NOUGHTS AND CROSSES WORK

JAYDEN HOBBS

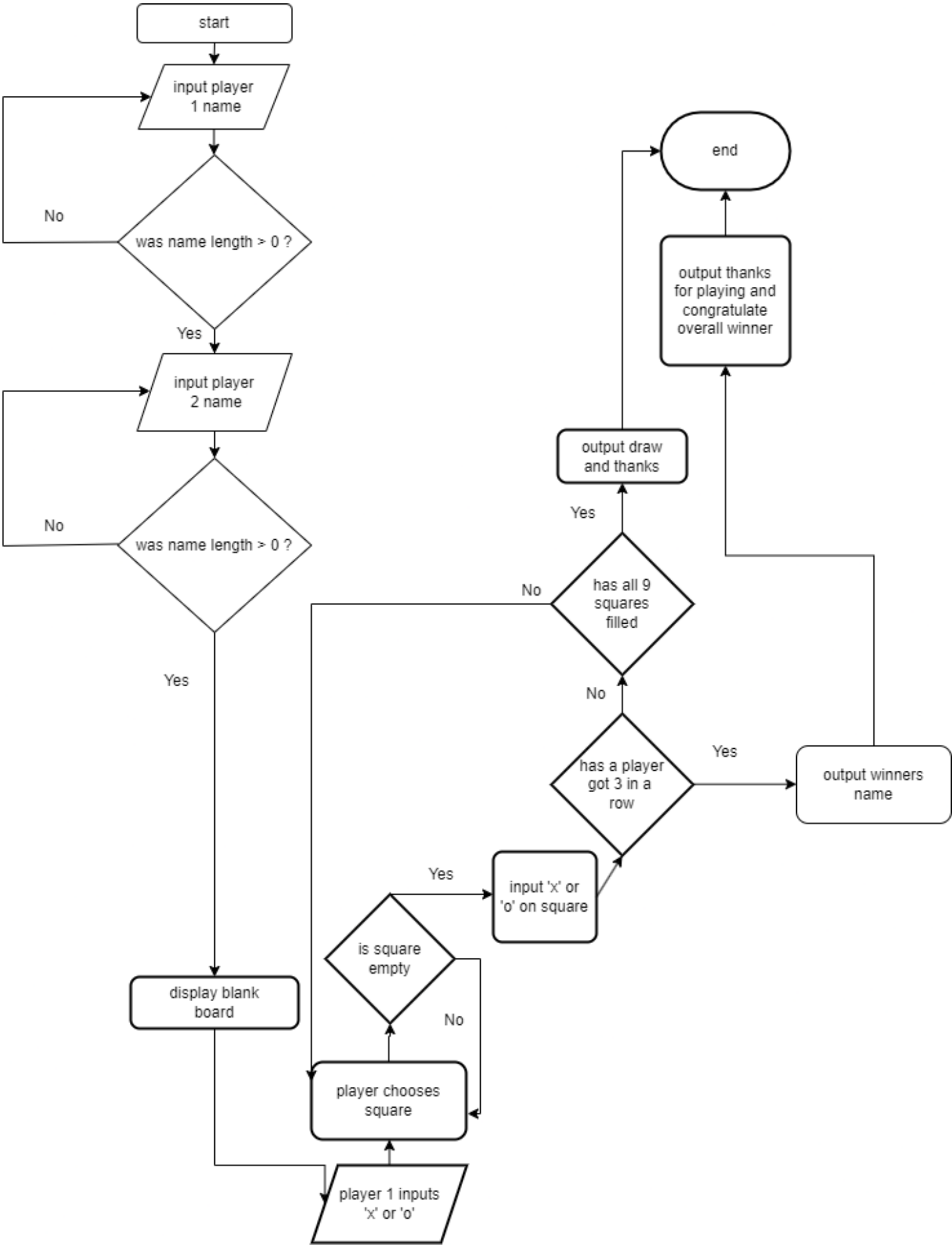
Contents

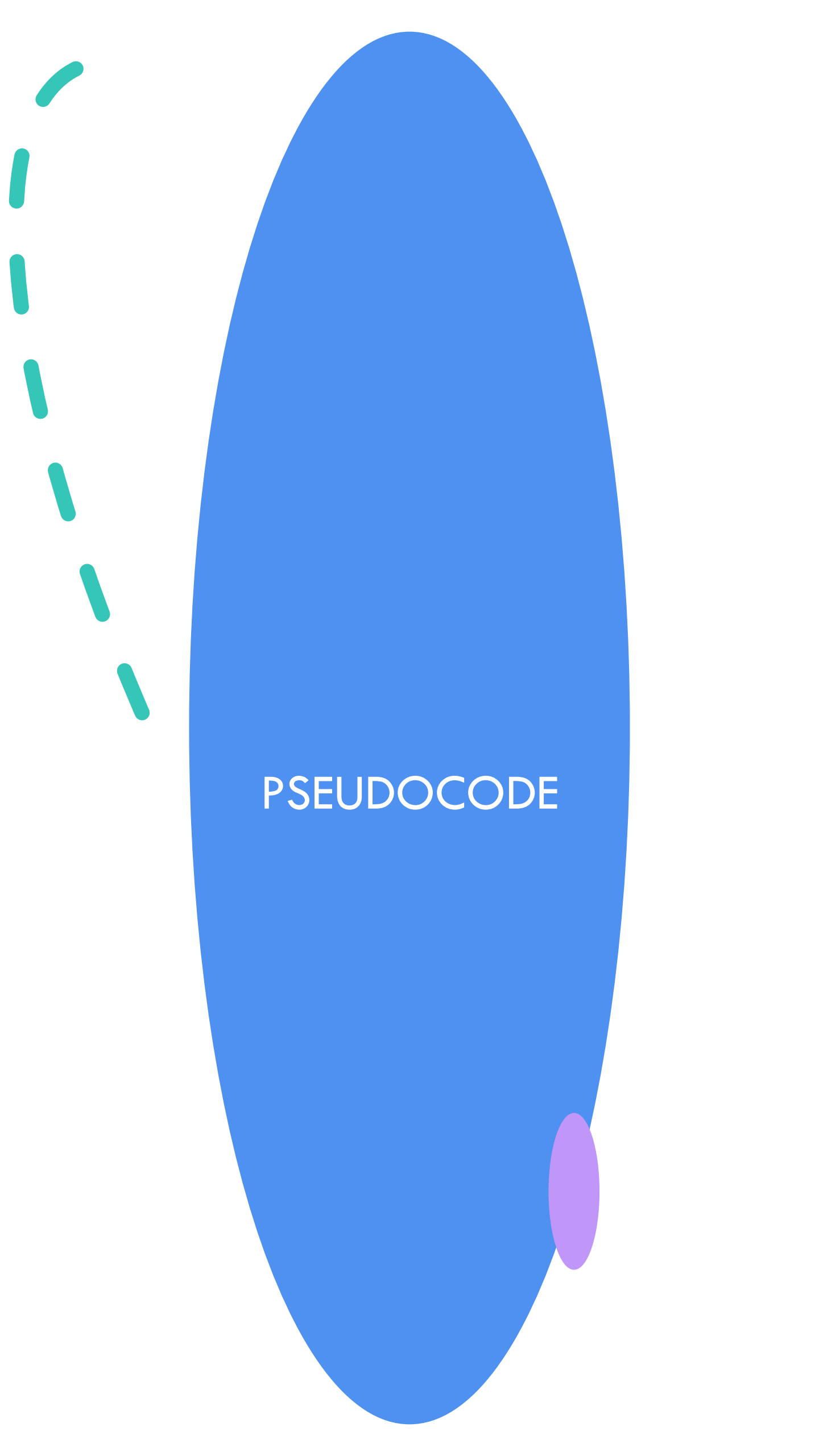
SUCCESS CRITERIA AND REQUIREMENTS

- Make game easy to understand and use
- Both players to enter names
- Board to show before start of game
- Players to take turns 1 by 1 inputting either ‘X’ or ‘O’
- Players cannot enter a nought or cross on a square that already has been inputted on
- After each player has gone three times, check to see if someone has three in a row
- If a player has three in row, end the game and output winners name]
- If all nine squares have been filled and there is no winner, output DRAW
- Keep a counter of winner's tally, finish game at certain number of games (inputted by users)
- Once games have finished, ask user if they want to play again
- Make the game easy to read by using time intervals between messages

