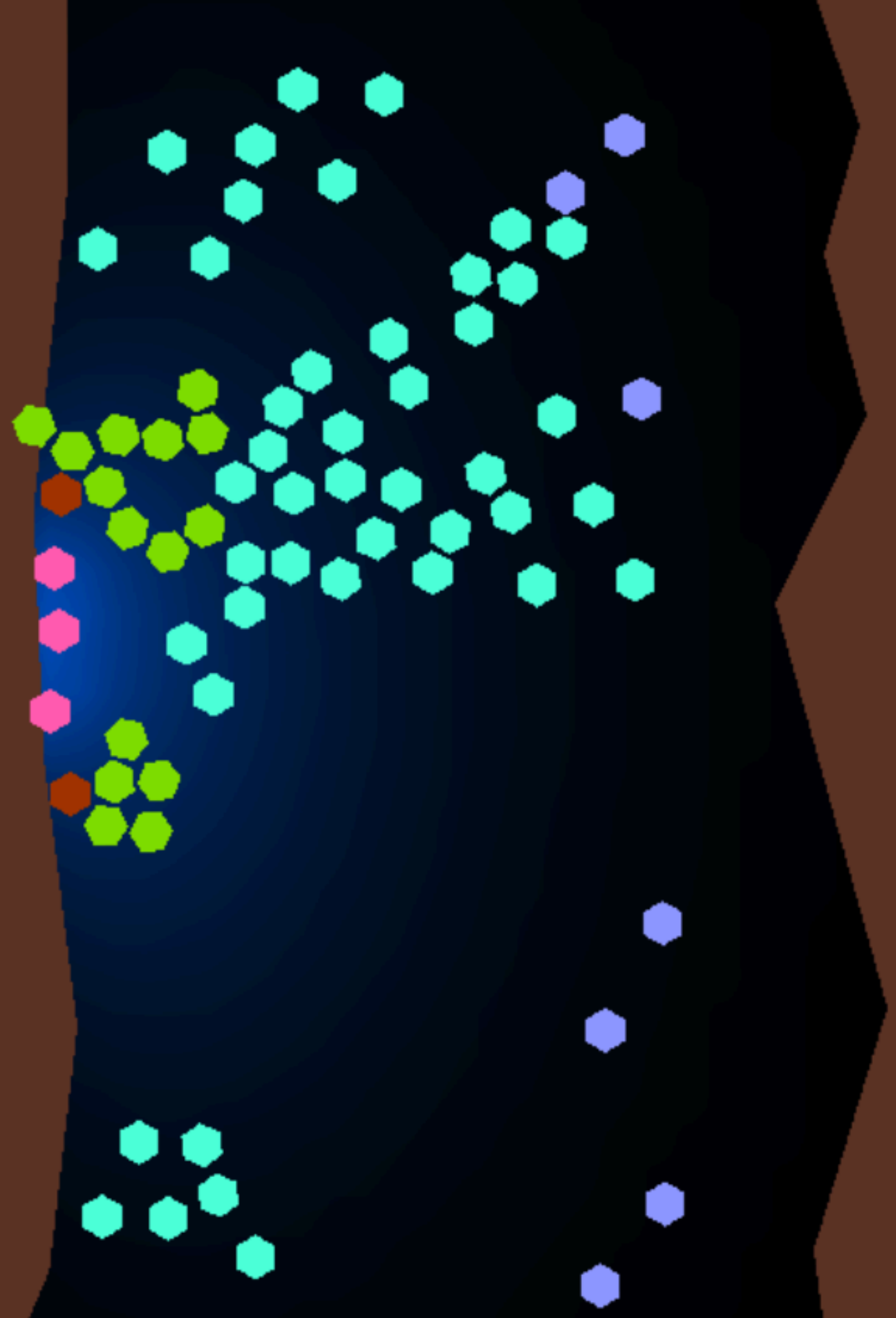


Pascal BALLE

BEHAVIOR TREE FOR GROUPS



A Godot addon to create 2D or
3D swarms, flocks and multi-agent
systems



A brief

INTRODUCTION



The main node of Behavior Tree For Groups (BTFG) represents a Godot group (a disk inside a square) completed with a trunk, to draw a tree.

