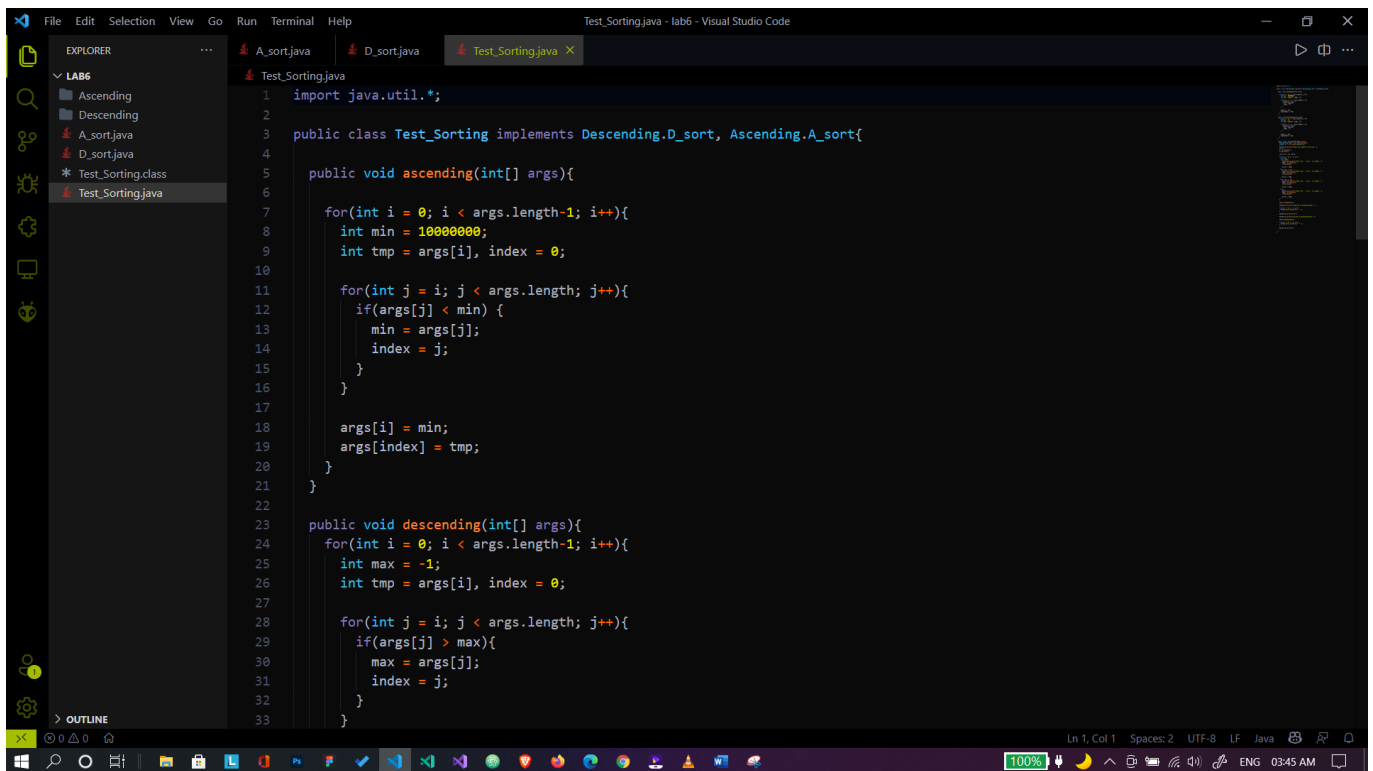
System.out.println("\n");

System.out.println("Sorted in Descending Order: ");

tSort.descending(arr);

