

Design Rationale For Crazy Steve's Used Dinosaur Emporium

Herein we detail the various design decisions made in order to implement the spec of Assignments 1 and 2 in an extensible and maintainable manner.

Interfaces

Two interfaces have been added to the game package at this stage:

- The Sellable interface was created in order to facilitate the buying and selling of things in game, with the idea that things other than Items could be sold in future. This also creates a very simple way to check if an Item in a player's inventory can be sold
- The Edible interface was added for similar reasons to the Sellable interface. Since already in the spec there are multiple classes that will need to be edible - Grass and HerbivoreFood for example, this is an easily extensible way to make both of them edible. As with Sellable, it is easy for us to check whether something is edible or not. Although it is not shown in the class diagram, we will create an enum to mark an Edible as "plant" or "meat" - a method in Edible will return which type it is.

A Dinosaur Abstract Class

- As the Class Diagram was being created, we noted that there were some commonalities between the two dinosaurs to be implemented in this spec. For example, BreedBehaviour and EatBehaviour are in fact functionally identical between the dinosaurs, and so to avoid unnecessary repeated code, a dinosaur superclass was created.
- Note that, although currently there are no other creature types, this design could easily be refactored to allow for that - either the Dinosaur superclass is simply renamed to Creature if there is enough common logic, or a Creature superclass is created which the current Dinosaur superclass is a subclass of. However we felt that this was not necessary to include as yet since it would only lead to a needless extra class without any other creature types.

A merged Behaviour

- Initially, our design had a ScavengeBehaviour and a GrazeBehaviour for Velociraptors and Protoceratops respectively. ScavengeBehaviour was for finding and eating Corpses, and GrazeBehaviour was for finding and eating grass or trees. However, thanks to the Edible interface, this is not necessary. Both behaviours are essentially identical.

Removal of PortableDinoItem

- PortableDinoItem was removed as all Item subclasses in the current implementation are different enough that the benefit (e.g. extensibility) of having unique classes for each outweighed the simplicity of instantiating PortableDinoItem.

