**ALGORITHM:**

**GENETIC ALGORITHM**

Genetic Algorithm is an optimization technique that attempts to replicate natural evolution processes. The genetic pool of a specific population for a given problem potentially contains the solution, or a better solution. This is the basic idea behind the genetic algorithm. On the basis of genetic and evolutionary principles, the genetic algorithm repeatedly modifies a population of artificial structures through the application of initialization, selection, crossover, and mutation operators. This is done in order to obtain an evolved solution.

Artificial genetic algorithm aims at improving the solution to a problem. This improvement is carried out by keeping the best combination of input variables. It optimizes the problem definition and also generates an objective function that is the way of determining which individual produces the best outcome. At first, from the sample space having many populations, the initial population is randomly selected and the fitness value is calculated and sorted. The tournament method is used in selection process and single point probability is calculated in the crossover. In mutation, the new offspring mutates using uniform probability measure. Always the best solution are selected and passed to the further generation, each time a new population is generated. The operators of Genetic Algorithm are:

 Selection – It is the survival of the fittest and the preference is always given to better outcomes.

 Mutation – It is based on trying random combinations and evaluating the result (success or failure) of the outcome.

 Crossover- It is done by combining portions of good outcomes in the hope of creating an even better outcome.

A. Pseudo code of genetic algorithm

* Initialize the population
* Evaluate initial population
* Repeat
* Perform competitive selection
* Apply genetic operators to generate new solutions
* Evaluate solutions in the population
* Until some convergence criteria is satisfied.