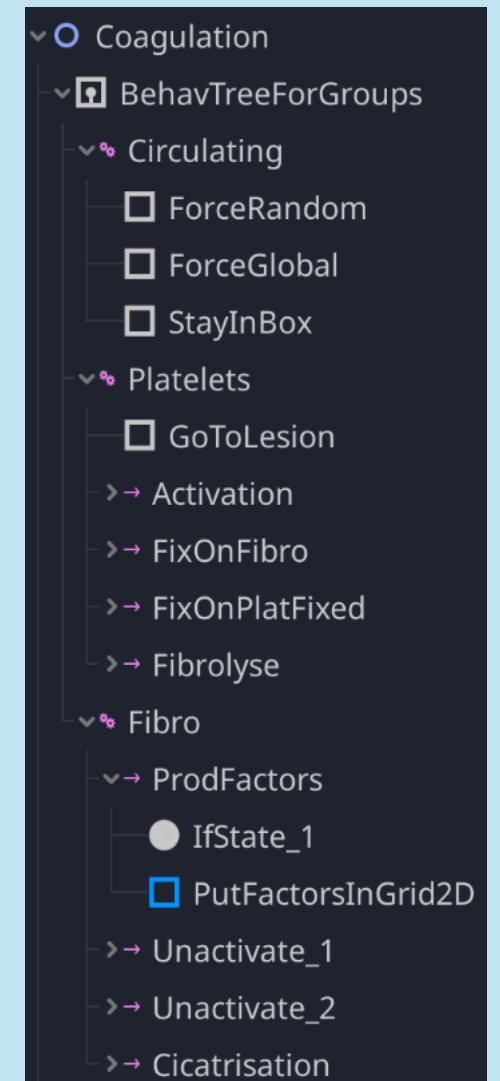
BEHAVIOR TREE FOR GROUPS

BTFG is an addon for Godot Engine that enables you to create swarms, flocks and multiagent systems using a single behavior tree.

You can easily design collective behaviors without any code by adding groups to your nodes.

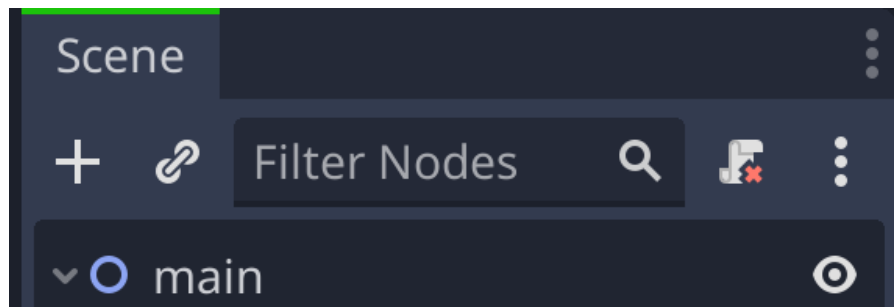
Several examples, in 2D or 3D, are available when installing the add-on in Godot: test them to understand how they work and what can be done.

When imported into your project, add groups to your nodes then create a new BTFG that works onto the groups of your choice.



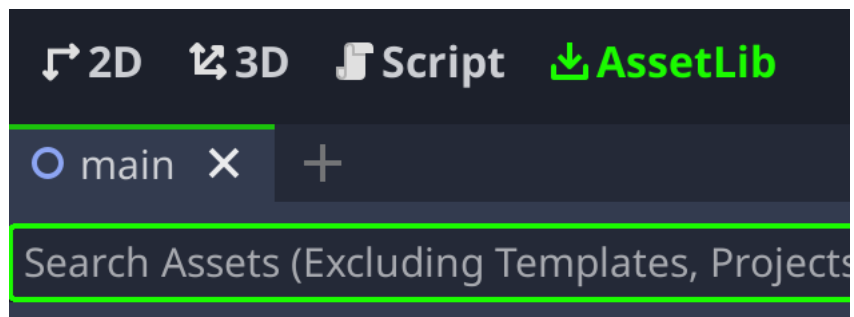
Simulation of blood coagulation made with BTFG.

