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1  /** 1110 - An Easy LCS:
2  Given two non-empty strings. You have to find the lexicographically
3  smallest Longest Common Subsequence(LCS) between them.
4  If the LCS length is 0 then just print ':('.
5  */
6  #include<bits/stdc++.h>
7  using namespace std;
8  string a,b;
9  int dp[105][105], nexta[105][27], nextb[105][27], last[105][27];
10 int fun(int i,int j){
11     if(i==a.size() || j==b.size())return 0;
12     if(dp[i][j]!=-1) return dp[i][j];
13
14     int ret=0;
15     if(a[i]==b[j]) ret = 1+fun(i+1,j+1);
16     else ret = max(fun(i+1,j), fun(i,j+1));
17
18     return dp[i][j] = ret;
19 }
20 int main(){
21     int tt; scanf("%d",&tt);
22     for(int ks=1; ks<=tt; ks++){
23         cin >> a >> b;
24         a = "+" + a; b = "-" + b;
25
26         memset(dp,-1,sizeof(dp));
27         int cnt = fun(0,0);
28
29         if(cnt==0){
30             printf("Case %d: :(\n",ks); continue;
31         }
32
33         for(int i=0; i<26; i++) last[a.size()][i]=a.size();
34         for(int i=a.size()-1; i>=0; i--){
35             for(int j=0; j<26; j++){
36                 nexta[i][j]=last[i+1][j];
37                 last[i][j]=last[i+1][j];
38             }
39             int id = a[i]-'a';
40             last[i][id]=i;
41         }
42
43         for(int i=0; i<26; i++)last[b.size()][i]=b.size();
44         for(int i=b.size()-1; i>=0; i--){
45             for(int j=0; j<26; j++){
46                 nextb[i][j]=last[i+1][j];
47                 last[i][j]=last[i+1][j];
48             }
49             int id = b[i]-'a';
50             last[i][id]=i;
51         }
52
53         string ans;
54         int pa=0,pb=0; int i=0, j=0;
55         for(int k=cnt; k>=0; k--){
56             for(char ch='a'; ch<='z'; ch++){
57                 int id=ch-'a';
58                 pa = nexta[i][id]; pb = nextb[j][id];
59
60                 if(a[pa]==b[pb] && dp[pa][pb]==k){
61                     ans += ch; i=pa, j=pb;
62                     break;
63                 }
64             }
65         }
66         cout << "Case " << ks << ": " << ans << endl;
67     }
68 }

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