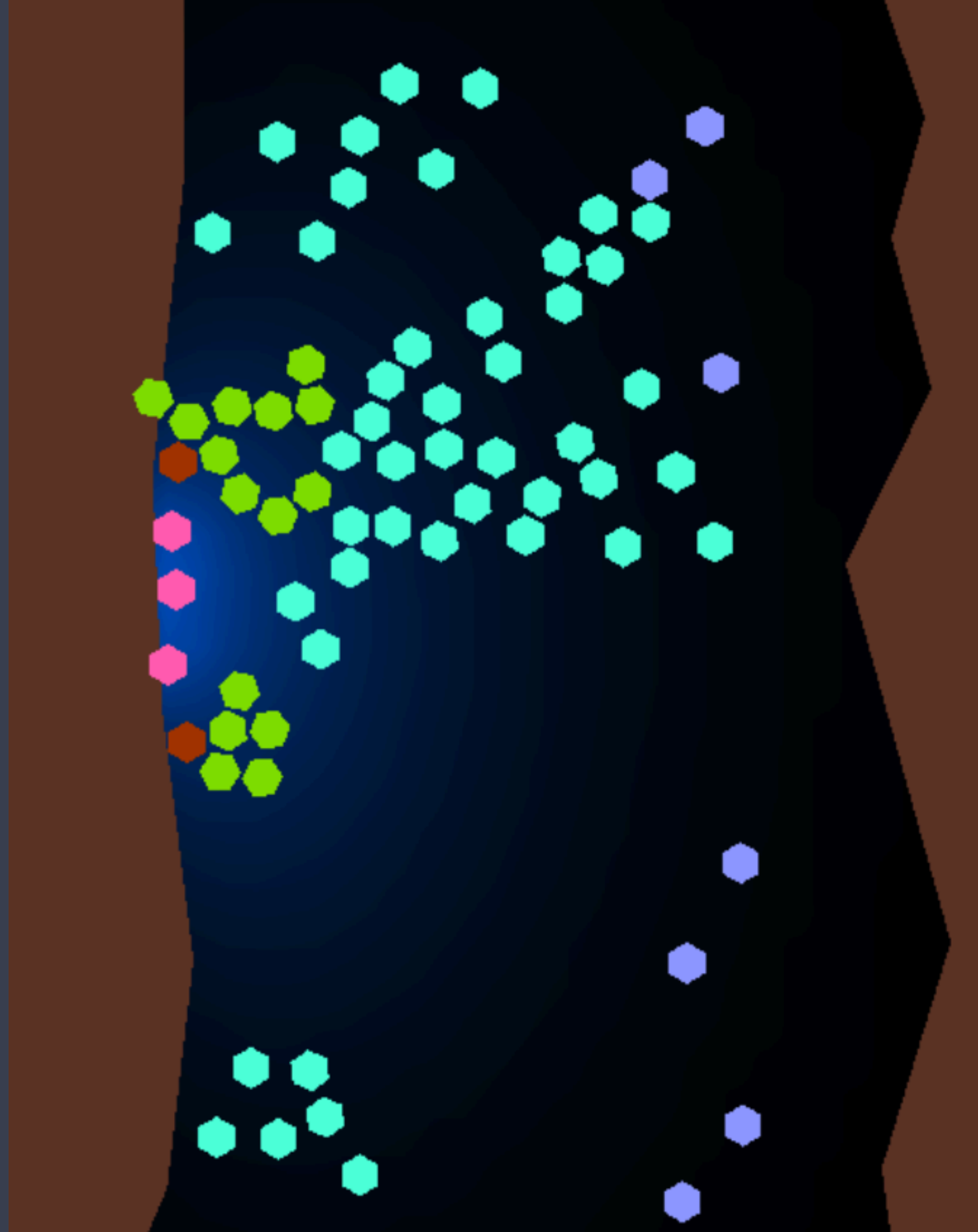
Pascal BALLET

BEHAVIOR TREE FOR GROUPS

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



Behavior Tree for Groups

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DOI: soon

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A brief

INTRODUCTION

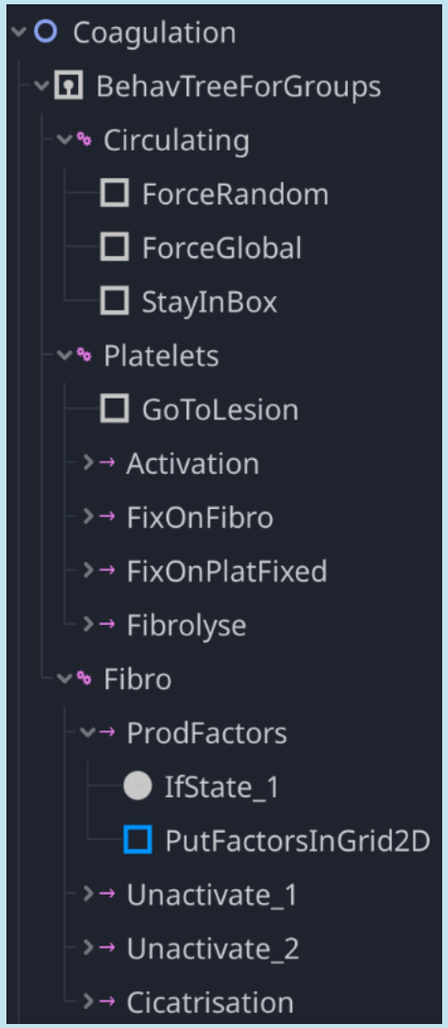
The main node of Behavior Tree For Groups (BTFG) represents a Godot group (a disk inside a square) completed with a trunk, to draw a tree.

