**Week 07**

**Shabikun Naher Eva**

**191-15-12677**

**LCS problem 01:**

#include <stdio.h>

#include <string.h>

int i, j, m, n, LCS\_t[50][50];

char S1[50] = "abcbdab", S2[50] = "bdcaba", b[50][50];

void lcsAlgo(){

m = strlen(S1);

n = strlen(S2);

for (i = 0; i <= m; i++)

LCS\_t[i][0] = 0;

for (i = 0; i <= n; i++)

LCS\_t[0][i] = 0;

for (i = 1; i <= m; i++)

for (j = 1; j <= n; j++) {

if (S1[i - 1] == S2[j - 1]) {

LCS\_t[i][j] = LCS\_t[i - 1][j - 1] + 1;

} else if (LCS\_t[i - 1][j] >= LCS\_t[i][j - 1]) {

LCS\_t[i][j] = LCS\_t[i - 1][j];

} else {

LCS\_t[i][j] = LCS\_t[i][j - 1];

}

}

int index = LCS\_t[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\_t[i - 1][j] > LCS\_t[i][j - 1])

i--;

else

j--;

}

printf("S1 : %s \nS2 : %s \n", S1, S2);

printf("DNA Most Match: %s", lcsAlgo);

}

int main() {

lcsAlgo();

}

**LCS problem 02:**

#include <stdio.h>

#include <string.h>

int i, j, m, n, LCS\_t[50][50];

char S1[50] = "catcat", S2[50] = "tgrcat", b[50][50];

void lcsAlgo(){

m = strlen(S1);

n = strlen(S2);

for (i = 0; i <= m; i++)

LCS\_t[i][0] = 0;

for (i = 0; i <= n; i++)

LCS\_t[0][i] = 0;

for (i = 1; i <= m; i++)

for (j = 1; j <= n; j++) {

if (S1[i - 1] == S2[j - 1]) {

LCS\_t[i][j] = LCS\_t[i - 1][j - 1] + 1;

} else if (LCS\_t[i - 1][j] >= LCS\_t[i][j - 1]) {

LCS\_t[i][j] = LCS\_t[i - 1][j];

} else {

LCS\_t[i][j] = LCS\_t[i][j - 1];

}

}

int index = LCS\_t[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\_t[i - 1][j] > LCS\_t[i][j - 1])

i--;

else

j--;

}

printf("S1 : %s \nS2 : %s \n", S1, S2);

printf("DNA Most Match: %s", lcsAlgo);

}

int main() {

lcsAlgo();

}