for(int i = 0; i < n; i++){
```

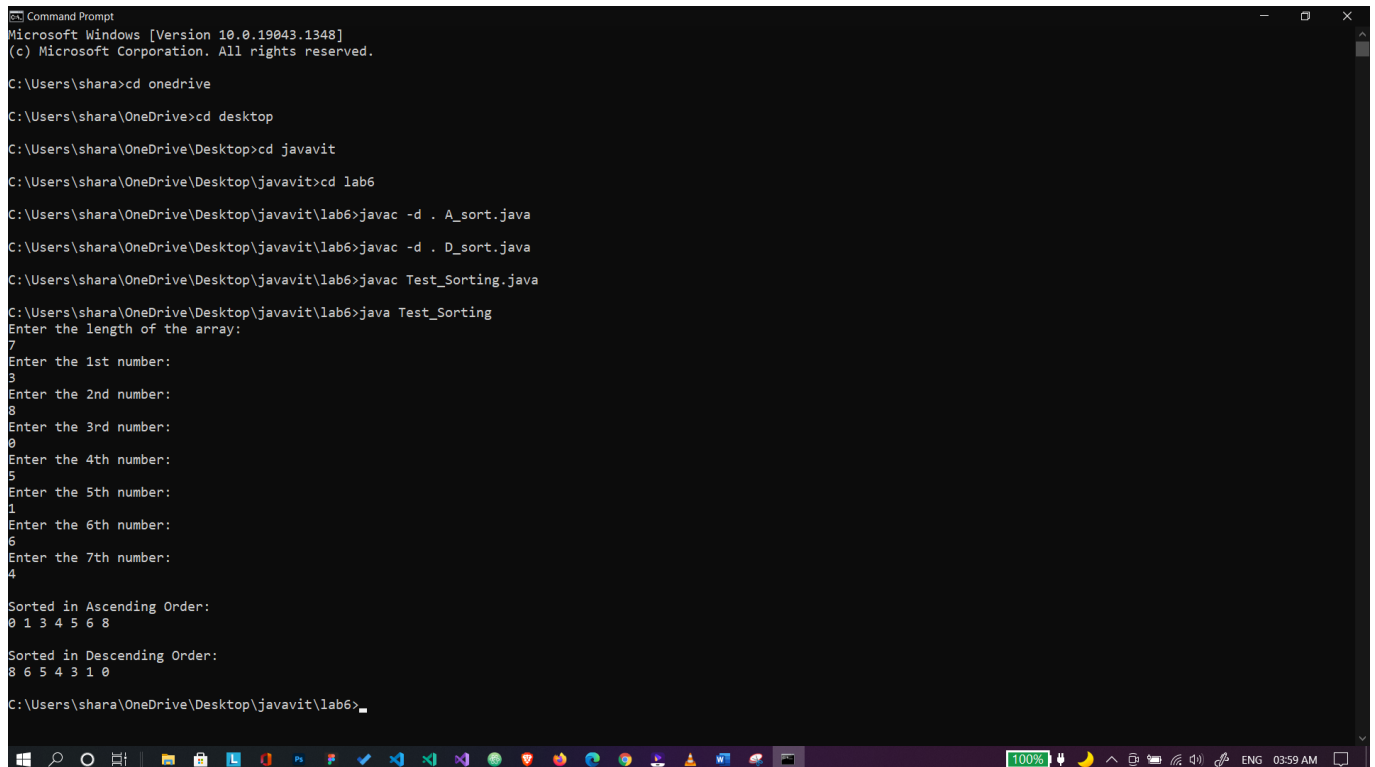
```
        System.out.print(arr[i] + " ");  
    }  
  
    System.out.println();  
  
}
```



```
Test_Sorting.java  
1  import java.util.*;  
2  
3  public class Test_Sorting implements Descending.D_sort, Ascending.A_sort{  
4  
5      public void ascending(int[] args){  
6  
7          for(int i = 0; i < args.length-1; i++){  
8              int min = 10000000;  
9              int tmp = args[i], index = 0;  
10  
11              for(int j = i; j < args.length; j++){  
12                  if(args[j] < min) {  
13                      min = args[j];  
14                      index = j;  
15                  }  
16              }  
17  
18              args[i] = min;  
19              args[index] = tmp;  
20          }  
21      }  
22  
23      public void descending(int[] args){  
24          for(int i = 0; i < args.length-1; i++){  
25              int max = -1;  
26              int tmp = args[i], index = 0;  
27  
28              for(int j = i; j < args.length; j++){  
29                  if(args[j] > max){  
30                      max = args[j];  
31                      index = j;  
32                  }  
33              }  
34          }  
35      }  
36  }
```

OUTPUT:

In command prompt:



```
Microsoft Windows [Version 10.0.19043.1348]
(c) Microsoft Corporation. All rights reserved.

