

Name: _____

Homework 4

CS157 - Spring 2009

Due: Thursday April 2, 2009 10:30am

Problem 1: Longest Increasing Subsequence

Consider the sequence $A = 4, 1, 5, 4, 0, 6, 9, 5, 6, 8, 3$.

Use the algorithm in section 6.2 the textbook to compute the length of the longest increasing subsequence, and fill in the values of L :

index	$L(1)$	$L(2)$	$L(3)$	$L(4)$	$L(5)$	$L(6)$	$L(7)$	$L(8)$	$L(9)$	$L(10)$	$L(11)$
value											

The length of the longest increasing subsequence of A is _____

The longest increasing subsequence of A is _____

Problem 2: Edit Distance

Consider the words $A = \text{"RAPTORS"}$ and $B = \text{"FRACTION"}$. Use the algorithm in section 6.3 of the textbook to compute the edit distance between A and B , and fill in the values of E :

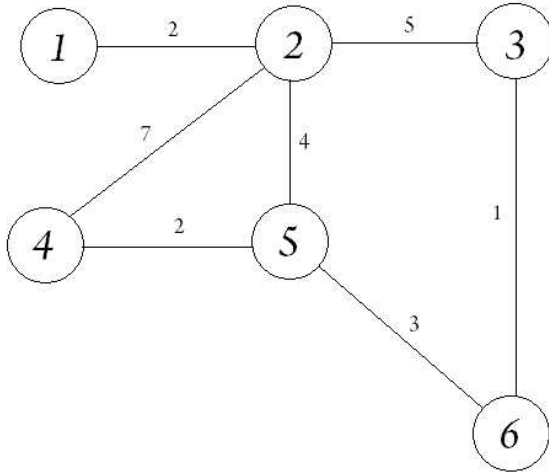
	R	A	P	T	O	R	S
F							
R							
A							
C							
T							
I							
O							
N							

The edit distance between A and B is _____

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Problem 3: All-Pairs Shortest Paths

Consider the following graph $G = (V, E)$ with vertices $V = \{1, 2, 3, 4, 5, 6\}$:



Using the algorithm in section 6.6 compute the all-pairs shortest paths for G and fill out the dynamic programming tables below corresponding to $dist(i, j, k)$ for $k = 0, 1, 2, 3, 4, 5, 6$:

$k = 0$

	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

$k = 1$

	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

$k = 2$

	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

$k = 3$

	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

Name: _____

$k = 4$

	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

$k = 5$

	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

$k = 6$

	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						