INF200: Biosim project

Nida Grønbekk and Yuliia Dzihora

Project structure:

1. Animals: parent class and sub classes

Similarities:

- All animals have age, weight and corresponding fitness.
- Annual weight decrease and after-birth weight decrease.
- Migration, giving birth and death.

Differences:

- Feeding:
  - ❖ herbivores need specific amount of fodder
  - ❖ carnivores need specific amount of meat (herbivores) and need to hunt for that

2. Create landscape, types of landscapes. Representing a cell of the island.

- Different landscape types have different amount of available fodder and animals might behave differently.

2.1 Representing a cell of the island.

- One cell of the island includes all the animal life cycles but within limits of this cell.

3. Create island

- Island looks like a 2d array of landscape types. Each cell of the island includes 2 lists of animals of each specie.

3.2 Create make_map function and island iterator.

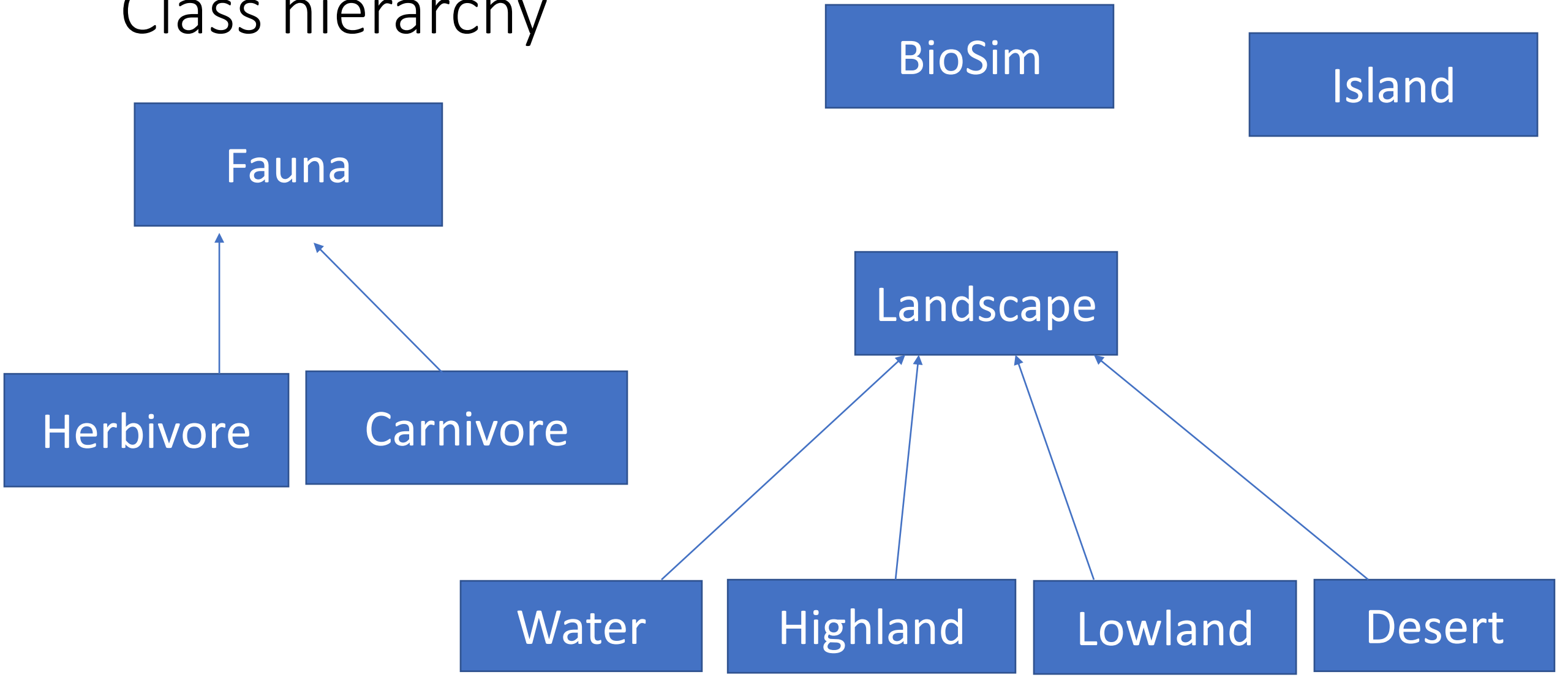
- Function generates map and iterator helps to go through it.

3.3 Create BioSim class, make add_population to add animals.

- Automatically generates an island object and call add_population for initial pop.

