* **Darwinian Natural Selection Key Principles:**
* **Heredity**
* **Variation**
* **Selection (Survival of the fittest)**
* **Process:**
* **Create a random population of “***N”* **elements (Variation)**
* **Within the loop:**
* **Calculate the fitness of “***N”* **elements (Selection)**
* **Reproduction / Selection (Happens** *N* **times)**
* **Pick two weighted parents**
* **Make a new element**
  + **Crossover (Heredity)**
  + **Mutation**

**Selected word: “unicorn”**

**Initial random population: {“unijorn”, “pancake”, “aaaaaah”, “popcorn”}**

**Corresponding Fitness scores: {5, 1, 0, 4}**

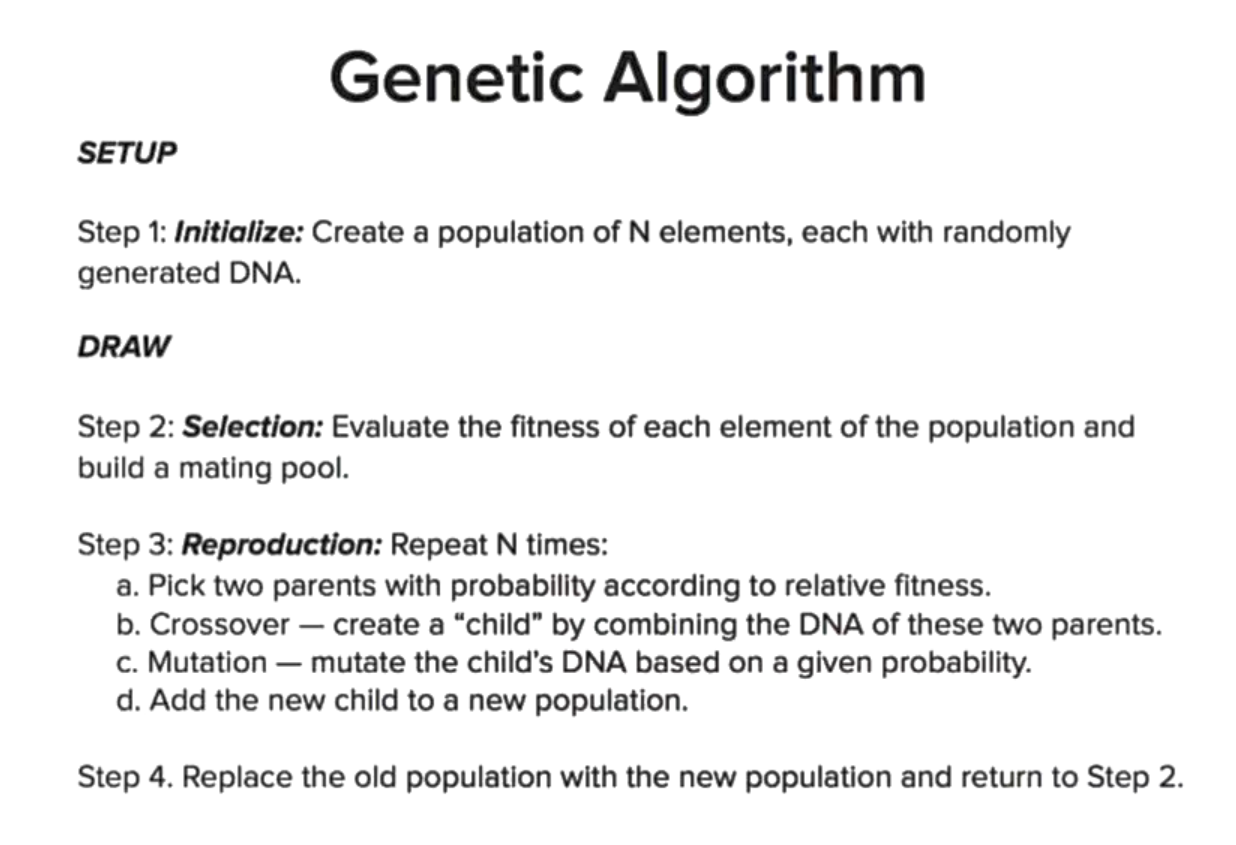
**Probability diagram:**

**Implemented cross over mechanism:**

**Take have of the genetic information of one, and take half the other; Then make up the new element (A child):**

|  |  |  |
| --- | --- | --- |
| **Parent N.1** | **Parent N.2** | **Child** |
| **unijorm** | **popcorn** | **uni + corn = “unicorn”** |

**In the case of not having the enough variation in the initial population, we introduce an additional artificial variation. Mutation: 1% mutation rate – there is 1% chance that the child can mutate. (Keeps variation in the system)**

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