Java, November 22, Lab Activity 7

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19BCE2105

Lab Activity-7 [CO4 – 4 Marks]

Deadline 22/11/2021 at 11.59pm for 100%, for 70% at 11.59pm 23/11/2021

7(a) Write the java program to open the file “numbers.txt" to check all the numbers are exactly divisible by seven or not using Thread-1. If that number is exactly divisible by seven, check that number is Armstrong number or not using Thread-2.

7(b) Write the Object of “Test_Sorting” in “Activity_6.txt” file for future reference. **Note:** With help of your Lab Activty-6 code, you could complete this activity(7b).

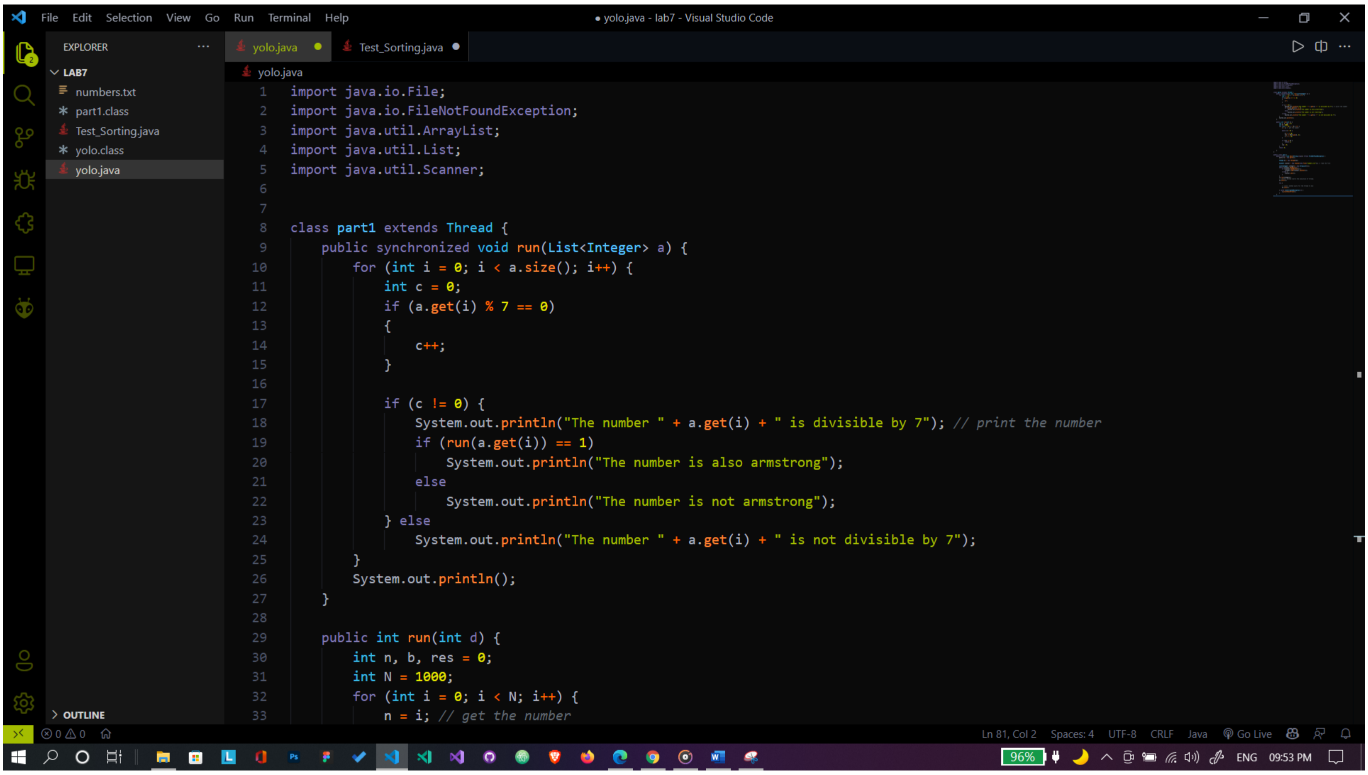
Solution:

