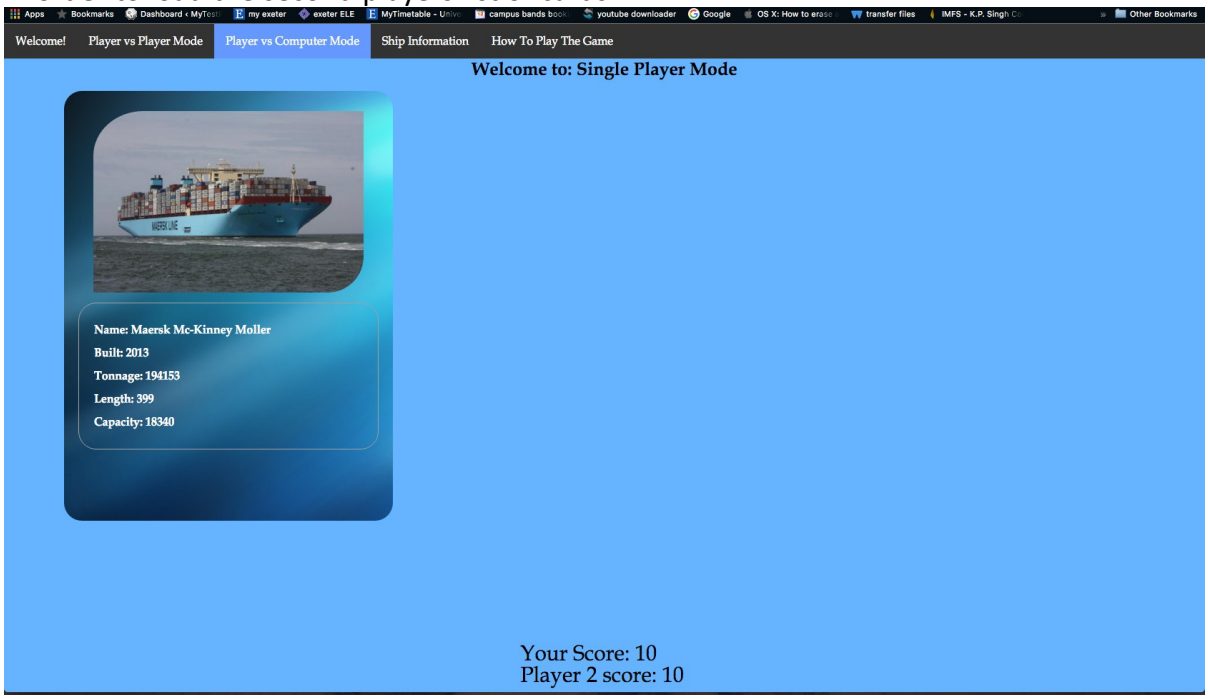
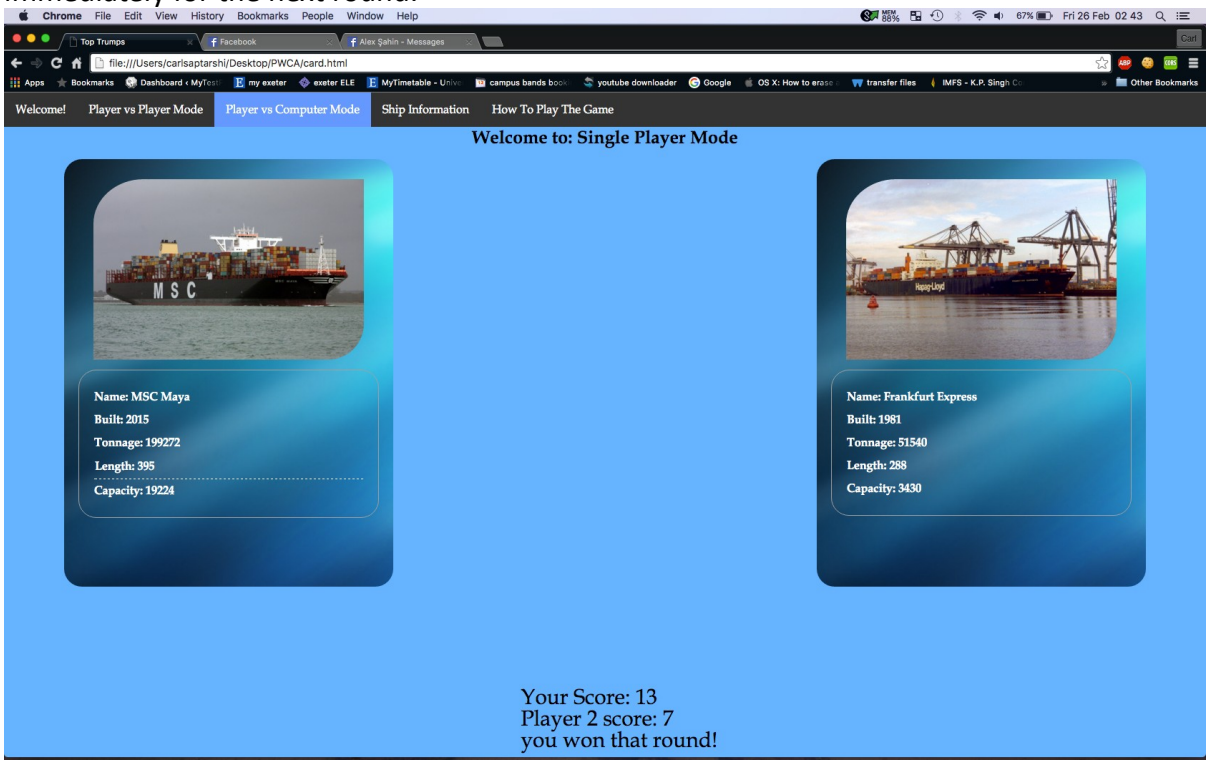
Top Trumps is traditionally a card based game, however, for the purposes of this assignment, we were told to simulate the game on-line using a variety of web programming tools such as HTML(5), CSS(3), JavaScript, AJAX and some D3. Each of these scripting and object oriented languages have their own key role in the design and functionality of how I created the Top Trumps Game.
The HTML was used in order to create multiple web pages for different parts of the local website that was created. For example, when the "Welcome" page is loaded, there are 4 buttons which will take the user to four different parts of the website: the single player mode, in which the user will play against the computer, a multiplayer mode, in which the user can connect to another user and play against each other using a common game ID. There are then two other pages, one for how the game is played, if users haven't played the game before but would like to, and also a Ship Information page which details specific ships in different formats such as tables and graphs.

