



# CSCI 4970/6970 Front-End Web Development CLASS PROJECT FALL 2020 (Total Points: 140)

A Black Jack Game with Javascript, HTML 5 and CSS 3  
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## Abstract

Blackjack, formerly also Black Jack and Vingt-Un, is the American member of a global family of banking games known as Twenty-One, whose relatives include the British game of Pontoon and the European game, Vingt-et-Un. It is a comparing card game between one or more players and a dealer, where each player in turn competes against the dealer. Players do not compete against each other. It is played with one or more decks of 52 cards, and is the most widely played casino banking game in the world [[Wikipedia, 2020](#)].

Your goal is to create a Black Jack game with all skills that you learned in this semester.

## 1 Objectives

In this project, students are supposed to learn:

1. How to design a web based game
2. How to use HTML5 + CSS3 to fulfill the requirement of your design
3. How to use JavaScript and jQuery

## 2 Guideline and Steps

### 2.1 Black Jack Game Rules

Players are each dealt two cards, face up or down depending on the casino and the table. In the U.S., the dealer is also dealt two cards, normally one up (exposed) and one down (hidden). In most other countries, the dealer only receives one card face up. The value of cards two through ten is their pip value (2 through 10). Face cards (Jack, Queen, and King) are all worth ten. Aces can be worth one or eleven. A hand's value is the sum of the card values. Players are allowed to draw additional cards to improve their hands. A hand with an ace valued as 11 is called "soft", meaning that the hand will not bust by taking an additional card. The value of the ace will become one to prevent the hand from exceeding 21. Otherwise, the hand is called "hard".

Once all the players have completed their hands, it is the dealer's turn. The dealer hand will not be completed if all players have either busted or received blackjacks. The dealer then reveals the hidden card and must hit until the cards total up to 17 points. At 17 points or higher the dealer must stay. (At most tables the dealer also hits on a "soft" 17, i.e. a hand containing an ace and one or more other cards totaling six.) You are betting that you have a better hand than the dealer. The better hand is the hand where the sum of the card values is closer to 21 without exceeding 21. The detailed outcome of the hand follows:

- If the player is dealt an Ace and a ten-value card (called a "blackjack" or "natural"), and the dealer does not, the player wins and usually receives a bonus.
- If the player exceeds a sum of 21 ("busts"); the player loses, even if the dealer also exceeds 21.
- If the dealer exceeds 21 ("busts") and the player does not; the player wins.
- If the player attains a final sum higher than the dealer and does not bust; the player wins.
- If both dealer and player receive a blackjack or any other hands with the same sum called a "push", no one wins.

## 2.2 Draft Your Website (20 Points)

In this phase, you are going to make a sketch or wireframe for your website. Examples could be found in Figure 1 and Figure 2. When you are designing your website, please follow the guideline presented in Chapter 17 of textbook.

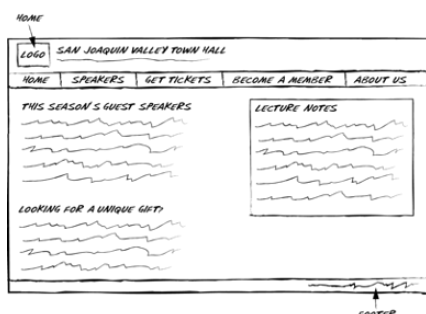


Figure 1: Sketch

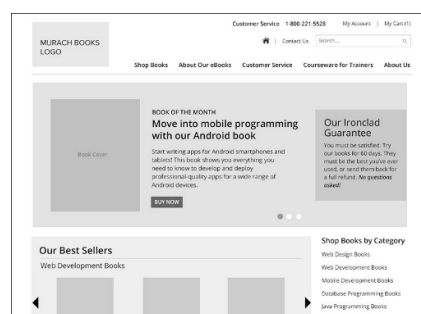


Figure 2: Wireframe

A sample Black Jack game layout is shown as follow.



Figure 3: Black Jack

### 2.2.1 Submission

Compress all design images together in zip or 7z format.

## 2.3 Implement Your Website (120 Points)

### 2.3.1 Requirements

1. You should create a control area to include all necessary functionalities in the game.
  - A "Deal" button allows the gamer to start a new game.
  - A "Hit" button allows the gamer to take another card from the dealer.
  - A "Stand" button allows the gamer to take no more cards.
  - (Optional - 20 bonus points) A "Split" button: If the first two cards of a hand have the same value, the player can split them into two hands, by moving a second bet equal to the first into an area outside the betting box. The dealer separates the two cards and draws an additional card on each, placing one bet with each hand. The player then plays out the two separate hands in turn; except for a few restrictions, the hands are treated as independent new hands, with the player winning or losing their wager separately for each hand. Occasionally, in the case of ten-valued cards, some casinos allow splitting only when the cards have the identical ranks; for instance, a hand of 10-10 may be split, but not one of 10-king. However, usually all 10-value cards are treated the same. Doubling and further splitting of post-split hands may be restricted, and an ace and ten value card after a split are counted as a non-blackjack 21. Hitting split aces is usually not allowed. Non-controlling players may follow the controlling player by putting down an additional bet or decline to do so, instead associating their existing wager with one of the two post-split hands. In that case they must choose which hand to play behind before the second cards are drawn. Some casinos do not give non-controlling players this option, and require that the wager of a player not electing to split remains with the first of the two post-split hands.
  - A message area showing the game message, e.g. "You won!", "You lost!", "Push (Draw)", etc.
2. You should create a card area for the gamer.
  - Use the provided card pictures without changing their file names.
  - Show the current sum of card in text in this area.
3. You should create a card area for the dealer.
  - The first card should be hidden (showing the back of the card) until the end of the game.
  - Use the provided card pictures without changing their file names.
  - Show the current sum of card in text in this area.

In this phase, you will implement the website with all skills that you learn in this course. Here are the requirements.

### 2.3.2 Required HTML/CSS/Javascript Techniques

1. Use Images.
2. Use CSS3 with external style sheet.
3. Use Javascript.
4. Use animation/transition/transformation.

5. Do not use other CSS libraries like BootStrap.
6. Do not use other framework like Vue, Angular but jQuery is OK.

### 2.3.3 Submission

Host your website somewhere (GitHub Page, S3, etc.) and submit the URL to your website.

## References

Wikipedia. Blackjack — Wikipedia, the free encyclopedia. <http://en.wikipedia.org/w/index.php?title=Blackjack&oldid=978095143>, 2020. [Online; accessed 20-September-2020].