

Dynamic

Video-72

Programming



Note :- This playlist is only for explanation of Dns & solutions.

See my "DP Concepts & Dns" playlist for understanding DP from scratch...



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Longest Palindromic

Substring

Company : amazon

Microsoft

SAMSUNG

5. Longest Palindromic Substring

Hint



Medium



27.5K



1.6K



Companies

Given a string `s`, return the longest palindromic substring in `s`.

Example :-

`S = "babad"`

`s = "cbba"`

`s = "ace"`

"aba" }
→ "bab"
→ "bb" } 2
→ "a"
 "c"
 "e" } 1

Building Intuition

How do we check if a string
is palindrome ???

"a b a b a"
i → ← j

iterative

```
✓ i = 0  
j = n-1  
while (i <= j) {  
    if (s[i] == s[j])  
        i++;  
        j--;  
    else  
        return false;  
}
```

Recursion:

Solve(0, n-1)

```
✓ Solve(i, j) { ✓  
    if (i >= j)  
        return True;  
    → if (s[i] == s[j])  
        return Solve(i+1, j-1);  
    else  
        return False;
```

S = "babab"

"b"
"ba"

maxlen = 3
sp = 0

b a ← b a d
 ba ab ← ba ad
 bab aba bad
 baba abad
 babad

Solve(i, j)

S.Substring(i, j-i+1); // C++

Complete Dry Run ...

maxlen = 3
sp = 0

S = "b a b a d"

S.Substring(0, 3)

Most Important Part ...

$S = "a a a a a a a"$

$\begin{matrix} 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ a & a & a & a & a & a & a & a \end{matrix}$

$\begin{matrix} & & i & & & & & j \end{matrix}$

$\text{solve}(0, 5)$

$[1][4] = \text{True}$

$[2][3] = \text{True}$

$(0, 5) \rightarrow (1, 4) \rightarrow (2, 3)$

$\text{solve}(1, 4)$

$(1, 4)$

$\uparrow \text{True}$

Rec + Mem.

