Phase-1 Practice Project

Longest Increasing Subsequence.

source code:

```
package longest;
import java.util.*;
public class Longestinc{
	public static List<Integer> longestinc(int[] nums) {
		int n = nums.length;
		int[] arr = new int[n];
		int[] prev = new int[n];
		int max = 1;
		int lastIndex = 0;
		for (int i = 0; i < n; i++) {
			arr[i] = 1;
			prev[i] = -1;
			for (int j = 0; j < i; j++) {
				if (nums[i] > nums[j] && arr[i] < arr[j] + 1) {
					arr[i] = arr[j] + 1;
					prev[i] = j;
					if (arr[i] > max) {
						max = arr[i];
						lastIndex = i;
					}
				}
			}
		}
		List<Integer> list = new ArrayList<>();
```

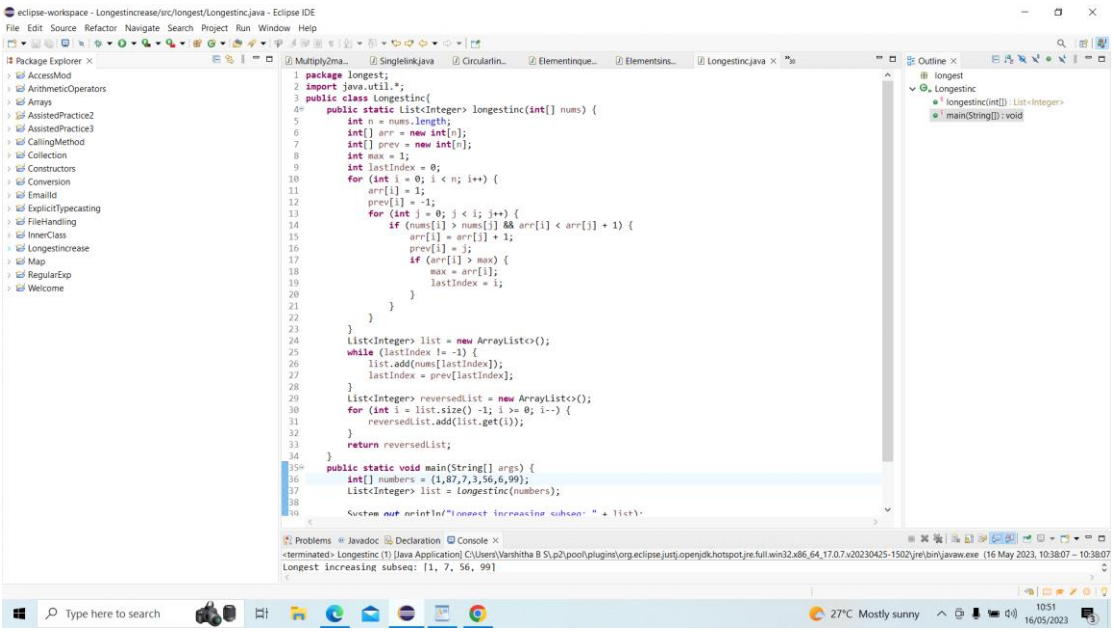
```
            while (lastIndex != -1) {
                  list.add(nums[lastIndex]);
                  lastIndex = prev[lastIndex];
            }
            List<Integer> reversedList = new ArrayList<>();
            for (int i = list.size() -1; i >= 0; i--) {
                  reversedList.add(list.get(i));
            }
            return reversedList;
      }
      public static void main(String[] args) {
            int[] numbers = {1,87,7,3,56,6,99};
            List<Integer> list = longestinc(numbers);

            System.out.println("Longest increasing subseq: " + list);

      }

}
```

Output:


