Minimax

MakeMove – (Player)

SpawnMarkerAtIndex

GetLocationForIndex

CheckWin

GetBestMove

AIMove

SpawnMarkerAtIndex

GetLocationForIndex

CheckWin

To integrate the AI for the single-player game using the BP\_TicTacToeAI blueprint, let's start by setting up the blueprint to interact with the C++ logic. You’ll be able to call the C++ functions you implemented, like GetBestMove and AIMove, directly from Blueprint. Here’s a step-by-step guide:

**1. Set Up BP\_TicTacToeAI**

* Open your BP\_TicTacToeAI blueprint, which is a child of ATicTacToeAI.
* In the blueprint’s **Details** panel, assign the BP\_TTTX and BP\_TTTO properties with the appropriate X and O marker blueprints.
* Place BP\_TicTacToeAI in your new single-player map where you want it to manage the AI.

**2. Set Up the Board Interaction in Blueprint**

* For each of the 9 StaticMeshActors representing your board spots:
  + Create a new Blueprint Interface, such as BPI\_TicTacToeInteraction, and add a function like OnClicked.
  + Implement this interface on each StaticMeshActor so that each board spot will call OnClicked when clicked.

**3. Implement Player Move Logic in Blueprint**

* In BP\_TicTacToeAI, add an OnClicked event handler.
* When a player clicks on a spot:
  1. Determine the index of the clicked spot.
  2. Call MakeMove from C++ with the index and bIsPlayer set to true.
  3. Spawn the player's marker using SpawnMarkerAtIndex.

**4. Trigger the AI Move in Blueprint**

* After a player move, call the AIMove function in BP\_TicTacToeAI.
* This function will internally call GetBestMove, then set the AI’s marker on the board, using the C++ logic to make it unbeatable.
* Optionally, call CheckWin after each move to detect any win, loss, or draw conditions, and handle the game’s outcome appropriately.

**5. Connecting to the StaticMeshActors**

* For each StaticMeshActor representing a board spot, set up an event to trigger the OnClicked function when it’s interacted with in-game.
* In the BP\_TicTacToeAI, bind this event to register each click and perform the player and AI moves as described.

**6. Debug and Test**

* Play the single-player game mode and verify:
  + Players' moves are registered correctly.
  + The AI makes moves immediately after the player.
  + The game’s outcome (win, loss, draw) is detected correctly.

This setup ensures that BP\_TicTacToeAI manages the game logic effectively, using your Minimax algorithm to make it impossible to beat the AI. Let me know if you’d like specific code snippets or further customization for any of these steps!