FLOWCHART

Made using draw.io


start
input player 1 name
was name length > 0 ?
No
Yes
input player 2 name
was name length > 0 ?
No
Yes
display blank board
player 1 inputs 'x' or 'o'
player chooses square
is square empty
No
Yes
input 'x' or 'o' on square
has a player got 3 in a row
Yes
output winners name
No
has all 9 squares filled
No
Yes
output draw and thanks
output thanks for playing and congratulate overall winner
end


PSEUDOCODE

```
*PSEDUCODE FOR NOUGHTS AND CROSSES*

# imports
IMPORT MATH
IMPORT RANDOM
IMPORT SYS

# global varaibles
GLOBAL GRID
GRID = [" "," "," "," "," "," "," "," "," "]

# assign variables
P1SCORE = 0
P2SCORE = 0
GAME_COUNTER = 0

# get name and validate OF PLAYER 1
PLAYER1 = " "
WHILE LEN(PLAYER1) = 0
      INPUT PLAYER1

# get name and validate OF PLAYER 2
PLAYER2 = " "
WHILE LEN(PLAYER2) = 0
      INPUT PLAYER2

# get max number of games and validate
MAX_GAMES = " "
WHILE LEN(MAX_GAMES) <= 0
      INPUT MAX_GAMES

# display blank board
DEF BLANK_BOARD():
      NUMBERED_GRID = ["1","2","3","4","5","6","7","8","9"]
      PRINT (GRID[0:3])
      PRINT (GRID[3:6])
      PRINT (GRID[6:])
      PRINT ("PLEASE MEMORISE THIS")
      GRID = [" "," "," "," "," "," "," "," "," "]

# computer chooses who goes first and game begins
DEF MAIN():
      FIRSTGO = RANDOM.RANDINT(1,2)
      R = 0
      GAME = 1
      MOVES = 0
      IF FIRST GO = 1:
            WHILE GAME == 1:
                  WHILE R != 1:
                        PLAYER1_MOVE = INPUT("PLEASE CHOOSE SPACE 1-9")
                        IF GRID[PLAYER1_MOVE - 1] == " "
                              GRID[PLAYER1_MOVE] = "X"
                              R = 1
                              COUNT = COUNT + 1
                        ELSE:
                              PRINT ("THATS BEEN TAKEN")


                        IF GRID[0] == "X" AND GRID[1] == "X" AND GRID[2] == "X"
                              PRINT ("PLAYER 1 WINS!")
                              P1SCORE = P1SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()
```

