Mutation

The purpose of mutation in GAs is to introduce diversity into the sampled population.

Mutation operators are **used in an attempt to avoid local minima by preventing the population of chromosomes from becoming too similar to each other**.

Mutation in Binary Coded GA

Bit Flip Mutation

In this bit flip mutation, we select one or more random bits and flip them.

1	0	1	**0**	0	**1**	1
1	0	1	1	0	0	1

Swap Mutation

In swap mutation, we select two positions on the chromosome at random, and interchange the values.

1	0	1	0	0	1	1
1	0	0	0	1	1	1

Scramble Mutation

In this, from the entire chromosome, a subset of genes is chosen and their values are scrambled or shuffled randomly.

1	0	1	0	0	1	1
1	0	0	1	0	1	1

Inversion Mutation

In inversion mutation, we select a subset of genes like in scramble mutation, but instead of shuffling the subset, we merely invert the entire string in the subset.

1	0	1	1	0	1	1

1	0	1	0	1	1	1