



A.Y. 2022-2023

Subject: Artificial Intelligence

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Experiment No. 05

Aim: Implementation of Genetic Algorithm

Output:

```
PS C:\Users\devan\OneDrive\Desktop\AI Prac Codes> python -u "c:\Users\devan\Downloads\Hill (1).py"
Enter number of samples: 4
Enter gene: 1010
Enter gene: 1100
Enter gene: 1111
Enter gene: 0000
Enter number of generations to be computed: 2

----- GENERATION 0 -----
Initial Population      X Value      Fitness Value  Probability  Expected Count  Actual Count
1010                   10           100           0.213        0.853           1
1100                   12           144           0.307        1.228           1
1111                   15           225           0.48         1.919           2
0000                   0            0            0.0          0.0             0

Selected Genes for Crossover -
['1010', '1100', '1111', '1111']
The crosspoint for pair 0 is 2
The crosspoint for pair 2 is 4

Crossover -
['1000', '1110', '1111', '1111']
For pair 1000, the bit that will be changed is 0
For pair 1110, the bit that will be changed is 0
For pair 1111, the bit that will be changed is 0
For pair 1111, the bit that will be changed is 1

Mutated -
['0000', '0110', '0111', '1011']
```

```
----- GENERATION 1 -----
Initial Population      X Value      Fitness Value  Probability  Expected Count  Actual Count
0000                   0            0            0.0          0.0             0
0110                   6            36           0.175        0.699           1
0111                   7            49           0.238        0.951           1
1011                   11           121           0.587        2.35            2

Selected Genes for Crossover -
['1011', '0110', '0111', '1011']
The crosspoint for pair 0 is 3
The crosspoint for pair 2 is 3

Crossover -
['1010', '0111', '0111', '1011']
For pair 1010, the bit that will be changed is 2
For pair 0111, the bit that will be changed is 3
For pair 0111, the bit that will be changed is 1
For pair 1011, the bit that will be changed is 3

Mutated -
['1000', '0110', '0011', '1010']

GENERATION 3 - ['1000', '0110', '0011', '1010']
```