**Player vs Player**

**Player vs AI**

* Easy Mode
* Medium Mode
* Hard Mode
* Insanity Mode

**Point Limit Conditions**

* Unlimited Mode
* Point Limit

**6 \* 7 Grid**

* Actual Grid
* 6 Rows
* 7 Columns

**Two Different Pieces**

* Either preset pieces to red and yellow or allow them to choose the colour
* Pieces will be o’s or we simply colour in the position of the grid

**Allow Players to Enter their names**

* Will replace the preset player 1 and player 2

**Instructions Screen**

**Winning Message**

* For rounds
* For game overall (if point limit was selected)

**Counters for Points**

* Max of 1 point per round
* Min of 0 points per round

**Coin Flip to See Goes First**

* Player 1 will choose heads or tails
* Player 2 will automatically get the side that Player 1 didn’t choose
* Winner of coin toss will whether they will go 1st or 2nd
* Same thing goes for AI, if AI wins coin flip it will randomly generate a number between 1 and 2 to decide whether it will go 1st or 2nd

**Checking Win Condition**

* Begin checking after the player that went first, begins their 4th turn
* Check diagonal, horizontal, vertical

**Placement of Pieces**

* Users enter column number of which they would like to place a piece
* The piece will automatically go to the first unoccupied position of the column from the bottom up (use a boolean for the entire grid, set everything to false, when a piece is placed set equal to true)
* Check for first unoccupied spot of a column by using a reverse for loop that checks bottom up

**Error messages**

* Entry of invalid value heads/tails option for coin flip
* Entry of invalid column number
* Out of bounds, when user tries to place a piece in a column that is already filled up to the top
* Forces user to re-enter value

**AI**

* Easy

AI will place a piece randomly every 3 turns. Other turns it will calculate the best place to put a piece.

* Medium

AI will place a piece randomly every 5 turns. Other turns it will calculate the best place to put a piece.

* Hard

AI will place a piece randomly every 8 turns. Other turns it will calculate the best place to put a piece.

* Insane

AI will not place any pieces randomly, all placements will be calculated.

**Switching of Turns**

**Checking of Score Condition**

* Check 8 directions
* Top, Bottom, Top Right, Top Left, Bottom Right, Bottom Left, Right, Left
* Check in Pairs (Ex. Top Right & Bottom Left ), and if at least one is true continue checking in that direction