GA I/O

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Input** |  |  |  | |
|  |  |  |  | |
| Type | **No** | **parameter** | **sample value** | |
|  |  |  |  | |
| User input | 1 | fitness function | =15\*x-x^2 | |
| Calculate | 2 | *parameter value range to calculate as* | 0-to-z(for z, fitness function result is 0) for above equation, x range is (0-15 as for 15 this eqn result is 15) | |
| User input | 3 | chromosome population size , N | 6 | |
| Random | 4 | Crossover pair selection:  (use any one from a and b) a) best, worst fitted population to consider, C b) Roulette wheel | 2 | |
| Random | 5 | **Crossover: position, P**  **consecutive** **bit, B** (from which position and how many consecutive bits to consider for crossover?) | 2,2 | |
| Random | 6 | Mutation range (for random selection= population size), MR (=C) **Mutation flip position , MP** | MR=(1-6) | |
|  |  | example: MR=2=C, MP=2 | 2,2 | |
|  |  |  |  | |
|  |  | for MR=2 select any 2 chromosome from the 6 crossover population set of previous step for flipping |  | |
|  |  |  |  | |
| User input | *7* | Termination condition choice: |  | |
|  |  |  |  | |
|  |  | Usually, we keep one of the following termination conditions − |  | |
|  |  |  |  | |
|  |  | 1. When there has been no improvement in the population for X iterations. *(no better fitness value is found)*   *\*Fitness (individual and average)* | | |
|  |  | 1. When we reach an absolute number of generations. | | |
|  |  | 1. *When the objective function value has reached a certain pre-defined value.* | | |
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|  |  |  | |  |
|  |  |  | |  |
|  |  |  | |  |
| Output |  |  | |  |
|  |  |  | |  |
|  | **No** | **parameter** | | **example** |
|  |  | *Display all 7 input parameter values* | |  |
|  | 1 | Best fitness value chromosome (in binary) | | 1110 |
|  | 2 | Best fitness value (individual): | | 56 |
|  | 3 | Best fitness value (average): | | 210 |
|  | 4 | Best fitness value (individual) found in generation: | | 4 |
|  | 5 | Best fitness value (average) found in generation: | | 6 |