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.



Simulation of blood coagulation made with BTFG.

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

A quick

SIMPLE 2D TUTORIAL

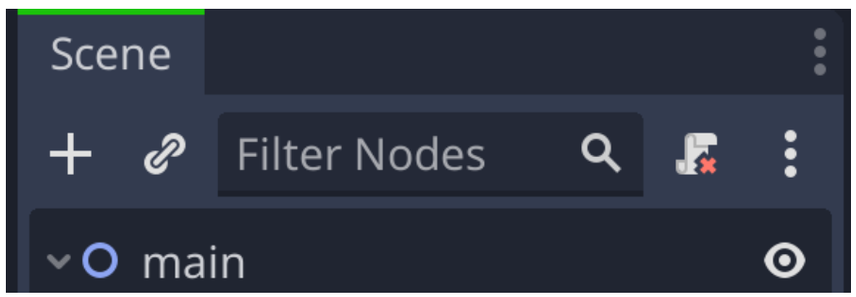
REQUIREMENT

Behavior Tree For Groups (BTFG) can be used by non coders to create numerous 2D or 3D programs. Nevertheless, developers can add their own nodes without difficulties.

Godot 4.X is required.

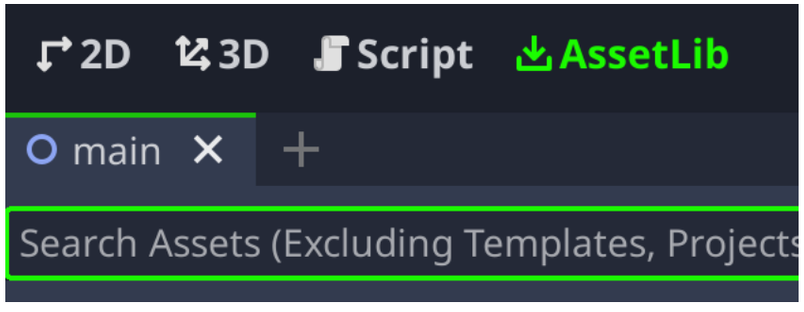
BTGF works on any platform like Windows, Mac OS or Linux.

