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15-112 TP Project Proposal

Project Description: My project is going to be a basic two player monopoly called Monopoly Light. The game will include the normal rules of monopoly but some rules will be simplified for clarity, such as the rent is going to be a percentage of the cost to buy the property and one there won't be negotiation between the two players on selling properties.

Competitive Analysis: There are multiple mobile apps or online games for monopoly. These games usually allow up to four players which I will only have two. Additionally, these games also allow for one person to play against an AI which I won't do. The graphics are also much more advanced as they are in 3D and sometimes the boards are "modernized" with settings in Vegas or Singapore, and my game will be based on the original board. My game will be similar in that it is based off of turns and that each player will have to follow the basic rules of monopoly such as buying properties, paying rent, going to jail, etc.

Structural Plan:
Main File: In this file I will put all the graphics of the game, which is mainly drawing the board. This file will also hold the data structure of the board which will be a 2D list. Finally I think this file will also have a function that tests if the game is still going on and switches between the two players.

Block Class: Each location on the board will be a block object that will contain the name of the location, it's price, color, property, and the left-top and bottom right coordinates. The coordinates will be helpful when moving each player. Property will be colored according to the player's color. This class also includes houses/hotels represented as an integer in the class.

Player Class: The player class will contain the player's current block, color, bank account, and owned properties. It also contains many functions necessary for player movement and for player purchasing of property, houses, and hotels.

Community Chest and Chance Class: This will contain the community chest and chance cards in separate 1D lists. When the card is used it gets put in another stack. If the stack becomes empty then reshuffle cards back into original stacks.

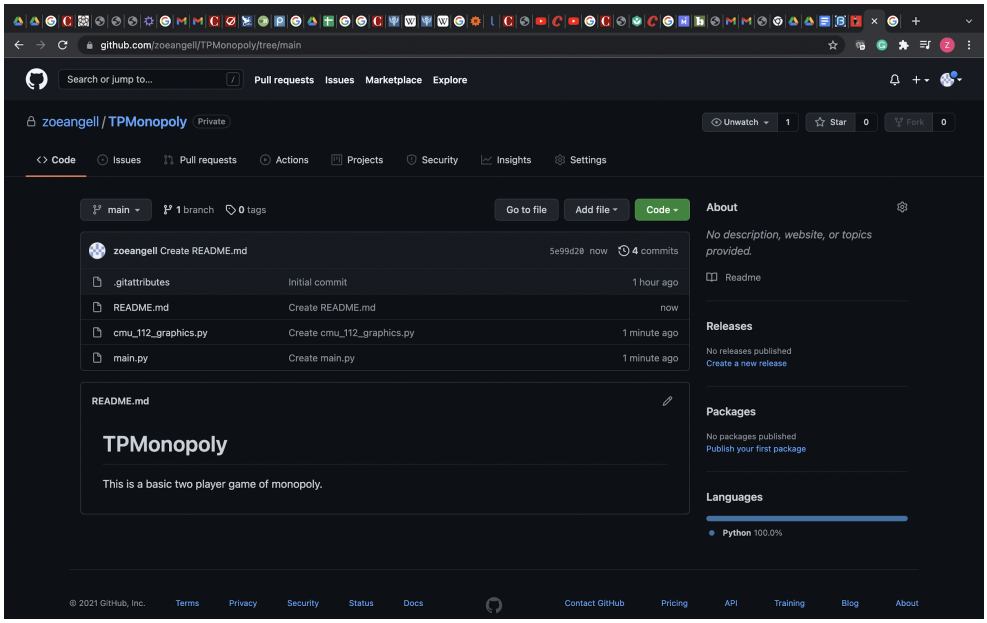
Algorithmic Plan: The biggest challenge of monopoly is keeping track of all the data. For this I am going to use OOP as I have mentioned for the player, property, and each block. This will help make writing the game play simpler. Additionally, I am going to keep track of the board in a 2D list which will have four rows with 10 columns, and one row will represent one side of the board. The most complex algorithm for my game will probably be the gameplay function as it needs to make sure to roll the dice, move the player, have the player pay rent/buy property, update all necessary variables, check if the player is bankrupt, and switch between players. I

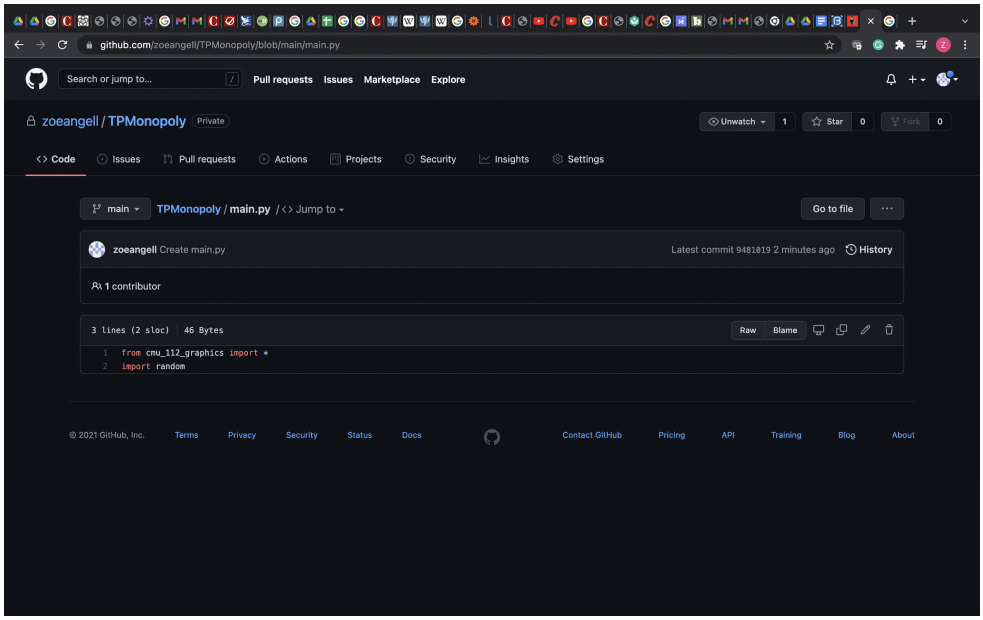
am going to approach this with a large while loop and use helper functions when necessary to make my code more clear. Also this is where keeping track of all the data in OOP is helpful.

Timeline Plan **edited:

- Nov 18th: Basic Board drawn with 2D Board Representation
- Novt 19th: Write the Player Class. Allow Players to Move on the Board with Graphical Representation.
- Nov 20th: Start gameplay with buying property and paying rent.
- Nov 21th: Continue to refine gameplay and start adding in houses.
- Nov 22th: Finish gameplay with houses and hotels.
- Nov 23rd: Test the hotel/house rent and test railroad/utility rent. Start adding in corner functions.
- Nov 24th: Finish adding in corner functions
- Nov 25th: Add in Chance and Community Chest
- Nov 26th: Test gameplay and revise according to tp2 demo feedback
- Nov 27th: Add a home screen *optional

Version Control: I am using GitHub and GitHub desktop to back up my code.





Modules: I am not using any additional modules.