A living ecosystem

The purpose of the application is to simulate the life in the wild nature. Our program will focus on the development of the ecosystems over time. It's main target will be the living parts and more specifically the fauna. The program should simulate how the population of the species changes over time.

Requirements:

- The application should have the notion of an ecosystem;
- Each ecosystem should be linked to a biome (large sections of land, sea, or atmosphere), e.g. Savanna, Tundra, Tropical rainforest, etc.
- Each ecosystem may only contain animals that inhabit the biome of the ecosystem.
- One animal may inhabit multiple biomes.
- For simplicity, assume that there are only two types of animals - Carnivore and Herbivore; and that each ecosystem has representatives of both types.
- Each animal must have age, max age, weight, main habitat (land, water, air).
- Each animal must also have a reproduction rate - number of iterations after which a new representative of the species is born.
- Herbivores must have escape points which show the escape-from-predator ability of the animals.
- Predators must have attack-points which show the predator skills when attacking.
- During attack the initial chance for success of the attack (prior to applying any other rules) is calculated with the formula:
  (attack points / (attack points + escape points)) * 100 %.
- The success of the attacks depends on the current age of the predators/victims. The attack and escape points should be scaled with coefficients based on the animals' age: 1 - currentAge / maxAge.
- Herbivores can be grouped in herds or live alone. The herd animals have 30% more chance of giving no victims when predators attack.
- Carnivores can attack in groups or separately. When they attack separately they have 50% less chance of success. When they attack a larger animal (with weight greater than their weight) and are not grouped (attacking separately) the chance of success is reduced (in times) by the ratio (herbivore weight / carnivore weight).
- The animal's age is preserved as a number of iterations
- Each carnivore should have a hunger level (between 0% and 100%) and a percentage change for each iteration (for example 20%). Which shows how much "hungry" a predator becomes after each iteration.
- If the predator cannot catch a prey before it's hunger level reaches 100% it dies.

- When a predator catches a prey then it's hunger level decreases with the result from this formula: (herbivore weight / carnivore weight) * 100. If a group attack was organised, the prey's weight is distributed equally between the participants. However, the carnivore that performed the attack receives two "portions".
- On each iteration carnivores attack herbivores by randomly choosing the target.

Let's start by implementing an ecosystem for the Savanna biome with the following types of animals:

Herbivores

Animal	Max age	Weight	Main Habitat	Living type	Reproduction rate	Escape points
Zebra	50	300 kg	land	group	10	80
Hare	24	5 kg	land	alone	3	100
Gazelle	25	25 kg	land	group	5	80
Buffallo	35	800 kg	land	group	9	40

Carnivores:

Animal	Max age	Weight	Main Habitat	Living type	Reproduction rate	Hunger rate	Attack points
lion	30	150 kg	land	group	6	20	80
cheetah	30	60 kg	land	alone	5	15	110
tiger	20	200 kg	land	alone	6	18	75
Hyena	24	50 kg	land	group	5	14	80

Notes:

- Bear in mind that the app should easily be extensible with other ecosystems
- Select the ecosystem at runtime (when the application starts)
- Provide the number of animals of each species to the application at runtime

Bonus points:

- Think of and implement another ecosystem(s).