Title:

| Author: | Date: | Approver: | Date: | Owner: | Date: | Project: |

## Revision History:

| Rev: | ECO#: | Change Description: | Approval: | Date: |
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# 1. Introduction

This Software will define the detail of animal's life cycle and food chain according to the image of Saskatchewan Wildlife Federation. In terms of the customer's requirements, this project will help students to study that the life cycle of animals, which live in a certain natural environment in Saskatchewan. And then the software will simulate the model of animal's life cycle. In the software, those animals will be placed in a virtual place, and looking for the food to decide they will live or die.

## 1.1  Scope

The software will be coded by Java. A group is asked to design a simulation program that make student to add or delete a bunch of different animals in a simulated place to see what happens between various animals. From the wildlife image we can see the life circle but this is not complete. Therefore, we need to make sure we can add more animals at any time in the software.

## 1.2  Related Documents

See Internal Design Section

## 1.3  External Requirements

1) The user can define which animals will in the life cycle, and they can add or delete the animals which they want or do not want
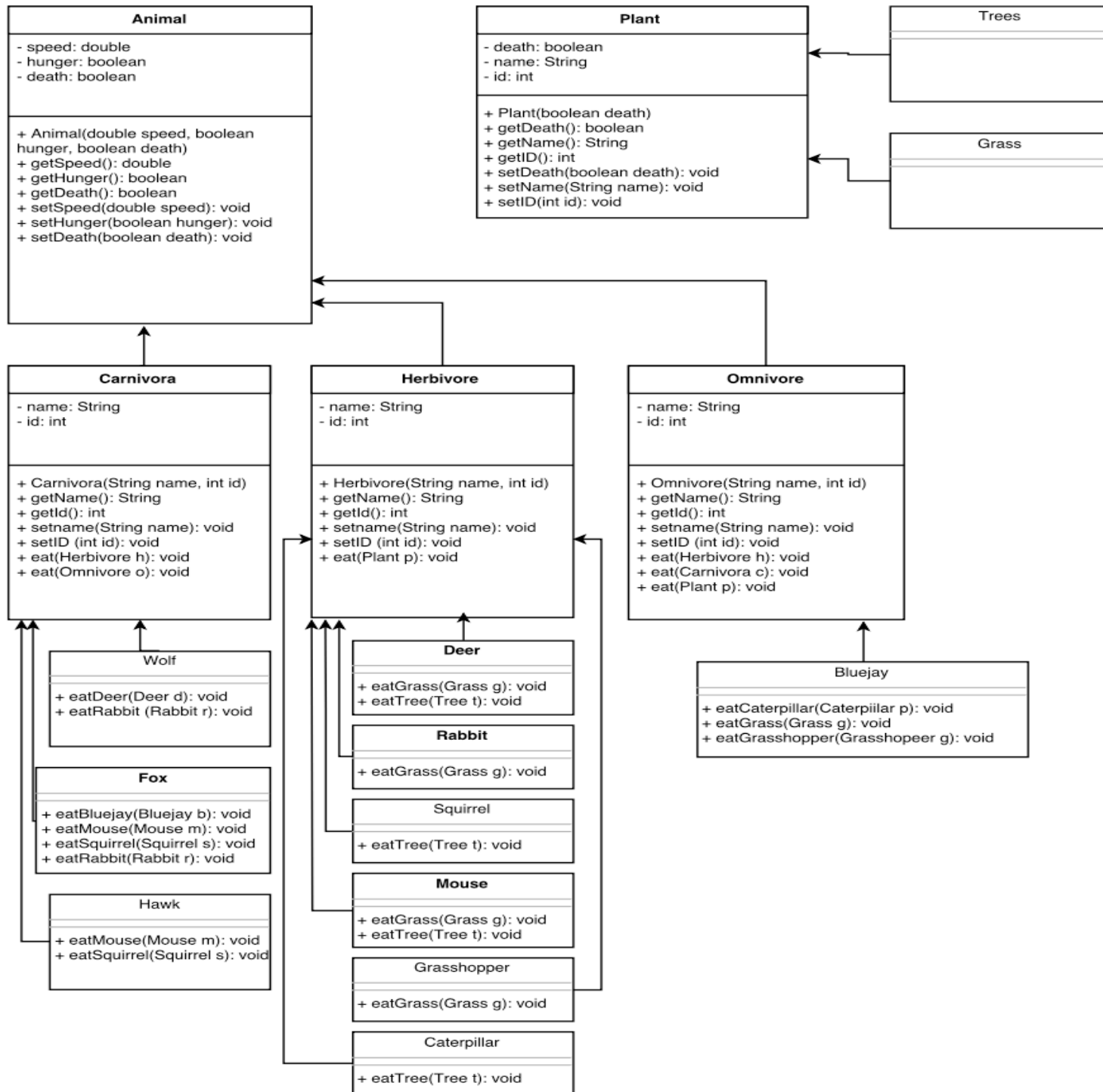
## 1.4  Internal Requirements

1) Use Jave
2) Use inheritance
3) Work in a group
4) Work with Github

## 1.5  Design issues

1) Mouse and BlueJay (Multiple Inheritance)

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## 2. Internal Design

**Animal**

- speed: double
- hunger: boolean
- death: boolean

+ Animal(double speed, boolean hunger, boolean death)
+ getSpeed(): double
+ getHunger(): boolean
+ getDeath(): boolean
+ setSpeed(double speed): void
+ setHunger(boolean hunger): void
+ setDeath(boolean death): void

**Plant**

- death: boolean
- name: String
- id: int

+ Plant(boolean death)
+ getDeath(): boolean
+ getName(): String
+ getID(): int
+ setDeath(boolean death): void
+ setName(String name): void
+ setID(int id): void

**Trees**

**Grass**

**Carnivora**

- name: String
- id: int

+ Carnivora(String name, int id)
+ getName(): String
+ getId(): int
+ setname(String name): void
+ setID (int id): void
+ eat(Herbivore h): void
+ eat(Omnivore o): void

**Herbivore**

- name: String
- id: int

+ Herbivore(String name, int id)
+ getName(): String
+ getId(): int
+ setname(String name): void
+ setID (int id): void
+ eat(Plant p): void

**Omnivore**

- name: String
- id: int

+ Omnivore(String name, int id)
+ getName(): String
+ getId(): int
+ setname(String name): void
+ setID (int id): void
+ eat(Herbivore h): void
+ eat(Carnivora c): void
+ eat(Plant p): void

**Wolf**

+ eatDeer(Deer d): void
+ eatRabbit (Rabbit r): void

**Fox**

+ eatBluejay(Bluejay b): void
+ eatMouse(Mouse m): void
+ eatSquirrel(Squirrel s): void
+ eatRabbit(Rabbit r): void

**Hawk**

+ eatMouse(Mouse m): void
+ eatSquirrel(Squirrel s): void

**Deer**

+ eatGrass(Grass g): void
+ eatTree(Tree t): void

**Rabbit**

+ eatGrass(Grass g): void

Squirrel

+ eatTree(Tree t): void

**Mouse**

+ eatGrass(Grass g): void
+ eatTree(Tree t): void

Grasshopper

+ eatGrass(Grass g): void

Caterpillar

+ eatTree(Tree t): void

**Bluejay**

+ eatCaterpillar(Caterpiilar p): void
+ eatGrass(Grass g): void
+ eatGrasshopper(Grasshopeer g): void

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## 2.1  Data  Flows

Sequence Diagrams

# 3.  Unit Test Strategy

Please refer to the PPP section in [8] for a full unit test strategy.

# 4.  Additional Information

# 5.  References

# 6.  Acronyms