SIMPLE 2D TUTORIAL



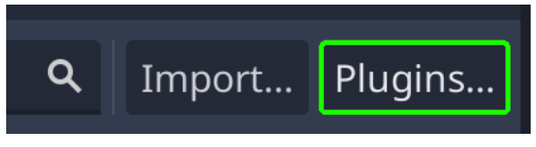
First, create a new 2D scene

- save it as *main.tscn*



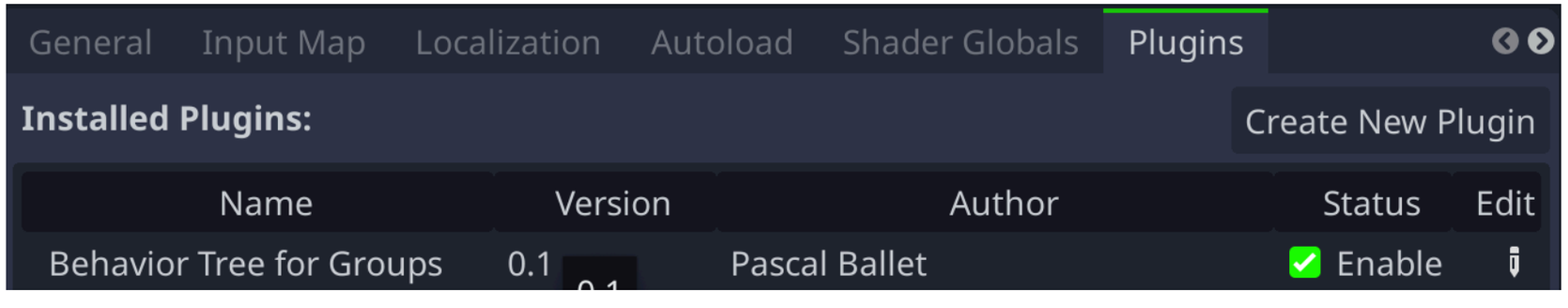
Addon download

- 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.

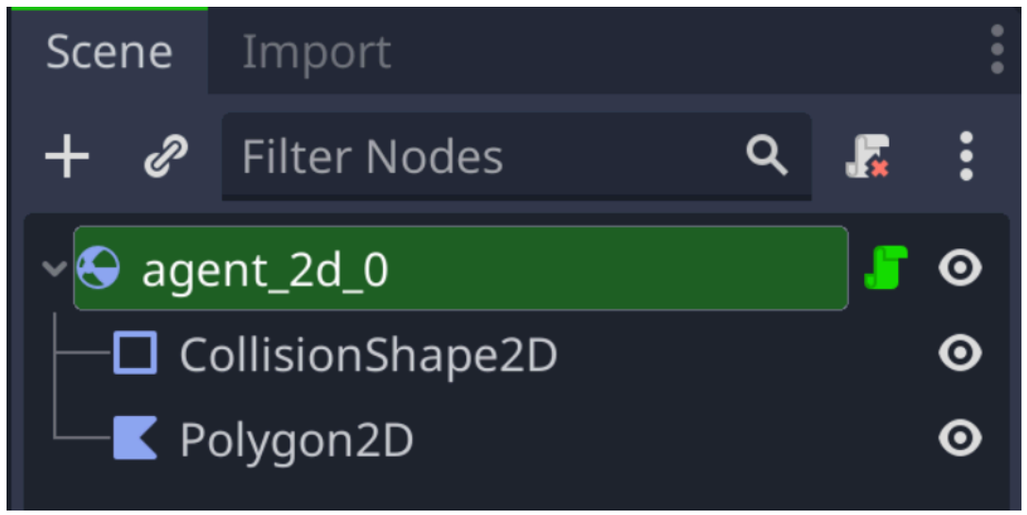


SIMPLE 2D TUTORIAL

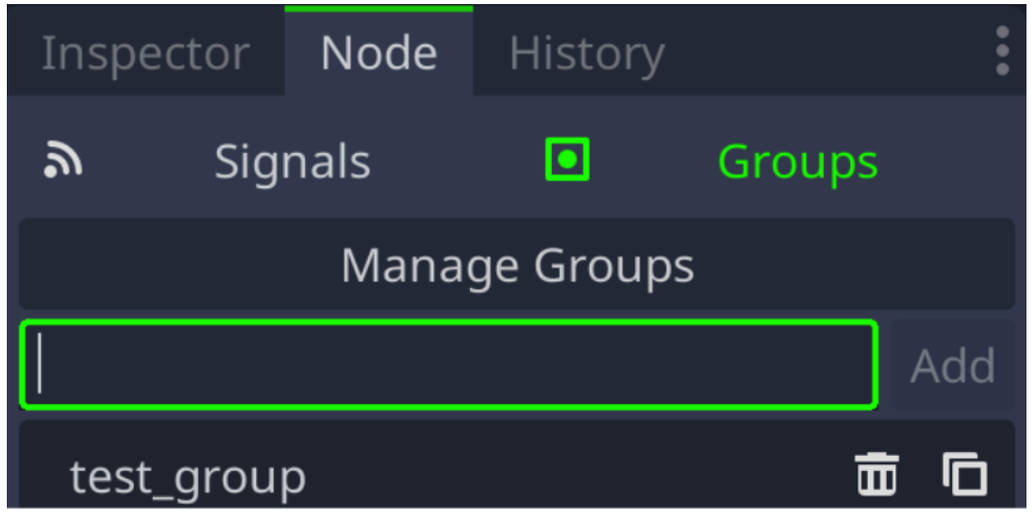
Now, create a new Agent2D

- 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*.



