Arimaa Final Report

Tayler How, Luke Miller, and Jesse Shellabarger

# State of Features

We implemented nearly every feature that we mentioned in our problem statement. The basic features of the game are in place. You are able to move pieces, push and pull them, and pieces can be removed from the board on death. The only feature that we ended up dropping was turn timer banks, which would store excess time at the end of a players turn. This excess time would be able to be used if a player ran out of time. We decided that this feature added very little to the game and to the goals of the project.

Game states can be loaded and saved at any point of the game. This is accomplished by writing the current state of the game to a text file that the user specifies. The user is then able to load any game that has been previously saved.

The game checks for all win conditions at the end of every move. These conditions are having a rabbit in the opponent’s home row, the loss of all the opponent’s rabbits, and the inability of the opponent to move.

Multiple players are able to play the game using “hot-seat” multiplayer on the same machine. It switches control of the pieces every four moves.

The game uses the user specified turn timer setting and then counts down in real time. If the turn timer expires, the user whose turn it is loses.

The board state is saved at the end of every user’s move, and the user is able to undo his moves. This reverts the board state to exactly how it was at the beginning of that players turn. This is useful in the case of a piece accidentally killed or an unwise move made.

The GUI of the game shows both player’s names, allows the user to start games or load games. It also displays whose turn it is and how much time is left in their turn. Finally, it shows how many move are left in the current turn.

# Testing Strategies

The main testing technique in this project was scripted automated unit testing. This is because the test driven development structure of the project emphasized this technique. We used various methods as discussed in class to make this unit testing work such as dependency injection in our save and load testing. An example of this is one of the unit testing used for pushing pieces. In this testing, we created a board that has pieces in place to be pushed. We then push the pieces, and insure that the push function returned true, and that the pieces were in the correct place. We repeated this for every direction we could push a piece.

We used big bang integration testing, as the complexity of the integrations was relatively low, and we only had a few parts to integrate. This led to any issues with the integration to be obvious, and we were able to fix any problems that appeared.

We did black-box exploratory acceptance testing for the completely integrated program. We used this technique because our design changed multiple times throughout the project, and so any scripted acceptance testing would be brittle and would have to be changed multiple times as the requirements changed

We also did independent verification and validation of our project by sending it to multiple third parties to play the game and report any bugs or issues with the gameplay experience.

# Testing Thoroughness