Program Design

## Input

1. **In detail indicate what the inputs to this program are?**

The input is the column number from 1 to 7 on which the user wants to drop their chip into.

1. **How do you validate the input?**

Only allow a number from 1 to 7 and check to see if the column is full or not.

1. **Pseudocode: Briefly explain how this section will look like**

Read the input in as an integer and use that input to determine which column of the board the chip will be place in. Check if that column is full or not and if it isn’t, allow the chip to be stored at the index.

## Processing

1. **What is this program?**

This program is a connect 4 game where a user will be playing again an AI but will also include an option for another player.

1. **Can we divide the calculations to the smaller “modules”?**

There will be many modules within this project. We will need a way to validate the board to check if a player has won or not, print the board each turn to allow to user to know what is going on, have a module to validate the user’s inputs and store the value into that index of the array. We will also need a module that will print out the whether the player has won or not and an entire function dedicated to the AI to make moves based on the user’s input and the board. It will incorporate algorithms to play against the user’s every move.

1. **Pseudocode: Briefly explain how this section will look like – Each module should have its own section.**

1: Ask for the user’s input from 1-7 and validate it.

2: Put the chip into the last row of the column and make sure each input will put the next chip on top instead of at the same index.

3: After the player’s turn the bot will go next and this loop will continue until a player makes a “connect 4”.

4: Read the board after each player’s turn to determine if they have won the game or not and if the win condition has been met, break from the loop and declare the winner.

5: Use a clear screen function throughout the program to erase previous boards as will continue to fill up the screen with outdated boards.

## Output

1. **What will this program display to the users?**

This program will display the board each turn after the player has picked a column.

1. **What kind of formatting this output will use (Currency with $ …)?**

None.

1. **Pseudocode: Briefly explain how this section will look like**

Use a loop to print out the board, which consists of a 2D array.