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①

```
#include <stdio.h>
#include <string.h>

int i, j, m, n, LCS_table[20][20];
char S1[20] = "HUMAN", S2[20] =
        "CHIMANZEE", b[20][20];

void lcsAlgo(){
    m = strlen(S1);
    n = strlen(S2);

for(i=0; i<=m; i++) {
        LCS_table[i][0]=0;}
for(i=0; i<=n; i++){
        LCS_table[0][i]=0;
    }

for(i=1; i<=m ; i++)
    for(j=1; j<=n; j++){
        if(S1[i-1]==S2[j-1){
        LCS_table[i][j]=LCS_table[i-1]
                [j-1]+1;

}
else if(LCS_table[i-1][j]>=LCS_table
                [i][j-1]){
    LCS_table[i][j]=LCS_table[i-1][j];
    }
else {
    LCS_table[i][j]=LCS_table[i][j-1];
    }
}
```

```
int index = LCS_table[m][n];
char lcsAlgo[index+1];
lcsAlgo[index] = '\0';

int i = m, j = n;
while(i>0 && j>0){
    if(S1[i-1]==S2[j-1]){
        lcsAlgo[index-1]=S1[i-1];
        i--;
        j--;
        index--;
    }
else if(LCS_table[i-1][j]>
        LCS_table[i][j-1]){
        i--;
    }
    else{
        j--;
    }
printf("S1: %s\nS2: %s\n",S1,S2);
printf("LCS: %s",lcsAlgo);
}

int main(){
    lcsAlgo();
    printf("\n");
}
```

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(2)

```
#include<stdio.h>
#include<conio.h>
int a[20][20], reach[20], n;
void dfs(int v){
    int i;
    reach[v] = 1;
    for(i=1; i<=n; i++)
        if(a[v][i] && !reach[i]){
    printf("\n %d -> %d", v, i);
        dfs(i);
    }
}
void main(){
    int i, j, count = 0;
    printf("\n Enter number of
            vertices: ");
    scanf("%d", &n);
    for(i=1; i<=n; i++){
        reach[i]=0;
        for(j=1; j<=n; j++){
            a[i][j]=0;
    }
}
```

```
printf("\n Enter the adjacency matrix:\n");
    for(i=1; i<=n; i++){
        for(j=1; j<=n; j++){
            scanf("%d", &a[i][j]);
    dfs(1);
    printf("\n");
    printf("reachable nodes are\n");
```

```
for(i=1; i<=n; i++){
    if(reach[i])
        printf("%d ", i);
}
}
```