DEVS-Based Modeling and Simulation for Predator-Prey System

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Description :

This project presents a Devs-based Predator-Prey simulation of a Sheep Grass System. The aim of this work is to study how the prey population changes with respect to predator and also to analyze the system behavior by tuning some of predator parameters.

Scope :

Many of the most interesting dynamics in nature have to do with interactions between organisms. One of such interactions is Predator-Prey which are subtle, indirect and difficult to detect. This plays an important role in the ecology of populations, determining mortality of prey and birth of new predators.

The scope of this project is to identify such kind of dependancies and interactions between the Predator and Prey.

Modeling & Simulation goals :

The below are the planned Simulation experiments on Predator-Prey system,

1) Analyze the difference between the rate of change of prey population by having single predator Vs the rate of change of prey population by having two predators that eats the same prey.

2) Analyze the difference between the rate of change of prey over period of time without predator (ie. Natural growth rate of prey in the absence of predator) Vs the rate of change of predator over period of time with predator.

3) Restricting predator move to only 4 directions (instead of 8) and analyzing the growth rate of prey.

4) Simulate the increasing number of predator count in the system and analyze the results.

5) How many moves a predator makes to search for a prey before it dies?