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Lotka-Volterra Simulator

This project is a FastAPI-based web application that simulates the Lotka-Volterra predator-prey model. Users can adjust the parameters and see the population dynamics over time.

Features

- Simulate predator-prey dynamics with customizable parameters
- API endpoint for performing simulations
- Optional HTML frontend (extendable)

Endpoints

[/](#)

Returns a welcome message.

[/simulate/](#)

Perform a simulation of the Lotka-Volterra model.

Parameters:

- **x0** (float): Initial prey population
- **y0** (float): Initial predator population
- **alpha** (float): Prey birth rate

- **beta** (float): Predation rate
- **gamma** (float): Predator death rate
- **delta** (float): Predator growth rate
- **T** (int): Time period for simulation

Response: Returns a JSON object with time, prey population, and predator population arrays.

Installation

1. Clone this repository:

```
git clone https://github.com/your-username/lotka-volterra-simulator.git
```