Design

My project involves an implementation of the game risk. I have also implemented a relatively smart artificial player.

My code consists of 3 classes: the Risk class, the Country class and the Player class. The Risk class is the main game itself. It implements the user interface, the model – view – controller functions and also contains the functions that control the artificial player. To run the game you need to execute the run() function in the Risk class. To store information about the game there exits a list of players where I treat each player as an instance of the class Player and a dictionary of countries where I treat each country as an instance of the class Country.

For the user:

The user can control all his actions using the various button provided in the sidebar menu. These actions modify the model. To display the model I have view functions that show the results of the users actions on the screen.

For the Artificial Player:

To control the Artificial Players I have a function called playAI() which is called whenever it is the AI’s turn. This function in turn calls the various functions attackAI(), placeAI(), fortifyAI() etc which control the AI’s tasks. The Place and Fortify functions are based on BSR as described by Franz Hahn in his paper

Evaluating Heuristics in the Game Risk An Aritifical Intelligence Perspective. The Attack function I came about after carrying out various simulations of different approaches of AI:

The first approach was attack all, which didn’t work that well.

The second approach took a step ahead and then evaluated that game state based on the number of armies you get next turn and then compared it to the current game state. If the game state had a higher rating then it carried out the attack otherwise it didn’t. Also it didn’t attack countries, which had a larger number of armies than the attacking country did.

My third approach took a step ahead and evaluated the game state based on BSR and then compared it to the current game state. If the game state had a higher rating then it carried out the attack otherwise it didn’t. Also it didn’t attack countries, which had a larger number of armies than the attacking country did.

My current AI works off both the second and the third approach and came about after testing and tweaking the AI’s little by little and seeing the results.

The User Interface:

Notes taken during user interface testing:

* Include title screen to help players know which game they are playing
* Have a help menu
* Print out the actions of the Artificial Player for users to see.
* Include a restart button – ‘r’

The user interface is simple and is guided by the instructions that I display at the bottom of the screen. I have also included a help menu to help players learn how to play the game.

Based on my competitive analysis I decided to include a sidebar menu which contained all the various buttons using which the user could perform any action.

I have tried mostly to stay true to my initial storyboard.

I hope you enjoy my game.