

Population Simulator

Congratulations! You are about to use the population simulator. This is a program that lets you simulate worlds and the organisms that live in them. You will have the choice to either design your own world that the program will attempt to make individuals adapt to, or let it generate a random world that organisms must adapt to.

World Traits (in order):

- Index 0 - Vegetation Density: this describes how much plant life is in the world. A high value would represent a lush biome, such as a jungle. A low value would represent a sparse biome, like a desert.
- Index 1 - Predator Density: This describes how often the organism would run into a natural predator. High numbers represent a very dangerous environment with a lot of predators roaming around, while low numbers represent very few predators.
- Index 2 - Land Mass Coverage: This trait displays how much of the world is covered by land. A high value would be a planet with very few areas with easily accessible water. A low value would be a planet mostly covered with water.
- Index 3 - Food Scarcity: A value that describes how difficult it is for this organism to find their target food in a world. High numbers for this trait would mean it is very hard to find food, low numbers would mean food is abundant in the world.
- Index 4 - Temperature: This trait describes the temperature of the world. High values mean extreme cold, while low values indicate warmer climates.

Individual Traits (in order):

- Index 0 - Size: High values here represent large organisms, small values lead to small individuals.
- Index 1 - Mobility: High values indicate fast and agile agents, while small numbers mean slow and stagnant individuals.
- Index 2 - Dehydration Adaptations: A high value here would reflect many ways to survive away from water (like a camel), while low values would demonstrate a high dependency on water (like a fish).
- Index 3 - Socialization: High numbers here correspond to very social behavior while low values are representative of solitary behavior
- Index 4 - Cold Tolerance: High numbers here show many adaptations to living in the cold, while low numbers represent an organism that is not equipped to deal with cold living conditions.

To use this program:

1. Open the program in a python IDE
2. Start running the program

3. Input your decision for if you want to make a custom world
 - a. If you do decide to make a custom world, input the values for each world trait
 - b. If you decide not to make a custom world, a random one will be auto generated
4. Observe the output to see how well the algorithm was able to adapt organisms to the environment

Sample Results:

```
Would you like to create a custom world? (y/n)n

WORLD TRAITS (All traits are on a scale from 1-10)
Vegetation Density: 6
Density of Predators: 9
Land Mass Coverage: 8
Food Scarcity: 2
Temperature (10 is cold): 2

AVERAGE KID CHARACTERISTICS (All characteristics are on a scale from 1-10)
Size: 7.4
Mobility: 8.7
Dehydration Adaptations: 8.1
Socialization: 4.1
Cold Tolerance: 4.8

WORLD: [6, 9, 8, 2, 2]
AVGKID: [7.4, 8.7, 8.1, 4.1, 4.8]
Survival Rate: 87.82%
```


^An example output

In any given output, you will see the traits of the world, the average value per characteristic of the offspring, and what the survival rate of that group of organisms on that particular world was.

Not part of my project but it can be fun (or terrifying) to go to an [online AI image generator](#) and use the average offspring characteristics to try to visualize the organism


large fast solitary camel

Generate Image



(Optional) Include an image to guide the AI image generation
PNG, JPG or GIF (512px x 512px for best results. Max size: 1MB)

Upload Initial Image



☐ Use as base for next image

^This is what I got when I tried to describe the offspring from the sample above. It may be best to avoid this if you think the organism is going to be nightmare fuel

Credits for the Population Simulator: Myself