Valid Parenthesis String

Friday, April 17, 2020 11:10 AM

dp[i][j] == true only if s[i], s[i+1], ..., s[j] is valid.

We want s[i] .... s[j] to be valid

either:

s[i] = * s[i+1] ... s[j] is valid.

or:

s[i] = (s[k] =) such that

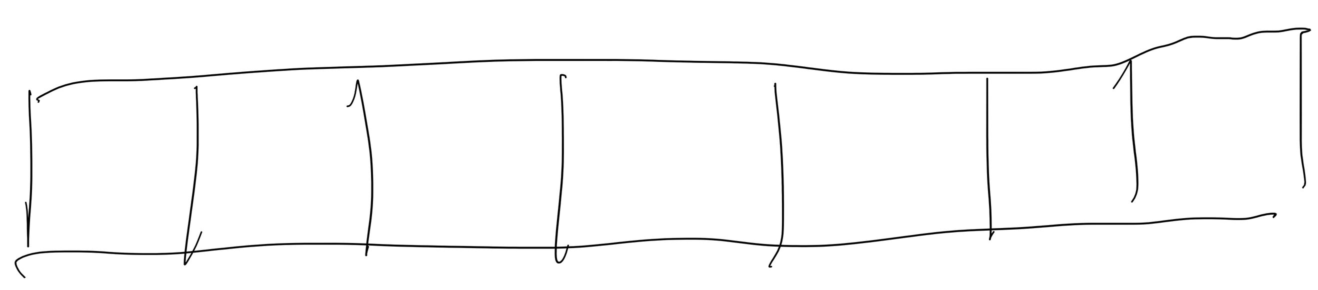
s[i+1] ... s[k-1] and s[k+1] .... s[j] are valid.

Eventually, we want to know whether dp[0][n-1] is valid or not

if s[0] = *, whether dp[1][n-1] is valid

else if s[0] = (, whether dp[1][k-1] and dp[k+1][n-1] are valid.

$0 < k \leq n-1$



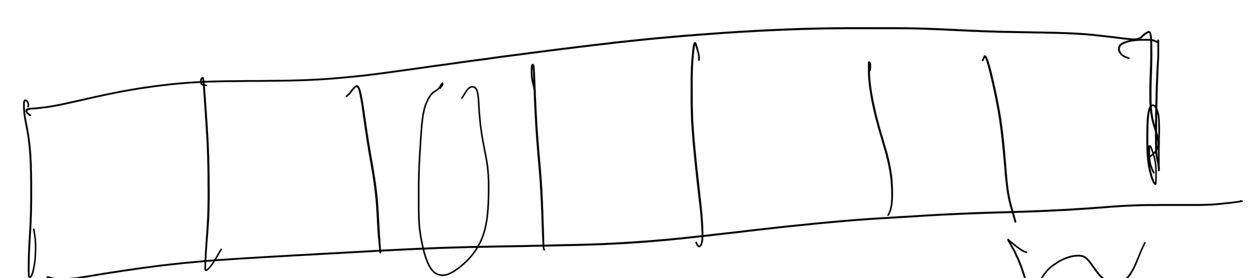
i k

( )

* *

s[i+1] ... s[k-1] valid

if k = i+1



i k i+size

i k

implementation

dp[0][n-1]

dp[0][0] dp[1][1] ...

dp[0][1] dp[1][2] ...

dp[i][i+size] == true $2 \leq$ size, i+size $\leq n-1$

The above is true only if one of the following conditions are met:

1) s[i] = * and dp[i+1][i+size] == true

2) s[i] = (or * s[k] =) or *

dp[i+1][k-1] == true

dp[k+1][i+size] == true