DAA – Project 2

TEAM MEMBERS:

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Sites Referred:

- **Lectures Slides**
- **https://www.geeksforgeeks.org/longest-common-subsequence-dp-4/?ref=lbp**
- **https://www.geeksforgeeks.org/printing-longest-common-subsequence/**
- **https://www.programiz.com/dsa/longest-common-subsequence**

Time Complexity of the Algorithm:

Algorithm	Best	Average	Worst
LCS_DP_BC	Ω(n*m)	θ(n*m)	O(n*m)

Results of LCS_DP_CB.py:

X = Diagonal Y = Dragon

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  | 0  1  2  3  4  5  6

  | Y  D  r  a  g  o  n

---------------------------------------

0 X |  0  0  0  0  0  0  0

1 D |  0 \1 <1 <1 <1 <1 <1

2 i |  0 ^1 ^1 ^1 ^1 ^1 ^1

3 a |  0 ^1 ^1 \2 <2 <2 <2 4 g |  0 ^1 ^1 ^2 \3 <3 <3

5 o |  0 ^1 ^1 ^2 ^3 \4 <4

6 n |  0 ^1 ^1 ^2 ^3 ^4 \5

7 a |  0 ^1 ^1 \2 ^3 ^4 ^5

8 l |  0 ^1 ^1 ^2 ^3 ^4 ^5

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```

Length of the Longest Common Subsequence is: 5

The Longest Common Subsequence of Diagonal and Dragon is Dagon

Runtime of the program is 0.0

X = NOAH Y = BOAT

  | 0 1 2 3 4

  | Y B O A T

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0 X | 0 0 0 0 0

1 N | 0 ^0 ^0 ^0 ^0

2 O | 0 ^0 \1 <1 <1

3 A | 0 ^0 ^1 \2 <2

4 H | 0 ^0 ^1 ^2 ^2

Length of the Longest Common Subsequence is: 2

The Longest Common Subsequence of NOAH and BOAT is OA

Runtime of the program is 0.0

