
FINAL PROJECT PROPOSAL



Online Onitama

Advanced Programming

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11 October 2018

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DESCRIPTION

Components

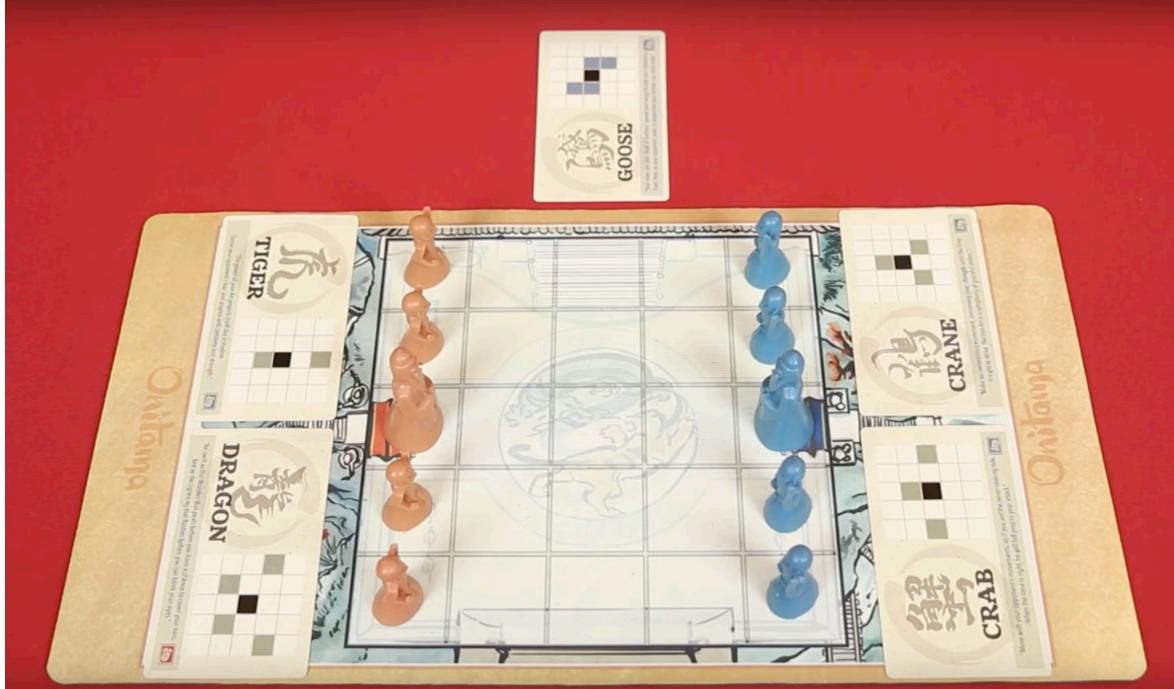
The project consists of an online version of the Japanese strategy board game called “Onitama”, it consists of 2 parts:

- Game Master (server) : in charge of listening for incoming players, assigning players to a table, starting matches, delivering cards, assigning turns, keeping scores and choosing the winners.
- Player (client): in charge of connecting to a server, showing the GUI with the status of the match and choosing cards to play

The server accepts multiple connections and can play against players (PvE) or match players and be the moderator (PvP)

Game Rules

It is a 2 players strategy game, the board is a grid of 5x5, each player has 5 “tokens”, 1 is the “master” and the remaining 4 are “students”, at the beginning of the match the Game master takes out 5 cards and gives 2 of them to each player and leaves the remaining one in “stand by”, the cards contain valid movements for the tokens, an initial configuration for the game is shown in the picture:



The tokens are moved according to the player cards, we pick one token and one movement, from there we have multiple valid cells to do the movement, if the cell is free we just move there, if the cell is occupied by an enemy token we move there and take the token out of the board, we can't move to that cell if it is occupied by

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other of our tokens or if it is out of the borders, each time a movement is done we take the used card movement and switch it with the stand by card, meaning that in each game there are only 5 valid movements and they end up rotating between players. After each movement the player's turn ends and beginning the opponent's turn

The goal of the game is to win by eliminating the opponent's master or by moving our master to the initial opponent's master position

Turn steps:

- 1) Choose movement to do
- 2) Choose token
- 3) Choose a valid cell to move according to the movement & token
- 4) Move token to cell (remove opponent's token from the board if it is the case)
- 5) Switch done movement with the "stand by" movement

After step 5 we check if there is a winner, otherwise it starts the other player's turn

Video explanation: <https://www.youtube.com/watch?v=lFRewjcngwU>

TOPICS

- Pointers: everything besides integer values and consta will be used as pointers, we will create pointers structs that represent the game and they will also have pointers to other variables
- Process Creation: this will be in the server side and this code will spawn different processes for playing with other players
- Threads: also in the server side, there will be a main thread listening for incoming connections (players) and it will spawn more threads that will play against players or be moderators between players, the threads die when the game is over or if there is an error on the client side (lost connection)
- Signals: There will be a limit of different concurrent active tables, processes will send signals when they are done so the table is freed and allows more players to "sit" and play

REFERENCES

<http://www.arcane-wonders.com/wp-content/uploads/2017/06/Onitama-Rulebook.pdf>

<https://de.wikipedia.org/wiki/Onitama>
