

# 005. Longest Palindromic Substring

## 005 Longest Palindromic Substring

- Dynamic Programming+string

### Description

Given a string **s**, find the longest palindromic substring in **s**. You may assume that the maximum length of **s** is 1000.

#### Example:

**Input:** "babad"

**Output:** "bab"

**Note:** "aba" is also a valid answer.

#### Example:

**Input:** "cbbd"

**Output:** "bb"

### 1. Thought Line

(1) To each element, set it as the middle elements and check from both left and right direction.

### 2. Dynamic Programming+string

```
1 class Solution {
2 public:
3     string longestPalindrome(string s) {
4         int n = s.size();
5         int len = 0; //len is the max length of Palindrome string.
6         int start = 0;
7         for(int i = 0; i < n; i++){
8
9             // start to expend the interval
10            int left = i, right = i;
11            // consider duplicate characters.
12            while(right < n && s[right+1] == s[right])
13                right++;
14            i = right;
15
16            // keep expanding
17            while(left > 0 && right < n-1 && s[left-1] == s[right+1]){
18                left--;
19                right++;
20            }
21
22            //update results
23            if(len < right-left+1){
24                len = right - left + 1;
25                start = left;
26            }
27        }
28        return s.substr(start, len);
29    }
```

