

22C : 031 (CS : 3310 : 0001) Algorithms

Edit distance - Handout

1. Definition

$Edit_Distance(s,t)$ = minimum cost for transforming s to t via insert, delete, and substitution operations

2. A dynamic programming algorithm to compute edit distance between two input strings s and t

```
int editDistance(char s[1..n], char t[1..m])

    int d[0..n, 0..m]

    for i from 0 to n d[i, 0] := i

    for j from 1 to m d[0, j] := j

    for i from 1 to n
        for j from 1 to m
            if s[i] = t[j] then:
                d[i, j] := d[i-1, j-1] // copy
            else:
                d[i, j] := minimum( d[i-1, j] + 1, // deletion
                                   d[i, j-1] + 1, // insertion
                                   d[i-1, j-1] + 1 // substitution )

    return d[n, m]
```