Flowchart for genetic algorithm

```
                        ┌──────────┐
                        │  Start   │
                        └────┬─────┘
                             │
                             ▼
                   ╱──────────────────╲
                  ╱  Initial population ╲
                  ╲                    ╱
                   ╲──────────────────╱
                             │
          ┌──────────────────┼──────────────────┐
          │  ┌───────────────▼──────────────┐   │
Evolution │  │          Selection           │   │
          │  └───────────────┬──────────────┘   │
          │                  ▼                   │
          │  ┌──────────────────────────────┐   │
          │  │          Crossover           │   │
          │  └───────────────┬──────────────┘   │
          │                  ▼                   │
          │  ┌──────────────────────────────┐   │
          │  │          Mutation            │   │
          │  └───────────────┬──────────────┘   │
          └──────────────────┼──────────────────┘
                             ▼
                        ╱─────────╲
                       ╱           ╲        No
                      ╱  Terminate  ╲──────────┐
                      ╲             ╱          │
                       ╲           ╱           │
                        ╲─────────╱            │
                             │  Yes            │
                             ▼                 │
                   ┌──────────────────┐        │
                   │ Best individuals │        │
                   └────────┬─────────┘        │
                            ▼                   │
                   ┌──────────────────┐         │
                   │     Output       │         │
                   └────────┬─────────┘         │
                            ▼                    
                   ┌──────────────────┐
                   │      Stop        │
                   └──────────────────┘
```

Start

Initial population

Evolution

Selection

Crossover

Mutation

Terminate

No

Yes

Best individuals

Output

Stop
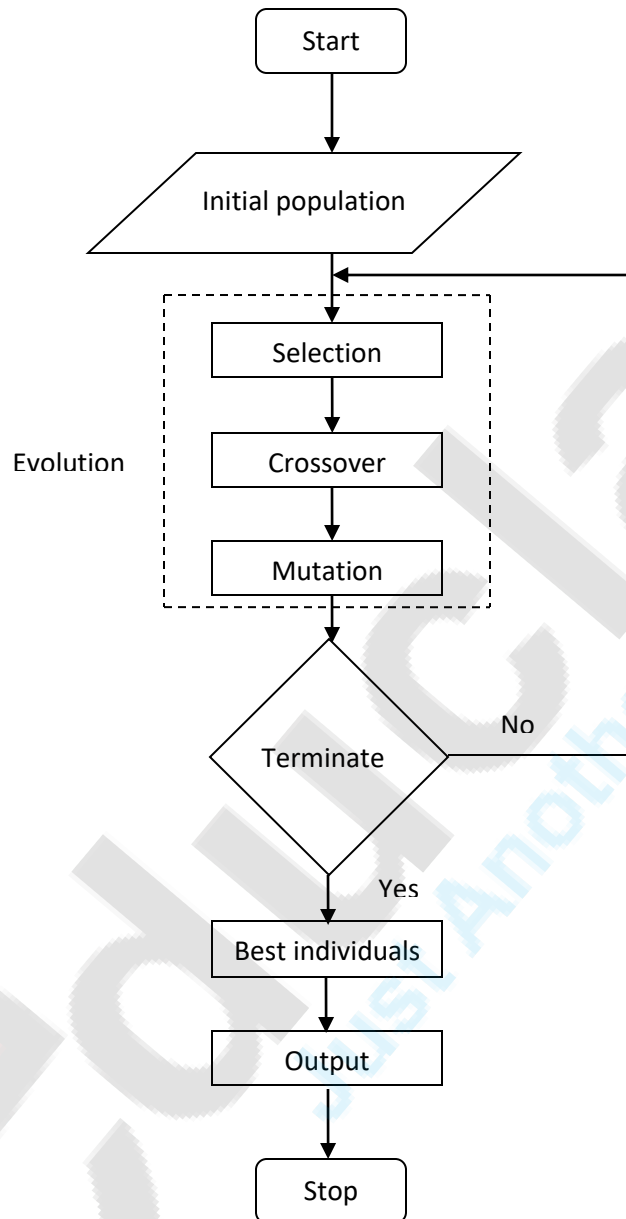
Genetic Algorithm vs. Traditional Algorithms

Genetic Algorithm	Traditional Algorithm
GAs operate with coded versions of the problem parameters rather than parameter themselves i.e. GA works with the coding of solution set and not with the solution itself	Traditional algorithms directly work on parameters(points) without coding
GAs operate on a whole population of points i.e. GA uses population of solutions rather than a single solution for searching	Almost all traditional algorithms search from a single point
Usually, the size of the population is in the range from 20 to 200 or 300 in the search space on each iteration	Majority of traditional optimization methods explores 1, 2, or 3 points in the search space on each iteration
GA uses fitness function for evaluation rather than derivatives	Traditional algorithms work on derivatives
GAs use probabilistic transition operates i.e. GAs do not use deterministic rules	Traditional algorithms for continuous optimization apply deterministic transition operates
GA improves the chance of reaching the global optimum	Traditional algorithms reach the local optimum
GA is robust	TA is not robust
GA helps in avoiding local stationary point	TA doesn't avoid local stationary point
In GAs previously found good information is emphasized using reproduction operator and propagated adaptively through crossover and mutation operators	TA doesn't use any reproduction, crossover or mutation operators
GA does not require any auxiliary information except the objective function values	TA needs auxiliary information