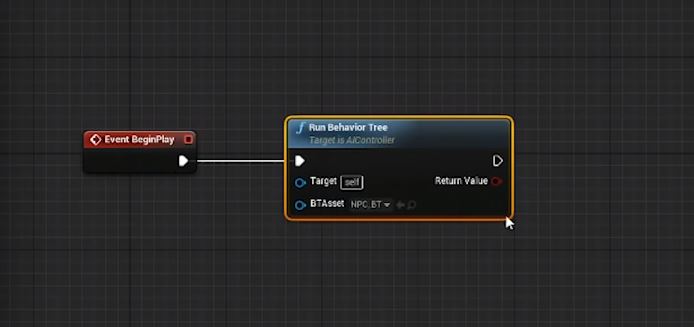
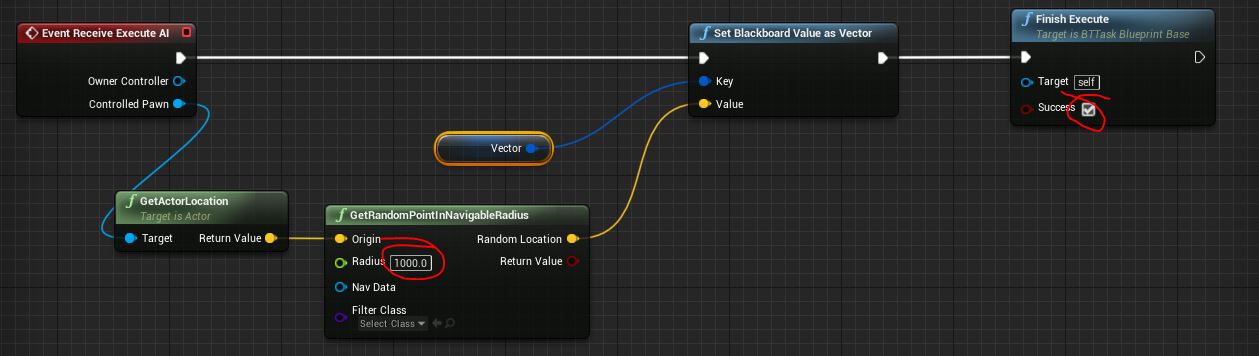
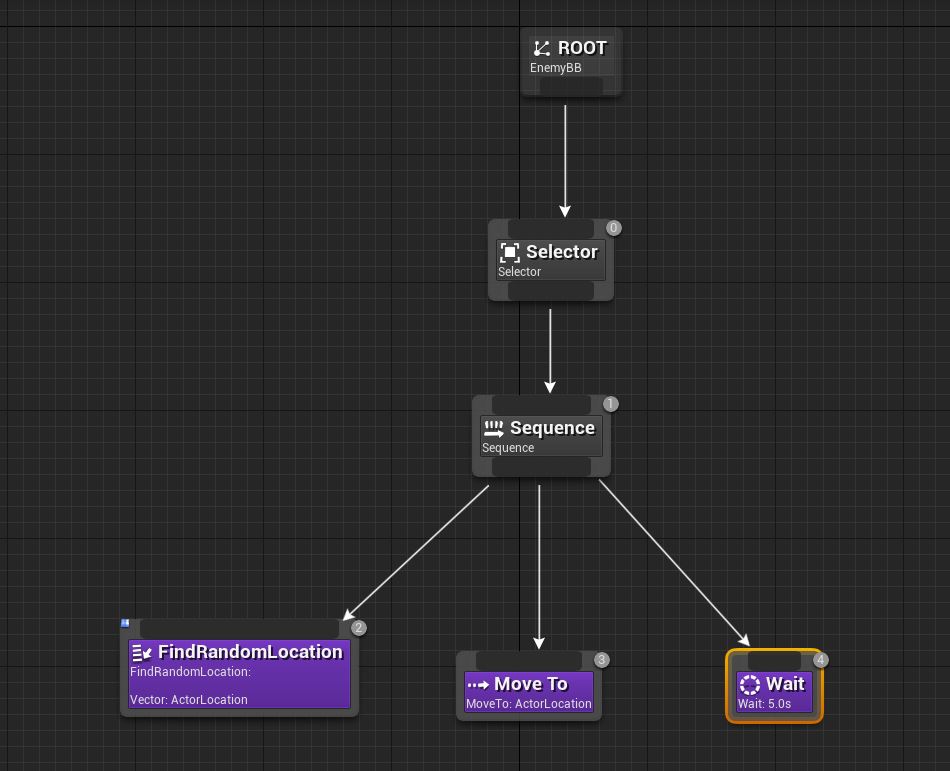
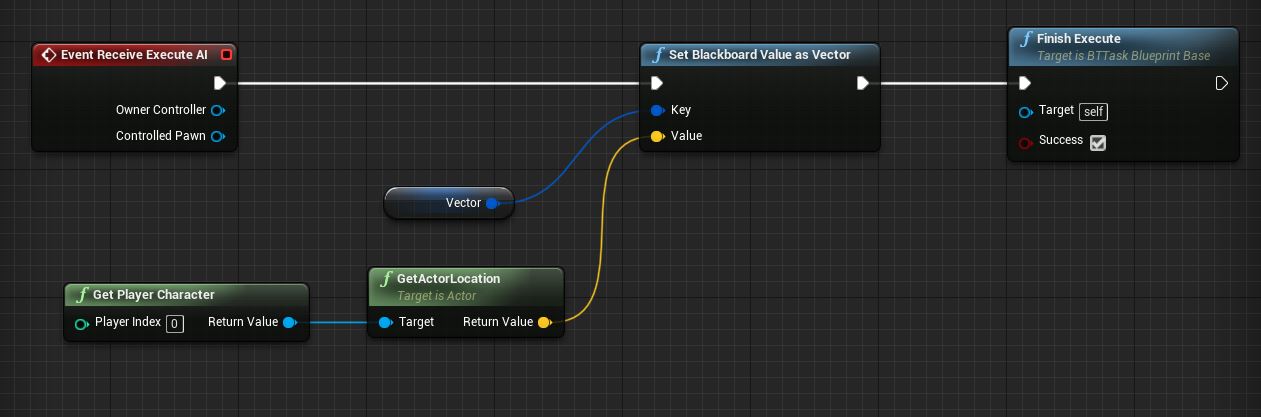
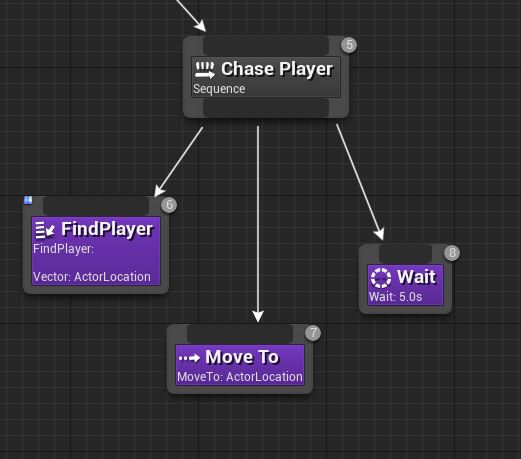
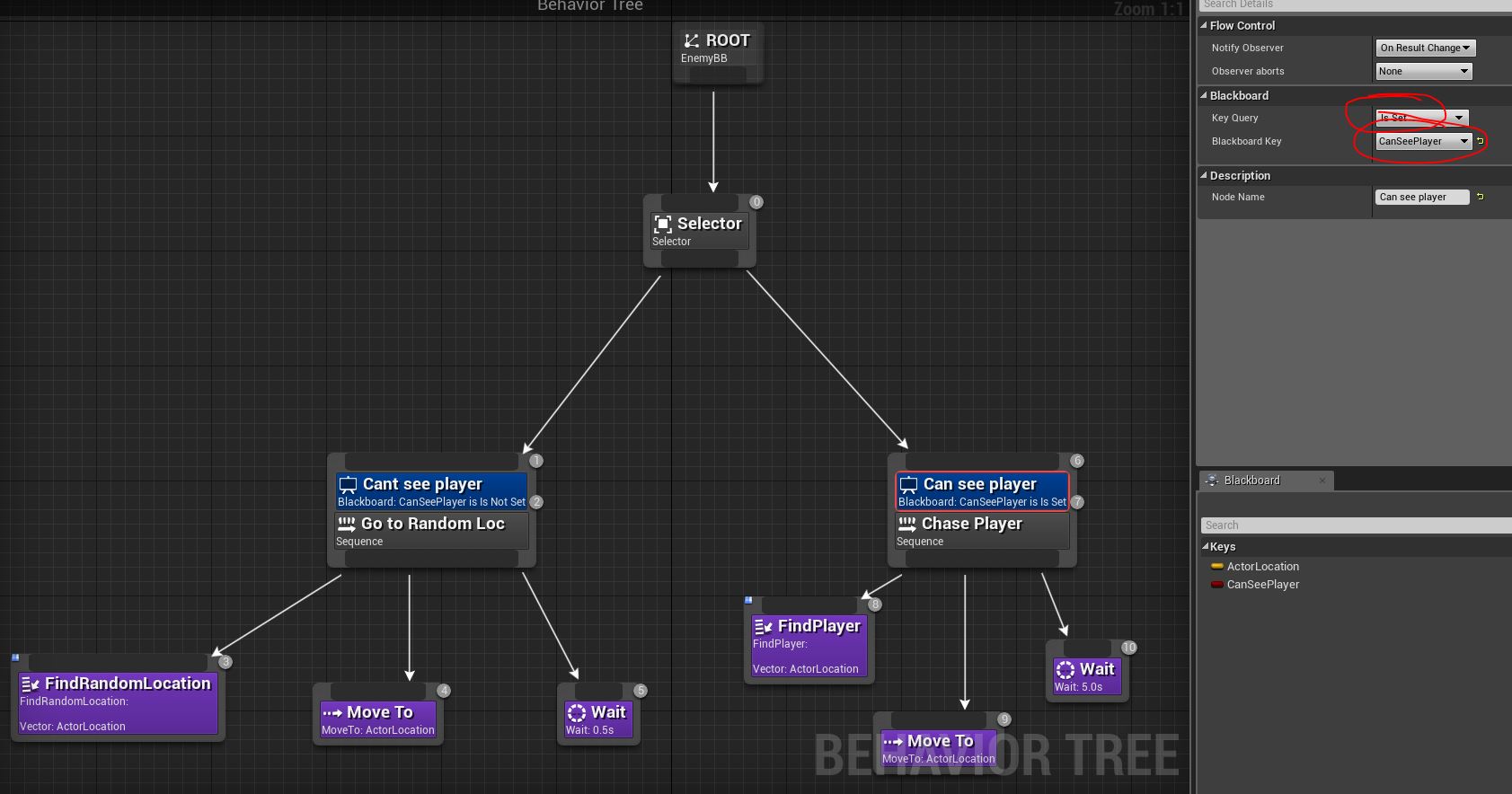
