Web Development – Mr. Turner

Project – Black and Red

**Project Overview**

Two players each have 2 piles of tokens (one pile of black and one pile of red). The object of the game is to get rid of all of the black tokens and have the most red tokens.

**The Site**

Black and Red is a 2 player game. The user will play against the computer.

Each player receives 10 black tokens and 10 red tokens at the beginning of the game.

There is one black die (6 sides) and one red die (6 sides).

*On each turn*, the current player will roll both dice. The red die will apply to the red tokens and the black die will apply to the black tokens. The player will be adding and removing tokens according to color and dice roll. For the purposes of the game, you may assume that there is an unlimited bank of black and red tokens available.

On your roll (player or computer), you may:

1- Remove red tokens from your pile and add black tokens to your opponent.

2- Add red tokens to your pile and remove black tokens from your opponent.

3- Remove black tokens from your pile and add red tokens to your opponent.

4- Add black tokens to your pile and remove red tokens from your opponent.

The game ends when one player has run out of black tokens. At that time, the player with the most red tokens is the winner.

Using HTML and Javascript, you will write a page that plays this game. The user will play against the computer.

On the user’s turn, (s)he will click the button to roll the dice.

After the dice have been rolled, the roll will be displayed. The user can then click on one of the 4 options (listed above) determining how (s)he wants to play the roll.

Once a selection has been made, the turn will switch to the computer. The computer will perform the same operations as the player, only randomly. When it comes to the display, there needs to be some way for the player to see what the computer has done. There are a number of ways to do this:

1. Run a scrolling output of the game’s actions so that the player can read the computer’s results.
2. Have a graphical display of the computer’s turn that remains on screen while the player takes his or her turn.
3. Have a button for the player to take the computer’s turn, which would remain on screen until the user rolls the dice.

Include a Reset button so that the player can start a new game when it’s over or even in the middle.

**Enhancements**

Give the computer some strategies. There are any number of ways the computer can play the game besides randomly. The best thing you can do, as the programmer, is play the game against the computer (or even play it with another person) and discover some viable strategies. Think about the decisions you make and the conditions under which you make them and program them into the computer. The computer can have a conservative or an aggressive personality, or even switch back and forth.

Some suggestions are:

* If either the player or the computer is running low on black chips, and the computer has fewer red chips, it might concentrate on getting more black chips into the game in order to keep it going.
* If it has more red chips, it might try to get rid of black chips in order to end the game more quickly.
* If it sees an opportunity to take the lead, it might go for the red chips, bringing the game to a swifter conclusion.

For any strategy, the computer will have to make some calculations. What does the field look like now? What will it look like after each move? Which outcome best serves its purpose?

**Programming Requirements**

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| * You must write all of your own code. Use of a drag and drop interface or the usage of code downloaded from the internet is not permitted. |
| * Use of deprecated code is not permitted. |
| * Your home page must be named *index.html or index.php*. |
| * You must comment your name into the top of every page, but below the doctype. |
| * Your code must be structured in a consistent and legible manner. |
| * Your interface must be smooth and easy to figure out for a client. |