

## Question:

### Longest Common Substring

## Solution:

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

#define MAX 100

void printLCS(char b[][MAX], char X[], int i, int j) {
    if (i==0 || j==0) {
        return;
    }
    if (b[i][j] == 'D') {
        printLCS(b, X, i-1, j-1);
        printf("%c", X[i-1]);
    } else if (b[i][j] == 'U') {
        printLCS(b, X, i-1, j);
    } else {
        printLCS(b, X, i, j-1);
    }
}

void LCS(char X[], char Y[]) {
    int m = strlen(X);
    int n = strlen(Y);
    int c[MAX][MAX];
    char b[MAX][MAX];

    for (int i=0; i<=m; i++) {
        c[i][0] = 0;
    }

    for (int j=0; j<=n; j++) {
        c[0][j] = 0;
    }

    for (int i=1; i<=m; i++) {
        for (int j=1; j<=n; j++) {
            if (X[i-1] == Y[j-1]) {
                c[i][j] = c[i-1][j-1] + 1;
                b[i][j] = 'D';
            } else if (c[i-1][j] >= c[i][j-1]) {
                c[i][j] = c[i-1][j];
                b[i][j] = 'U';
            } else {
                c[i][j] = c[i][j-1];
                b[i][j] = 'L';
            }
        }
    }
}

printf("Length of LCS: %d\n", c[m][n]);

printf("LCS: ");
printLCS(b, X, m, n);
printf("\n");
```

```
}  
  
int main() {  
    char X[] = "ABCBDA";  
    char Y[] = "BDCAB";  
  
    LCS(X, Y);  
  
    return 0;  
}
```

## Output:--

Length of LCS: 4  
LCS: BCAB