PokemOz

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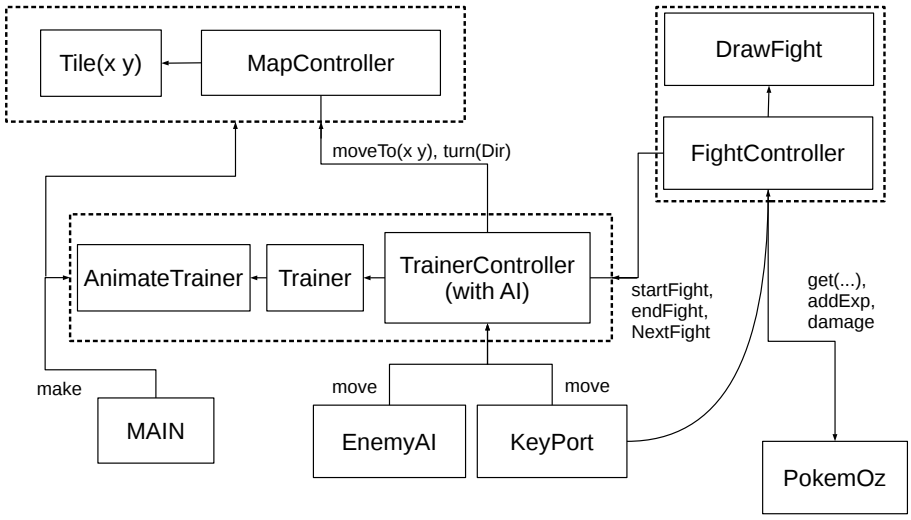
Introduction

We were tasked with the import mission of creating a PokemOz game using message-passing concurrency. In this report, we will try to explain the design decisions and the concepts used along this project.

Component Diagram

Our components and thus our component diagram are based in a large part on the lift example in section 5.4 of CTMCP [1].



Every one of these components are modeled using `NewPortObject` or an alternative `NewPortObjectKillable` which allows the game to stop the thread when it is no longer needed, to save on resources.

State Diagrams

We programmed every part of our program using port-objects. Using these port-object allowed us to make an easily testable system using states. In the

[1] VAN ROY, P., HARIDI, S., *Concepts, Techniques, and Models of Computer Programming*, The MIT Press, Cambridge.

following section, we will show the state diagrams for the stateful port-objects.

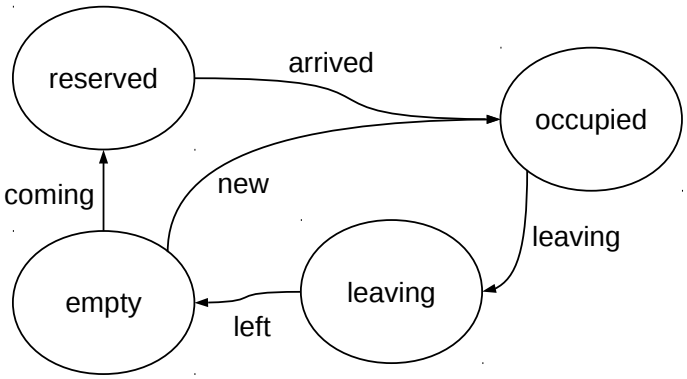


Figure 1: Tile State Diagram

Tile A Tile on the map has an easy state diagram. Each tile has a set of fixed coordinates that can be used by other port-objects to send a tile some messages, through the MapController. The `reserved` and `leaving` intermediate states allow a tile to refuse new Trainers wanting to go on a tile while another trainer is not yet on the tile, but is animating to it at the moment. The text next to the arrows are the messages received by a tile that trigger the state change.

PlayerController This state diagram shows the states of both the PlayerController and the Trainer port-objects. The TrainerController receives "keys" from the keyboard or the Artificial Intelligence, and will then move the Trainer on the map or start a fight, and relinquish control to the FightController.

FightController The last important port-object is the FightController. Every time a fight takes place a new FightController port-object is created. It waits for input from the user, or uses autofight to let the player fight.

Artificial intelligence

We also want to attract the readers attention on the artificial intelligence that can be triggered using the `--ai` switch on the command-line. The AI is implemented using Dijkstra's shortest path algorithm. It calculates a distance between its position and the last tile with a greater distance for the grass and the trainer surroundings.

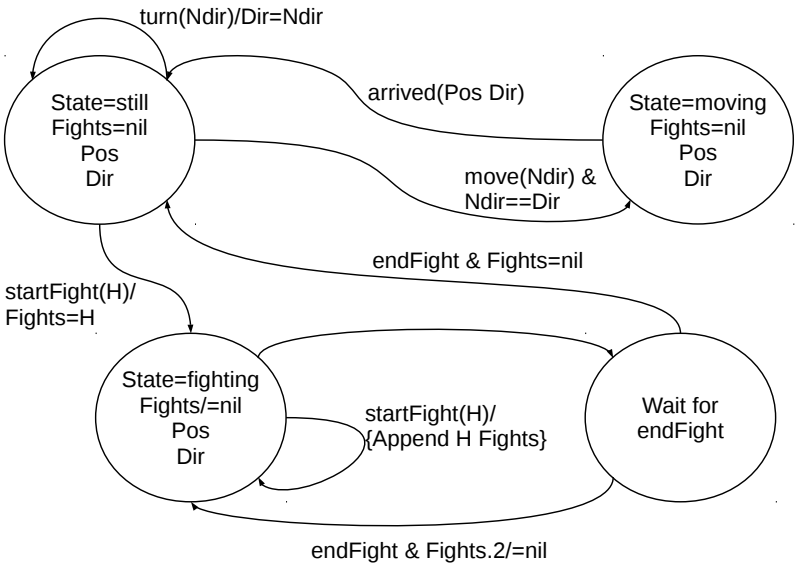


Figure 2: PlayerController State Diagram

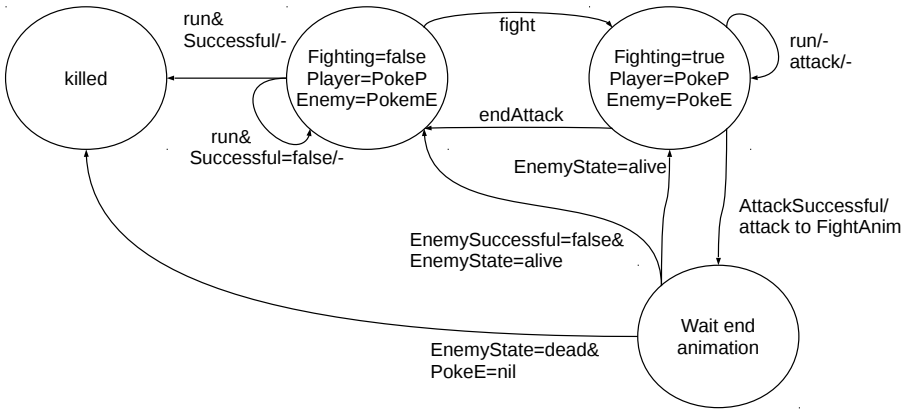


Figure 3: FightController State Diagram