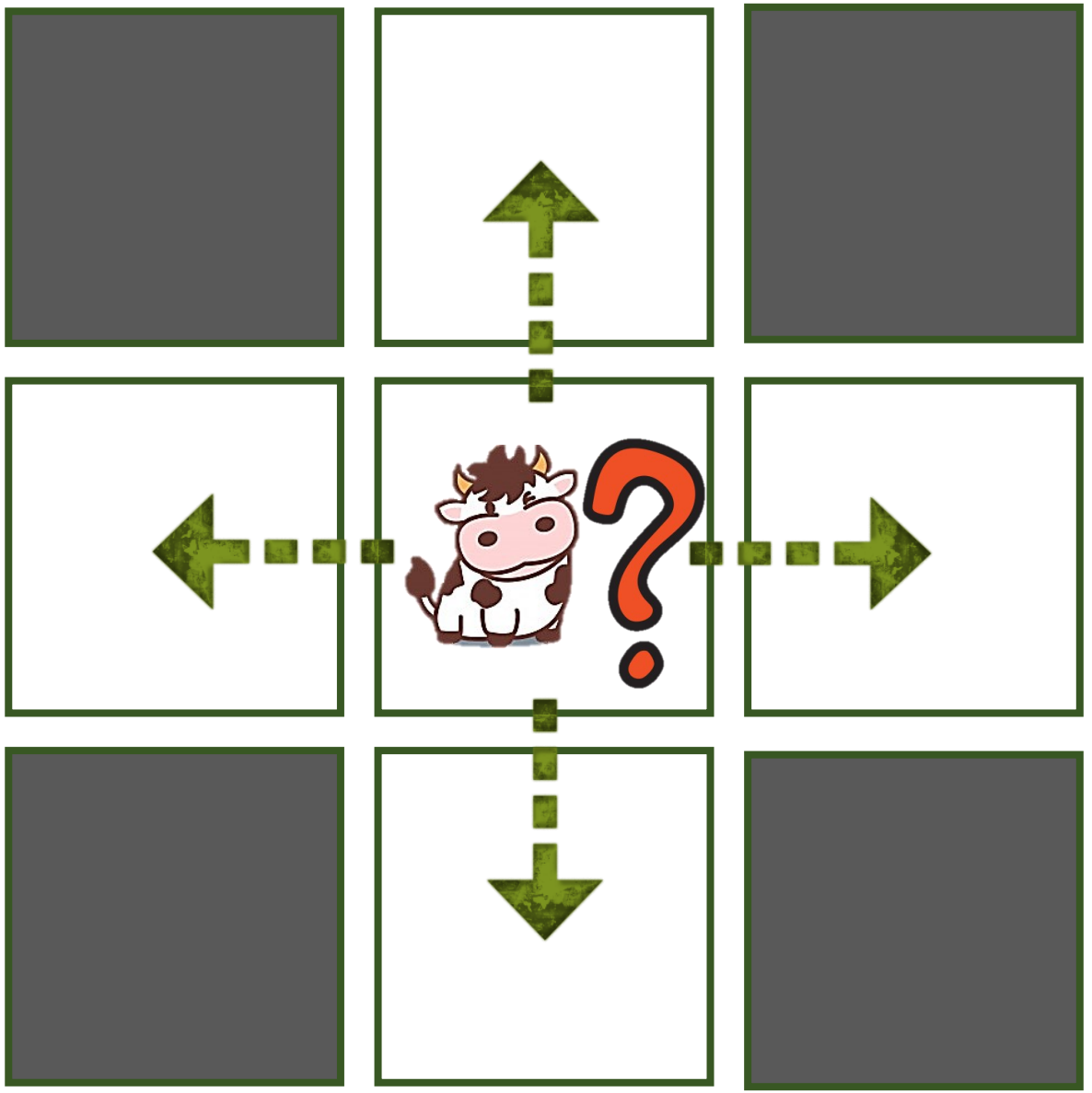
4. Define migration in BioSim.
5. Define the cycles.
6. simulate() calls all the cycles, also calls a visual update function.
7. Updates all the plots in the figure.
8. Then made functions for saving as pictures and as a movie.