Firstly I will focus on the structure of the Single Player Mode. Upon clicking the Single Player Mode button from the Welcome page, you are presented with your simulation of a card. The card consists of 3 div containers so that I could make an appropriately sized card which is visually appealing using CSS. The card appears by calling the newgame() function to start the new game and then retrieves their hand as well as the full array of ships from the server in order to load the second players list of cards.



Similar to the real game, in reality we wouldn't be able to see the other player's top card, I have accordingly hidden player's 2 card by default. Again, by default, I have chosen to let the player start (Assigned by calling player=1). This is because typically in most "Man vs AI", the human starts. The player can (in their own time) click on one of the "onclick" categories based upon the top face card that is their ship on the left hand side. However, the value "name" is disabled as this has no functionality as names are incomparable. Whilst this is happening, the top card of payer one has already been sent back to the server, to wait for player two to send their card. For the structure of the program, I chose to initially load my deck, then my card, then send it off before retrieving or using player 2 at all. Once player 2's deck if ready, their card has loaded and sent to the server. Once player 1(me) clicks a

category, the player 2 card will be revealed as the category's value has now been sent to the server for both cards. Here I invoke my compare function which allows the two players to compare their values. Once the values have been compared, the player with the higher card wins. In such a case, the losing card holder pops their value off of their deck and that card object will be pushed onto the bottom of the winning card holders deck as well. therefore I created a text box that says whether or not I have won in each round with the final score after each round being printed. Once this round is over, a new player 2 card is loaded immediately for the next round.



Since this particular mode is for one player only, I also had to design a mode in which the computer /AI can make it own choice so that way there is a possibility of the computer winning! The computer can only take a turn after the human has, and once finished, the state changes back to human for the human turn. In order to simulate a category press and to avoid bias (where possible), I decided to all the AI to generate a random number between 5 and 8 and accordingly select their category. (5-8 because cards 1-4 only relate to player 1). Similarly again, the cards are sent to the server, the values of the top facing cards are compared and then the winner takes the losers card. In order to win, the array of your cards has to equal 20 before the opponent. Finally once a player has reached 20 overall, then there is an alert to say who has won the game followed by the game stopping and no more cards can be dealt nor any categories selected.

If another table is clicked on mid game, e.g. to view ship information or player to player mode, the game automatically with restart form the beginning when you return to the game.

The next mode that can be accessed is the Ship information page. This was created in order for the user to be able to access any specific ship that they wanted to, for example, review a ships specifications . here I have made a list of the 20 ships that can be accessed using a a list. Upon the click of the specific element in the array, a card will appear which contains the information for the ship as well as a graphical D3 bar chart.

The final main part of the website is the multi player mode. In order for this game to work, both members need to have connected to some common place. This is a common id that comes from loading a new game. If joining a game, I created a text box to submit the game id and only if they match will both player one an two be connected. If player2 hasn't connected yet, I have created a query function that queries every second to see whether or not player two has connected. This allows me to not have to constantly manually query to check if the system has been connected. After this, the game is relatively similar to the computer mode as this is a turn based game, as like playing against the computer. Once the connection has been established, player one will take their go. Again the there is a check to query whether or not the category has been selected. Once this takes place, the compare function can compare the values and return the winner of the round before allowing p2 to take their turn.

Through out the project, due to the minimal restrictiveness of JS, global variables were used as this made it easier to access variables from one place in another without having to redeclare anything at all.
Finally, upon testing the project, it must be noted that for optimal results of the game, play using Mac OSX on a 15"screen or above, for full comparability. There have been a couple of issues such as the buttons on the Welcome page not working on the Blue Room linux machines however, when testing on other browsers, generally there were no issues.