SIMPLE 2D TUTORIAL



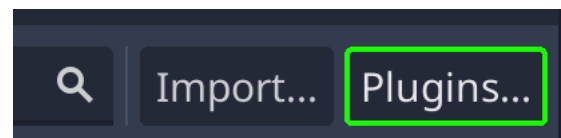
First, create a new 2D scene

- save it as *main.tscn*



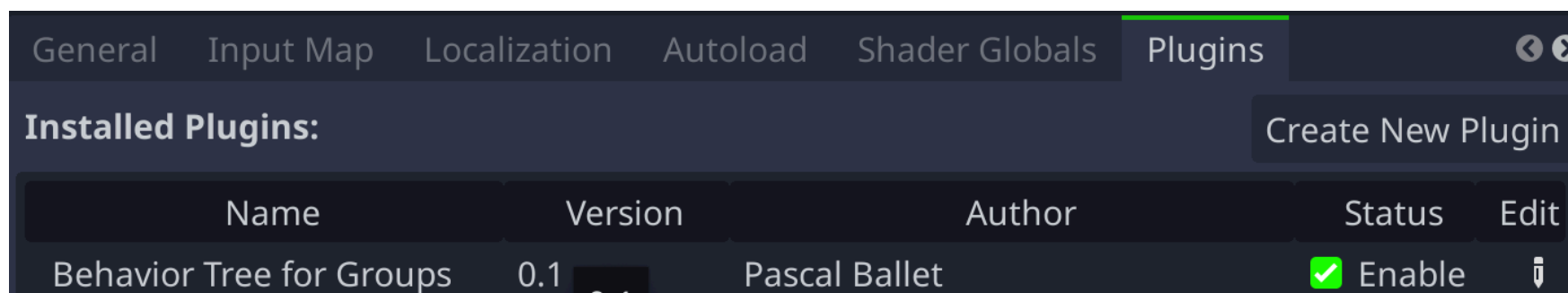
Addon download

- From the *AssetLib* tab of *Godot*, search, select, then download the *Behavior Tree For Groups* addon.

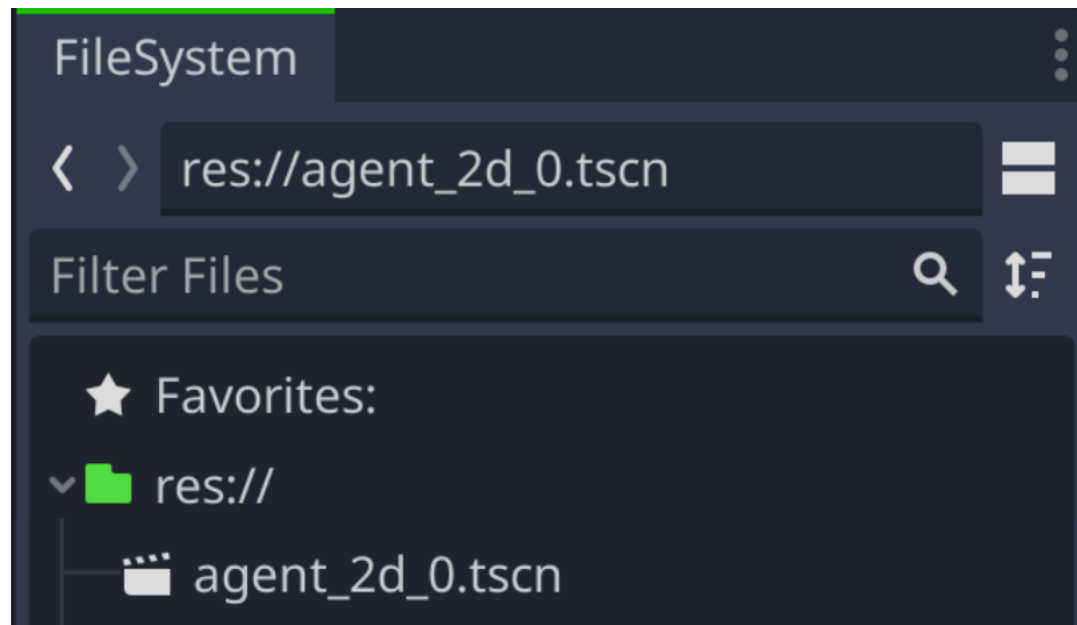


Plugin activation

Do not forget to *Enable* it from the *Plugins* section.