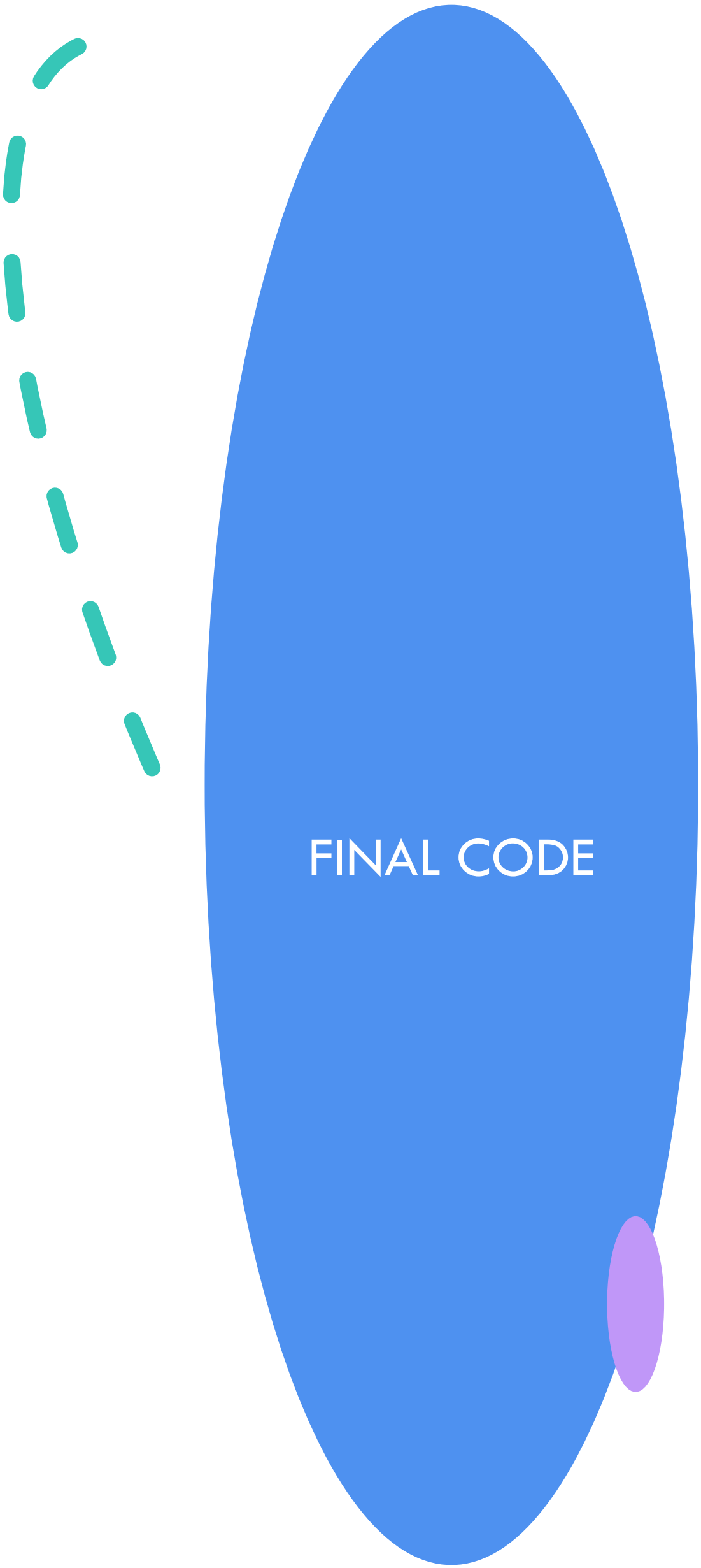
```
                    ELIF GRID[3] == "X" AND GRID[4] == "X" AND GRID[5] ==
"X"
                          PRINT ("PLAYER 1 WINS!")
                          P1SCORE = P1SCORE + 1
                          GAME_COUNTER = GAME_COUNTER + 1
                          NUMBEROFGAMES ()

                    ELIF GRID[6] == "X" AND GRID[7] == "X" AND GRID[8] ==
"X"
                          PRINT ("PLAYER 1 WINS!")
                          P1SCORE = P1SCORE + 1
                          GAME_COUNTER = GAME_COUNTER + 1
                          NUMBEROFGAMES ()

                    ELIF GRID[0] == "X" AND GRID[3] == "X" AND GRID[6] ==
"X"
                          PRINT ("PLAYER 1 WINS!")
                          P1SCORE = P1SCORE + 1
                          GAME_COUNTER = GAME_COUNTER + 1
                          NUMBEROFGAMES ()

                    ELIF GRID[1] == "X" AND GRID[4] == "X" AND GRID[7] ==
"X"
                          PRINT ("PLAYER 1 WINS!")
                          P1SCORE = P1SCORE + 1
                          GAME_COUNTER = GAME_COUNTER + 1
                          NUMBEROFGAMES ()

                    ELIF GRID[2] == "X" AND GRID[5] == "X" AND GRID[8] ==
"X"
                          PRINT ("PLAYER 1 WINS!")
                          P1SCORE = P1SCORE + 1
                          GAME_COUNTER = GAME_COUNTER + 1
                          NUMBEROFGAMES ()

                    ELIF GRID[0] == "X" AND GRID[4] == "X" AND GRID[8] ==
"X"
                          PRINT ("PLAYER 1 WINS!")
                          P1SCORE = P1SCORE + 1
                          GAME_COUNTER = GAME_COUNTER + 1
                          NUMBEROFGAMES ()


                    ELIF GRID[2] == "X" AND GRID[4] == "X" AND GRID[6] ==
"X"
                          PRINT ("PLAYER 1 WINS!")
                          P1SCORE = P1SCORE + 1
                          GAME_COUNTER = GAME_COUNTER + 1
                          NUMBEROFGAMES ()


              PRINT (GRID[0:3])
              PRINT (GRID[3:6])
              PRINT (GRID[6:])

              R = 0

              IF MOVES == 9:
                    PRINT ("ITS A DRAW, BOTH PLAYERS RECIEVE A POINT")
                    P1SCORE = P1SCORE + 1
                    P2SCORE = P2SCORE + 1
                    GAME_COUNTER = GAME_COUNTER + 1
```

```
            WHILE R != 1:
                  PLAYER2_MOVE = INPUT("PLEASE CHOOSE SPACE 1-9")
                        IF GRID[PLAYER2_MOVE - 1] == " "
                              GRID[PLAYER2_MOVE] = "O"
                              R = 1
                              COUNT = COUNT + 1
                        ELSE:
                              PRINT ("THATS BEEN TAKEN")

                        IF GRID[0] == "O" AND GRID[1] == "O" AND GRID[2] == "O"
                              PRINT ("PLAYER 2 WINS!")
                              P2SCORE = P2SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[3] == "O" AND GRID[4] == "O" AND GRID[5] ==
"O"
                              PRINT ("PLAYER 2 WINS!")
                              P2SCORE = P2SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[6] == "O" AND GRID[7] == "O" AND GRID[8] ==
"O"
                              PRINT ("PLAYER 2 WINS!")
                              P2SCORE = P2SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[0] == "O" AND GRID[3] == "O" AND GRID[6] ==
"O"
