

Edit Distance: Sunday → Saturday

1. Cost Models

Model A

- Substitution = 1
- Insertion = 1
- Deletion = 1

Model B

- Substitution = 2
- Insertion = 1
- Deletion = 1

2. Example Edit Path

Transforming **Sunday** → **Saturday**:

1. Insert 'a' after S → Saunday
2. Insert 't' after Sa → Saturday
3. Substitute 'n' → 'r' → Saturday

Total operations = 3

Cost under Model A = 3

Cost under Model B = 4

3. Minimum Edit Distance

Model	Distance
A	3
B	4

4. Reflection

- The edit distance differs between models because Model B penalizes substitutions more.
- Insertions are efficient in this case since most letters needed to be added.
- Only one substitution was required, but it was costly in Model B.
- Applications:
 - Spell-checking: Lower substitution costs → faster typo correction.
 - Bioinformatics (DNA alignment): Higher substitution costs → better represent the rarity/impact of mutations compared to insertions or deletions.