

```

1  #include <bits/stdc++.h>
2  using namespace std;
3  #define ll long long
4
5  Cyclic Longest Common Subsequence:
6
7  // maximum of lcs(any cyclic shift of s, any cyclic shift of t) in O(n*m)
8  const int N = 2010;
9  int dp[N * 2][N], from[N * 2][N];
10
11 // it is work for string or for normal vector
12 // vector<int> s , t;
13 string s , t;
14
15 int yo() {
16     int n = s.size(), m = t.size();
17     auto eq = [&](int a, int b) {
18         return s[(a - 1) % n] == t[(b - 1) % m];
19     };
20     dp[0][0] = from[0][0] = 0;
21     for (int i = 0; i <= n * 2; ++i) {
22         for (int j = 0; j <= m; ++j) {
23             dp[i][j] = 0;
24             if (j && dp[i][j - 1] > dp[i][j]) {
25                 dp[i][j] = dp[i][j - 1];
26                 from[i][j] = 0;
27             }
28             if (i && j && eq(i, j) && dp[i - 1][j - 1] + 1 > dp[i][j]) {
29                 dp[i][j] = dp[i - 1][j - 1] + 1;
30                 from[i][j] = 1;
31             }
32             if (i && dp[i - 1][j] > dp[i][j]) {
33                 dp[i][j] = dp[i - 1][j];
34                 from[i][j] = 2;
35             }
36         }
37     }
38     int ret = 0;
39     for (int i = 0; i < n; ++i) {
40         ret = max(ret, dp[i + n][m]);
41         // re-root
42         int x = i + 1, y = 0;
43         while (y <= m && from[x][y] == 0) ++y;
44         for (; y <= m && x <= n * 2; ++x) {
45             from[x][y] = 0, --dp[x][m];
46             if (x == n * 2) break;
47             for (; y <= m; ++y) {
48                 if (from[x + 1][y] == 2) break;
49                 if (y + 1 <= m && from[x + 1][y + 1] == 1) {
50                     ++y;
51                     break;
52                 }
53             }
54         }
55     }
56     return ret;
57 }

```