

LCS Table and Sequence Code

```
# Install required libraries
!pip install pandas fpdf

# Import libraries
import pandas as pd
from fpdf import FPDF

# Define the two strings
str1 = "AGGTA"
str2 = "GXTXAYB"

# Create a 2D table initialized with zeros
m = len(str1)
n = len(str2)
lcs_table = [[0] * (n + 1) for _ in range(m + 1)]

# Fill the LCS table using Dynamic Programming approach
for i in range(1, m + 1):
    for j in range(1, n + 1):
        if str1[i - 1] == str2[j - 1]:
            lcs_table[i][j] = lcs_table[i - 1][j - 1] + 1
        else:
            lcs_table[i][j] = max(lcs_table[i - 1][j], lcs_table[i][j - 1])

# Create a DataFrame to display the LCS table
df = pd.DataFrame(lcs_table, columns=[""] + list(str2), index=[""] + list(str1))
print("LCS Table:")
display(df)

# Reconstruct the LCS from the table
lcs = []
i, j = m, n
while i > 0 and j > 0:
    if str1[i - 1] == str2[j - 1]:
        lcs.append(str1[i - 1])
        i -= 1
        j -= 1
    elif lcs_table[i - 1][j] >= lcs_table[i][j - 1]:
        i -= 1
    else:
        j -= 1

# Reverse the LCS because we built it backwards
lcs = ''.join(reversed(lcs))

# Display results
print(f"Length of LCS is: {lcs_table[m][n]}")
print(f"The LCS is: {lcs}")
```