Part (a)

yolo.java

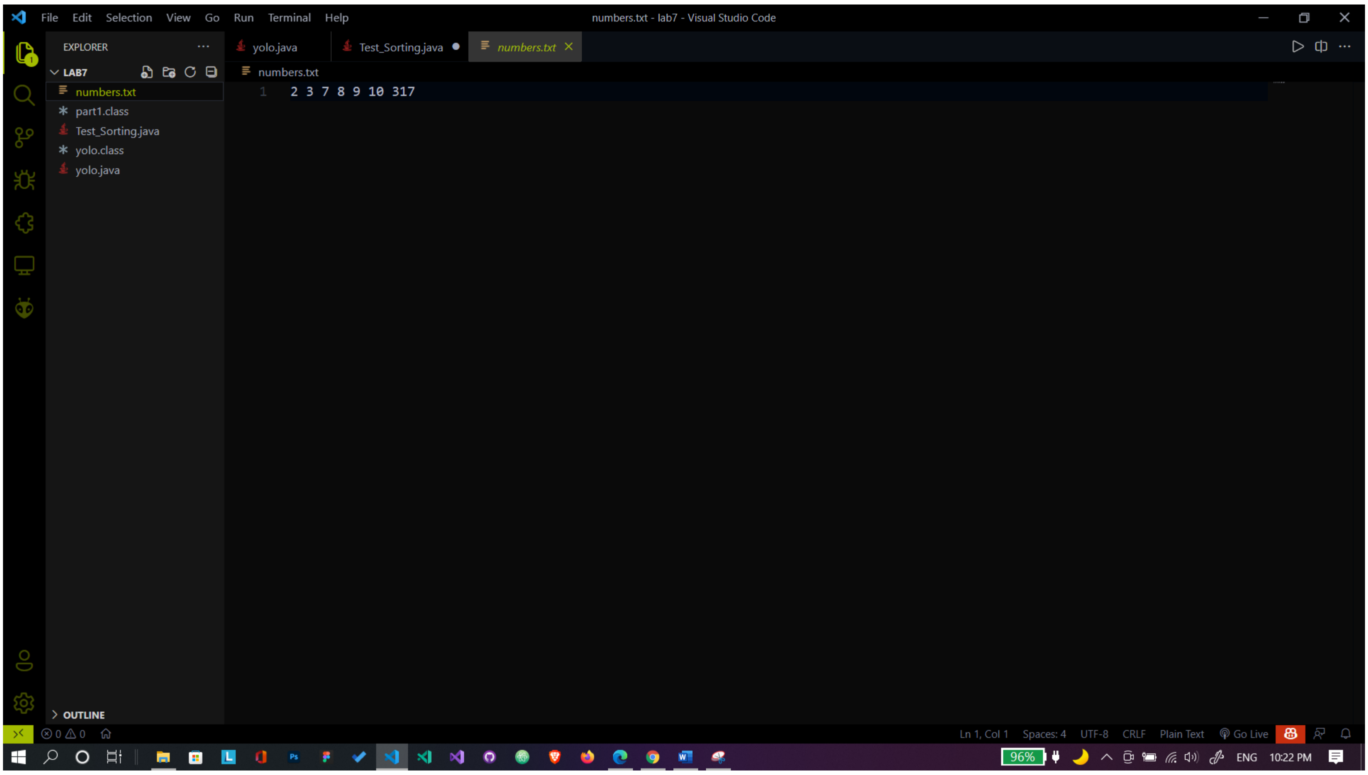
```
import java.io.File;
import java.io.FileNotFoundException;
import java.util.ArrayList;
import java.util.List;
import java.util.Scanner;


class part1 extends Thread {
    public synchronized void run(List<Integer> a) {
        for (int i = 0; i < a.size(); i++) {
            int c = 0;
            if (a.get(i) % 7 == 0) {
                c++;
            }

            if (c != 0) {
                System.out.println("The number " + a.get(i) + " is divisible by 7");
// print the number
                if (run(a.get(i)) == 1)
                    System.out.println("The number is also armstrong");
                else
                    System.out.println("The number is not armstrong");
            } else
```

```
                System.out.println("The number " + a.get(i) + " is not divisible by 
7");
        }
        System.out.println();
    }

    public int run(int d) {
        int n, b, res = 0;
        int N = 1000;
        for (int i = 0; i < N; i++) {
            n = i; // get the number

            while (n > 0) {
                b = n % 10;
                res += Math.pow(b, 3);
                n = n / 10;
            }
            if (res == d) {
                return 1;
            }
            res = 0;
        }
        return 0;
    }
}

public class yolo {
    public static void main(String args[]) throws FileNotFoundException {
        part1 t1 = new part1();

        Thread m1 = new Thread(t1);
        Scanner scanner = new Scanner(new File("numbers.txt")); // read the file
        List<Integer> integers = new ArrayList<>();
        while (scanner.hasNext()) {
            if (scanner.hasNextInt()) {
                integers.add(scanner.nextInt());
            } else {
                scanner.next();
            }
        }
        t1.run(integers);
        // start() method starts the execution of thread.
        m1.start();

        try {
            // join() method waits for the thread to die
            m1.join();

        } catch (InterruptedException e) {
            e.printStackTrace();
        }
    }
}
```