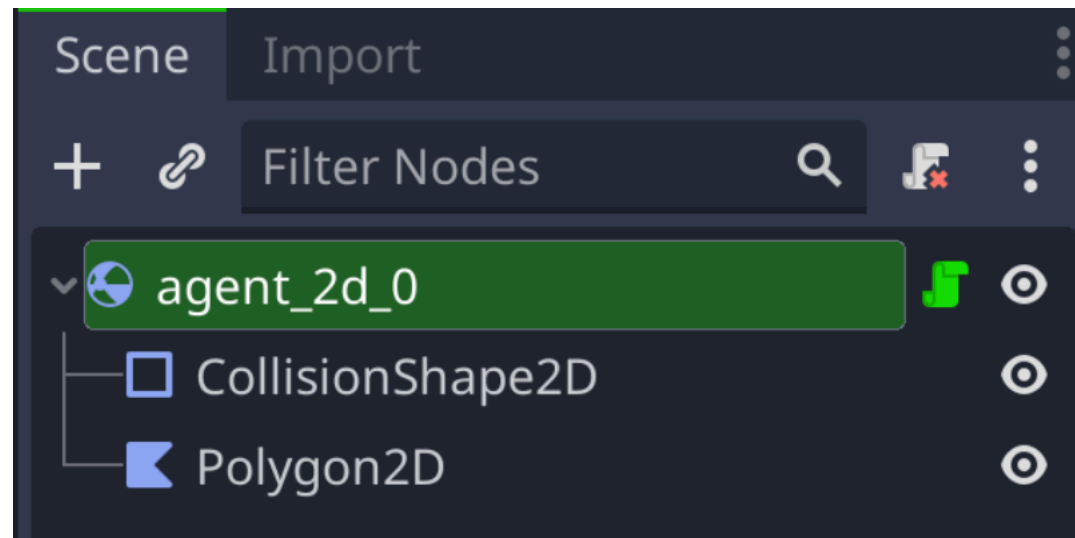
SIMPLE 2D TUTORIAL



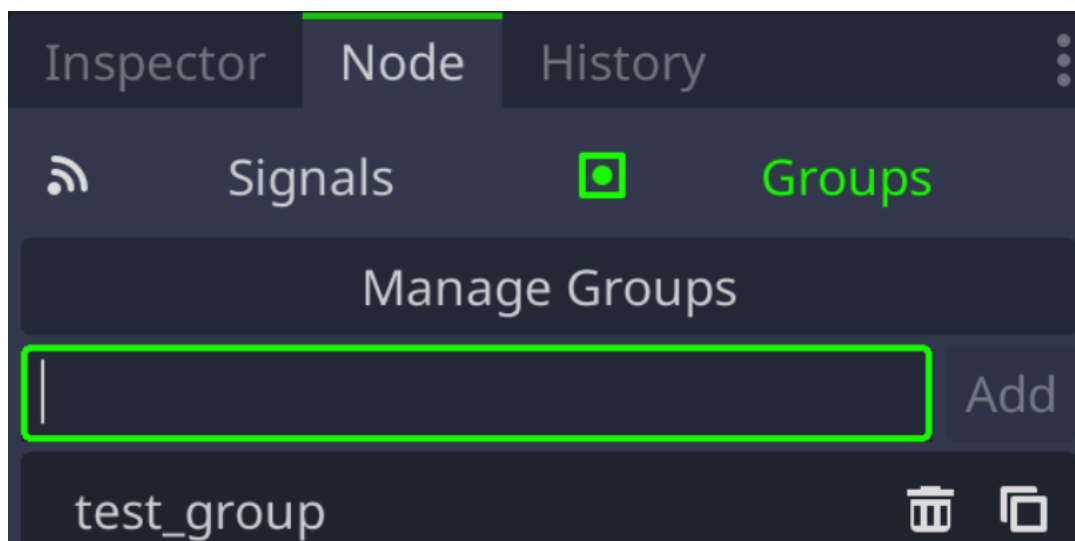
Now, create a new Agent2D

- Click the + button in your scene tree and
- Select NewAgent2D
- A file called *agent_2d_0.tscn* is automatically generated into your file system

NB : this node is NOT added to your scene tree, but is just a convenient way to create an agent, which is a *RigidBody2D* with its *MeshInstance* and *CollisionMesh*. If you prefer, you can also create your own *RigidBody2D*.