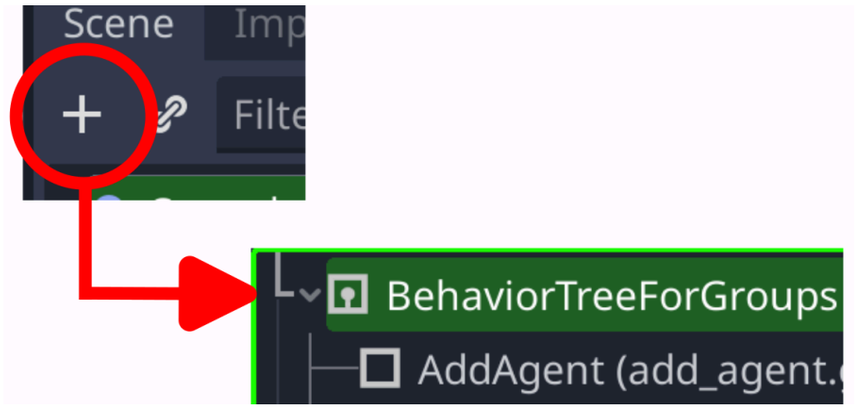
- Open the *agent_2d_0.tscn* automatically generated, and
- select the *RigidBody* at the root of this scene.



