**Instructions:**

**1. Click on the header position of this file. And write your roll number.**

**2. Hand written document is NOT acceptable.**

**Failure to conform to these requirements will result in cancellation of your answer script.**

**Question:**

Find the Edit distance between the word “pattern” and its misspelled version given beside your roll number in the following table. (i) Show in tabular form the optimal distances of every point of the corresponding grid. (A sample grid is provided for you in the next page. Use this one or your own.) (ii) Draw the optimal path in a separate grid.

**Show all necessary steps of your computation.**

| Roll No. | Misspelled word |
| --- | --- |
| 0705056 | ppattern |
| 1305065 | paattern |
| 1405037 | patttern |
| 1505003 | patteern |
| 1505009 | patterrn |
| 1505011 | patternn |
| 1505012 | opattern |
| 1505014 | poattern |
| 1505016 | lpattern |
| 1505017 | plattern |
| 1505018 | pqattern |
| 1505019 | paqttern |
| 1505020 | pwattern |
| 1505024 | pawttern |
| 1505026 | psattern |
| 1505036 | pasttern |
| 1505037 | pxattern |
| 1505038 | paxttern |
| 1505039 | pzattern |
| 1505042 | pazttern |
| 1505046 | parttern |
| 1505050 | patrtern |
| 1505052 | payttern |
| 1505053 | patytern |
| 1505054 | pahttern |
| 1505058 | pathtern |
| 1505060 | pagttern |
| 1505061 | patgtern |
| 1505066 | pafttern |
| 1505069 | patftern |
| 1505070 | pattrern |
| 1505071 | pattyern |
| 1505074 | patthern |
| 1505075 | pattgern |
| 1505079 | pattfern |
| 1505080 | pattwern |
| 1505081 | pattewrn |
| 1505082 | pattefrn |
| 1505084 | pattdern |
| 1505085 | pattedrn |
| 1505087 | pattsern |
| 1505090 | pattesrn |
| 1505093 | patteren |
| 1505094 | pattetrn |
| 1505095 | pattertn |
| 1505096 | pattegrn |
| 1505098 | pattergn |
| 1505100 | patterfn |
| 1505102 | patterdn |
| 1505103 | patterbn |
| 1505104 | patternb |
| 1505106 | patterhn |
| 1505107 | patternh |
| 1505109 | patterjn |
| 1505110 | patternj |
| 1505111 | pattermn |
| 1505113 | patternm |
| 1505114 | ppattern |
| 1505115 | paattern |
| 1505116 | patttern |
| 1505117 | pawytern |
| 1505119 | poattern |
| 1505120 | pattergn |

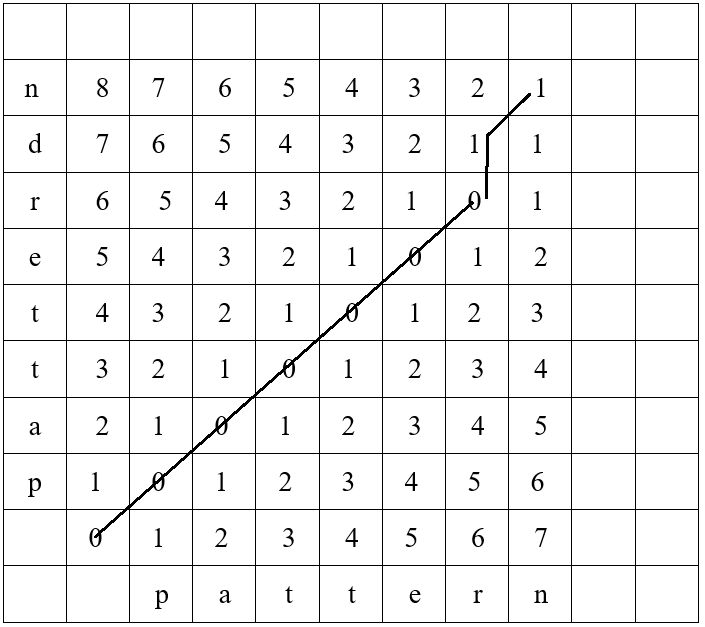
**Answer:**

Necessary steps:

1. Distance *D(0, 0)* of *(0, 0)* node is *zero (0)*.
2. Distance of each node is calculated using any one of three predecessors. In this case it is bottom, left and diagonally left-bottom node.
3. If the current node’s diagonally left-bottom node is *x* and there is no change in current node then *x* is assigned in current node.
4. If the current node’s diagonally left-bottom node is *x* and there is a change in current node then *x + 1* is assigned in current node, where 1 is the distance cost.
5. For vertical and horizontal iterations, distance won’t be *zero (0)* as this denotes either insertion or deletion. In this case, distance corresponding to every operation is *one (1)*.
6. Here given strings, *“pattern”* and *“patterdn”* is similar till char *‘r’* and then there will be a deletion operation and again final char is similar for both strings.
7. So total cost for given characters is *one (1).* **Deletion of char ‘d’**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |
| n | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |  |
| d | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 1 |  |  |
| r | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 1 |  |  |
| e | 5 | 4 | 3 | 2 | 1 | 0 | 1 | 2 |  |  |
| t | 4 | 3 | 2 | 1 | 0 | 1 | 2 | 3 |  |  |
| t | 3 | 2 | 1 | 0 | 1 | 2 | 3 | 4 |  |  |
| a | 2 | 1 | 0 | 1 | 2 | 3 | 4 | 5 |  |  |
| p | 1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |  |  |
|  | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  |  |
|  |  | p | a | t | t | e | r | n |  |  |

**Optimal Path:**

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