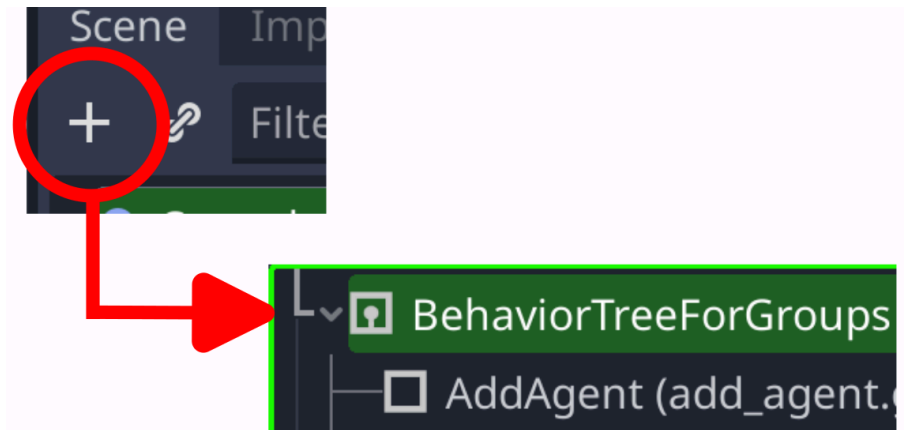
- Open the *agent_2d_0.tscn* automatically generated, and
- select the *RigidBody* at the root of this scene.



- In the *inspector*, go to the *Node Tab*
- then go to *Group*
- and add a new group called *test_group*

