# Coin Game

**System Overview:**

The purpose of this software is to allow users to play the Coin Game and allow for statistical testing for the best winning strategy. The system will allow for either a human player to play the coin game, or for a bot to be created to play the game according to a strategy.

**Coin Game Rules:**

The goal of the Coin Game is for every coin to have the same side facing up after any turn. A turn is one spin of the wheel followed by the player choosing which coins to reveal and whether or not to flip any combination of the revealed coins. Number of sections must be a positive integer greater than 0, number of revealed coins must be less than or equal to the number of sections, number of turns must be an integer greater than 0

Prior to starting the game, the number of sections on the wheel, the number of coins to reveal after each spin, and the number of turns a player has are chosen by user input.

The Coin game starts of with the wheel with the chosen number of sections. In each section there is a coin with a hidden value that is either heads or tails.

The wheel is then spun. After the wheel spin, the player can choose which sections to reveal according to the number allowed and choose to flip them or keep the same value.

This process is repeated until all of the coins on the wheel are the same value or until the player is out of spins. If the coins are all the same value facing up, the player will be notified they win, if the player is out of spins, they will be notified they lost.

**Current Game Demo Instructions:**
1. Start the demo and read the description printed to the description.
2. Choose the "Enter" button to spin the wheel again or the "Q" button to quit the game.

**Completed Functionality:**
1. Coin creation with ability to flip
2. Wheel Creation with spinning
3. Command line representation of wheel.

**Next Steps:**
1. Implement Engine Class to allow for a player to interact with the wheel
2. Add functionality to engine class for non user players to play multiple games
   a. Add ability to specify number of games to play with current settings.

**Example Command line input and output:**

Console Output:

Number of coins? 9

Number of coins revealed? 4

Number of turns? 2

X X X X X X X X X

0 1 2 3 4 5 6 7 8

Reveal?
0,4,6,7(user input)
H X X T X T T X

Flip?
0,4,6,7 (user input)
H X X H X H H X
Spin Again (input enter)
X X X X X X X X
0 1 2 3 4 5 6 7 8
Reveal?
2,3,4,5 (user input)
X X H H H H X X X
0 1 2 3 4 5 6 7 8
Flip?
(input enter)
Game Over
H T H H H H T H T

# API

## Class Coin

Class Summary:
      Creates the coin object. Also maintains the state of the coin.

Constructors:
      Coin()
            -Description: Constructs a Coin object with a randomized value of 'H' or 'T'.

Methods:
      flip()
            -Type: void
            -Description: Modifies the coin state by flipping the value
      get_coin()
            -Type: String
            -Description: Provides the current state of the coin
      set_coin(String newState)
            -Type: void
            -Description: Sets the state of the coin to a new state provided by the engine

## Class Wheel

Class Summary:

Creates the wheel object. Also maintains the state of the wheel along with the spin functionality.

Variables:
    Coin[] coinWheel:
            -Description: Array of coins on the wheel

Constructors:
    Wheel(int sections):
            -Description: Creates the wheel object.
            -Parameter in sections: sections of the wheel.

Methods:
    get_wheel(int[] selections):
            -Type: void
            -Description: Prints the values of the revealed and unrevealed coins to the
             System
            -Parameter int [] selections:

    set_wheel_coin(int coinIndex):
            -Type: void
            -Description: flips value of specific coin on the wheel.
            -Parameter coinIndex: Index of a coin
    spin():
            -Type: void
            -Description: changes the order of the coins on the wheel object.

## Class Engine

Class Summary:
    The engine that runs the coin game.

Variables:
    int [] turn:
            -Description: Number of turns that the wheel is allowed to spin
    int [] revealed:
            -Description: Coins revealed

Methods:
    make_wheel():
            -Type: void
            -Description: makes wheel for the game.
    play_game():
            -Type: void

-Description: Runs game for the player.
check_win():
        -Type: boolean
        -Description: Checks the status of the wheel to determine if the player has won
display_wheel():
        -Type: String
        -Description: Displays the values on the wheel for the player.