

Assignment 3 - FIT2099

Rationale

Introduction - Fixing

Assignment 2 was not ideal and needed some modification and improvement that are done before starting assignment 3. To be more precise, implementation of shop and buying and selling was challenging and our group was not able to implement this feature properly, growing tree was causing bugs of having out of boundary indexes and finally dinosaurs were not able to find food and eat it properly, which are considerable issues which were fixed in this assignment.

Northern and Southern maps (move to new map)

The existing map in assignment 2 is called Jurrasick park or the Southern map which on its north new exist to the Northern map or Dark jungle are made by which two maps can interact with each other, meaning that all the creatures and ground can move between the two maps. These exits are created by a for loop in which its minimus is `map.getRangeX().min` and its max is `map.getRangeX().max`, exits are added one by one on the grounds on the north of the southern map. therefore , the player can walk between the maps if it goes on the north of the southern map and south of the northern map.

Shop & Player

Previously in assignment 2, the shop had a menu showed to the player from which player should've chosen one and the buying and selling methods were implemented in the player class which was not a remarkable design and were causing errors. In assignment 3, several actions for buying and selling are created individually and are shown to player by using the method called 'allowableActions' in the superclass 'Ground'. More precisely, an object of Actions is created and returns buy and sell actions declared in the constructor and added to the actions object. All the unnecessary methods were removed from player class and the classes explained preliminary.

Buy and Sell Actions

Buy actions allow the player to buy all types of dinosaur eggs in addition to the herbivore food and carnivore food, where Sell actions let the player to sell protoceratops egg and all the corpse collected throughout the game. In buy actions, firstly, checks if the player has adequate money in its inventory then subtracts the determined price from its budget and adds the item to the player's inventory, while in selling actions, if player has the selected item in its inventory it removes the item from player's inventory then adds the determined amount to the player's budget. Buying and selling menu is shown to the player when the player is near the shops located in two maps.

Water, Reeds and Fish

Water is a terrain type that allows merrin creatures lives in and makes reeds and reeds make Fish which is fed to the Plesiosaurs. Water class contains 3 methods called `canActorEnter` which makes sure that land-based dinosaurs are not allowed in water, `grow` that has a 1% chance of creating reeds, and `tick` to implement the `grow` method. In `grow` method, if the type of the terrain next to a water is a dirt, that water has a 10% chance of becoming reeds, and the terrain next to water is water has a 5% chance of becoming reeds, which was implemented by creating a random number and comparing them for the values equivalent to 10% and 55 then, all the exits of the location that the water is located on are checked to determine the type of the water next to a water.

Similarly, the reeds are a terrain type that only merrin animals are allowed in and has methods of `grow`, `canActorEnter` and `tick` in addition to methods called `fish` that has a small chance of creation of fish, as well as a `die` method to prevent the reeds to overcrowd.

T-rex

This dinosaurs is required for this assignment that is a land-based dinosaurs and is able to eat alive dinosaurs as well as their corpses and eggs. The game is finished and the player

wins the game if the T-rex breed and the egg hatches, then the message of “Winner winner Chicken Dinner” is displayed on the screen and terminates the game.

Similarly, T-rex is a subclass of Dinosaurs and has methods such as breed that allows T-rex to lay on an egg, eat that increases its foodLevel by the foodValue of the food eaten as well as attack other dinosaurs and player. A method called eatAliveDino allows this dinosaurs to eat other actor as well as the player and eating player results in the termination of the game. To be more precise, this method checks the exits around the T-rex and eliminate every actor around it and adds to its foodLevel.

Only a T-rex with a foodLevel of greater than or equal to 1600 can breed which has makes the baby T-rex and make its age zero. The age of a T-rex is 12 years old because age 11 is the age that the winning message is displayed and terminates the game, therefore, when the T-rex's egg is bought from the shop and dropped to be born the player does not win the game and it should wait until the t-rex breeds and after one turn of being hatched the game is over and the player wins.

Pteranodons and Plesiosaurs

These dinosaurs are implemented similar to other carnivorous dinosaurs with the difference of passing through water and having different diet and seeking food method. Pteranodons are flying dinosaurs that can pass through water, therefore, the method of canActorEnter in Water returns true and in land terrain types returns false.

Moreover, their method for seeking food is different, if a food is around them 2 steps further on land or water, they can fly 2 steps and go there otherwise they just wander around, additionally their diet is fish, corpse and eggs of other animals. Like Pteranodons, plesiosaurs can enter the water and they eat fish and corpse but their eggs are hatched differently. The player should put the egg near the water, and when their eggs are hatched the new baby Plesiosaurs will be born in the water, If the player put the egg in other locations the egg will be destroyed and removed from the map after 10 turns.

Termination of the game (ending game)

There are three ways implemented for the game to terminate. First, when the T-rex eats the player the message of game over is displayed on the screen, secondly, an action called `QuitGameAction` is created that let the player to terminate the game whenever it wants, this action will display a message saying, "Would you like to exit the game? Type 1 for No and 2 For yes." which typing 1 displays the message saying "player resumes the game" and typing 2 displays the message saying "Player exit the game " and eliminate the player from the map, and finally, when the player wins the game by growing a T-rex and make it breed which was clarified before.