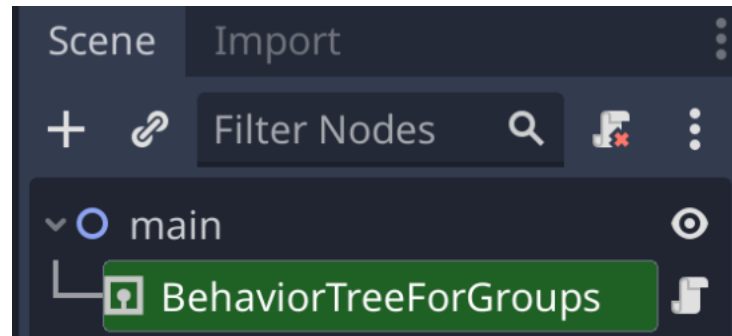
Save the *agent_2d_0.tscn* scene

And go back to your *main* scene

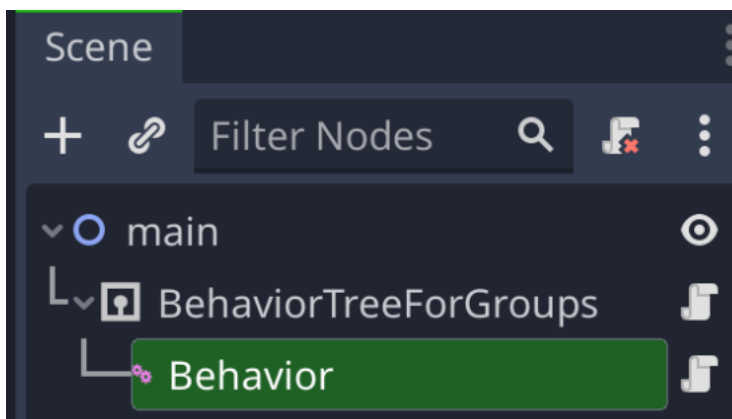


Then, create a simple behavior tree

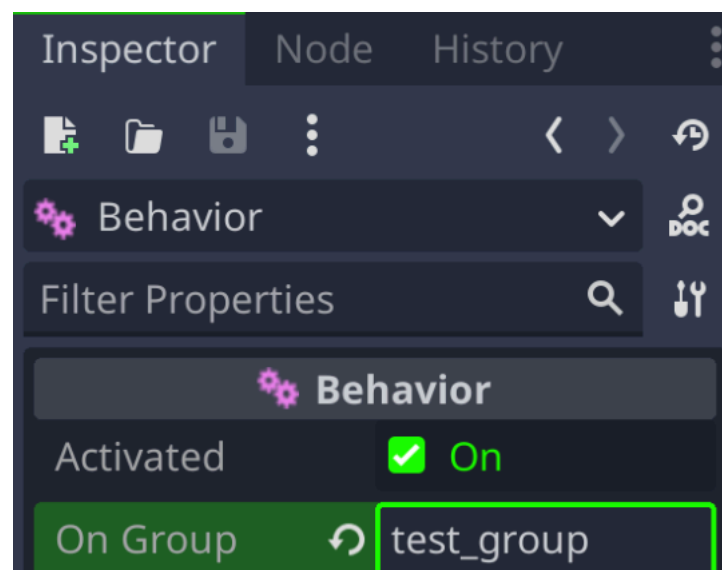
- Click the *plus button* in your *main* scene, then select the node *BehaviorTreeForGroups*



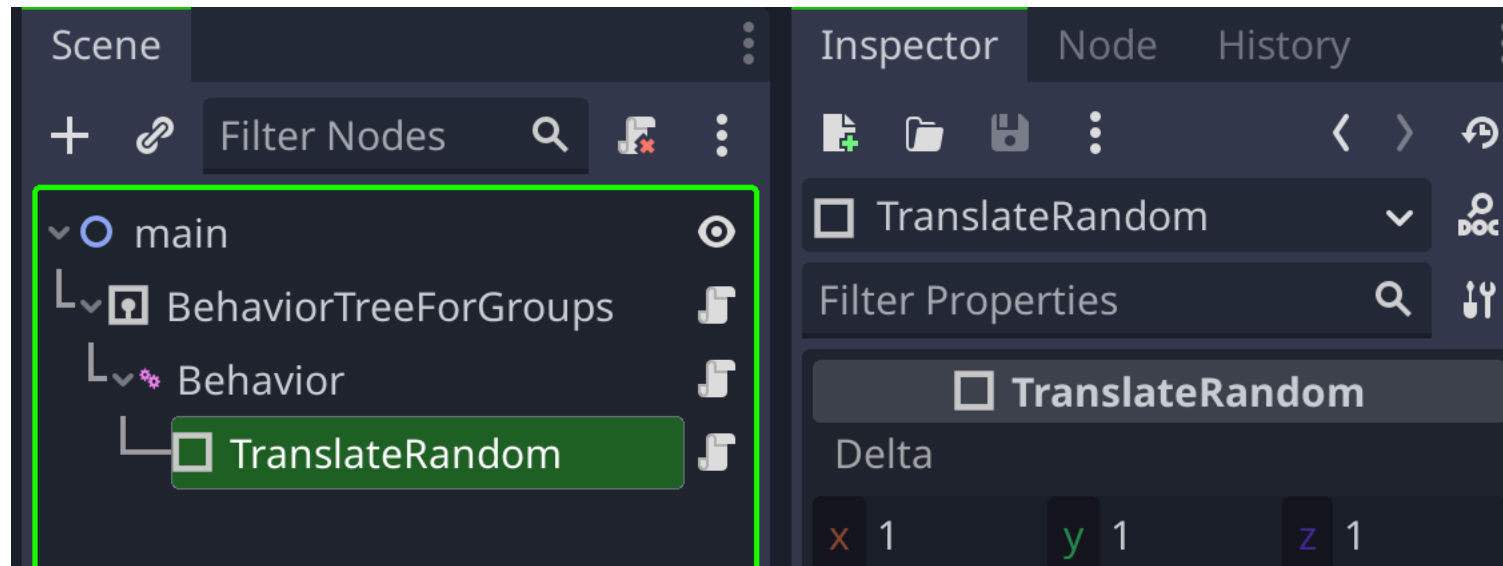
- Then, add a new child node called *Behavior*



