

# Java Concept Of The Day

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## How To Find Longest Substring Without Repeating Characters In Java?

pramodbablad July 10, 2016 | 0

### Problem :

Write a java program or function to find the longest substring without repeating characters in a given string. For example, if *"javaconceptoftheday"* is the input string, then the longest substring without repeating or duplicate characters is *"oftheday"* and its length is 8.

## How To Find Longest Substring Without Repeating Characters In Java?

Step 1 : Convert the given *inputString* to an array of characters called *charArray*.

```
char[] charArray = inputString.toCharArray();
```

Step 2 : Initialize *longestSubstring* to *null* and *longestSubstringLength* to 0.

```
String longestSubstring = null;
```

```
int longestSubstringLength = 0;
```

Step 3 : Define one *LinkedHashMap* called *charPosMap*. It will hold characters of *inputString* as keys and their position as values. Here, we have used *LinkedHashMap* instead of *HashMap* because it maintains the insertion order of elements.

```
LinkedHashMap<Character, Integer> charPosMap = new  
LinkedHashMap<Character, Integer>();
```

Step 4 : For every char *ch* in *charArray*, check whether it is already present in *charPosMap*. If it is not present, add this char to *charPosMap* along with its position.

```
if(!charPosMap.containsKey(ch))  
{  
    charPosMap.put(ch, i);  
}
```


























Step 5 : If char *ch* is present in *charPosMap*, reposition the cursor *i* to the position of *ch* and clear the *charPosMap*.

```
i = charPosMap.get(ch);
```

```
charPosMap.clear();
```

Step 6 : Check whether the size of *charPosMap* is greater than *longestSubStringLength*. If it is greater than *longestSubStringLength*, assign the size of *charPosMap* to *longestSubStringLength* and its keySet to *longestSubstring*.

```
if(charPosMap.size() > longestSubStringLength)  
{  
    longestSubStringLength = charPosMap.size();  
  
    longestSubstring = charPosMap.keySet().toString();  
}
```

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```
}
```

Step 7 : Print *longestSubstring* and *longestSubstringLength*.

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## Java Program To Find Longest Substring Without Repeating Characters :

```
1  import java.util.LinkedHashMap;  
2  
3  public class MainClass  
4  {  
5      static void longestSubstring(String inputString)  
6      {  
7          //Convert inputString to charArray
```

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```
8
9
10
11 //Initialization
12
13 String longestSubstring = null;
14
15 int longestSubStringLength = 0;
16
17 //Creating LinkedHashMap with characters as keys and the
18
19 LinkedHashMap<Character, Integer> charPosMap = new Link
20
21 //Iterating through charArray
22
23 for (int i = 0; i < charArray.length; i++)
24 {
25     char ch = charArray[i];
26
27     //If ch is not present in charPosMap, adding ch into
28
29     if(!charPosMap.containsKey(ch))
30     {
31         charPosMap.put(ch, i);
32     }
33
34     //If ch is already present in charPosMap, reposionir
35
36     else
37     {
38         i = charPosMap.get(ch);
39
40         charPosMap.clear();
41     }
42
43     //Updating longestSubstring and longestSubstringLeng
44
```

```

45         if(charPosMap.size() > longestSubStringLength)
46         {
47             longestSubStringLength = charPosMap.size();
48
49             longestSubstring = charPosMap.keySet().toString();
50         }
51     }
52
53     System.out.println("Input String : "+inputString);
54
55     System.out.println("The longest substring : "+longestSubstring);
56
57     System.out.println("The longest Substring Length : "+longestSubStringLength);
58 }
59
60 public static void main(String[] args)
61 {
62     longestSubstring("javaconceptoftheday");
63
64     System.out.println("=====");
65
66     longestSubstring("thelongestsubstring");
67 }
68 }

```

### Output :

Input String : javaconceptoftheday

The longest substring : [o, f, t, h, e, d, a, y]