eclipse-workspace - Longestincrease/src/longest/Longestinc.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Package Explorer
AccessMod
ArithmeticOperators
Arrays
AssistedPractice2
AssistedPractice3
CallingMethod
Collection
Constructors
Conversion
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ExplicitTypecasting
FileHandling
InnerClass
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RegularExp
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Singlelink.java
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if (nums[i] > nums[j] && arr[i] < arr[j] + 1) {
arr[i] = arr[j] + 1;
prev[i] = j;
if (arr[i] > max) {
max = arr[i];
lastIndex = i;
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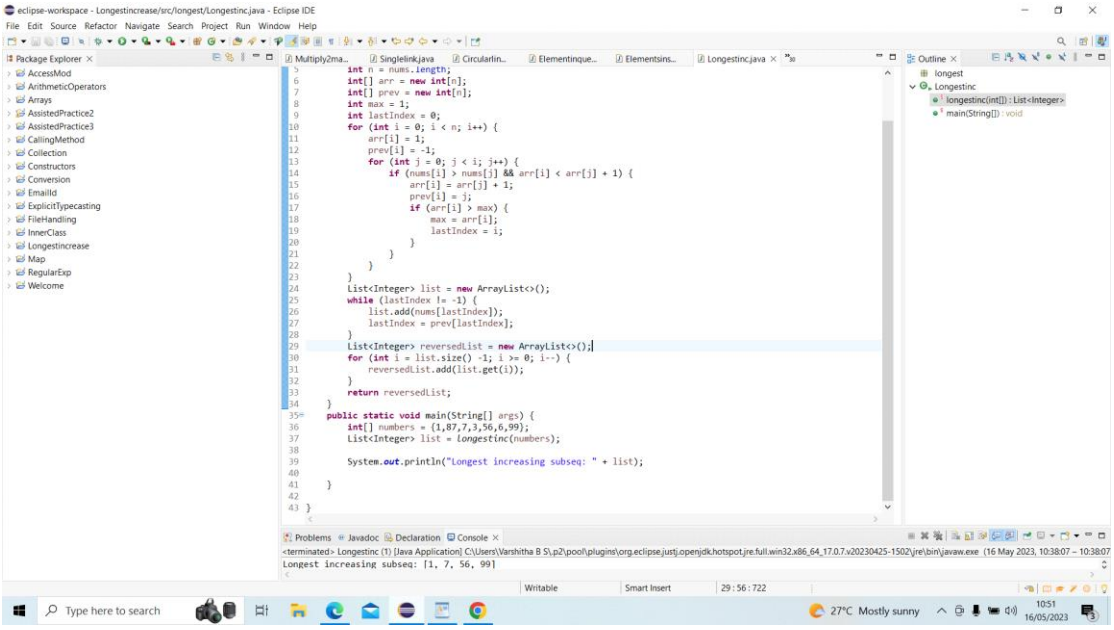
}
List<Integer> list = new ArrayList<>();
while (lastIndex != -1) {
list.add(nums[lastIndex]);
lastIndex = prev[lastIndex];
}
List<Integer> reversedList = new ArrayList<>();
for (int i = list.size() -1; i >= 0; i--) {
reversedList.add(list.get(i));
}
return reversedList;
}
public static void main(String[] args) {
int[] numbers = {1,87,7,3,56,6,99};
List<Integer> list = longestinc(numbers);
Outline
longest
Longestinc
longestinc(int[]) : List<Integer>
main(String[]) : void
Problems
Javadoc
Declaration
Console
<terminated> Longestinc (1) [Java Application] C:\Users\Varshitha B S\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.7.v20230425-1502\jre\bin\javaw.exe (16 May 2023, 10:38:07 – 10:38:07
Longest increasing subseq: [1, 7, 56, 99]
Type here to search
27°C Mostly sunny
10:51
16/05/2023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reversedList.add(list.get(i));
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return reversedList;
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List<Integer> list = longestinc(numbers);
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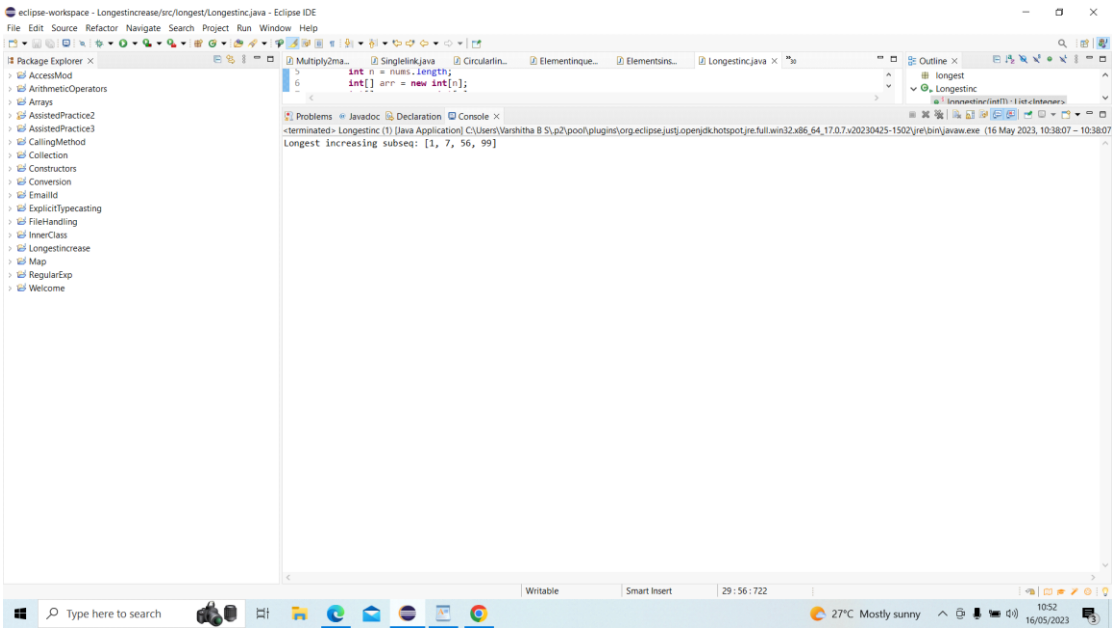
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