Minimum Edit Distance: Sunday → Saturday

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1. Models and Costs

Model A: - Substitution (Sub) = 1 - Insertion (Ins) = 1 - Deletion (Del) = 1

Model B: - Substitution (Sub) = 2 - Insertion (Ins) = 1 - Deletion (Del) = 1

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2. One Possible Edit Sequence

Starting with `Sunday`:

1. Insert `a` after `S`: `Sunday` → `Saunday` (Insertion)
2. Insert `t` after `Sa`: `Saunday` → `Satunday` (Insertion)
3. Substitute `n` → `r`: `Satunday` → `Saturday` (Substitution)
4. Total operations = 3
5. Cost Model A = 1 + 1 + 1 = 3
6. Cost Model B = 1 + 1 + 2 = 4

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3. Minimum Edit Distance

Model	Minimum Edit Distance
A	3
B	4

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4. Reflection

1. The minimum distance differs for the two models because Model B penalizes substitutions more heavily.
2. Insertions were most useful here because we mainly needed to add letters to match `Saturday`.
3. Only one substitution was needed, but it was costly in Model B.
4. In applications like spell check, lower substitution cost favors correcting typos with minimal changes.
5. In DNA alignment, higher substitution cost is preferred to reflect the biological reality that mutations are rarer or more significant than insertions/deletions.