Assignment 2 Software Design Document

CS2300 Section 1 Spring 2022

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# Project Description

We are designing a linear domination game and using lines and points to calculate certain distances to place lines on a game board and then output that result of the game to files.

# Approach

In main I only called a control function and set variables to go into that function. In the control function I am calling every function in order to run the game. There is a good amount of logic in control because you need to test for validity and end of game scenarios just in case the game ends before the input does. I also used a Line class to store each play so that you could parse the input and interact with the columns and rows at will.

# Detailed Design

## Programming Language

I used Java for this assignment. Java is useful for creating new classes such as the lines I used and it also very good at passing things by reference into certain functions. This is extremely helpful as it changes the variables inside of the function without having to return varaibles or multiple variables at a time.

## Modules

Main: The inputs into main are the test files and then the outputs would be the printing to the files and the printing to the console.

Control method: The inputs into control was the input from the input file in variable form and a line ArrayList that was initialized from the input as well as a history ArrayList. The outputs from this would be score changes and invalid plays based on the Line ArrayList.

Line class: This class initializes the input from the file into a row and column array where you can access each row and column at will.

## Flowcharts

Diagram

Description automatically generated

## Key Data Structures

The main data structure that I used was 2-dimensional char array to store the gameboard. I also used two array lists for the history and the plays because you can dynamically change the size of these as there are more plays and more plays read in from the file.

## Test Description

I used 5 different test files. The first three files were provided by the instructor to test certain situations such as the validity of plays and the length of lines. The final two test files were made by the student and for these I inputted random values but not repetitive values until the end of the file so that the game can play out for a longer period of time.