Sunday, 27 Dec 2021 12:48 AM

8. Given a string, count all palindrome substrings

Eg: input → abc
output → 3

(odd)

Manacher

(even)

Manacher

$k = \frac{n}{2}$

TC → n+k

Worst → (n)

(n-1) or n → (n²)

Manacher's Algorithm

TC → O(n)
SC → O(n)

8 3 1 2 4 5 8 ...

→ f(n) = f(n-1) + f(n/2)

1 2 3 4 5 6 7 8

→ f(n) = f(n-1) + n

8. Recursion

⇓

Recurrence relations

⇓

Solve

1. Guess & prove
2. Substitution
3. Master theorem
4. Substitution method

Substitution method

x , n

calc → x^n

x = 2 , n = 5

2^5 →

*

$x^n \Rightarrow x^{n-1}$

$x^2 \Rightarrow x^{n-2}$

```
power( x, n)
{ if (n==0) return 1;
  ans = power( x, n-1);
  return ans * x;
}
```

R.C →

f(n,0) = f(n,n-1) = x

f(n) = f(n-1) = x

2⁵
2⁴
2³
2²
2¹
2⁰
ans = 2⁴
ans = 2³
2⁵ = 2⁴ × 2 = 32
f(n) = 2f(n/2) + 1
O(log n)
3²ⁿ
3²
3¹
3⁰
3²ⁿ
3²
3¹
3⁰
ans = power(x, n/2)
ans = ans × ans
if
odd
ans = ans × x
T(n) = 2T(n/2) + 1
n/2
n/2
n/2