

To: Instructors of CS 4500

From: Jennifer Der and Timothy Haas

Subject: Fish Game

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Fish is a strategy game where two to four players compete with their friends to see who can collect the most fish. The game board is made out of adjacent hexagonal tiles, each containing a positive number of fish. A player has N number of penguins they control to move across the board to collect fish. A referee controls the layout of the game board, and assigns each player a color and number of penguins. The referee also decides whose turn is next; turns always cycle from the youngest to oldest player.

There are five components to the Fish game:

- The Game Board (Data tier): the board that each player sees
 - The Game Board keeps track of: 2-4 Players, a grid of the Game Tiles, and the Referee.
 - The Game Board has a method to draw itself, which lives in the Presentation tier.
- Player(s) (Data tier): one of the players in the game
 - A Player keeps track of: their age, their Color, and their Penguins.
 - A Player controls their Penguins to move on the Game Board. Penguins must only move across borders between active Game Tiles.
- Game Tile (Data tier): a hexagon that holds a positive number of fish
 - A Game Tile keeps track of: the number of fish that are currently on top of it and its location within the Board.
 - A Game Tile becomes inactive when there are zero fish on it.
- Referee (Logic tier): who keeps track of the game rules
 - The Referee sets up the game, and decides how many fish are on each tile, assigns each Player a Color, gives Players Penguins, and determines whose turn is next.
 - It has the ability to know when the game has ended. The game is over when no Player can move.
- Penguins (Data tier): controlled by Players
 - Each Penguin keeps track of their position in the Board.
 - A Penguin knows its available moves at any given time.

As well as utility components for functionality and playability:

- Color
 - A Color is one of: red, white, brown, or black.
 - Each of these may be assigned to a Player by the Referee.
- Player Interface (Presentation tier)
 - Allows Players to sign up for the game tournament, and interfaces with Players in order to play the game.
 - Once all Players are signed up, the referee initiates the start of the game from an endpoint located on the Player Interface.
 - The Interface connects to external payment system