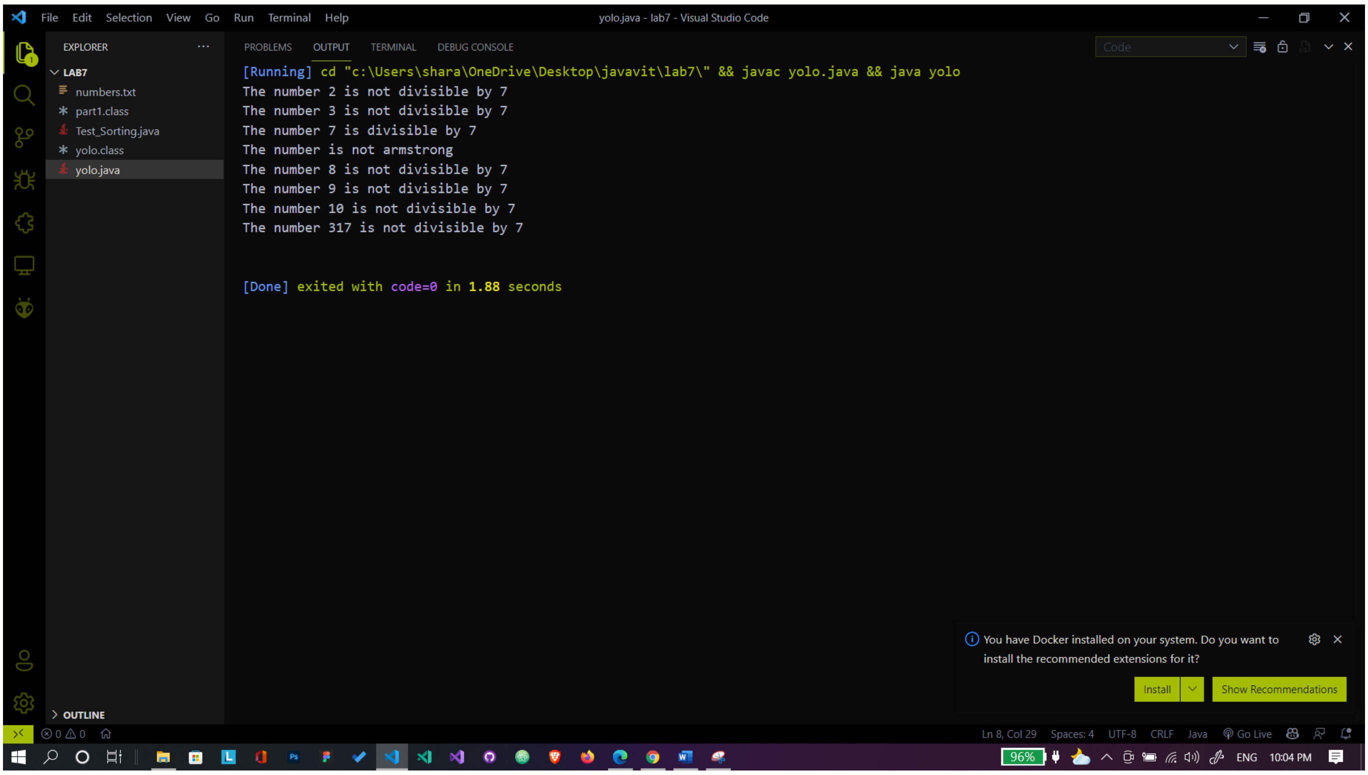
File Edit Selection View Go Run Terminal Help
• yolo.java - lab7 - Visual Studio Code
EXPLORER
LAB7
numbers.txt
part1.class
Test_Sorting.java
yolo.class
yolo.java
OUTLINE
yolo.java
Test_Sorting.java
Ln 81, Col 2 Spaces: 4 UTF-8 CRLF Java Go Live
ENG 09:53 PM

```
import java.io.File;
import java.io.FileNotFoundException;
import java.util.ArrayList;
import java.util.List;
import java.util.Scanner;


class part1 extends Thread {
    public synchronized void run(List<Integer> a) {
        for (int i = 0; i < a.size(); i++) {
            int c = 0;
            if (a.get(i) % 7 == 0)
            {
                c++;
            }

            if (c != 0) {
                System.out.println("The number " + a.get(i) + " is divisible by 7"); // print the number
                if (run(a.get(i)) == 1)
                    System.out.println("The number is also armstrong");
                else
                    System.out.println("The number is not armstrong");
            } else
                System.out.println("The number " + a.get(i) + " is not divisible by 7");
        }
        System.out.println();
    }

    public int run(int d) {
        int n, b, res = 0;
        int N = 1000;
        for (int i = 0; i < N; i++) {
            n = i; // get the number
```



