

```
// LCS
```

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

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

```
int i, j, m, n, LCS_table[20][20];
```

```
char S1[20] = "ACADB", S2[20] = "CBDA", 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\n", lcsAlgo);
```

```
int len = strlen(lcsAlgo);
```

```
printf("length is : %d", len);
```

```
}
```

```
int main() {
```

```
    lcsAlgo();
```

```
    printf("\n");
```

```
}
```

Time Complexity: $O(nm)$

Output:

A screenshot of a Windows command prompt window. The title bar at the top shows the file path "H:\C Algo\Lab_9\bin\Debug\Lab_9.exe". The main area of the window contains the following text:
S1 : ACADB
S2 : CBDA
LCS: CB
length is : 2

Process returned 0 (0x0) execution time : 0.062 s
Press any key to continue.