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

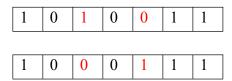
Bit Flip Mutation

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

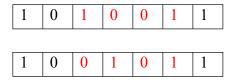
Swap Mutation

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



Scramble Mutation

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



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	1 0	1 0 1			
ĺ		1	1 0	1 0 1	1 0 1 1