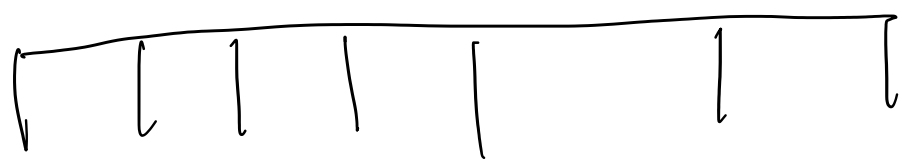


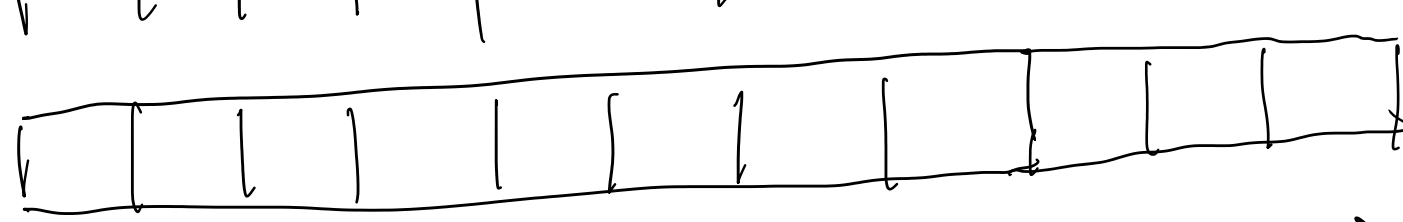
Shortest way to Form String

Thursday, April 16, 2020

1:28 PM

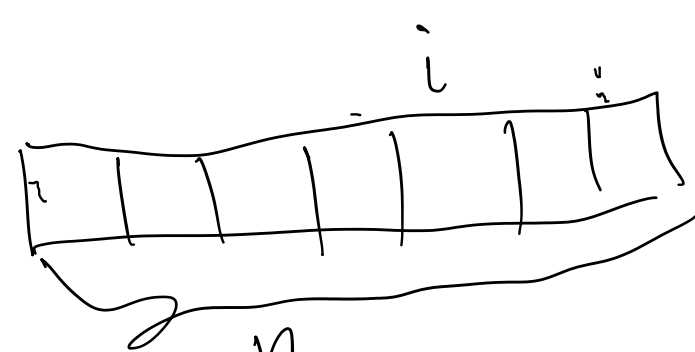
google medium

source 

target  dp[i]

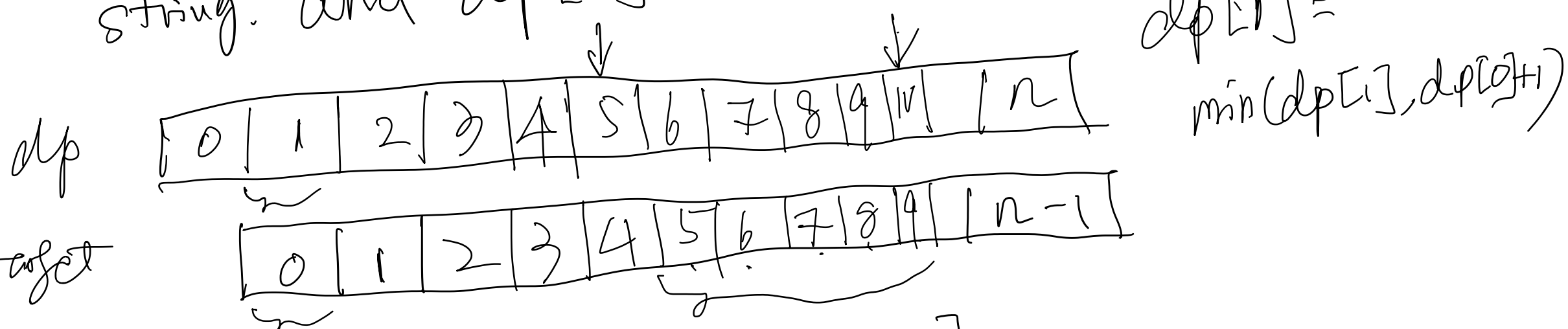
Solution #1 dp

$$f(n) = f(i) + 1$$



$$\min[f(n)] = \min[f(i) + 1] \quad 0 \leq i \leq n$$

To execute the command, we need to have target.substr(i, n-i+1) is a subsequence of source string. and dp[i] has a valid value.



$$dp[i] = \min[dp[i], dp[j] + 1]$$

$$dp[10] = \min[dp[10], dp[5] + 1]$$

$$dp[5] \neq n+1$$

target.substr(5, 5)

(194)

C++

Autocomplete

```

1 class Solution {
2 public:
3     int shortestWay(string source, string target) {
4         int n = target.size();
5         vector<int> dp(n+1, n+1);
6         dp[0] = 0;
7         for (int i = 1; i <= n; ++i) {
8             for (int j = i-1; j >= 0; --j) {
9                 if (dp[j] != n+1 and isSub(target.substr(j, i-j), source)) {
10                     dp[i] = min(dp[i], dp[j]+1);
11                 }
12                 else {break;}
13             }
14         }
15         return dp.back() == n+1? -1: dp.back();
16     }
17 }
18
19 private:
20     bool isSub(string t, string s) {
21         int i = 0, j = 0;
22         int ts = t.size(), ss = s.size();
23         while (i < ts and j < ss) {
24             if (t[i] == s[j]) {i++; j++;}
25             else {j++;}
26         }
27         return i==ts;
28     }
29 };
    
```