X = FARAH Y = FaaaRAh

  | 0 1 2 3 4 5 6 7

| Y F a a a R A h

---

0 X | 0 0 0 0 0 0 0 0

1 F | 0 \1 <1 <1 <1 <1 <1 <1

2 A | 0 ^1 ^1 ^1 ^1 ^1 \2 <2 3 R | 0 ^1 ^1 ^1 ^1 \2 ^2 ^2 4 A | 0 ^1 ^1 ^1

  ^1 ^2 \3 <3

5 H | 0 ^1 ^1 ^1 ^1 ^2 ^3 ^3

Length of the Longest Common Subsequence is: 3

The Longest Common Subsequence of FARAH and FaaaRAh is FRA

Runtime of the program is 0.0020096302032470703

X = PARAMETER Y = MeTeR

| 0 1 2 3 4 5

| Y M e T e R

---

0 X | 0 0 0 0 0 0

1 P | 0 ^0 ^0 ^0 ^0 ^0

2 A | 0 ^0 ^0 ^0 ^0 ^0

3 R | 0 ^0 ^0 ^0 ^0 \1

4 A | 0 ^0 ^0 ^0 ^0 ^1

5 M | 0 \1 <1 <1 <1 ^1

6 E | 0 ^1 ^1 ^1 ^1 ^1

7 T | 0 ^1 ^1 \2 <2 <2

8 E | 0 ^1 ^1 ^2 ^2 ^2

9 R | 0 ^1 ^1 ^2 ^2 \3

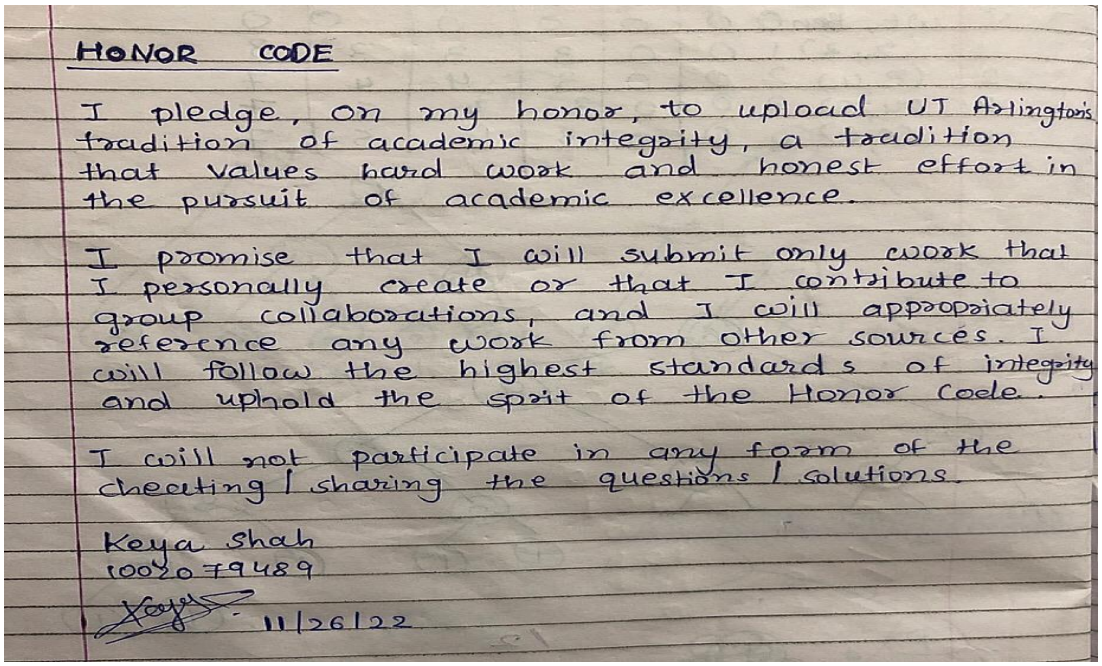
Length of the Longest Common Subsequence is: 3

The Longest Common Subsequence of PARAMETER and MeTeR is MTR

Runtime of the program is 0.0010001659393310547

Honor Code:

(a) Keya Kalpeshbhai Shah



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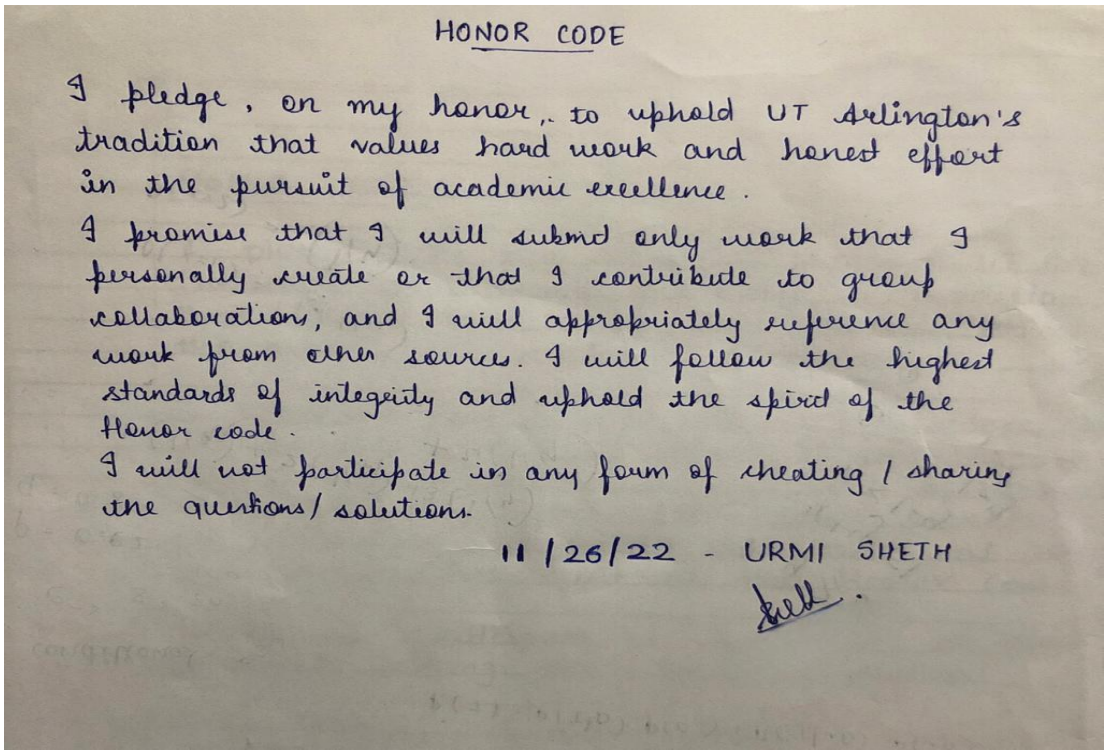
I promise that I will submit only work that I personally create or that I contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spit of the Honor Code.

I will not participate in any form of the cheating / sharing the questions / solutions.

Keya Shah
1002079489
11/26/22

(b) Urmi Manish Sheth



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11/26/22 - URMI SHETH