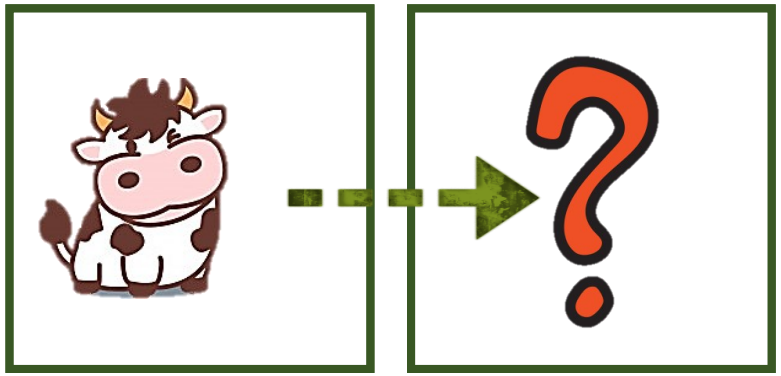
Class hierarchy



Example: migration

- Migration in BioSim
- Call migration in Fauna class



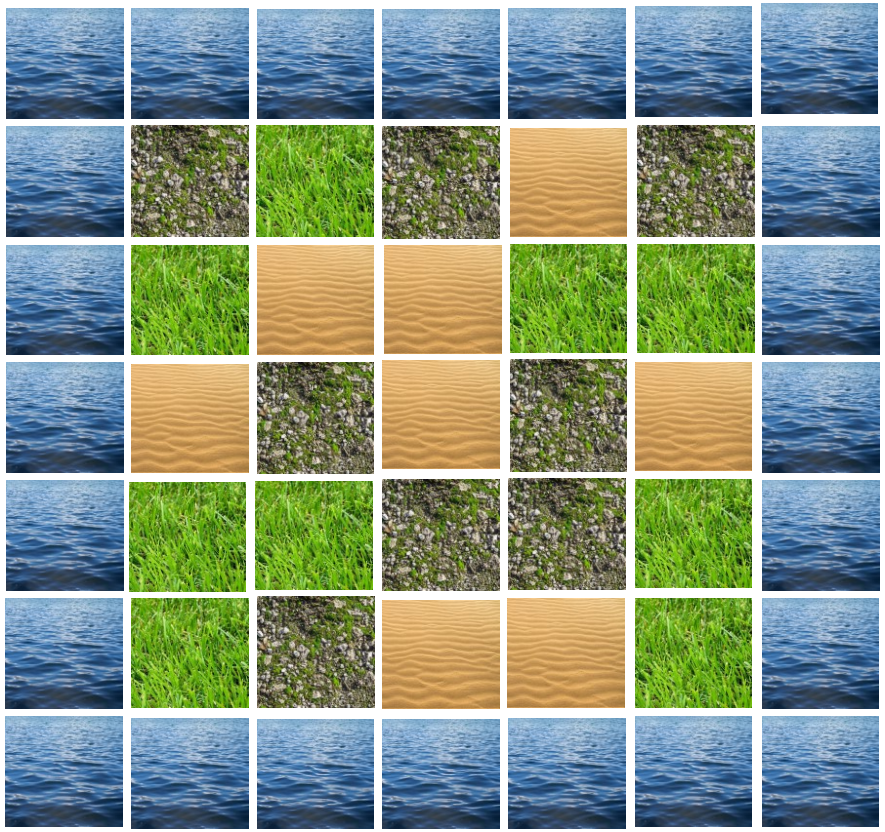


Highland

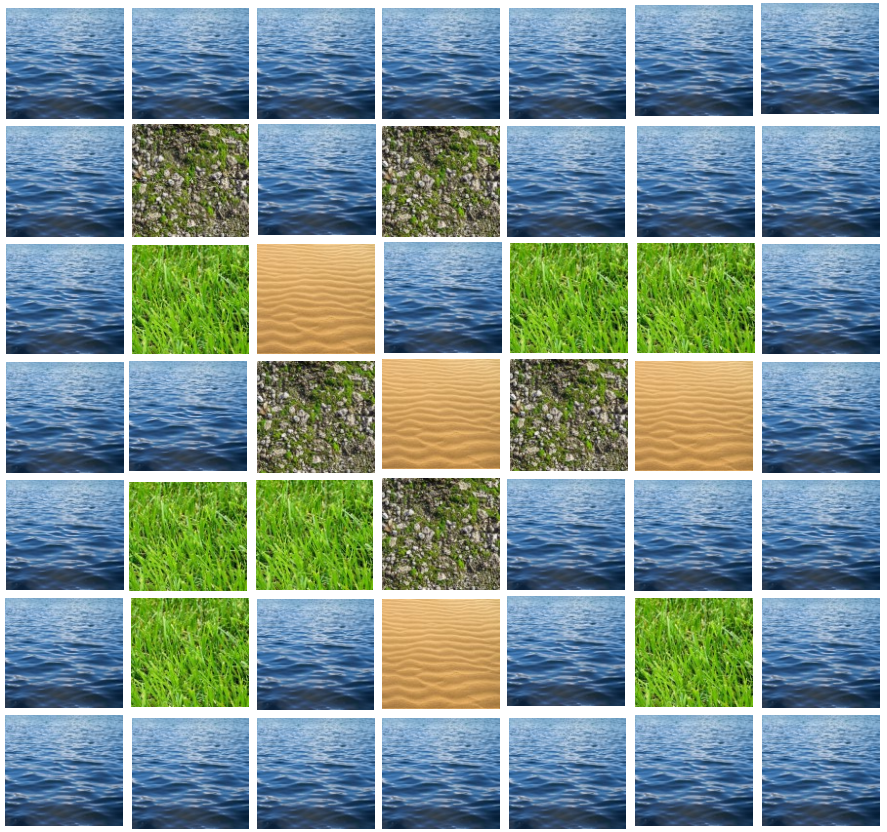
Desert

Lowland

Water



Option 1: Water just on the border around land



Option 2: Water can be placed everywhere

Auto-generated island examples

Visual example

- We show an example of an island generated with random landscapes at each cell and animals randomly placed.