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

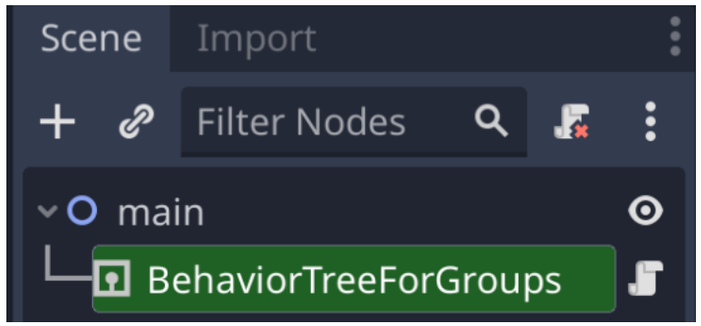
Save the *agent_2d_0.tscn* scene

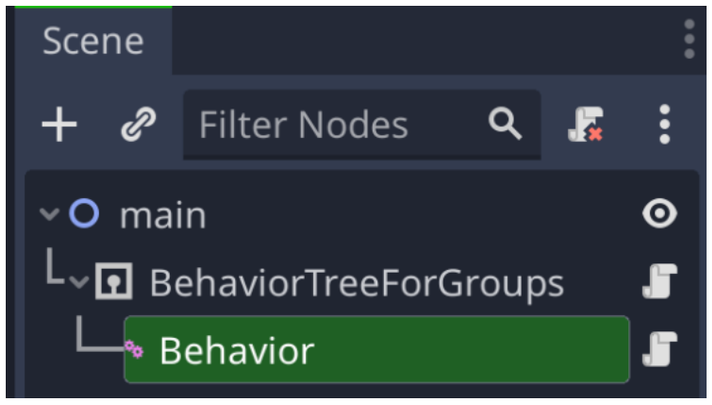
And go back to your *main* scene



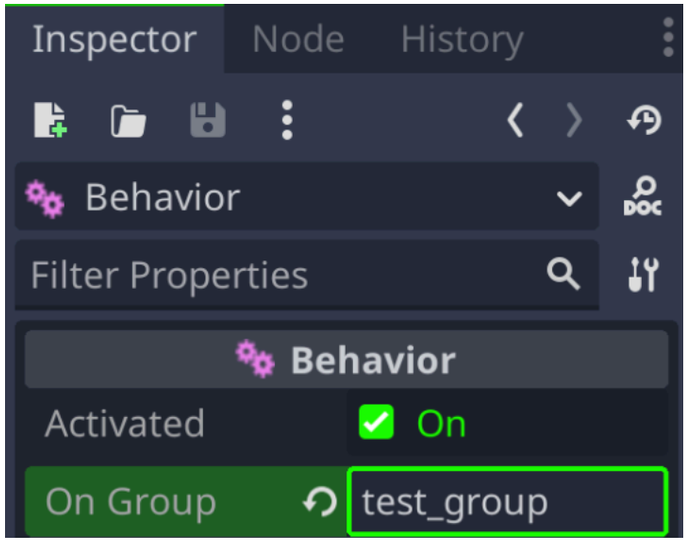
Then, create a simple behavior tree

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



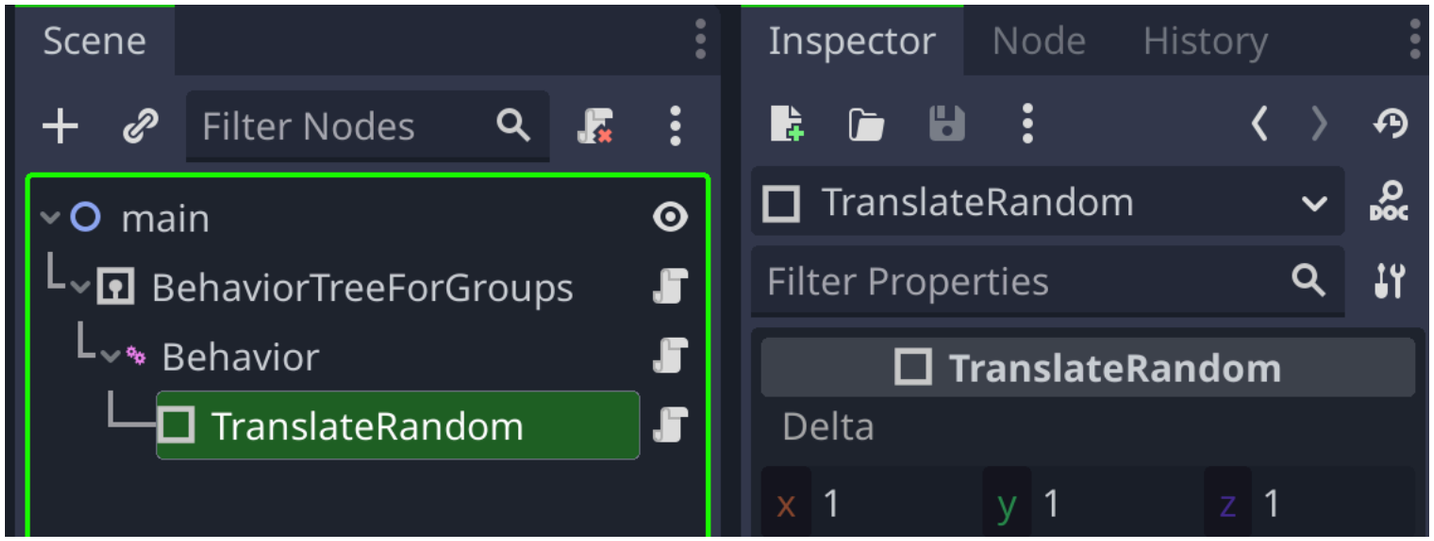