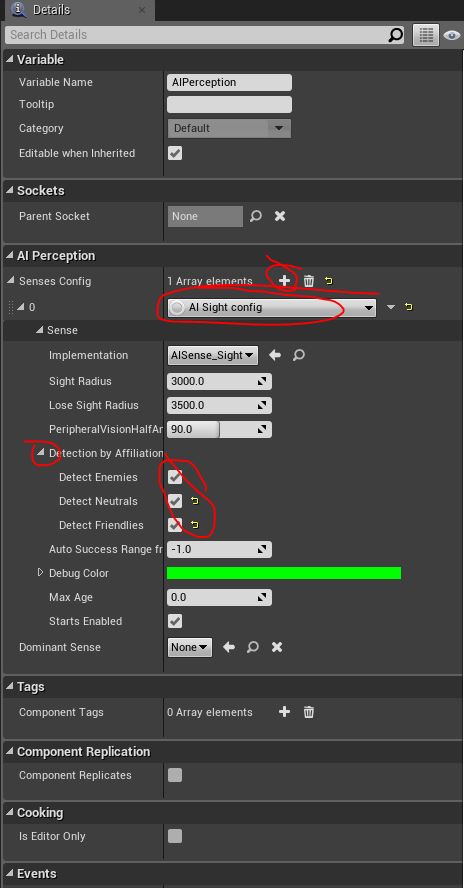
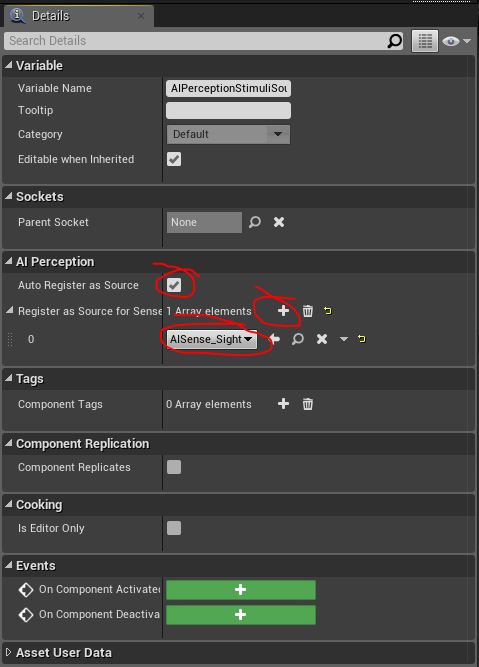
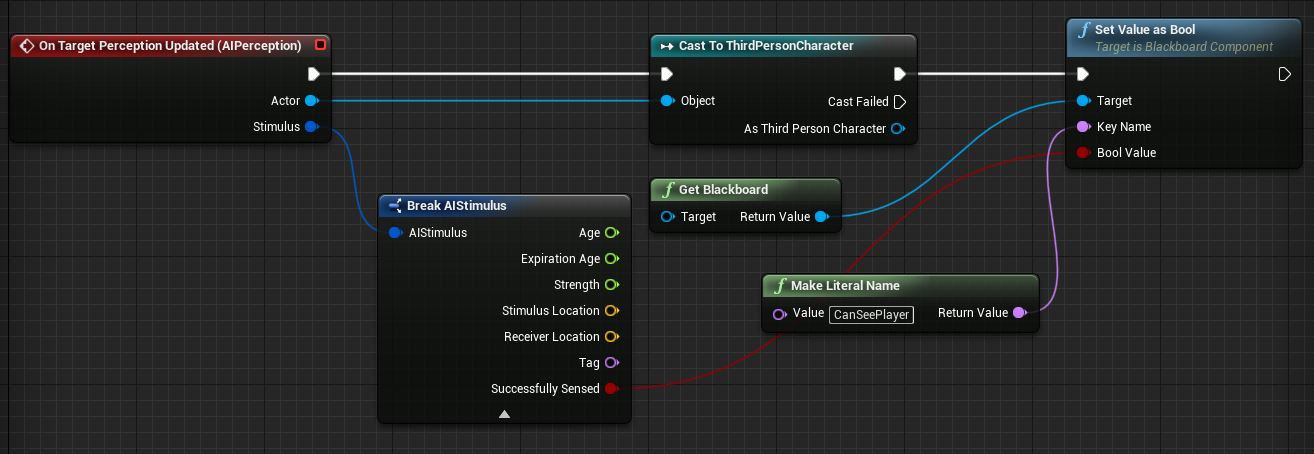
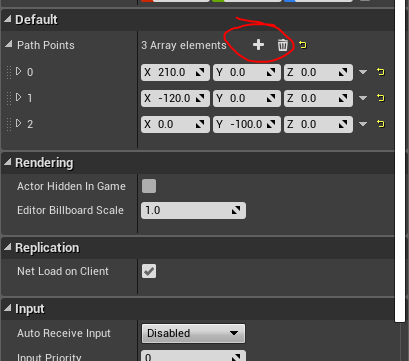
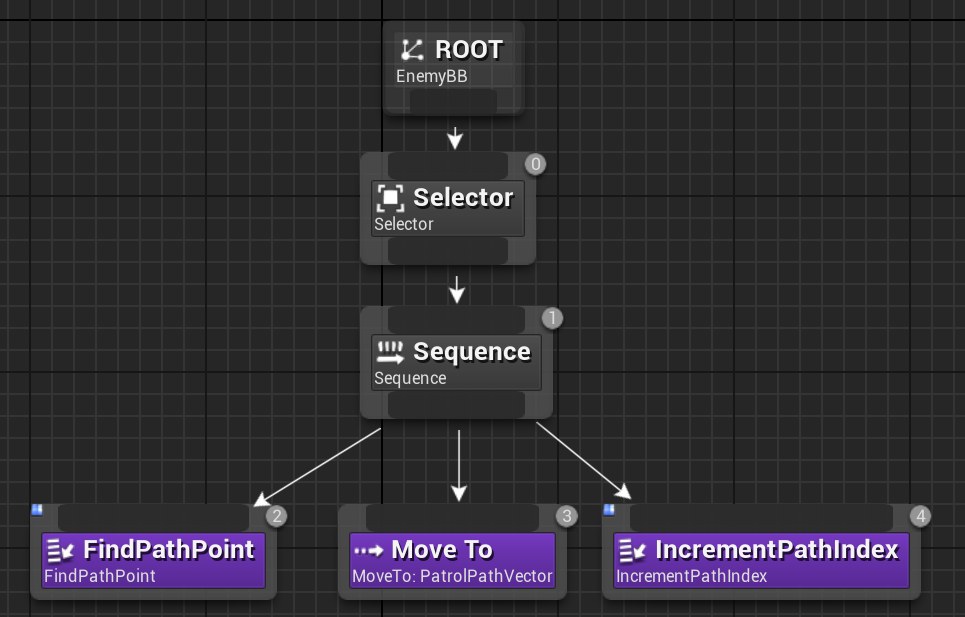
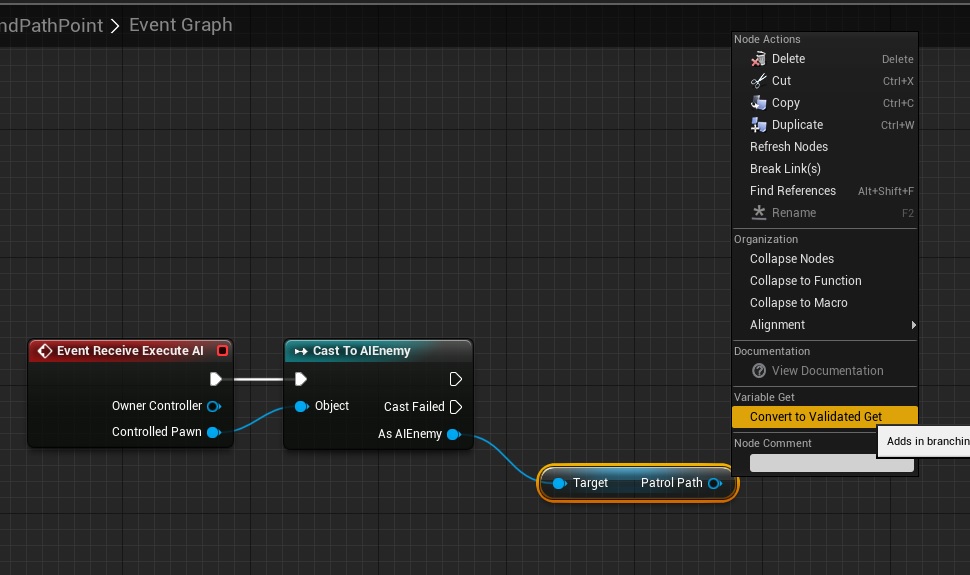
