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Mr. Orkney

AP CSP Period 4

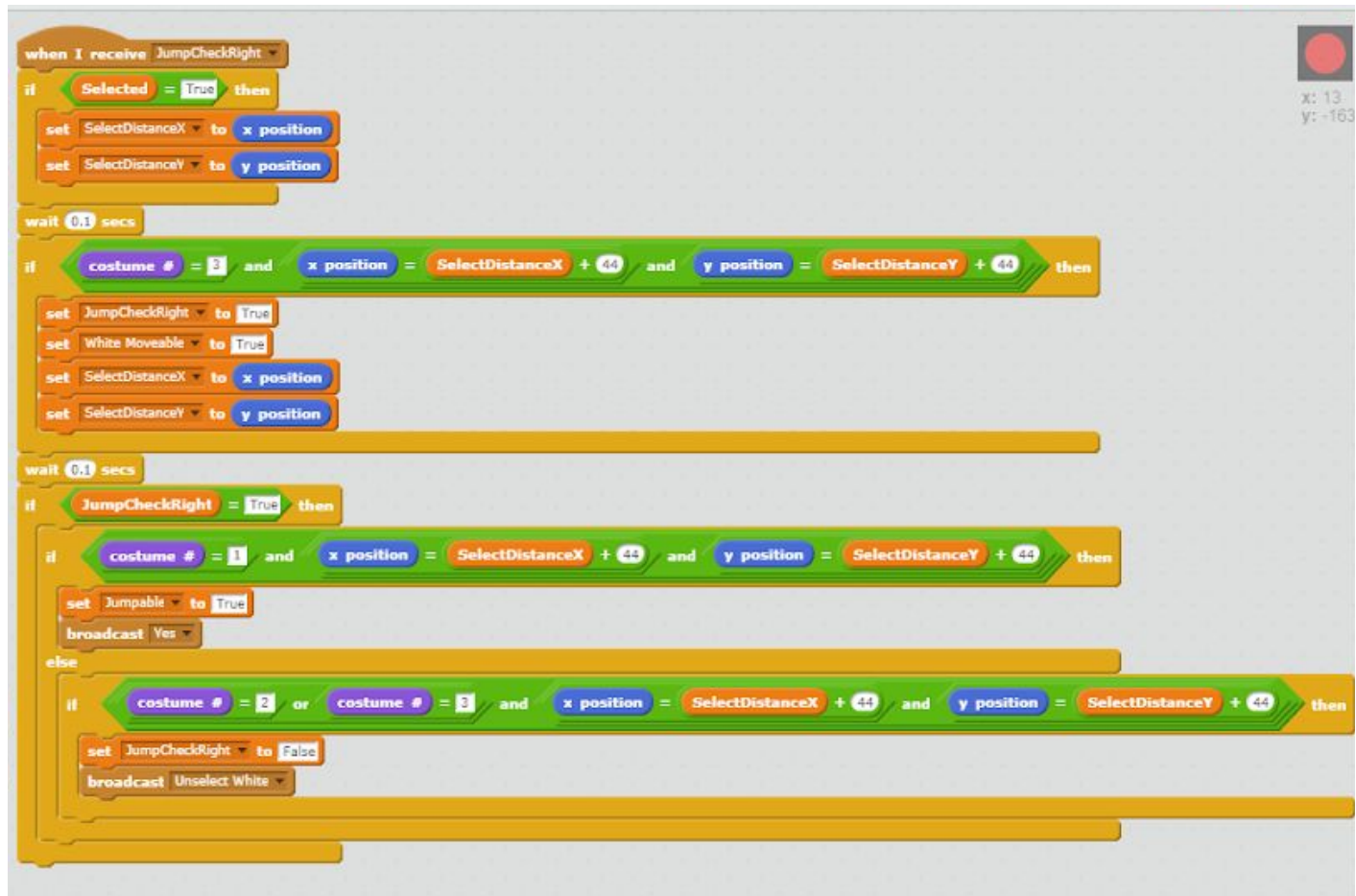
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### Written Responses

2a. The program that I created was made in Scratch. The purpose of the program is to simulate a game that is similar to checkers. It isn't really checkers, though. The goal of the player is to move their pieces across the board and try to clear it of all the white pieces. There is no way to move back, however. This means that every move you make counts. Only the player can jump over pieces. The enemy A.I. cannot jump over the players pieces. Clearing the board successfully results in the player winning. The video shows a short demo of what the program is like. You can see that the pieces can be selected and moved wherever the player wants. It also demonstrates that the A.I. is capable of making its own moves without player input. It also shows that the player can jump over white pieces.

2b. One of the major problems I faced while coding the program was trying to make the pieces move. The tough part was making it so the pieces could only make legal moves. Originally, the pieces could move anywhere on the board. Eventually, I solved this problem by making a global variable that keeps track of which tiles the pieces could move to without breaking the rules of the game. Another major problem was making the A.I. make its own moves. I had no experience making an A.I. before, so this took quite a few tries to get down. I finally settled on a simple A.I. using a random number generator to make its decisions.

2c.



These two pieces of code are responsible for checking if the selected piece can jump over a white piece next to it. There are three algorithms that are used by both of the pieces of code. The first algorithm checks the x and y positions of the selected piece. The second algorithm checks to see if there is a white piece near the selected piece that can possibly be jumped. If there is a possibly jumpable white piece near the selected piece, the third algorithm checks to see if there is an empty tile behind the white piece that the selected piece can move to. If all these algorithms turn out true, then the selected piece can jump over the white piece.

2d.



This piece of code is an abstraction that handles the detection of when a sprite is clicked and how to react to the click. Depending on the value of certain variables, the program may react differently. This block of code broadcasts different messages that are received by other blocks of codes that have their own function. It handles the selection of moveable pieces, the deselecting of a selected piece, the moving of a piece, and the jumping of a white piece. Altering this piece of code could greatly change the way the game functions or even break it.