- Then, add a new child node called *Behavior*

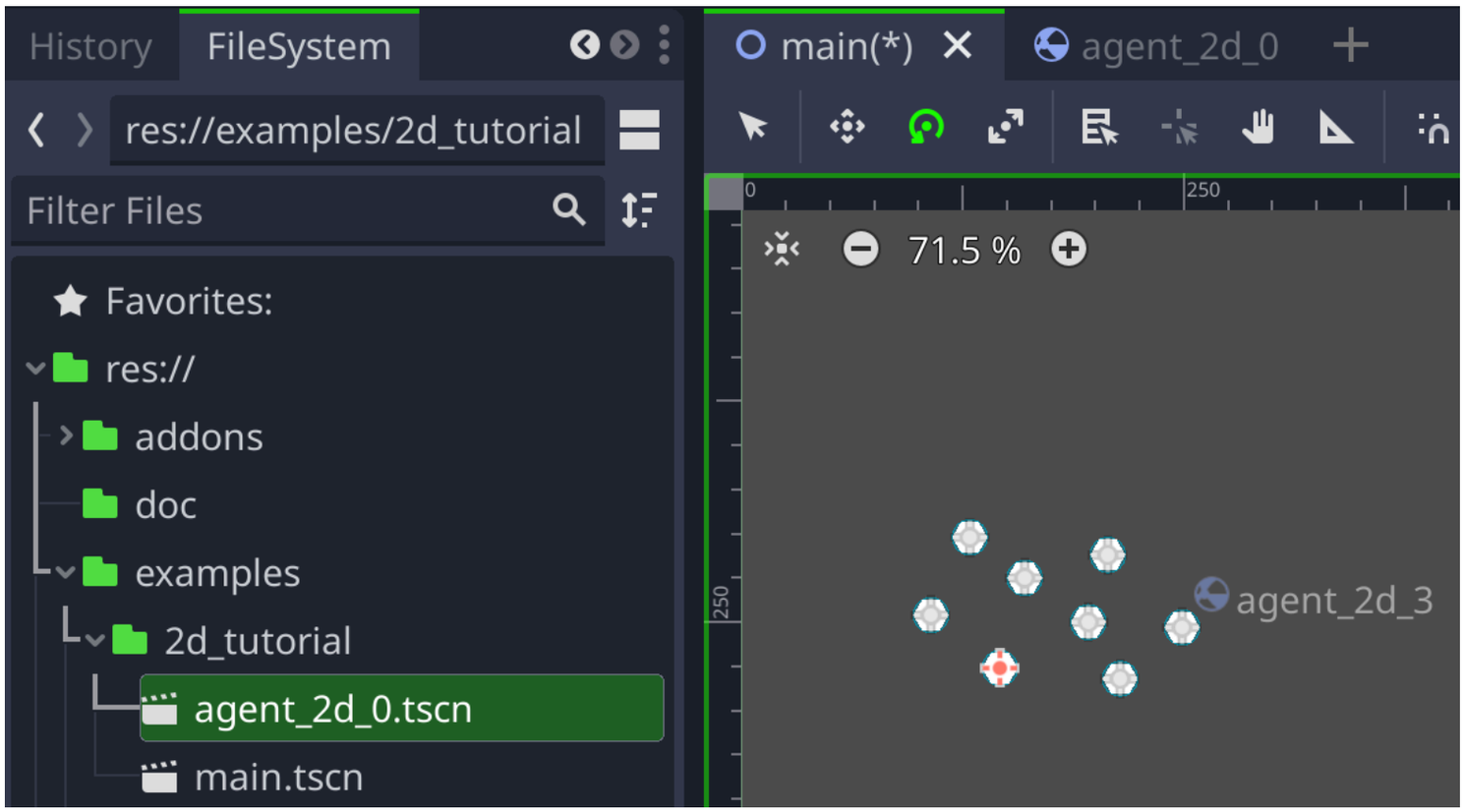


- In the inspector of the newly created node Behavior, in the Group property, write *test_group*. That means all the nodes having the *Group test_group* will be treated.

Add an *Action* in the *Behavior*



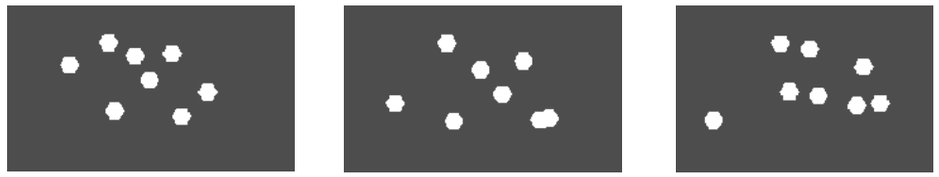
- As child of the node Behavior, add a new node called TranslateRandom