                              PRINT ("PLAYER 2 WINS!")
                              P2SCORE = P2SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[1] == "O" AND GRID[4] == "O" AND GRID[7] ==
"O"
                              PRINT ("PLAYER 2 WINS!")
                              P2SCORE = P2SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[2] == "O" AND GRID[5] == "O" AND GRID[8] ==
"O"
                              PRINT ("PLAYER 2 WINS!")
                              P2SCORE = P2SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[0] == "O" AND GRID[4] == "O" AND GRID[8] ==
"O"
                              PRINT ("PLAYER 2 WINS!")
                              P2SCORE = P2SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()


                        ELIF GRID[2] == "O" AND GRID[4] == "O" AND GRID[6] ==
"O"
                              PRINT ("PLAYER 2 WINS!")
                              P2SCORE = P2SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
```

```
                        NUMBEROFGAMES ()



            PRINT (GRID[0:3])
            PRINT (GRID[3:6])
            PRINT (GRID[6:])

            R = 0

            IF MOVES == 9:
                  PRINT ("ITS A DRAW, BOTH PLAYERS RECIEVE A POINT")
                  P1SCORE = P1SCORE + 1
                  P2SCORE = P2SCORE + 1
                  GAME_COUNTER = GAME_COUNTER + 1
      ELSE:
            WHILE GAME == 1:
                  WHILE R != 1:
                        PLAYER2_MOVE = INPUT("PLEASE CHOOSE SPACE 1-9")
                        IF GRID[PLAYER2_MOVE - 1] == " "
                              GRID[PLAYER2_MOVE] = "O"
                              R = 1
                              COUNT = COUNT + 1
                        ELSE:
                              PRINT ("THATS BEEN TAKEN")

                        IF GRID[0] == "O" AND GRID[1] == "O" AND GRID[2] == "O"
                              PRINT ("PLAYER 2 WINS!")
                              P2SCORE = P2SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[3] == "O" AND GRID[4] == "O" AND GRID[5] ==
"O"
                              PRINT ("PLAYER 2 WINS!")
                              P2SCORE = P2SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[6] == "O" AND GRID[7] == "O" AND GRID[8] ==
"O"
                              PRINT ("PLAYER 2 WINS!")
                              P2SCORE = P2SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[0] == "O" AND GRID[3] == "O" AND GRID[6] ==
"O"
                              PRINT ("PLAYER 2 WINS!")
                              P2SCORE = P2SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[1] == "O" AND GRID[4] == "O" AND GRID[7] ==
"O"
                              PRINT ("PLAYER 2 WINS!")
                              P2SCORE = P2SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[2] == "O" AND GRID[5] == "O" AND GRID[8] ==
"O"
                              PRINT ("PLAYER 2 WINS!")
                              P2SCORE = P2SCORE + 1
```

```
                        GAME_COUNTER = GAME_COUNTER + 1
                        NUMBEROFGAMES ()

                  ELIF GRID[0] == "O" AND GRID[4] == "O" AND GRID[8] ==
"O"
                        PRINT ("PLAYER 2 WINS!")
                        P2SCORE = P2SCORE + 1
                        GAME_COUNTER = GAME_COUNTER + 1
                        NUMBEROFGAMES ()


                  ELIF GRID[2] == "O" AND GRID[4] == "O" AND GRID[6] ==