File Edit Selection View Go Run Terminal Help
numbers.txt - lab7 - Visual Studio Code
EXPLORER
LAB7
numbers.txt
part1.class
Test_Sorting.java
yolo.class
yolo.java
OUTLINE
yolo.java
Test_Sorting.java
numbers.txt
Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Plain Text Go Live
ENG 10:22 PM

```
2 3 7 8 9 10 317
```



```
[Running] cd "c:\Users\shara\OneDrive\Desktop\javavit\lab7\" && javac yolo.java && java yolo
The number 2 is not divisible by 7
The number 3 is not divisible by 7
The number 7 is divisible by 7
The number is not armstrong
The number 8 is not divisible by 7
The number 9 is not divisible by 7
The number 10 is not divisible by 7
The number 317 is not divisible by 7


[Done] exited with code=0 in 1.88 seconds
```

You have Docker installed on your system. Do you want to install the recommended extensions for it?

Part (b)

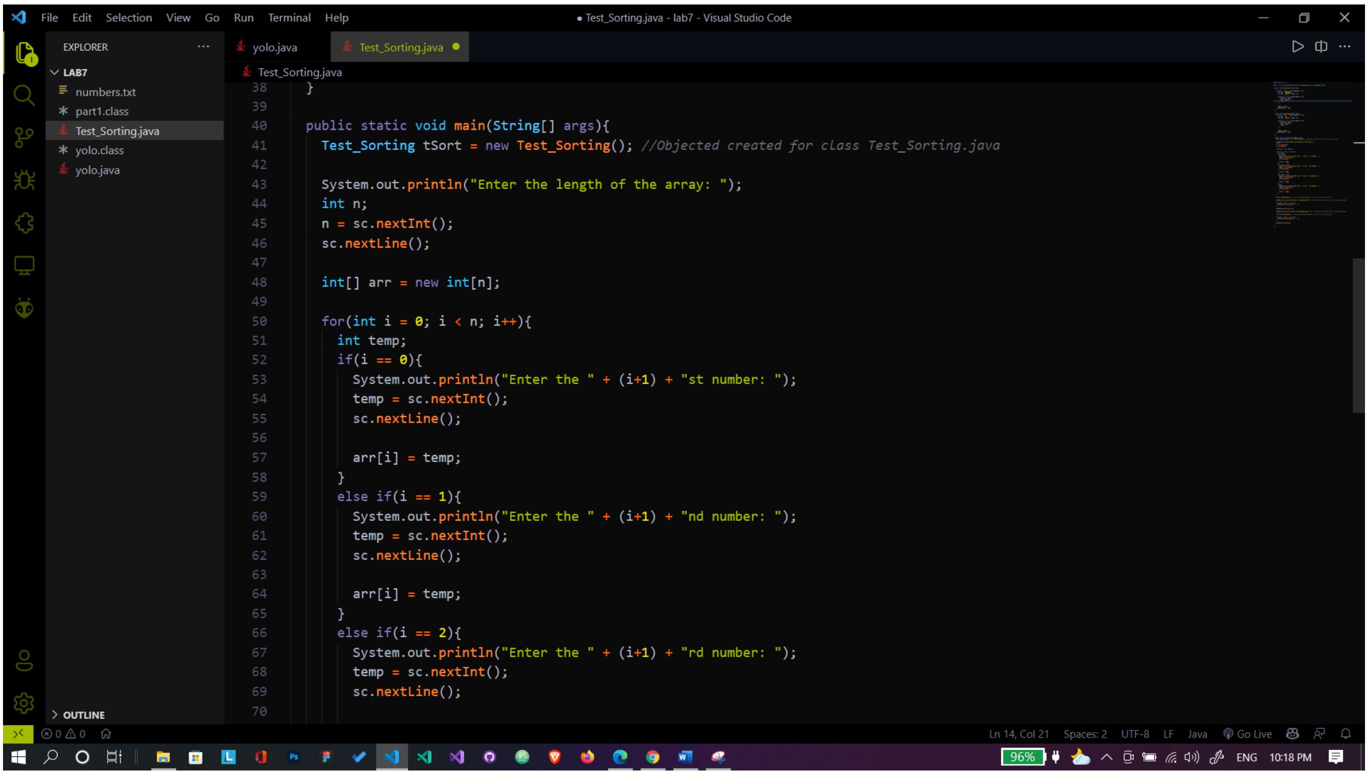
Here, **tsort** is the object
I'd already written it in Activity 6. Pasting the code below.

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(); //Objected created for class
Test_Sorting.java

    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); //Calling ascending method from class Test_Sorting.java

  System.out.println("\nSorted in Ascending Order: "); //Printing the sorted array
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: "); //Printing the sorted array
in descending order

