

## Projects to Choose From

All projects will include a menu structure with instructions, player statistics, and high scores (with file IO to save game data). The interface for these projects will be text-based console games. Most of these games will use OOP programming principles.

You will form a 2-person team with one of your fellow students. A random drawing will occur to sequence the teams' draft order. The first team will choose from one of the below projects. The second team will then make their choice, etc, until all teams have chosen a project. Once chosen, that project is no longer available. Teams can trade projects and players on draft day if they so choose.

Here are the projects, in alphabetical order, with a brief description of each:

### Blackjack Extreme!

Human vs. AI. Like the classic card game of 21, but with different rules. You will make up the new rules during analysis of this problem with the help of the instructor.

### Dice Poker!

Human vs. AI – The human and AI 'throw' 5 dice, resulting in nothing, 1-pair, 2-pair, 3-of-a-kind, 4-of-a-kind, 5-of-a-kind, a 1-5 or 2-6 straight, full house (3 of one number, 2 of another). High number wins ties. The human chooses the number of rounds to play.

### Crack the Code!

Puzzle game. The human chooses how many rounds to play.

The human guesses the 3 numbers, including their position, to win.

For example: The computer randomly chooses these numbers: 1-2-3

The human guesses 5-2-1.

The computer tells the human:

1 number is correct and in the correct position.

1 number is correct and in the wrong position.

(In this example, the number 2 is correct in the correct position, and the number 1 is correct but not in the correct position.)

Then the human makes another guess

Points are earned for the fewest guesses. Getting the correct answer in 1 guess: 10 points, 2 guesses: 8 points, etc, until 10 wrong guesses.

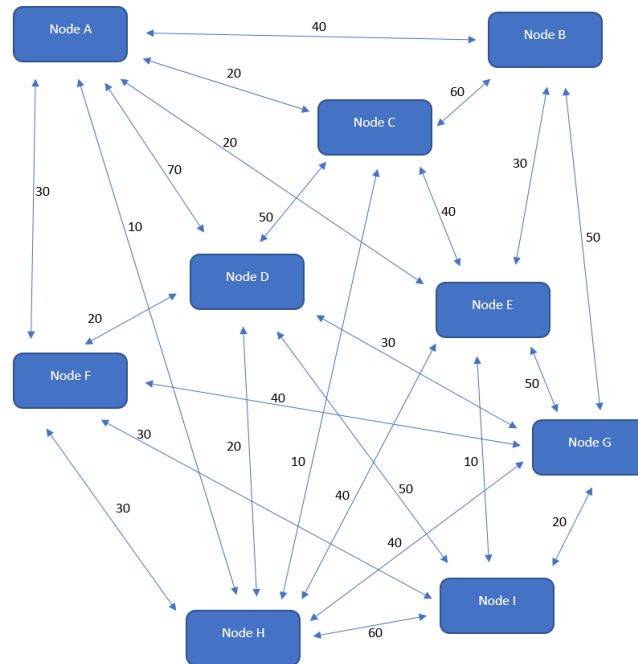
### Go Fishing!

Human vs. AI – The classic card game with a few special rules you will make up during analysis of this problem with the help of the instructor. The human chooses the number of hands to play.

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### Nodes and Edges Problems

Several puzzles to solve. 9 nodes with a cost to travel on the edges between each node. The program must identify the least cost path to travel to all nodes, but only once. The cost of traveling on each edge, will be read in from a text file before each run of the software. The human designates the starting and ending nodes.



### Radical Tic-Tac-Toe!

The human chooses:

- Playing Mode: Human vs. AI, Human vs. Human, or AI vs. AI.
- Board size: 3x3, 4x4, 5x5, 6x6, 7x7, 8x8, 9x9.
- Number of rounds: 1 to 9.

Players earn points by choosing cells next to each other including diagonals.

- 2 in a row: 1 point
- 3 in a row: 2 points
- 4 in a row: 3 points, etc.

The player with the most points at the end of the last round wins.

### Text-based Adventure Game (You name it!)

Human vs. AI. Uses OOP. Includes evil locations, backpack inventory items, treasure to find, bad guys to avoid, power-ups to heal and a story-line.

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### The Dangerous Game of War!

Human vs. AI. The classic card game of War, but the players choose how many cards to “bet” before the hand. You will make up new rules during analysis of this problem with the help of the instructor.

### The Hangman Cheats

The classic Hangman game, human vs. computer – but the computer cheats. Using an internal dictionary, read from a text file, the computer does not pick a word until it has to. At the beginning of the game the computer selects a word length, but not a word.

When the human guesses a letter (let's say you guess the letter 'E'), the computer consults its word list to see if there are words which don't contain an 'E'. Since there are lots of words that does not contain an 'E', the computer tells the human their guess is wrong. Now let's say the human guesses the letter 'I'. The computer looks for words which don't contain either an 'E' or an 'I'. Since there are plenty of these also, the computer once again tells the human their guess is wrong.

Eventually, the computer will not be able to find a word that doesn't contain any of the human's guesses, so it'll have to pick a word from the dictionary. Even now, the computer can cheat because when the human makes their next guess, the computer will try to find a different word which contains the previous guesses in all the right places, but does not contain the new letter being guessed. Good luck, human!

### Two Pig Dice Game

Human vs. AI – Like the classic dice game with a few new rules. The first player to score 100 or more points wins. Uses OOP. Here are the basic rules:

- Each turn, a player repeatedly rolls 2 dice until either a 1 is rolled on one of the dice or the player decides to "hold"
- If the player rolls a 1, they score nothing and it becomes the next player's turn.
- If the player rolls any other number, it is added to their turn total and the player's turn continues.
- If a player chooses to "hold", their turn total is added to their score, and it becomes the next player's turn.
- If two 1s are rolled, the player's entire score is lost, and the turn ends.
- If a double is rolled, the point total is added to the turn total as with any roll but the player is obligated to roll again
- If two 6s are rolled, the player's entire score is doubled.
- If two 2s are rolled the player's score is halved.

### World of Orcs

Human vs. AI. A text-based Map Game. Uses OOP. Avoid Orcs, look for Unicorns, find the treasure! You will make up the rules during analysis of this problem with the help of the instructor.