"O"
                        PRINT ("PLAYER 2 WINS!")
                        P2SCORE = P2SCORE + 1
                        GAME_COUNTER = GAME_COUNTER + 1
                        NUMBEROFGAMES ()

            PRINT (GRID[0:3])
            PRINT (GRID[3:6])
            PRINT (GRID[6:])

            R = 0

            IF MOVES == 9:
                  PRINT ("ITS A DRAW, BOTH PLAYERS RECIEVE A POINT")
                  P1SCORE = P1SCORE + 1
                  P2SCORE = P2SCORE + 1
                  GAME_COUNTER = GAME_COUNTER + 1

            WHILE R != 1:
                  PLAYER1_MOVE = INPUT("PLEASE CHOOSE SPACE 1-9")
                        IF GRID[PLAYER1_MOVE - 1] == " "
                              GRID[PLAYER1_MOVE] = "X"
                              R = 1
                              COUNT = COUNT + 1
                        ELSE:
                              PRINT ("THATS BEEN TAKEN")

                        IF GRID[0] == "X" AND GRID[1] == "X" AND GRID[2] == "X"
                              PRINT ("PLAYER 1 WINS!")
                              P1SCORE = P1SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[3] == "X" AND GRID[4] == "X" AND GRID[5] ==
"X"
                              PRINT ("PLAYER 1 WINS!")
                              P1SCORE = P1SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[6] == "X" AND GRID[7] == "X" AND GRID[8] ==
"X"
                              PRINT ("PLAYER 1 WINS!")
                              P1SCORE = P1SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[0] == "X" AND GRID[3] == "X" AND GRID[6] ==
"X"
                              PRINT ("PLAYER 1 WINS!")
                              P1SCORE = P1SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
```

```
                              NUMBEROFGAMES ()

                        ELIF GRID[1] == "X" AND GRID[4] == "X" AND GRID[7] ==
"X"
                              PRINT ("PLAYER 1 WINS!")
                              P1SCORE = P1SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[2] == "X" AND GRID[5] == "X" AND GRID[8] ==
"X"
                              PRINT ("PLAYER 1 WINS!")
                              P1SCORE = P1SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()

                        ELIF GRID[0] == "X" AND GRID[4] == "X" AND GRID[8] ==
"X"
                              PRINT ("PLAYER 1 WINS!")
                              P1SCORE = P1SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()


                        ELIF GRID[2] == "X" AND GRID[4] == "X" AND GRID[6] ==
"X"
                              PRINT ("PLAYER 1 WINS!")
                              P1SCORE = P1SCORE + 1
                              GAME_COUNTER = GAME_COUNTER + 1
                              NUMBEROFGAMES ()


            PRINT (GRID[0:3])
            PRINT (GRID[3:6])
            PRINT (GRID[6:])

            R = 0

            IF MOVES == 9:
                  PRINT ("ITS A DRAW, BOTH PLAYERS RECIEVE A POINT")
                  P1SCORE = P1SCORE + 1
                  P2SCORE = P2SCORE + 1
                  GAME_COUNTER = GAME_COUNTER + 1

# function to see if selected number of games has been reached
DEF NUM_OF_GAMES(MAX_GAMES):
IF GAME_COUNTER = MAX_GAMES:
      IF P1SCORE > P2SCORE
            PRINT("PLAYER 1 IS THE WINNER")
            END
      ELSE:
            PRINT("PLAYER 2 IS THE WINNER")
            END
ELSE:
      BLANK BOARD()

END
```


