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Project Instruction of Fanorona

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Instructions on how to compile and run my program

The source code zip contains three folders

Src: the source code of the program

Bin: the classes which I have compiled

Compile

I have compile the java files to the bin folder.

If you want to compile the files by yourself, use command “cd” to the Fanorona/src, type in “javac action_listener/*.java game/*.java gameUI/*.java state/*.java utility/*.java”

Run

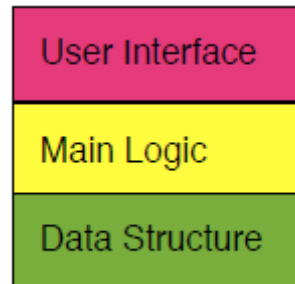
Use command “cd” to the Fanorona/bin or Fanorona/src(if you compile by yourself), then type in “java gameUI/WelcomeUI”

note: If you choose computer go first and a god level, after you click “play”, it will be a little slow to show the game UI because the computer is thinking about the first step, but it will not over 10 seconds.

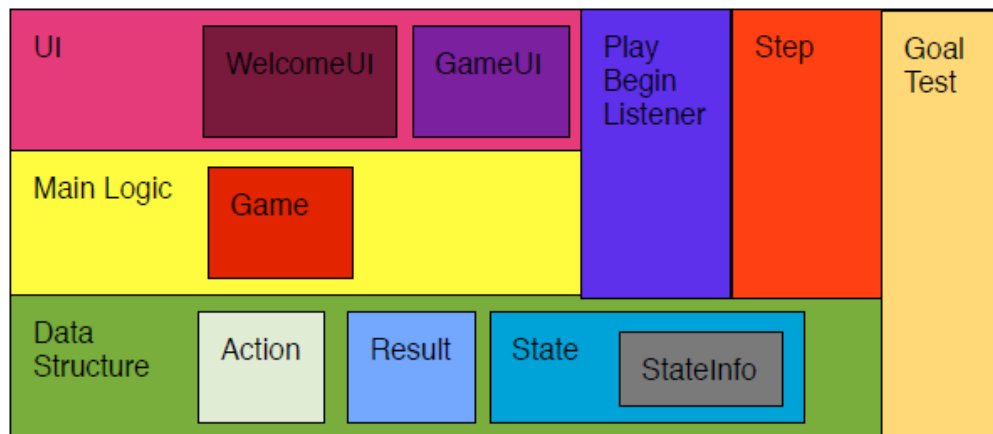
Description of my design and algorithm

Design and algorithm of the program

The frame of the program



The class graph of the program



User Interface

The UI has two shot screens above, and they are designed by two different classes: WelcomeUI and GameUI.

Search Algorithm

Using alpha-beta search and a cut off function, the alpha-beta search is just like what we learn in the class, so there is nothing to describe. The only modify is adding a parameter to maxValue and minValue function to record the depth reached.

The cut off function will be described in part 2 below.

Goal test

The class GoalTest is used to do the goal test for states. When the number of black/white player's token is down to zero, the state right now is goal state.

The cut off and evaluation function

The evaluation function is that $(\# \text{total token} - \# \text{remain token}) * 2$. It means that more less the token of enemy's remain on the board the more high score you can get. The evaluation function is between -153 and 153.

The different levels of difficulty part

There are three level in the game: child level, adult level and god level.

Child level: search at most in the depth 3 in the search tree

Adult level: search at most in the depth 10 in the search tree

God level: search at most in the depth 20 in the search tree

If the game reach the specified depth and do not reach a goal state, the game will cut off and use the evaluation function return a utility value.