Homework 1

"JavaScript and the DOM manipulation"

The following problem set is worth 100 points total. Please submit a zip file containing all relevant code to the Canvas drop box by the due date of the assignment.

Requirements

Of the problems listed below, implement two of the four. (The problems of higher difficulty are awarded higher points.)

Cookie Problem (40 pts)

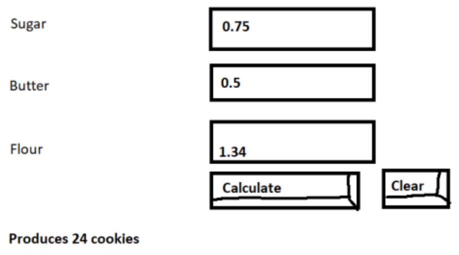
A cookie recipe calls for the following ingredients:

• 1.5 cups of sugar

• 1 cup of butter

• 2.75 cups of flour

The recipe produces 48 cookies with this amount of ingredients. With this information, produces a dynamic web application which can do the following:



Sugar 0.75

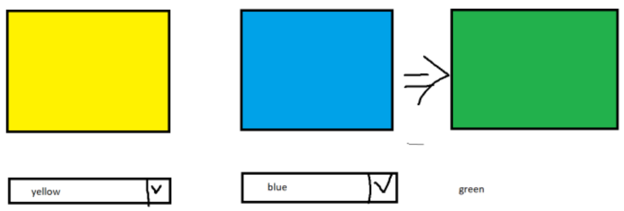
Butter 0.5

Flour 1.34

Produces 24 cookies

Primary Colors (50 pts)

Implement a dynamic web application which behaves like the following:



Your application should contain two dropdown statements and three block level elements (for instance **div**) with a background color. Each dropdown statement contains the following three primary colors:

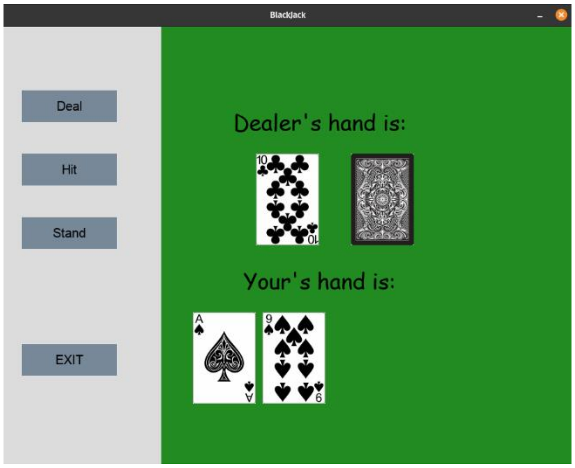
- Red
- Yellow
- Blue

When you change a dropdown, you should change the background color of the associated element to match. When you have two dropdowns with selected values, you should change the third background color to the secondary color produced by the two dropdowns. As a reference:

- Red and Yellow produces Orange.
- Red and Blue produces Purple.
- Yellow and Blue produces Green.

Blackjack Problem (50pts)

Attached to the assignment is a zip file containing a list of playing cards. For this problem, you are to implement a playable game of BlackJack (in JavaScript). Feel free to generate a UI such as the following:



You application should have four buttons:

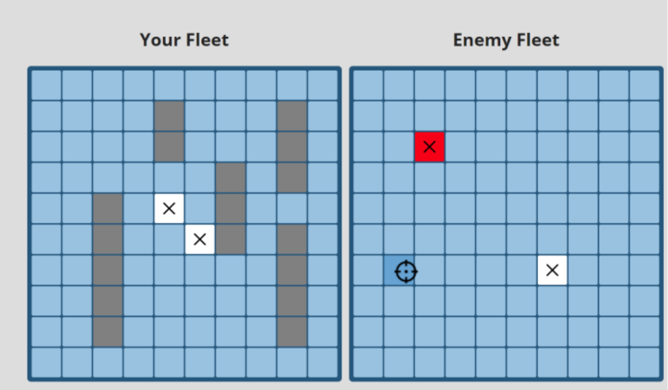
Button Name	Description
Deal	When this button is clicked, you and the dealer are given two playing cards at random. You (the player) are able to see your two cards. You (the player) can only see one of the dealer's two cards.
Hit	When this is clicked, you are randomly drawn an additional card. If your score goes over 21, the game is over and the dealer has won.
Stand	When this is clicked, the dealer's hand is revealed. If your score is higher than the dealer's and is under 21, you will the hand.

For scoring, each of the number cards is awarded their own value. Each face card is worth ten points. An ace is worth either one point or eleven points.

As an example, if you have an Eight of Hearts, a King of Clubs and an Ace of Diamonds, your score should be 19.

Battleship Problem (60pts)

The game of Battleship is a classic two-person game with a user interface which looks like the following:



You (the player) and the computer opponent are shown two game boards (10x10). At the start of the game you will place five ships on the board. The ships can be arranged vertically or horizontally. The five ships are the following:

Ship Name	Cell Length
Patrol Boat	2
Submarine	3
Destroyer	3
Battleship	4
Aircraft Carrier	5

At the start of the game, you will randomly place ships for your computer opponent. For your ships, you can either randomly place them on your grid or produce an interface which allows the user to place the ships anywhere chosen.

Once the ships are placed, you and your computer opponent will change blows. You'll click a cell on the computer's grid, the computer opponent will randomly pick a cell on your grid. You will keep doing this loop until either you or the computer has all five of your ships sunk. At this point either you or the computer has won the game.

Submission Requirements

For the submission, submit a zip file with all assets needed for me to run your two applications. Feel free to use any technique used in class (either DOM manipulation or jQuery.) Submit using the Canvas drop box before the due date.