QuickFire Coding
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Final Project Planning Document

The main purpose for this project is to create a game that will address the core learning standards for fractions, as taught at the fourth grade level. The game will include a board (likely a one-dimensional array) with a different problem at each location. The problems at each location will address one of ten core standards (as referenced from CCS standards: *http://www.free-test-online.com/ccss/grade4/grade4_fractions.html*) and will either be generated or picked randomly from a set. The player wins by reaching the finish line. The player will advance by successfully solving the problem given at the start of each turn. If the answer is correct, the player will advance, otherwise a computer player will move forward. The player wins the game by reaching the finish line prior to any computer player. Additional feedback may be made available to the player, suggesting potential areas of improvement in their understanding of fractions.

The initial testing design for this project will ensure that the basic components are functioning properly. This means the board initializes and displays, players display and move as intended, and problems are shown as expected (and are random if they are randomly generated). High level testing will ensure that the logical components of each method are correct, allowing for a focus on implementing the gui and user interactions in the later stages of the project.

Major functional aspects of the program include the user interface, a problem generator, computer player actions, and game displays. The user interface must include a way to begin the next turn, input an answer to a given question, and submit the answer. The problem generator will output a question from a hard coded set or from an algorithm that generates a random question. There may or may not also be a visual display, e.g. the equivalence of a fraction may be shown with slices of pizza. The progression of the players will be shown on a track, which may or may not include background visuals.

In Part I, the focus will be on coding the underlying classes (including the Player, HumanPlayer, and ComputerPlayer classes), interactions between classes, and implementing important gameplay elements (such as problem generation). There will only be limited coding involving user interface. In Part II, the focus will be on adding game progression, gui, and game displays. Only small changes or fixes to Part I content should be expected at this point.