**Blackjack Term Project Proposal (MIS3640 - Problem Solving and Software Design)**

**Team Members:** Waylon Ryan, Matt Michalke, Alden Pexton, and Christian Thompson

**1. The Big Idea: What is the main idea of your project? What topics will you explore and what will you generate? What is your minimum viable product? What is a stretch goal?**

The main idea of our project is to create a blackjack game that will allow a user to play against a computer. The end product will look similar to an online flash game that has an intuitive and user-friendly interface. To provide some context to the game of blackjack, it is a simple card game where each player is dealt two cards. The goal is have your cards sum up to 21 or as close as possible to win. Each player is eligible to receive additional cards on top of the two they receive initially. If a player’s cards add up to value greater than 21, they lose. The key to blackjack is trying to have your cards sum up to 21 exactly, or as close as possible without going over. Before every round, each player has the opportunity to place bets against the dealer. Depending on how your hand plays out in comparison to the dealer, you will win or lose your bet. Beyond creating a simple blackjack game, our team will allow users to have an additional degree of control over the game. Such controls include adjusting the difficulty level of the dealer, adjusting the number of card decks in play, and altering the style of play so that the deck will include a variety of ratios of card suits. In order to achieve this lofty goal, our team will have to explore many topics within python such as conditional statements, dictionaries, external packages such as math and random. In addition we anticipate utilizing gaming packages such as flask that will help us create the game interface. Since our team doesn’t have as much experience with web interface design, our minimum viable product would be a simple web application that lacks certain UI intricacies but still allows users to interact with the app. Our stretch goal for the project will be to first, create a highly interactive user interface and second, incorporate accounts for every user that stores information in a database. As a result we will be able to create a rankings leaderboard so that users can challenge friends and compete with one another.

**2. Learning Goals: Since this is a team project, you may want to articulate both shared and individual learning goals.**

As a project team, our overarching shared learning goal is to improve our comprehension of python and understand how it can be utilized to create complex web and software applications. For each of us, this project is our first time creating a large-scale web application, as the majority of our team is inexperienced beyond the basics of python coding. With this in mind, we want to improve our python coding skill levels, to the point where we can feel comfortable mapping out and completing a project of this scale and difficulty level. In addition to improving our skills and comprehension of Python, we are also looking to explore game development as well as how to design web interfaces for applications. With multiple group members taking Web Technologies this semester, designing a web application with python will build off of their current learnings in other classes. As a way to complete the project, we will look to implement agile project management to iteratively improve our project and learn from our mistakes.

As far as individual goals, each team member has identified learning goals they have for this semester:

**Waylon:**

* Improve understanding of python coding skills and how to code more efficiently
* Become comfortable designing databases for web applications

**Matt:**

* Improve understanding of app development
* Become better at commenting code

**Alden:**

* Improve the organization of python code and work through debugging more efficiently
* Become more familiar with marrying python code with interface design to create an optimal user experience.

**Christian:**

* Improve comprehension of Flask and how to design a web application framework.
* Learn how to problem solve in python through agile project management.

**3. Implementation Plan: this will probably be pretty vague initially. Perhaps at this early juncture you will have identified a library or a framework that you think will be useful for your project. If you don't have any idea how you will implement your project, provide a rough plan for how you will determine this information.**

In order to create the web app we will need to use a library to help. One that we have identified is Flask. Flask is a Python Microframework that helps with web development.  We feel that this library should help us make a working interface for our game.

**4. Project schedule: You have 8 weeks (roughly - I know thanksgiving week is off) to finish the project. Sketch out a rough schedule for completing the project. Depending on your project, you may be able to do this in great specificity or you may only be able to give a broad outline. Additionally, longer projects come with increased uncertainty, and this schedule will likely need to be refined along the way.**

Week 1 - Fully understand the decision process the computer should follow. Determine what functions will be needed for the project.

Week 2 -  Begin coding the user decision making process.

Week 3 - Finish coding user decision making process/begin coding dealer decision making process.

Week 4 - Finish coding deal decision making process/choose stretch goal ideas we would like to implement.

Week 5 - Begin coding stretch goal ideas into project.

Week 6 (Thanksgiving Break) - Finish integrating stretch goal ideas into project.

Week 7 - Begin creating user interface.

Week 8 - Finish creating user interface.

**5. Collaboration plan: How do you plan to collaborate with your teammates on this project? Will you split tasks up, complete them independently, and then integrate? Will you pair program the entire thing? Make sure to articulate your plan for successfully working together as a team. This might also include information about any software development methodologies you plan to use (e.g. agile development). Make sure to make clear why you are choosing this particular organizational structure.**

We plan on combining all written code on a weekly basis to test functionality and make sure everything is being integrated together. We will divide up each portion of the code that needs to be written and then send it to the group partner to look over the code more closely before we put all the code together to test functionality. We believe this will allow us to use an agile methodology and let us learn from what we have done each week.

**6. Risks: What do you view as the biggest risks to the success of this project?**

The biggest risk to the success of this project is the ability to combine the code we have written with a user interface, as none of the team’s members currently know how to do so. There is also several bonus features such as betting credits/multiple players that we would like to add, but we will have to find a way to best focus our time to allow us to complete the project.

**7. Additional Course Content: What are some topics that we might cover in class that you think would be especially helpful for your project?**

Learning how to design a user interface would be extremely helpful for our project. By being able to make a visual representation of the cards and assigning a card value to each card, the user will be able to play the game with minimal reading. Learning how to integrate python code into an online platform would also be useful, as we will need to explore how to utilize Flask further. We would also like to learn how a database can be used if we choose to have a type of credits used to bet with.