

## Use Case Model

**Use case:** Place a mark on the tic-tac-toe board.

**Actors:** players, tic-tac-toe system

**Goal:** to allow one of the basic actions of the game of tic-tac-toe to be played

**Preconditions:** a match of tic-tac-toe must have started and it must be the actor's turn.

**Summary:** When a user wants to place mark on the board, a match of tic-tac-toe must be in progress and it must be the user's turn. They then select one of the empty cells on the board, after which their symbol (either X or O) is placed on the cell and the system moves the turn order forward.

**Steps:**

<i>Actor Actions</i>	<i>System Responses</i>
1. Select a cell on the board during their turn	2. Place the user's symbol on the cell, and then moves to the next player's turn.

**Postconditions:** the board remembers the user's selection by placing a mark in the indicated cell.

**Use case:** Time out an inactive player.

**Actors:** players

**Goal:** Prevent a game from lasting forever by limiting the amount of time allotted to each player's turn.

**Preconditions:** a match of tic-tac-toe must have started and the player's current turn must have longer than the amount of time allotted to their turn timer.

**Summary:** If a turn lasts more than the allotted time on the timer, the tic-tac-toe system ends the game and declares the winner to be the player whose turn did not time out.

**Steps:**

<i>Actor Actions</i>	<i>System Responses</i>
1. During their turn, does not select a valid move within the allotted time limit	2. Declares the player whose turn did not time out the winner and ends the match.

**Postconditions:** the match of tic-tac-toe ends and one player is declared the winner.

**Use Case:** start a match of tic-tac-toe

**Actors:** player

**Goal:** to start a match of tic-tac-toe

**Preconditions:** system must not be in the middle of a tic-tac-toe match.

**Summary:** when the user wants to start a match of tic-tac-toe, they select this option. The system then initializes an empty board and displays it to the user. (

**Steps:**

<i>Actor Actions</i>	<i>System Responses</i>
1. Selects the start a match option	2. Begins a match of tic-tac-toe by initializing a board and then displaying it to the user.

**Postconditions:** the game board is initialized and displayed to the user.