# SYSC 3110 Design Decisions

Milestone 3

Group 8

**Group Members:** Sandy Alzabadani, Elyssa Grant, Gillian O'Connell, John Khalife

**Author:** Elyssa Grant, 101258660

## AIPlayer

The AIPlayer was created completely from scratch for this milestone. The AI player extends Player, since it needs to be able to perform all the actions a regular player would normally be able to do, such as accessing a rack, updating their score and adding words. The AIPlayer holds a shared instance of Board with the Game, to be able to add its own words to the Board without intervention, as well as constants for the different directions that the AI can try to place letters. The AI has a singular public-facing method that tells it to perform a turn on its own, which limits the coupling it has with other classes. AIPlayer then has several helper methods to determine possible locations to add words to the board, generate potential words, and attempt to add them. The AIPlayer’s limitations are that it will only attempt to create words perpendicular to the direction of the word it is adding onto, and the words it adds will always use the intersected letter as either the first or last letter in the word. These limitations were added in order to keep the code simpler and more readable.

## Board

Board’s main changes involved adding a static array to Board that holds the proper premium values. Methods to activate and deactivate the tiles were added to help with checking valid letter placement, flip and mirror coordinates, initialize the premium tiles and get whether the word was the first word being added to the board was also added, to assist in the AI player’s decisions.

## Game

To facilitate adding AI players to the game, a new method to add an AI player to the list of all players was created. Furthermore, several methods were changed to be protected instead of public to decrease the potential coupling between classes.

## Player

AIPlayer required access to many pieces of Player’s code to be able to perform the same gameplay loop as a normal player. For this reason, Player’s rack, usedLetters, usedLocations, updateScore() and pullFromBag() methods were all made protected instead of private as they were before.

## ScrabbleView

New constants for the colours of the premium tiles were added for better code maintainability and readability when updating the appearance of the board after a player attempted to place a word.