FINAL CODE

IMPORTS AND GLOBAL STATEMENTS

```
# imports
import random
import math
import time
import sys

# declare global variables
global grid
global numberedGrid
global count
global p1Score
global p2Score
global gameCounter
# assign all variables
p1Score = 0
p2Score = 0
gameCounter = 0
count = 0
numberedGrid = ["1", "2", "3", "4", "5", "6", "7", "8", "9"]
grid = [" ", " ", " ", " ", " ", " ", " ", " ", " "]

```

VALIDATING INPUTTED NAMES AND CREATING THE BLANK BOARD

```
22  def player1Name():
23      global p1Name
24      p1Nameinput = str(input("Please enter Player 1's Name: "))
25      p1Name = p1Nameinput.upper()
26      while len(p1Nameinput) < 1:
27          p1Nameinput = str(input("Please enter at least 1 character: "))
28      return p1Name
29
        1 usage
30  def player2Name():
31      global p2Name
32      p2Nameinput = str(input("Please enter Player 2's Name: "))
33      p2Name = p2Nameinput.upper()
34      while len(p2Nameinput) < 1:
35          p2Nameinput = str(input("Please enter at least 1 character: "))
36      return p2Name
37
        1 usage
38  def blank_board():
39      print(numberedGrid[0:3])
40      print(numberedGrid[3:6])
41      print(numberedGrid[6:])
42      time.sleep(0.5)
43      print("Please memorise these positional markers")
44      time.sleep(0.5)
45      memorised = input("Have you memorised them? 'y' for Yes and 'n' for no: ")
46      while memorised != 'y':
47          memorised = input("Please enter a response or memorise them: ")
```

MAIN PROGRAM – PART 1

```
def main():
    gameCounter = 0
    print("PLAYER 1 will go first")
    go = 0
    game = 1
    moveCounter = 0
    while game == 1:
        while go != 1:
            move = int(input("PLAYER 1 - Please enter the number for the position you wish to take. 1-9: "))
            if grid[move-1] == " ":
                grid[move-1] = "x"
                go = 1
                moveCounter = moveCounter + 1
            else:
                print("That spot has been taken. \n Please enter a new number")

            if grid[0] == "x" and grid[1] == "x" and grid[3] == "x":
                print("Player 1 Wins!")
                print(grid[0:3])
                print(grid[3:6])
                print(grid[6:])
                sys.exit()

            elif grid[3] == "x" and grid[4] == "x" and grid[5] == "x":
                print("Player 1 Wins!")
                print(grid[0:3])
                print(grid[3:6])
                print(grid[6:])
                sys.exit()
```

MAIN PROGRAM – PART 2

```
79              elif grid[6] == "x" and grid[7] == "x" and grid[8] == "x":
80                  print("Player 1 Wins!")
81                  print(grid[0:3])
82                  print(grid[3:6])
83                  print(grid[6:])
84                  sys.exit()
85
86              elif grid[0] == "x" and grid[3] == "x" and grid[6] == "x":
87                  print("Player 1 Wins!")
88                  print(grid[0:3])
89                  print(grid[3:6])
90                  print(grid[6:])
91                  sys.exit()
92
93              elif grid[7] == "x" and grid[4] == "x" and grid[7] == "x":
94                  print("Player 1 Wins!")
95                  print(grid[0:3])
96                  print(grid[3:6])
97                  print(grid[6:])
98                  sys.exit()
99
100             elif grid[2] == "x" and grid[5] == "x" and grid[8] == "x":
101                 print("Player 1 Wins!")
102                 print(grid[0:3])
103                 print(grid[3:6])
104                 print(grid[6:])
105                 sys.exit()
```