The longest Substring Length : 8

=====

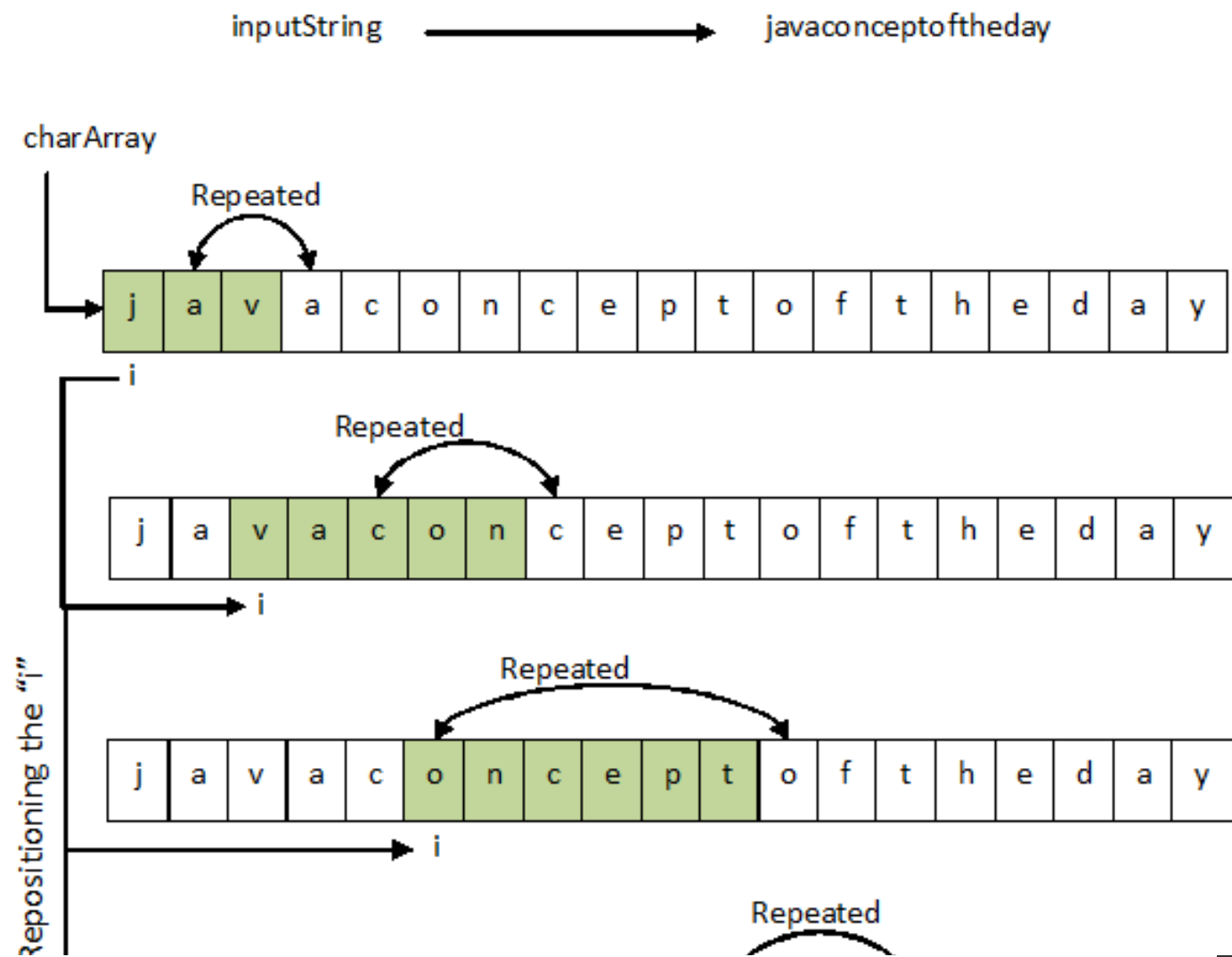
Input String : thelongestsubstring

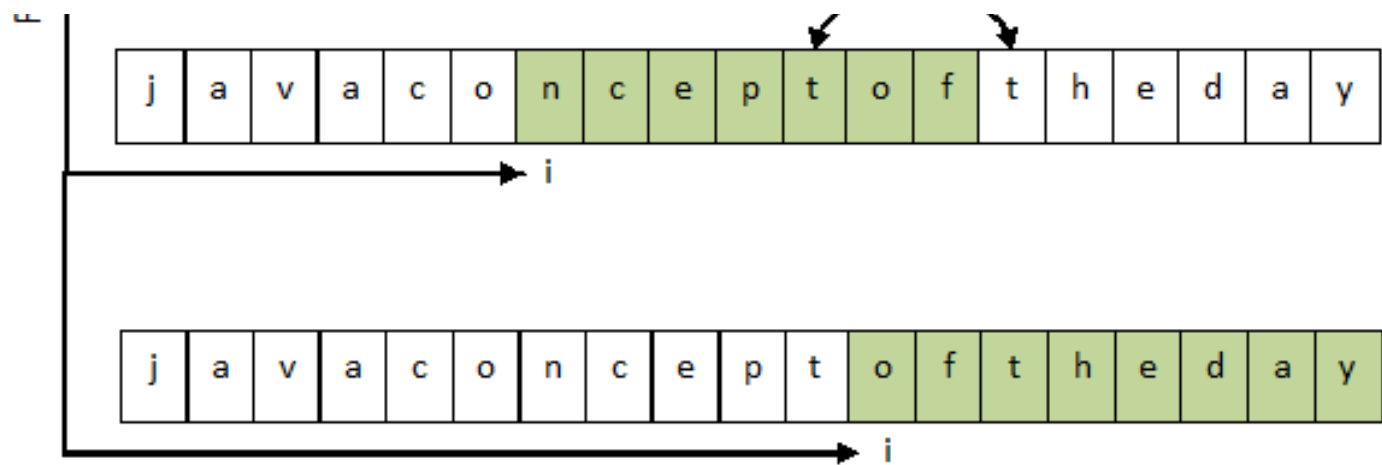
The longest substring : [u, b, s, t, r, i, n, g]

The longest Substring Length : 8

## How It Works?

### Longest Substring Without Repeated Characters





Longest Substring Without  
Repeated Characters



oftheday

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