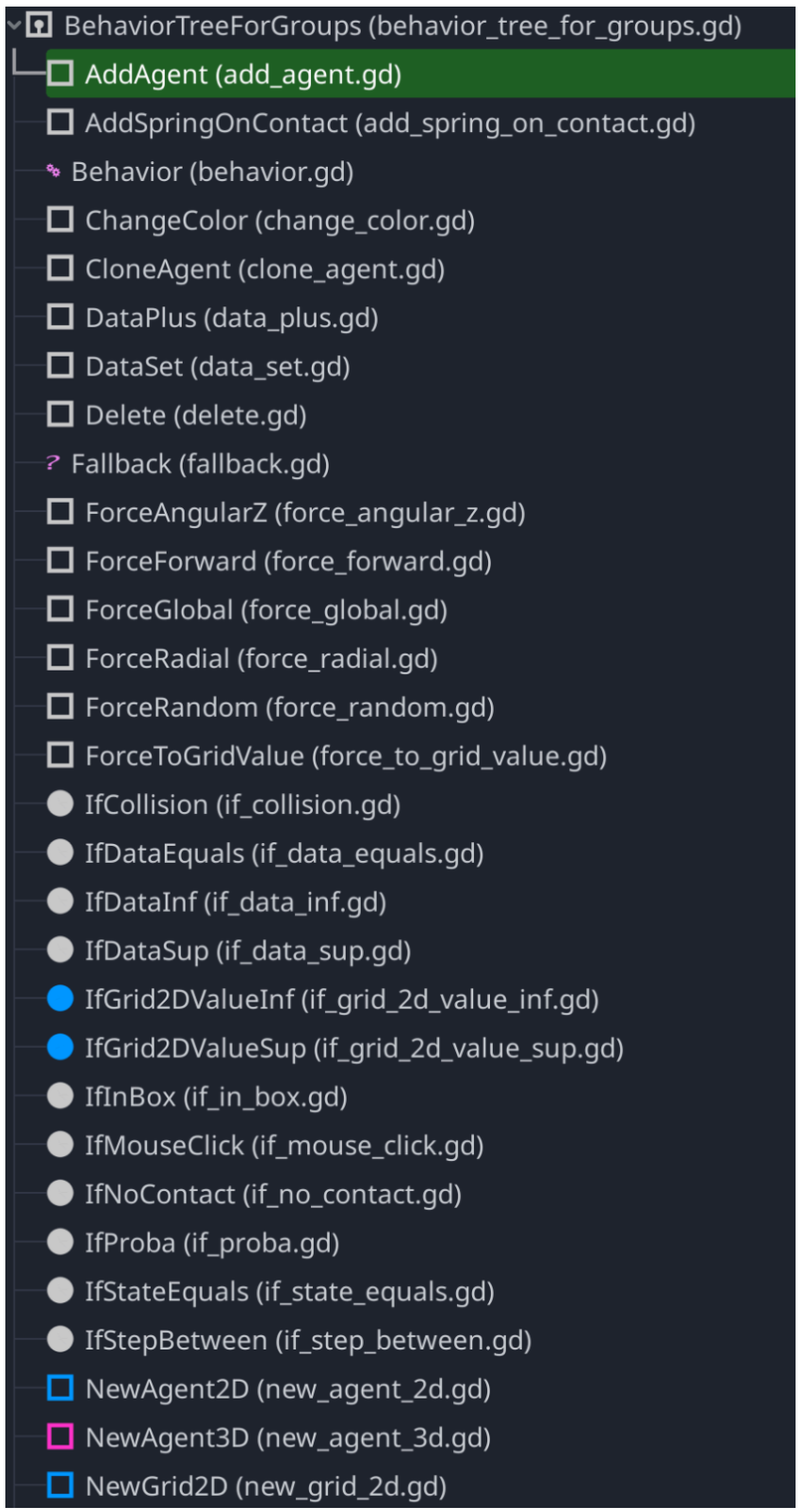


Finally, add many *agent_2d*

- 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

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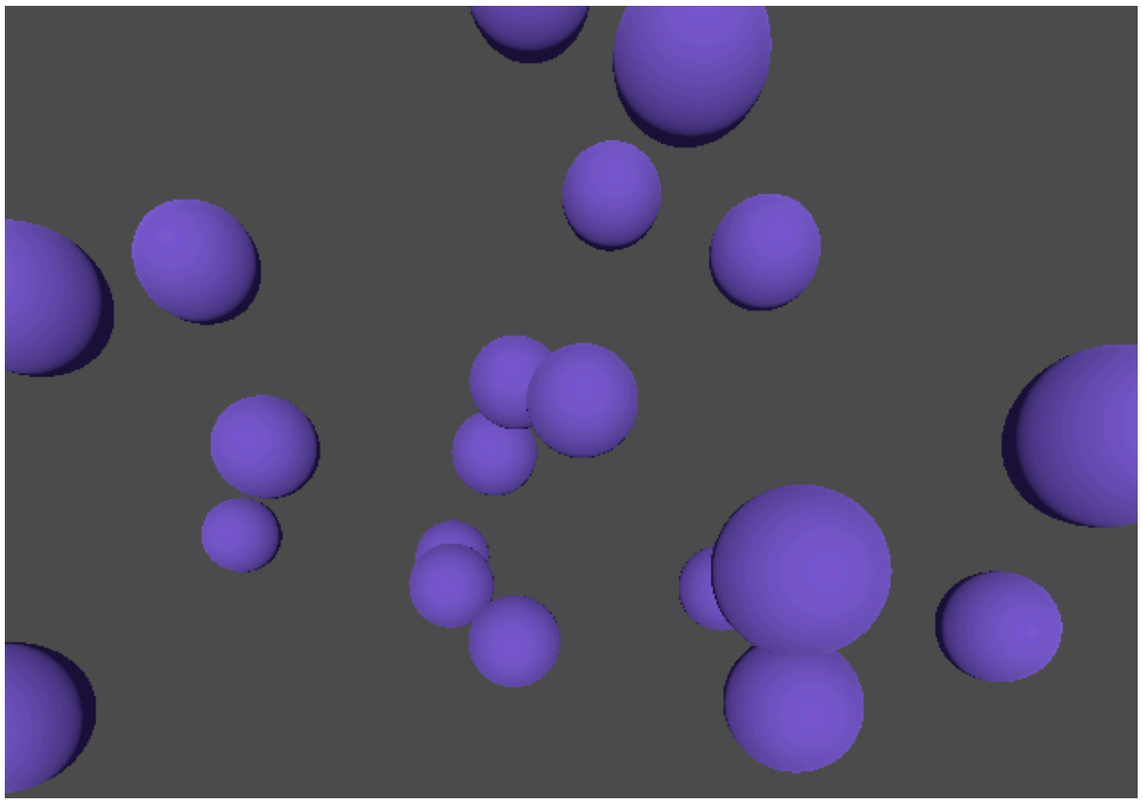
A very quick

