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STRINGS

video-17

Leetcode
- Easy ✓
459

Repeated Substring Pattern



Ad



Asked By :-



amazon



459. Repeated Substring Pattern

Easy

4685

423

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Given a string s, check if it can be constructed by taking a substring of it and appending multiple copies of the substring together.

Ex:- 1 $S = \text{"abcdabcd"}$, $n=8$
True

$S = \text{"abc"}$, $n=3$

~~"a" "a" "a"~~ False

Intuition

Intuition

$S = \text{"abcabcabcabc"}$, $n = 12$

"a"	1 ✓
"ab"	2 ✓
abc	3 ✓
abca	4 ✓
abcab	5 ✗
abcabc	6 ✓ $n/2$
abcabca	7 ✗

- ① if $(n \cdot l == 0)$
- ② times = n/l ;
- ~~③ $l \neq n/2$~~
- ④

→ for ($l = n/2$; $l \geq 1$; $l--$) { ✓

→ if $(n \cdot l == 0)$ { ✓

Accepted.

int times = n/l ; ✓

string pattern = $S.substr(0, l)$;

Accepted.

```
int times = n/l; ✓
```

```
string pattern = s.substr(0, l);
```

```
string newstr = "";
```

```
while (times--) {  
    newstr += pattern;  
}
```

```
if (newstr == s)  
    return True;
```


```
}
```

```
}
```

```
return False;
```

Slight optimization

$n = 18$

$S =$ "aaaaaaaaaaaaaaaa" 

$S = "aaaaaaaaaaaaaaaaaaaa"$

$$l = n/2 = 18/2 = 9$$

$$n/l = 18$$

$$\text{times} = 18/9 = 2$$

$$\text{times} = n/l = 18$$

1
aaaaa.....

Time Complexity :-

```
for (int l = n/2 ; l >= 1 ; l++) {
```

```
    if (n/l == 0) {
```

← $(2 \times \sqrt{n})$

```
        times = n/l ;
```

```
        pattern = s.substr(0, l) ; →  $O(n)$ 
```

```
        newStr = ""
```

```
        while (times--) {
            newStr += pattern ;
        } →  $O(n)$ 
```


times = n / l ;

pattern = s.substr(0, l); $\rightarrow \underline{O(n)}$

newStr = " "

{ while (times --) {
 newStr += pattern;
} } $\rightarrow \underline{O(n)}$

if (newStr == s)
 return True;

}

}

return False;

$\times \sqrt{n}) * (\times n)$

$\approx \boxed{O(n \times \sqrt{n})}$