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A concept paper on an environment for board game competitions in scala suitable for parts B and C

**1.0 Introduction**

This project will involve setting up an environment that allows for machine-vs-machine competitions in the board game Hex. [1] Hex is a connection board game for two players played on a hexagonal grid, theoretically of any size and several possible shapes, though the typical size is 11 X 11. The first player always has a winning strategy! While the winning strategy is not known, it can be proven that the first player can win for sure, with perfect play. The players alternate turns to place their tile on any unoccupied space on the game board, with the goal of forming an unbroken chain of tiles (of his own colour of course) linking his two regions.

1.1 Background

The game of Hex was first invented in 1942 by Piet Hein, a Danish scientist, mathematician, writer, and poet. In 1948, John Nash at Princeton re-discovered the game, which became popular among the math graduate students at Princeton. They called Hex either “Nash” or “John”, though the latter referred to the hexagonal bathroom tiles that they played the game on. In 1952, Parker Brothers, Inc. popularized the game as “Hex.

[2] According to hexagon.org Hexagon has increasingly been interpreted for computer play (whether it be online or simply on the desktop) the strict adherence to board styles, colour schemes and number of players has fluctuated greatly. When playing on the computer there are usually two options available. Firstly playing against a computer program, or secondly, connecting to the internet and playing with an opponent somewhere else in the world. Where computer programs will often tend to move much quicker and allow a fast turn-around game, they can become quite predictable and not offer much challenge after a period of time. People on the other hand may take long thinking about each move.

**1.2.0 Problem statement**

The current computer based hex board game allows an individual to play against the computer or one to compete with someone else in a different location connected to the internet. Therefore for this reason, we propose hex game application that will allow two people to play the game using their devices regardless of whether they are connected to the internet or not as well as allowing the players ample time to make their moves.

1.3.0 Main objective

To set up an environment that allows machines to compete against each other in the board game Hex regardless of whether there is internet connection or not.

**1.3.1 Specific objectives**

To design easy to use interfaces for the game engines as well as a nice looking graphical user interface.

Testing and validating the software after it has been designed.

References

[1]University of Oxford.(2017). Undergraduate student project [online].Available: <https://www.cs.ox.ac.uk/teaching/studentprojects/516.html>

[2](2012-2017). Play Hexagon (online) Available: http://www.hexagongame.org