Genetic Algorithms are probabilistic search algorithms, which simulate natural evolution. They are based on the phenomenon of “survival of the fittest”. In nature, the fittest individuals are most likely to survive and mate, and their offspring are expected to be fitter and healthier.

The algorithm represents the search space of the problem, or the population as a collection of individual represented by character strings or chromosomes. The algorithm choses an initial randomly generated population, and determines the fitness of each individual in this population. The fitness of an individual is used to find the probability of crossover. Parents are chosen stochastically from this population, and are combined to produce children. From newly created individuals, a small number are chosen for mutation, i.e. their character string (genetic makeup) is changed at a randomly chosen mutation point. The individuals with least fitness are removed from the population after each iteration to reduce the population to its initial size. This new generation is then used in the next iteration and the process is repeated until a stopping criterion is reached, such as a maximum number of iteration or a specified fitness level. At this point the individual with maximum fitness is taken to be the optimal solution