Step 1: Max 1 SNP Difference

Compare each sequence:

Sequence 1 (CGGTTC) and **Sequence 2 (CGGTTC)**:

- These are identical. Hence, they are in **Cluster 1**.

Sequence 1 (CGGTTC) and **Sequence 3 (CGCCTC)**:

- They differ by **1 SNP** (second position: G vs. C). Thus, they can be in **Cluster 1**.

Sequence 3 (CGCCTC) and **Sequence 5 (CGCCTC)**:

- These are identical, so they also belong in **Cluster 1**.

Sequence 4 (CAGCAC):

- This sequence has more than **1 SNP difference** compared to the others, so it will be **in its own cluster**.

Result for Max 1 SNP Difference:

- **Cluster 1**: CGGTTC, CGGTTC, CGCCTC, CGCCTC
- **Cluster 2**: CAGCAC

Step 2: Max 2 SNP Differences

Compare each sequence:

1.

Sequence 1 (CGGTTC) and **Sequence 2 (CGGTTC)**:

- Identical, so they belong in **Cluster 1**.

Sequence 1 (CGGTTC) and **Sequence 3 (CGCCTC)**:

- Differ by **1 SNP**. Still in **Cluster 1**.

Sequence 1 (CGGTTC) and **Sequence 4 (CAGCAC)**:

- They differ by **2 SNPs** (third and fifth positions). Hence, they belong in **Cluster 1**.

Sequence 3 (CGCCTC) and **Sequence 5 (CGCCTC)**:

- Identical, so they also belong in **Cluster 1**.

Result for Max 2 SNP Differences:

Cluster 1: CGGTTC, CGGTTC, CGCCTC, CGCCTC, CAGCAC

Step 3: Max 3 SNP Differences

Sequence	Max 1 SNPs different in cluster	Max 2 SNPs different in cluster	Max 3 SNPs different in cluster
CGGTTC	1	1	1
CGGTTC	1	1	1
CGCCTC	1	1	1
CAGCAC	2	1	1
CGCCTC	1	1	1