  tSort.descending(arr); //Calling descending method from class Test_Sorting.java

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

  System.out.println();
```

```
    }
}
```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yolo.java
OUTLINE
yolo.java
Test_Sorting.java
Ln 14, Col 21 Spaces: 2 UTF-8 LF Java Go Live
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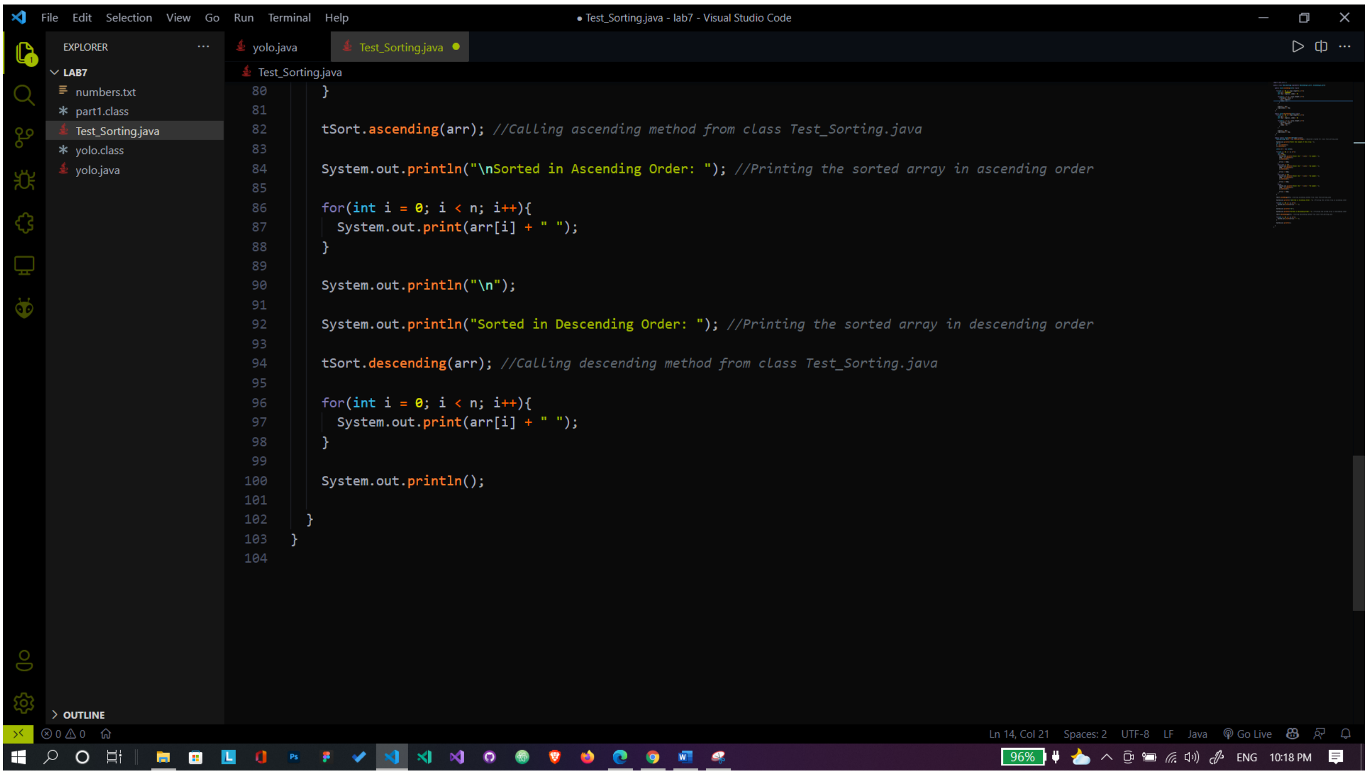
ENG 10:18 PM

```
  }

  public static void main(String[] args){
    Test_Sorting tSort = new Test_Sorting(); //Objected created for class Test_Sorting.java

    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();

```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yolo.class
yolo.java
OUTLINE
yolo.java
Test_Sorting.java
Ln 14, Col 21 Spaces: 2 UTF-8 LF Java Go Live
96%
ENG 10:18 PM

```
    }

    tSort.ascending(arr); //Calling ascending method from class Test_Sorting.java

    System.out.println("\nSorted in Ascending Order: "); //Printing the sorted array 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: "); //Printing the sorted array in descending order

    tSort.descending(arr); //Calling descending method from class Test_Sorting.java

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

    System.out.println();

  }
}

```