Assignment Report

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**1.A description of simulator.**

The simulator contains 6 species: Wolf ,Snake ,Tiger ,Deer ,Cow ,Grass.

Wolf`s behaviours:

Catch Deer and Cow as their food. Breed in the morning,sleep at night. Hard to find the prey when the weather is foggy. Not always succeed to kill the prey even if it finds it. Will feel ill if it eats the prey which contains a disease. The disease will result in fast senescence.

Snake`s behaviours:

Catch Deer as their food. Breed in the morning,sleep at night. Hard to find the prey when the weather is foggy. Not always succeed to kill the prey even if it finds it. Will feel ill if it eats the prey which contains a disease. The disease will result in fast senescence.

Tiger`s behaviours:

Catch Deer and Cow as their food. Breed in the morning,sleep at night. Hard to find the prey when the weather is foggy. Not always succeed to kill the prey even if it finds it. Will feel ill if it eats the prey which contains a disease. The disease will result in fast senescence.

Both three predators fight for deers. Tiger and wolf also fight for cows. For large predator, deer will provide only half foodlevel.(Tiger and Wolf)

Large predators will hunt when their foodlevels are below a threshold.(Now is 70% of foodlevel).

Deer`s behaviours:

Eat grass. Breed in the morning,sleep at night. When the father deer finds the food, he will share the food with the children deer which has the smallest age. Will feel ill if it eats the grass which is toxic and the toxic grass will only provide little amount of foodlevel.The disease will result in fast senescencea.

Cow`s behaviours:

Eat grass. Breed in the morning,sleep at night. When the father cow finds the food, he will share the food with the children cow which has the smallest age. Will feel ill if it eats the grass which is toxic and the toxic grass will only provide little amount of foodlevel.The disease will result in fast senescence.

All animals will become a virus container if they feel ill.

The herbivore who eats the toxic grass will be infected, the predator who eats the ill herbivore will be infected.The virus will be inherited to the descendants when animal breeds.

Grass`s behaviours:

Grows at foggy and sunny days, stop growing at raining days. Only when the waterlevel of grass is greater than a threshold, grass will be able to grow.(40% of waterlevel) The grass will become eatable when it grows up. (Eatable age)The rainy day will provide water for grass.

The source of the disease is the grass.

For grass, the probability of becoming toxic is 1/100 every time when it breeds. The toxic grass cant breed, it will only grow and die.

The weather system:

There are three weathers in simulator: Rainy, Sunny and Foggy.

Sunny day is the ordinary day, All creatures grow normally.

Rainy day will influence grass. The grass stops growing in rainy day and get water supply.

Foggy day will influence predators. Its harder for them to find the food.(50% of chance)

The day & night system:

We consider 2 steps as a day. The first step is AM, and the second step is PM.

All animals sleep at night.

**3.Known Bugs & Unfinished tasks.**

At first I want to create a complete structure for family, hence I create few variables: father, mother, couple and children. Every time when a animal breeds, he/she will have a partner and children. The child will have their father and mother.