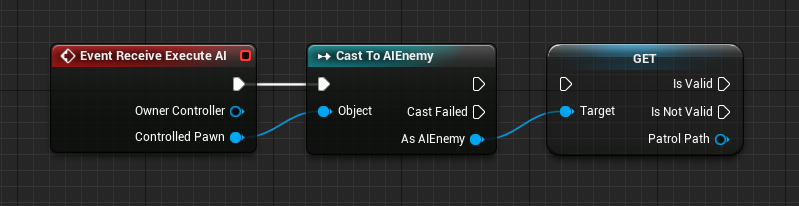
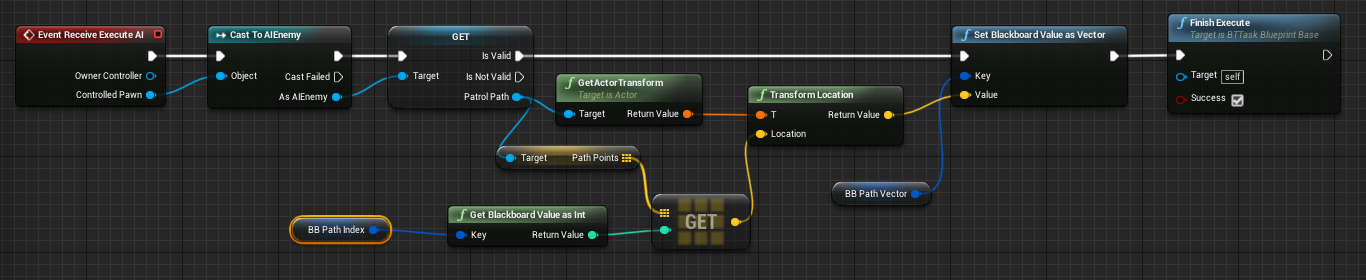
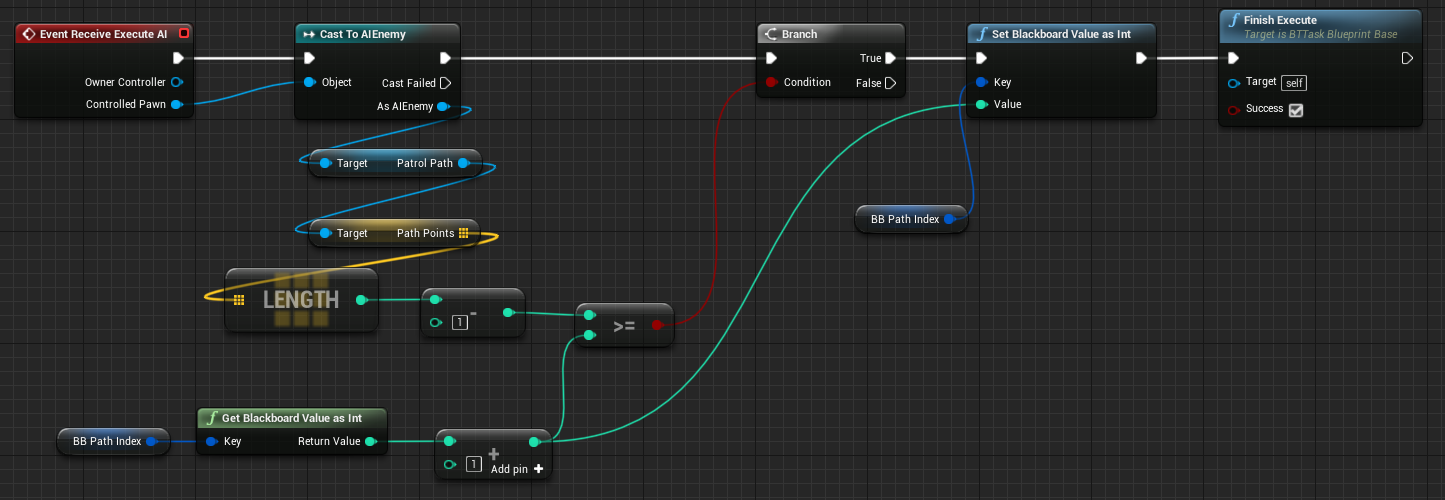
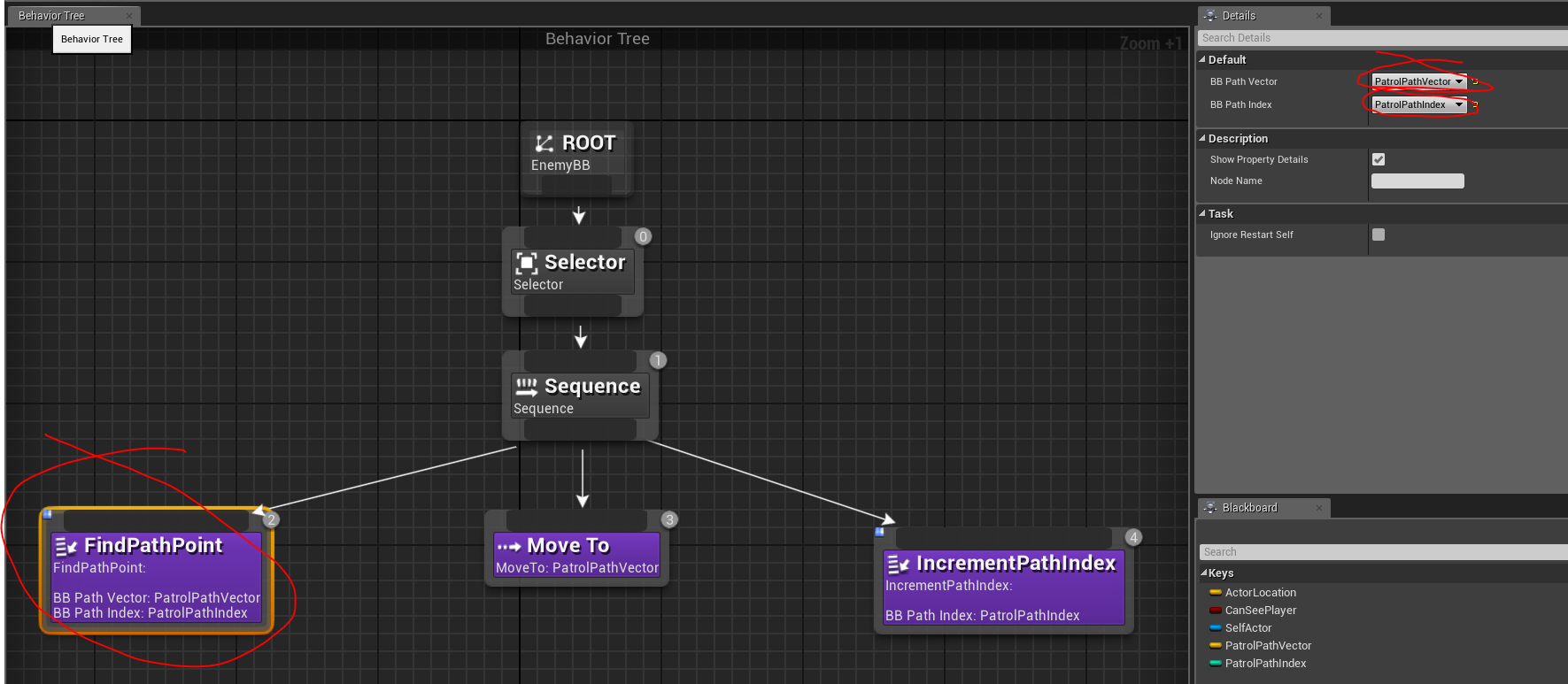
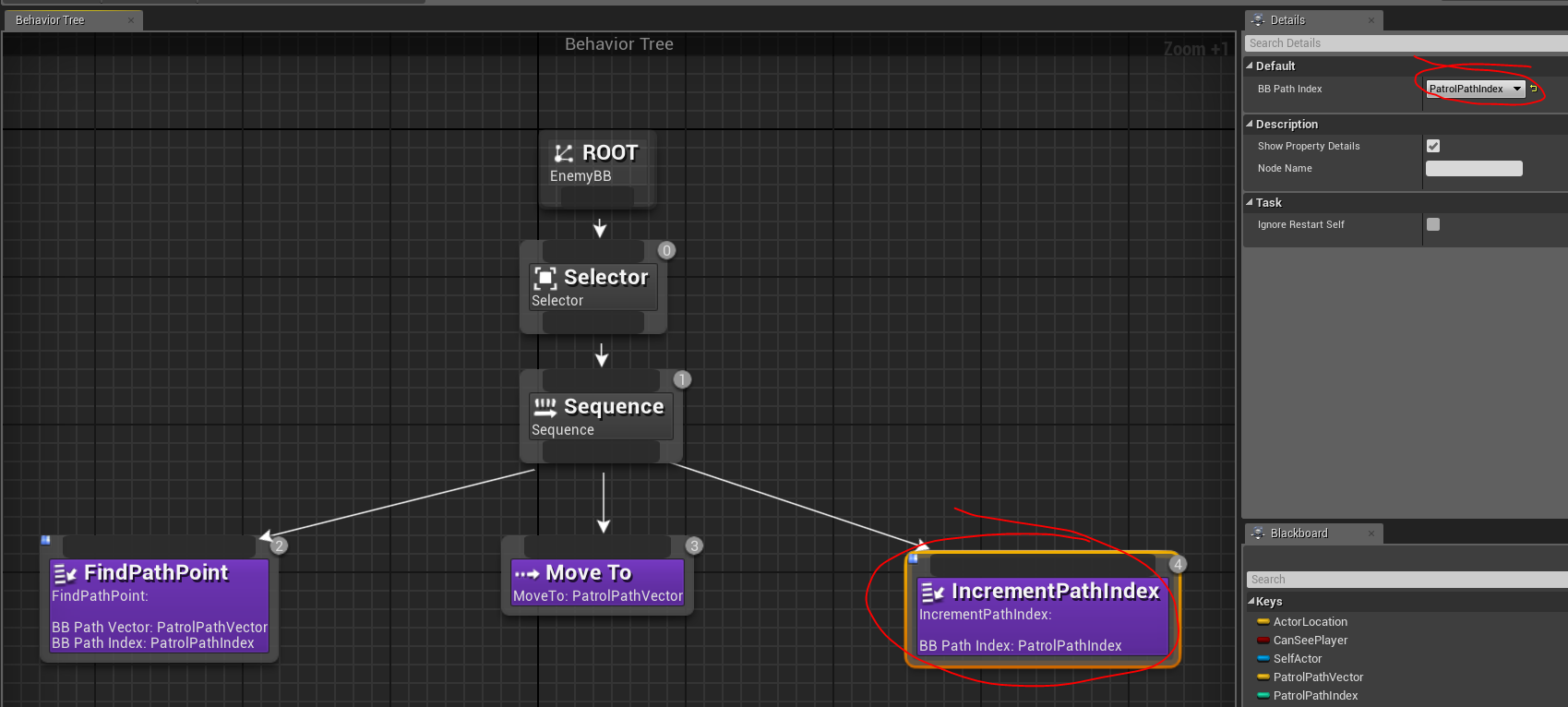
**AI Enemy**

<https://www.youtube.com/watch?v=zNJEvAGiw7w&list=PL4G2bSPE_8ukuajpXPlAE47Yez7EAyKMu>

1. Create a Third person template.
2. Create AI folder in Content Browser
3. Create a new character (Name it AI Enemy)
4. Open it add skeleton mesh (Mannequin)
5. Add Thirdperson Anim BP
6. Create a new AIController (From blueprint class)
7. Create Behaviour Tree and BlackBoard
8. Select AI controller in enemy character defaults
9. In AI Enemy character BeginPlay - add BP run behaviour tree
10. 
11. Select our behaviour tree in Run Behaviour Tree node.
12. Open Behaviour Tree (it is a decision making tree)
13. Drag from root and pick selector and then choose sequence. Add another sequence
    1. Selector selects and sequence play in sequence
    2. Explain numbers
14. Drag enemy into level.
15. Drag in nav mesh bound volume in to scene(scale and hit p to show)
16. In BlackBoard create a new key of type Vector and name it ActorLocation
17. Back to Behaviour tree.
18. Create new task by clicking on New Task button.
19. Create Execute event and finish execute
20. 
