

CT

CSE-403

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Sec : B

Ans. to the ques. no. -01

Genetic Algorithm is the process of generating new states with the help of parent states and with or without some random mutation.

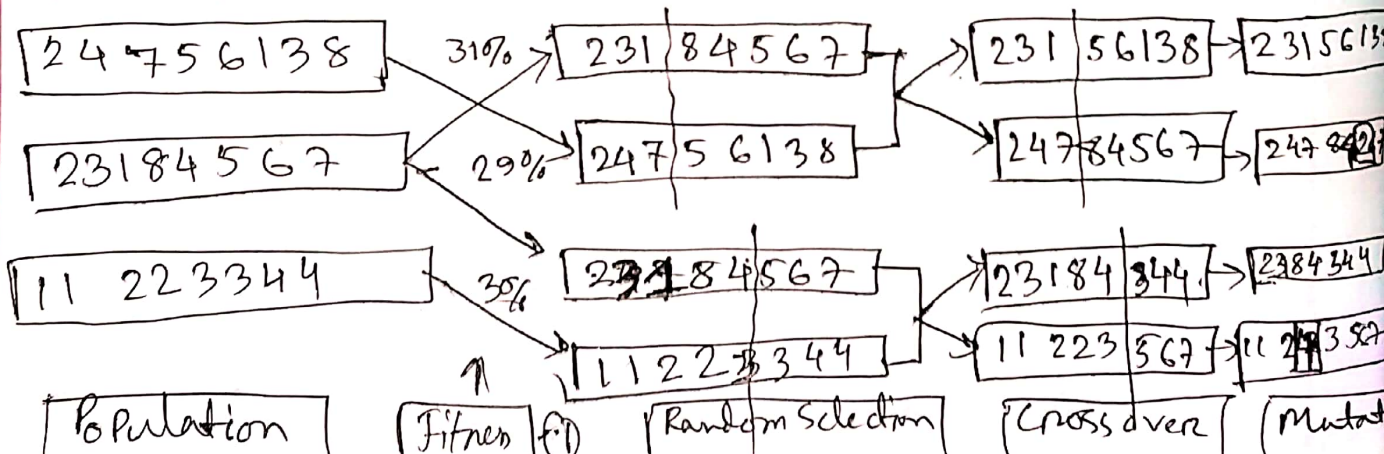
The overall genetic Algorithm process can be divided into;

- ① Random selection
- ② Fitness function
- ③ Cross-over
- ④ Random mutation.

Lets say for the N-queen problem if 3 states in the population are:

24756138 ; 23184567 ; 11223344

with fitness values (suppose) are : 31%, 29%, 03% then :



Ans. to the ques. no. - 03

Probability of success, $p = (201714018 \% 5) + 45 \%$

$$= 3 + 45 \%$$

$$= 48 \%$$

$$= 0.48$$

So, restart required $= \frac{1}{p} = \frac{1}{0.48} = 2.08 \approx 2$
(Ans)

Given,

Steps when successful iteration, $s = (201714018 \% 5) + 17$

$$= 3 + 17$$

$$= 20$$

Steps when failure iteration, $f = (201714018 \% 7) + 14$

$$= 2 + 14$$

$$= 16$$

\therefore total moves/action required for an optimal

$$\text{solution} = 1 * s + \left(\frac{1}{p} - 1 \right) * f$$

$$= 20 + \left(\frac{1}{0.48} - 1 \right) * 16$$

$$= 20 + \left(\frac{1}{0.48} - 1 \right) * 16$$

$$= 37 \text{ moves. (Ans)}$$

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Ans. to the ques. no-02

~~Yes~~ Local Beam Search is the Algorithm where the initial states are k instead of one state.

In this Algorithm, multiple initial states starts at the beginning and shares information among them, so that even if one state is at local minimum (or maximum) other states can reach to global minimum (or maximum).

So, the statement is correct.