Object Oriented Analysis

# Specification

Objective: To make a simulation of evolution that reaches a stable point at some point.

What does stable ecology mean?

* Net number of organisms does not significantly increase or decrease over a given period of time.

Requirements:

Graphical representation of an organism.

An organism has attributes such as:

* Health
* Hunger
* Speed

The organisms need to eat food which can either be other organisms or vegetation.

The organisms should breed and their attributes (representing genetics) will be crossed over to make a composite organism with random features within limit.

Environmental factors play a part in the life cycle and cold or hot climate can kill some organisms unless they have the specific resistances to temperatures.

Water should be present on the map which organisms can walk into but slows them down. Same with different terrain such as mountains.

# Analysis

MOSCOW ANALYSIS

Must

* Organism life cycle
* Genetic crossover algorithm
* Organism attributes
* Live edit of organisms
* Simple 2D graphics
* Herbivores and natural food sources

Should

* Weather/disease system
* Advanced path-finding algorithm
* Terrain variation, e.g. grass, mountains, water
* Ability to pause, speed up and slow down simulation

Could

* Natural disasters
* Speciation (new species forming from heavily mutated organisms over time)
* A game log with charts and text output
* Sprite sheet animation
* Particle effects, e.g. weather effects, running water, blood

Won’t

* 3D graphics
* Scale realism

# Real world model / main objects

**Environment**

* Mountains
* Water
* Land
* Hot
* Cold

**Sprites/ organisms**

* Herbivore
* Carnivore
* Plant

**Simulation**

* State machine / brain