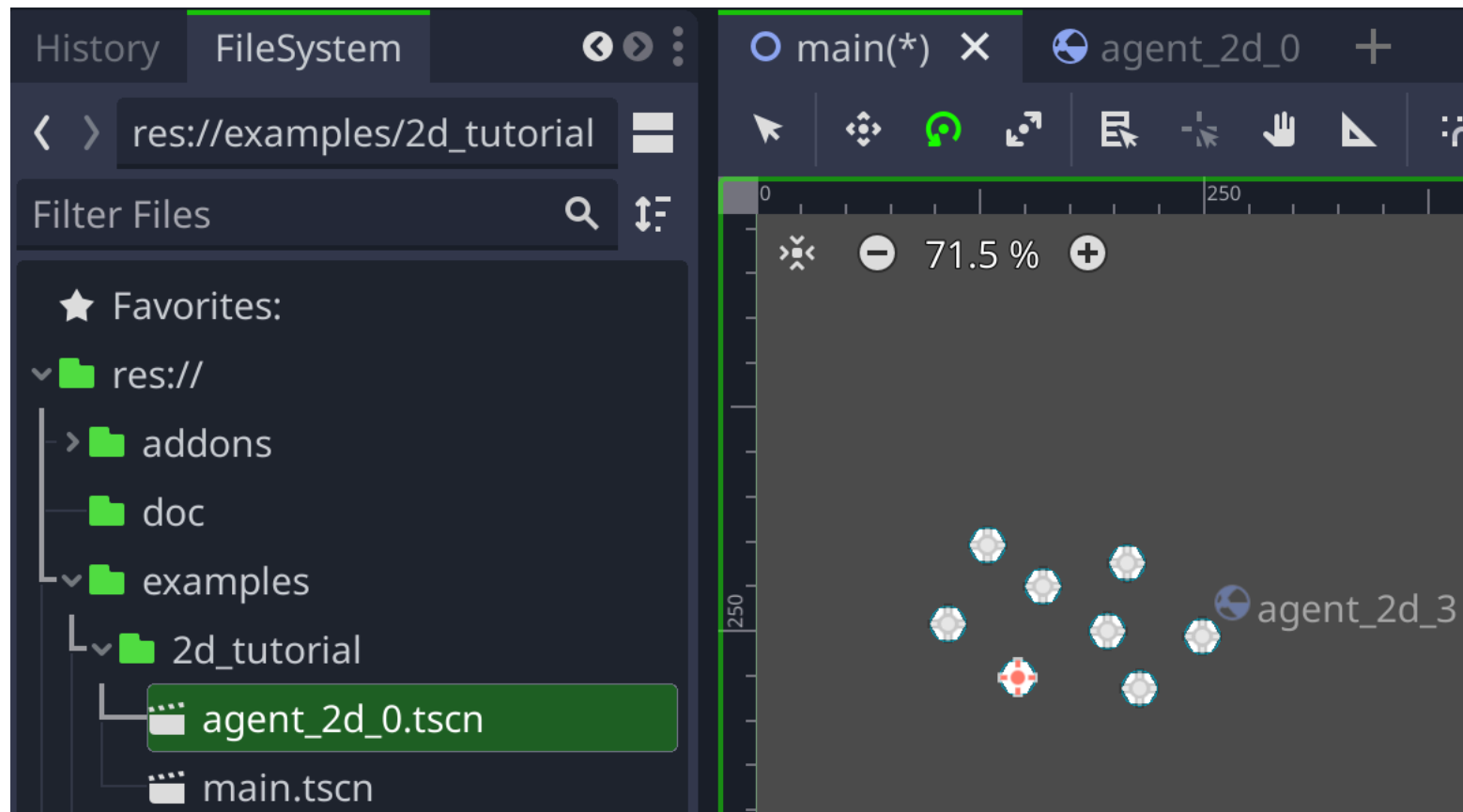
- In the inspector of the newly created node *Behavior*, in the *Group* property, write *test_group*. That means all the nodes having the *Group test_group* will be treated.