MAIN PROGRAM – PART 3

```
107             elif grid[0] == "x" and grid[4] == "x" and grid[8] == "x":
108                 print("Player 1 Wins!")
109                 print(grid[0:3])
110                 print(grid[3:6])
111                 print(grid[6:])
112                 sys.exit()
113 
114             elif grid[2] == "x" and grid[4] == "x" and grid[6] == "x":
115                 print("Player 1 Wins!")
116                 print(grid[0:3])
117                 print(grid[3:6])
118                 print(grid[6:])
119                 sys.exit()
120 
121         print(grid[0:3])
122         print(grid[3:6])
123         print(grid[6:])
124 
125         go = 0
126 
127         if moveCounter == 9:
128             print("Game over - its a draw")
129             gameCounter = gameCounter + 1
130             sys.exit()
```

MAIN PROGRAM – PART 4

```
        while go != 1:
            move = int(input("PLAYER 2 - Please enter the number for the position you wish to take. 1-9: "))
            if grid[move-1] == " ":
                grid[move-1] = "o"
                go = 1
                moveCounter = moveCounter + 1
            else:
                print("That spot has been taken. \nPlease enter a new number")

            if grid[0] == "o" and grid[1] == "o" and grid[3] == "o":
                print("Player 2 Wins!")
                print(grid[0:3])
                print(grid[3:6])
                print(grid[6:])
                sys.exit()

            elif grid[3] == "o" and grid[4] == "o" and grid[5] == "o":
                print("Player 2 Wins!")
                sys.exit()

            elif grid[6] == "o" and grid[7] == "o" and grid[8] == "o":
                print("Player 2 Wins!")
                print(grid[0:3])
                print(grid[3:6])
                print(grid[6:])
                sys.exit()

            elif grid[0] == "o" and grid[3] == "o" and grid[6] == "o":
```

MAIN PROGRAM – PART 5

```
167             elif grid[7] == "o" and grid[4] == "o" and grid[7] == "o":
168                 print("Player 2 Wins!")
169                 print(grid[0:3])
170                 print(grid[3:6])
171                 print(grid[6:])
172                 sys.exit()
173 
174             elif grid[2] == "o" and grid[5] == "o" and grid[8] == "o":
175                 print("Player 2 Wins!")
176                 print(grid[0:3])
177                 print(grid[3:6])
178                 print(grid[6:])
179                 sys.exit()
180 
181             elif grid[0] == "o" and grid[4] == "o" and grid[8] == "o":
182                 print("Player 2 Wins!")
183                 print(grid[0:3])
184                 print(grid[3:6])
185                 print(grid[6:])
186                 sys.exit()
187 
188             elif grid[2] == "o" and grid[4] == "o" and grid[6] == "o":
189                 print("Player 2 Wins!")
190                 print(grid[0:3])
191                 print(grid[3:6])
192                 print(grid[6:])
193                 sys.exit()
```

MAIN PROGRAM – PART 6

```
194             print(grid[0:3])
195             print(grid[3:6])
196             print(grid[6:])
197
198             go = 0
199
200             if moveCounter == 9:
201                 print("Game over - its a draw")
202                 gameCounter = gameCounter + 1
203                 sys.exit()
204
205
206
207     blank_board()
208     player1Name()
209     player2Name()
210     main()
```

RESULTS

THE CODE WORKS AS WELL AS IT SHOULD!

IT ENDS SUCCESSFULLY WHEN THERE IS A DRAW AND WHEN SOMEONE WINS THE GAME

THE WAY I DID THIS PROJECT WAS BY USING A 1D ARRAY AND PRINTING IT ON THE PAGE AS THREE SEPARATE LINES TO MAKE IT LOOK LIKE A REAL BOARD. THEN USE THE INDEX OF THE ARRAY TO ENTER THE DESIRED SYMBOL