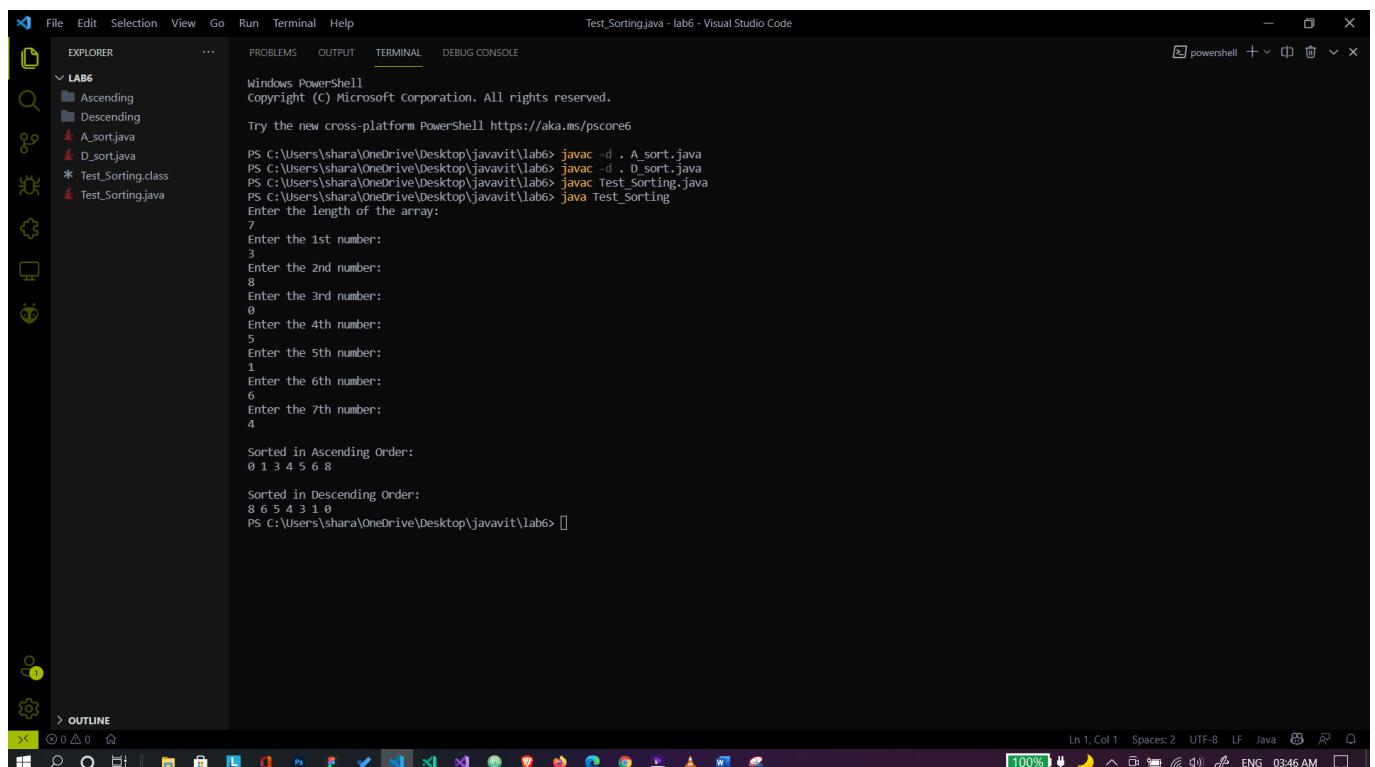
C:\Users\shara>cd onedrive
C:\Users\shara\OneDrive>cd desktop
C:\Users\shara\OneDrive\Desktop>cd javavit
C:\Users\shara\OneDrive\Desktop\javavit>cd lab6
C:\Users\shara\OneDrive\Desktop\javavit\lab6>javac -d . A_sort.java
C:\Users\shara\OneDrive\Desktop\javavit\lab6>javac -d . D_sort.java
C:\Users\shara\OneDrive\Desktop\javavit\lab6>javac Test_Sorting.java
C:\Users\shara\OneDrive\Desktop\javavit\lab6>java Test_Sorting
Enter the length of the array:
7
Enter the 1st number:
3
Enter the 2nd number:
8
Enter the 3rd number:
0
Enter the 4th number:
5
Enter the 5th number:
1
Enter the 6th number:
6
Enter the 7th number:
4

Sorted in Ascending Order:
0 1 3 4 5 6 8

Sorted in Descending Order:
8 6 5 4 3 1 0

C:\Users\shara\OneDrive\Desktop\javavit\lab6>
```

In VSCode Terminal:



```
Test_Sorting.java - lab6 - Visual Studio Code

Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\shara\OneDrive\Desktop\javavit\lab6> javac -d . A_sort.java
PS C:\Users\shara\OneDrive\Desktop\javavit\lab6> javac -d . D_sort.java
PS C:\Users\shara\OneDrive\Desktop\javavit\lab6> javac Test_Sorting.java
PS C:\Users\shara\OneDrive\Desktop\javavit\lab6> java Test_Sorting
Enter the length of the array:
7
Enter the 1st number:
3
Enter the 2nd number:
8
Enter the 3rd number:
0
Enter the 4th number:
5
Enter the 5th number:
1
Enter the 6th number:
6
Enter the 7th number:
4

Sorted in Ascending Order:
0 1 3 4 5 6 8

Sorted in Descending Order:
8 6 5 4 3 1 0
PS C:\Users\shara\OneDrive\Desktop\javavit\lab6>
```