01	
Vate:	

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	+	0	P	E	2	A		- Active Co.	0	
-11-	0		2	3	4	5	6	-	8	9
C	21.5	1.5	1.75	2.75	3.75	4.75	5.75	6.75	7.75	8.15
R	2	2.5	32.25	3.25	2.75	3,75	4.75	5.75	6-75	7.75
É	3	2.5	3.25	10225-	13.25	3.25	4.25	5.25	6-25	7.25
A	4 Y		1	6.	3.75	120		1	*	
	The sel Carter		4.25	1	E .	4.15	A .	3		A .
	6	5.5	5.25	4.75	5	4.5	4.25	3.25	4.25	5.25
0	7	6	6.25	5.75	6	5.5	5.25	u.25	+0	4.25
N	8	7	6.75	6.75	6.5	6.5	6.25	5.25	4.25	3.25

CREPAT	10.0
OPERAT	101
$s(c\rightarrow 0)+s(r\rightarrow p)+i(r)$	
1.5+0.75+1=[3.25]	consonent vowel
	(2) 5(v-)p) = 0.75
士 0	r 2 p ave ionnents
# 0	(3) $i(v) = 1$
c 1 ins 1.5	
do[1][1]=min lins, del sub)=min(1+1,1+1,0+1.5)=1.5 ALBA

dp[1][1]=min lins, del, sub)=min[1+1,1+1,0+1.5]=1.5 ALBA

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National University of Computer and Emerging Sciences, Islamabad Campus



Course: Natural Language Processing Program: BS(Computer Science)

20 Minutes 01-Sep-2025 Course Code: Semester: Total Marks: Name: CS-4063 Fall 25 15

Exam: Quiz-1

Duration:

Section:

Paper Date:

Roll No:

Question — Minimum Edit Distance

Not all spelling mistakes are equal — confusing "a" with "e" feels closer than confusing "a" with "t". Weighted edit distance models this by giving smaller costs to similar edits and higher costs to unlikely ones. Compute the minimum edit cost between the following two strings:

Use the following operation costs:

- Insertion = 1
- Deletion = 1
- Substitution:
 - o 0 if identical (e.g., $r \rightarrow r$)
 - o 0.5 if both are vowels (a, e, i, o, u) (e.g., $a \rightarrow e$)
 - o 0.75 if both are consonants (all other letters) (e.g., $s \rightarrow z$)
 - 0 1.5 if one is a vowel and the other is a consonant (e.g., $a \rightarrow t$)

Tasks:

- 1. Construct the dynamic programming table step by step under these costs.
- 2. Clearly state the minimum edit cost between the two strings.

Bonus (5 pts):

Backtrack through your DP table to show one possible optimal alignment (the actual sequence of edit operations).

	#	0	P	E	R	Α	T	I	0	N
#	0	, 1	2	3	4	5	G	7	8	9
C	1	1.5	1.75	2.75	3-15	4-75	5-75	6.75	7-75	8-75
R	2	2-5	2.25	3.25	2-75	3.75	15.4-75	5-75	C.75	7-75
E	3	2-5	3.25	2.25	3-25	3-25	4.25	5-25	6-25	7-25
Α	ч	3.5	4.0	3.25	3.75	3.25	4.25	4-75	5-75	6-75
T	5	4-5	4-25	4-25	4.0	4.25	3.25	4.25	5.25	B-25
I	6	5-5	5-25	4.75	5.0	4-5	4-25	3-25	4.25	5-25
O	7	B	6-25	5-75	6.0	5-5	5-25	4-25	3.25	4-25
N	8	7	6-75	6-75	6.5	6.5	6-25	5-25	4.25	3.25

[&]quot;creation"

[&]quot;operation"

Rubnicz-

DP Table - 12 Marks

mitialisation — 3 marks

wheet sequence — smarks step-by-step tilling — 6 marks.

rainimem Edit cost _ 3 marks

THE STATE OF THE S

correct final wst= 3.25 ____ 2 malks

enpuieitly stated ___ 1 mark

BONUST -

correct sequence of edits—3 marks
proper de augnment snown—2 marks.