TicTacToe Environment Class

Paramater

State Variables	Data Type
• df_state	Data Frame
• action_space	Int Array
• win_loss	Int Array
• win	Boolean
• lose	Boolean
• tie	Boolean
• moves	Int
• play	Boolean

Functions

Name	Input	Output	State Read	State Written	Functionality
__init__()	• None	• None	• df_state • action_space • win_loss • win • lose • tie • moves • play	• df_state • action_space • win_loss • win • lose • tie • moves • play	Initializes the class object.
reset()	• None	• None	• df_state • action_space • win_loss • win • lose • tie • moves • play	• df_state • action_space • win_loss • win • lose • tie • moves • play	Resets the class object to the initial state.
end_condition()	• None	• None	• df_state • win • lose • tie • moves • play • win_loss	• df_state • win • lose • tie • moves • play • win_loss	Determines if any of the end conditions of the game has been met.
end_of_turn()	• None	• None	• win • lose • tie • play	• play	Checks to see if any of the win / lose / tie booleans are true at the end of an agetns turn.
action_space()	• None	• None	• action_space • df_state	• action_space	Updates the action space by determining where zero values exist in df_state
get_state()	• None	• df_state	• df_state	• None	Returns the current state of the game. Used to help agents make decisions.
update_environment()	• action • player	• action • player	• df_state	• df_state	Recieves the players action and then updates df_state.
step()	• action • player	• reward • df_state	• play • win • tie	• None	Simulate a players turn. Recives the player number and action as input then updates the board, determines if the game is over and then returns the rewards / state of the game.