

Longest Increasing Subsequence

Introduction:

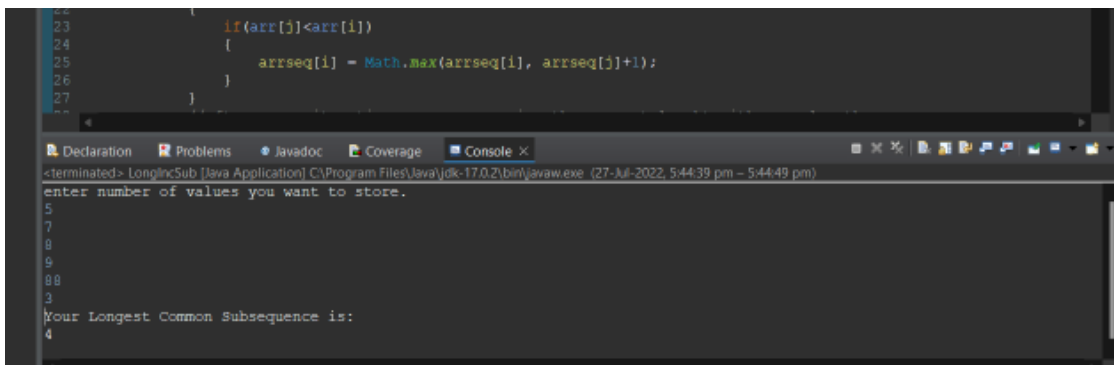
This Longest Increasing Subsequence program which will give the use LIS

Installation Guide:

1. GitHub link: <https://github.com/baljeet-singh97/LongestIncreasingSubsequence>
2. Download the entire project as Zip in local system.
3. import the project in **Eclipse IDE**

How to use:

1. After running the code you will see the window like:

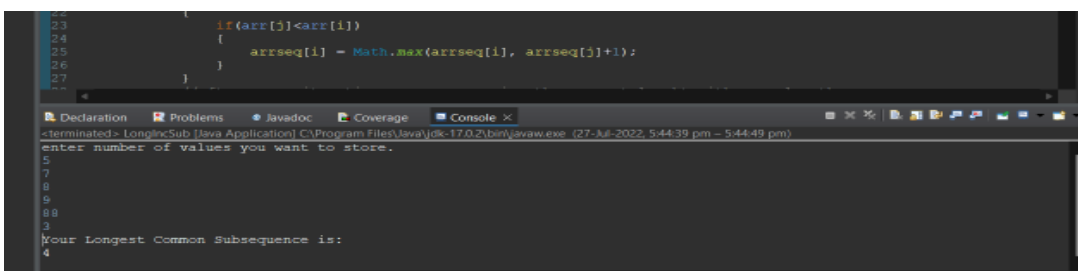


The screenshot shows the Eclipse IDE interface. The top editor displays Java code for finding the Longest Increasing Subsequence (LIS). The code includes a loop that iterates through an array and updates the 'arrseq' array based on the current element. The bottom console window shows the program's execution. It prompts the user to 'enter number of values you want to store.' and then displays the input values: 5, 7, 8, 9, 88, 3. Finally, it outputs 'Your Longest Common Subsequence is: 4'.

```
22         if(arr[j]<arr[i])
23         {
24             arrseq[i] = Math.max(arrseq[i], arrseq[j]+1);
25         }
26     }
27 }
```

```
<terminated> LongIncSub [Java Application] C:\Program Files\Java\jdk-17.0.2\bin\javaw.exe (27-Jul-2022, 5:44:39 pm - 5:44:49 pm)
enter number of values you want to store.
5
7
8
9
88
3
Your Longest Common Subsequence is:
4
```

2. Enter the number of values you want to store, then store all the values and press enter you will get you Longest Increasing Subseq.



This screenshot is identical to the one above, showing the same Java code and console output in the Eclipse IDE. It demonstrates the program's functionality by taking a sequence of numbers as input and calculating the length of the longest increasing subsequence, which is 4 in this case.

```
22         if(arr[j]<arr[i])
23         {
24             arrseq[i] = Math.max(arrseq[i], arrseq[j]+1);
25         }
26     }
27 }
```

```
<terminated> LongIncSub [Java Application] C:\Program Files\Java\jdk-17.0.2\bin\javaw.exe (27-Jul-2022, 5:44:39 pm - 5:44:49 pm)
enter number of values you want to store.
5
7
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3
Your Longest Common Subsequence is:
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```

Code Description:

Main Function:

```
//making object of class Subseq  
Subseq obj = new Subseq();
```

Classes:

- created class “Subseq” to perform the longest increasing subsequence

Created return type method to find LIS and return it to main.

```
int lis(int arr[], int n)
```

```
//created an array arrseq to store the lenght of all subseq  
int arrseq[] = new int[arr.length];
```

```
//filling the arrseq with value 1  
Arrays.fill(arrseq, 1);
```

```
//performed the operation checking from j to i
```

```
for(int i=1; i<arr.length; i++)  
{  
    for(int j=0; j<i; j++)  
    {  
        if(arr[j]<arr[i])  
        {  
            arrseq[i] = Math.max(arrseq[i], arrseq[j]+1);  
        }  
    }  
}
```

```
//after every iteration we are comparing the current lenght with prev length.
```

```
max = Math.max(max, arrseq[i]);
```

```
//returning the LIS  
return max;
```