Add an Action in the Behavior

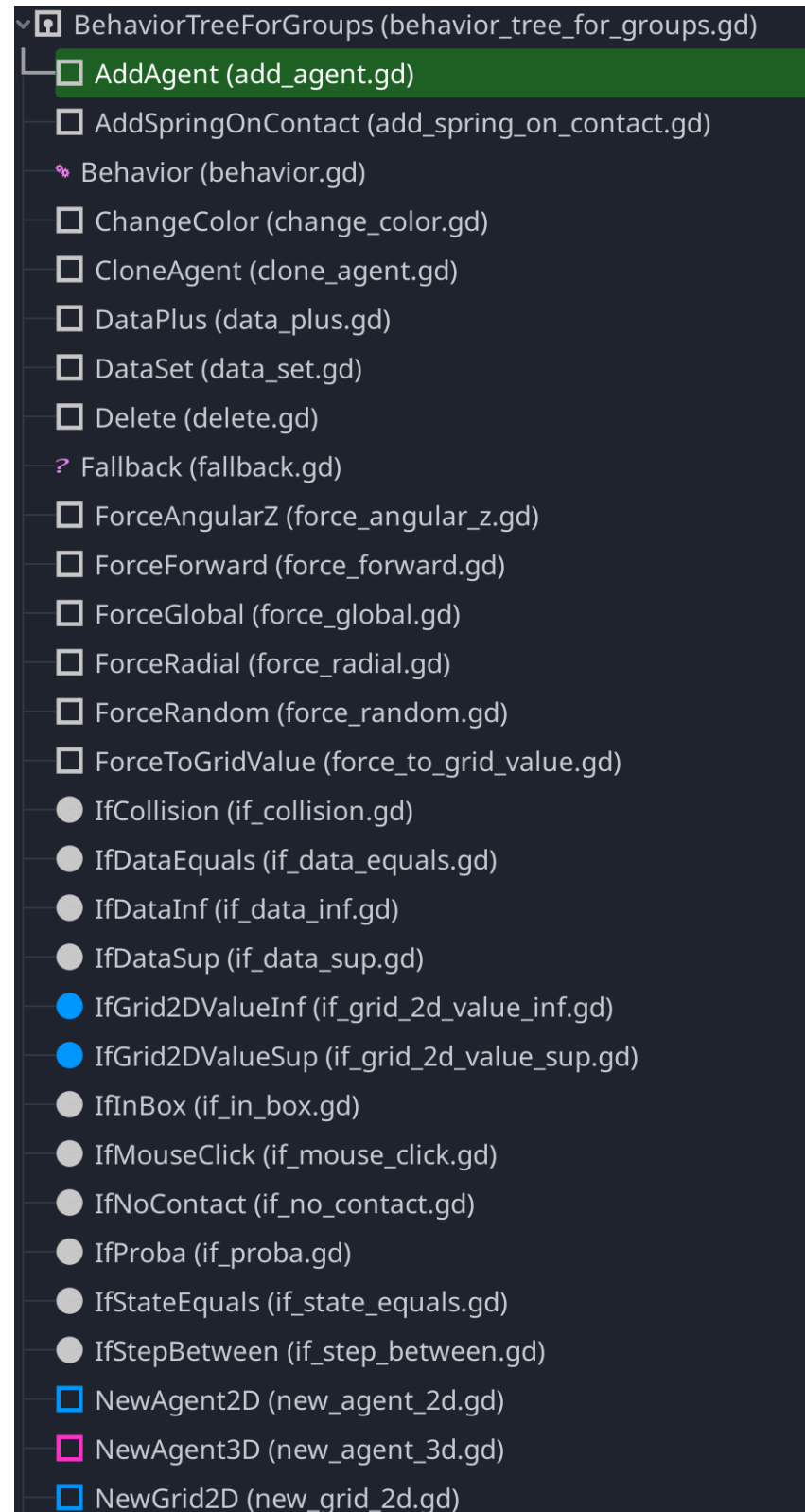
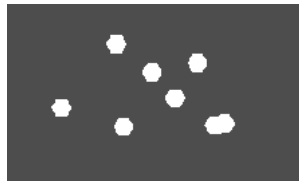
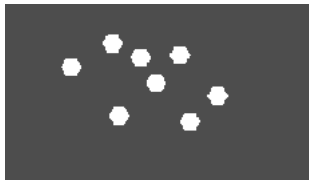


- As child of the node Behavior, add a new node called TranslateRandom



Finally, add many agent_2d

- by *drag & drop* from the file *agent_2d.tscn* to your *main* scene
- place 8 of them in your *main* scene



Execute your program

- all the agents having the group *test_group* will move at random

- for example, you can change the speed of the translation by changing the default value Delta to 5 in the *TranslateRandom* node

Conclusion

Many other nodes exists to create many different behaviors

SIMPLE 3D TUTORIAL

Very simple

- Replace 2d by 3d in the previous example!
- And do not forget to put a *camera* and a *light* before you execute your program

