**Project Proposal: Black Jack**

**Motivation:**

I have always enjoyed card games such as blackjack and poker. I see this project as an opportunity to program a game of blackjack. I also see an opportunity to reuse some code that I previously wrote for this class which represents a deck of cards.

**Objective:**

The objective of this project is to design, from scratch, using all the topics that are covered in EEEE 346: Advanced Programming. These are enumerated below as well as an initial plan to use all of the desired c++ functionality.

The objective of this specific project is to design a program that plays blackjack and is easily modifiable so that if I have time at the end, or after the class is finished, I can implement extra functionality of designing a code that counts cards and provides suggestions to help people learn the strategy for playing blackjack.

**Expected Functionality:**

Pointers: Pointers are essential for almost any big project. I expect to have to use pointers in a myriad of ways, including pointing to a specific card in the deck, as well as getting classes’ member functions to interact with each other. No specific part of my program will exemplify my use of pointers, but pointers will be present throughout my program.

Classes: I plan to have 7 classes to implement a blackjack game.

Card: This class will represent one playing card

Hand: A collection of Cards

Deck: Derived from hand, a collection of cards that represents the blackjack deck. Include shuffling and dealing

Player: derived from hand, this will be the base of both human and house

Human: Human blackjack player

House: Automated blackjack player

Game: Game where other classes are called and interact with each other.

Overloading: I will use operator overloading in order to send cards to various places such as hands or in order to output the face/value.

Inheritance: I will use public inheritance to for is-a relationship such as Human is-a Player and Player is-a hand (collection of cards)

Polymorphism: Player will be an abstract class because it is only used as a base class to human, and house.

File Processing: I will use the standard library fstream to read information from files in order to pass card values from file to file if the classes are located in different files.

Standard Library: If I use a standard library, I will use it as a container array to hold the deck of cards before it is shuffled. Another option is to shuffle the cards and place them in a LIFO stack

Data Structures: I will use data structures by grouping different cards located in a hand under one name.

Search and Sorting: I will sort a deck of cards so the cards are shown from lowest value to highest value once they are dealt.