

EE422C Project 4 (Critters) README

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GitHub Repository: <https://github.com/synacktic/critter>

Critter Data Structure

Created a world map to hold the Critters by implementing a 2D grid with each coordinate containing a List of all Critters at that position

Babies & Population List

Used provided ArrayList

New Classes

Critter1

Fields:

- private static final int GENE_TOTAL: number of genes the critter has
- private int[] genes: array that holds the specific genes for the critter
- private int dir: direction the Critter is facing
- private int longevity: used to count how many timesteps the Critter1 has been alive. Used for deciding to reproduce.

Methods:

- public String toString(): represents the Critter on the world with a 1
- public Boolean fight(String): decide to fight based on the outcome for a randomly generated number from 0-33, less likely to fight another Critter1
- doTimeStep(): decides to run if roll is odd, decide to breed every 5th timestep if it has enough health

Critter2

Fields:

- private static final int GENE_TOTAL: number of genes the critter has
- private int[] genes: array that holds the specific genes for the critter
- private int dir: direction the Critter is facing

Methods:

- public String toString(): represents the Critter on the world with a 2
- public Boolean fight(String): fights every critter except other Critter2s
- doTimeStep(): walks only if it has enough energy to, decide to reproduce only if the randomly generated roll is a multiple of 19

Critter3

Fields:

- private static final int GENE_TOTAL: number of genes the critter has
- private int[] genes: array that holds the specific genes for the critter
- private int dir: direction the Critter is facing

Methods:

- public String toString(): represents the Critter on the world with a 3
- public Boolean fight(String): Only attacks its own kind every other time
- don't run if it already ran this time around
- doTimeStep(): Breeds at a high energy level to make strong children
- simplified genetic code
- only moves if it has to
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Critter4

Fields:

- private static final int GENE_TOTAL: number of genes the critter has
- private int[] genes: array that holds the specific genes for the critter
- private int dir: direction the Critter is facing

Methods:

- public String toString(): represents the Critter on the world with a 4
- public Boolean fight(String): Does not fight if it can breed instead
- Always eat the algae
- Don't run if it already moved this time around
- doTimeStep(): Does not move too often, unless it runs from a fight
- Breeds at a lower energy level
- 1/2 chances to mutate its genes twice as fast