SIMPLE 3D TUTORIAL

REQUIREMENT

Nodes in BTFG are made to be used indifferently for 2D or 3D projects.

Usually, BTFG applies its behaviors on RigidBodies. Some nodes can be simple Nodes.

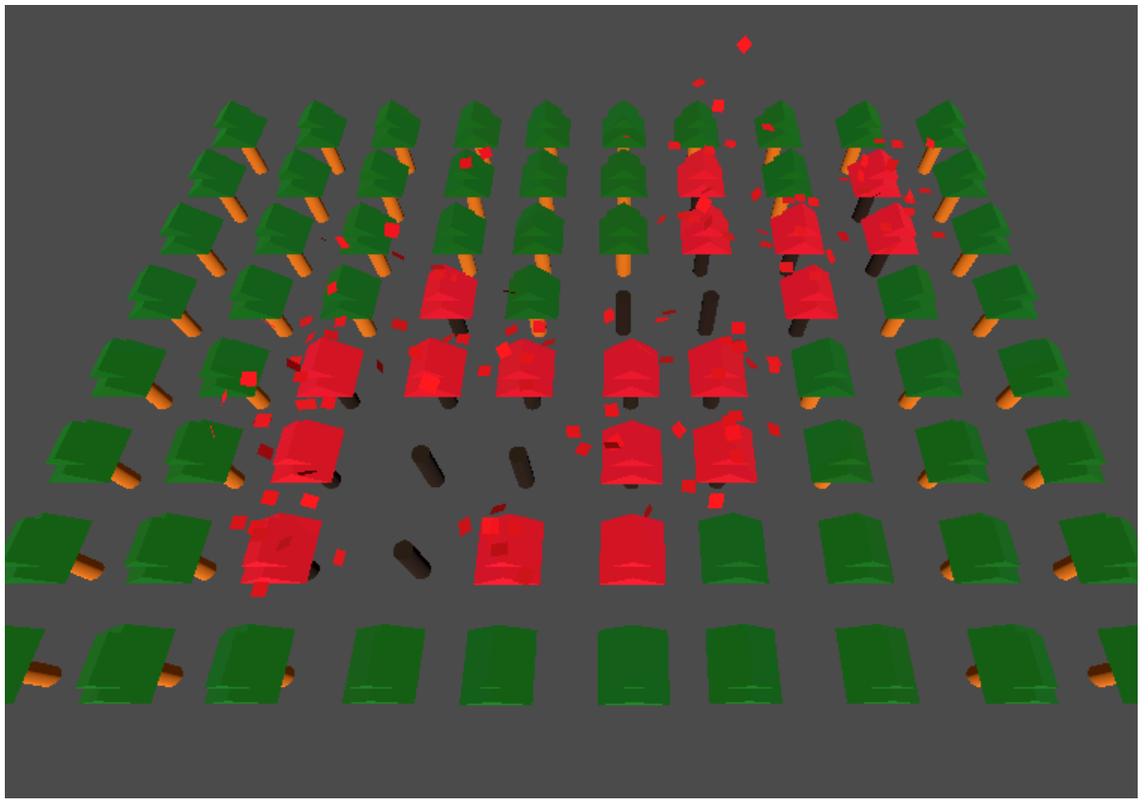


SIMPLE 3D TUTORIAL

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



A short

CONCLUSION

Conclusion

Many other nodes exists to create many different behaviors. Do not hesitate to try them and create impressive multi-agent systems, flock and swarms