21. Create new variable of type BlackboardKeySelector, Name it Vector.
22. Set Variable to be public
23. Add following Blueprint
24. 
25. Rename the task to a logical name
26. Add the new task to Behaviour tree as follows
27. 
28. Compile and the character should run to Random locations in the level.
29. To avoid snap rotation of the character do the following
    1. In class defaults - Uncheck "Use Controller Rotation Yaw"
    2. In CharacterMovement - Check "Orient Rotation to Movement"
30. We can rename the Sequence to "Go to Random Location"
31. Create another sequence Chase Player.
32. Create new Task.
33. Add Event Receive Execute AI and Finish Execute like in step 19
34. Create a variable of type blackboard key selector
35. Add the following Blueprint
36. 
37. Rename the task in content browser
38. Add the task in Behaviour Tree under new sequence as follows
39. 
40. To decide if the enemy has found the player we need a boolean (to switch between 2 sequences)
41. For that create a boolean in Blackboard "CanSeePlayer"
42. Now we will give the sequences a decorator. (which decides if we want to go to the sequence)
43. Right click on "Go to Random Loc" sequence and go to Add Decorator and select Blackboard.
    1. A blue decorator will appear on the sequence
44. Select it and in details panel change Key Query to "is not set" and Blackboard Key to "can see player"
    1. Basically it says if blackboard key "can see player" is not set, only then do the sequence.
45. We can rename the decorator.
46. Add another decorator on the other sequence and set the opposite to the cant see decorator.
47. 
48. Now we need to set the boolean
49. For that go to AIController and add a component AIPerception
50. Select the AIPerception and Click the + sign to add a Senses Config
51. Change category to AI Sight Config
52. Open it and check all in Detections by affiliations
53. 
54. Now go to Player Character and add "AIPerceptionStimuliSource" component.
55. Go to its details and check auto register as source
56. Add array element
57. and select AISense\_Sight in array element
58. 
59. Now Go to AIPlayerController and select AIPerception and right click and search "OnTargetPerceptionUpdate" then add the following BPs
60. 
61. Compile and run and when ever the enemy sees the player it will follow.
62. We can change the setting of AIPerception and AIPerceptionStimuliSource.
63. Try Cooldown decorator on chase player branch of Behaviour tree
64. Next thing we are going to do is make the AI walk on a path determined by us.
65. Let's move all the previous Behaviour Tree aside and disconnect
66. We need a new Actor that can store vectors for the petrol path.
67. For that create a new Actor class and name it PatrolPath.
68. Open it and add a variable of type vector and make it an array.
69. Make instance editable and check ‘Show 3D widget’
70. Drag and drop the actor in the level and while it is selected on details panel add elements. You can select the 3D representation of the vector in level and move it.
71. 
72. 
73. Place the points in different places in the world.
74. Now go to the Enemy Character and and make a variable of type PatrolPath object reference (actor we just created.)
75. Make the variable instance editable. Compile and save.
76. Now go to the world and select the Enemy Character. On its details panel we should be able to select the PatrolPath actor.
77. Now we need to pick each point using BP
78. So go to BB and create 2 variables PatrolPathVector and PatrolPathIndex
79. Go to BT and add 2 new task and go to content browser and rename it “FindPathPoint” and “IncrementPathIndex”. FindPathPoint will find the location of the path point in the array and set its location to for the character to move. And Increment path Index will increment the index value
80. Add both tasks to the Behaviour Tree
81. 
82. Open FindPathPoint
83. Add 2 variables of the type BlackboardKeySelector name it BBPathVector and BBPathIndex
84. Then add the following BP
85. 
86. Right Click on get node and choose convert to validate get.
87. 
88. This is to ensure that code runs only if an actor path is selected in the character.
89. Now we need to get the location of PathPoint variables in PatrolPath actor in the AIEnemy and assign it to the vector in BB. So add the following BP
90. 
91. We cannot assign the vector value directly because the vector value of the path vectors are in local space not in world space. To overcome this we need to modify the script as follows.
92. 
93. This will set the location for enemy character to walk taken from the PathPoint array. Now we need to increment the array index using the next task BP.
94. Open IncrementPathIndex.
95. Add a variable called BB\_PathIndex of the type BlackBoardKeySelector (Instance Editable)
96. Add the following BP
97. 
98. In BT select each task and pick appropriate variables in details.
99. 
100. 

Exercise :

1. Now the enemy stops at the last point you can try to reset the path index in the script so that the character always walks or runs.
2. Select the path vectors randomly.