

Interactive Grid GDExtension demo project

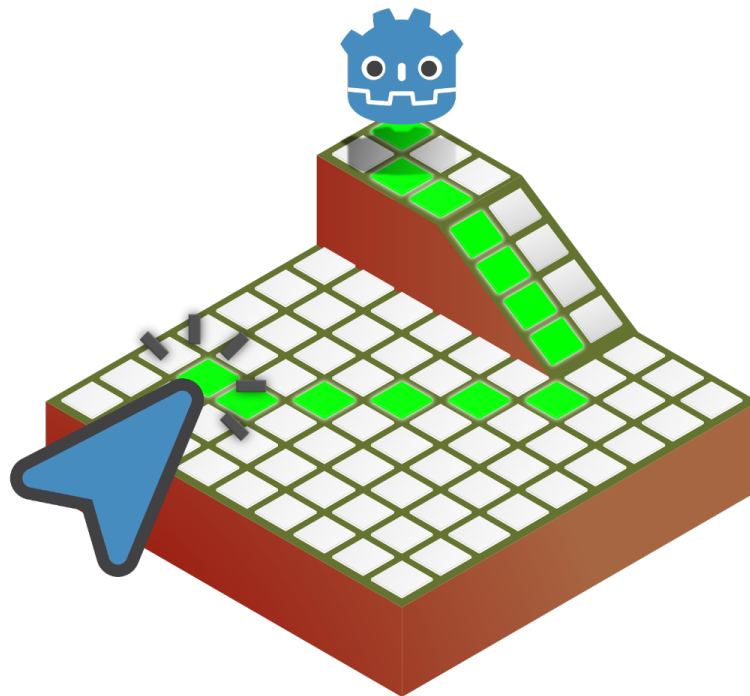
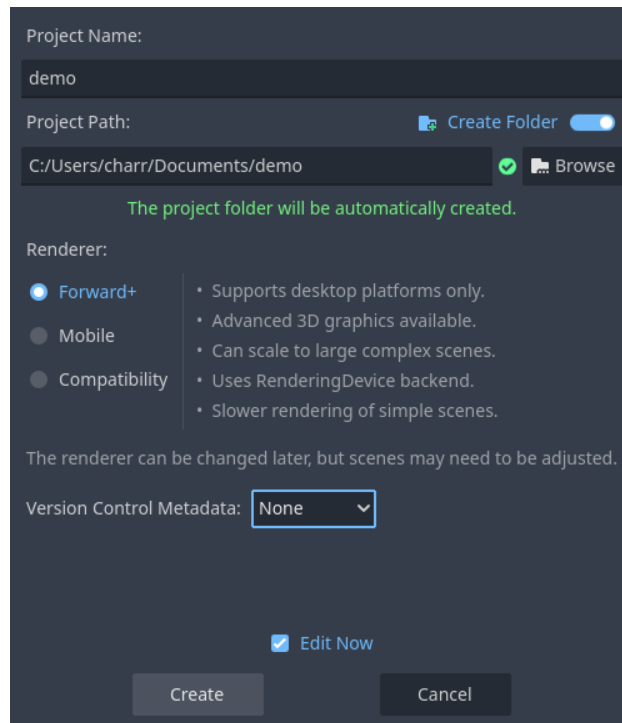


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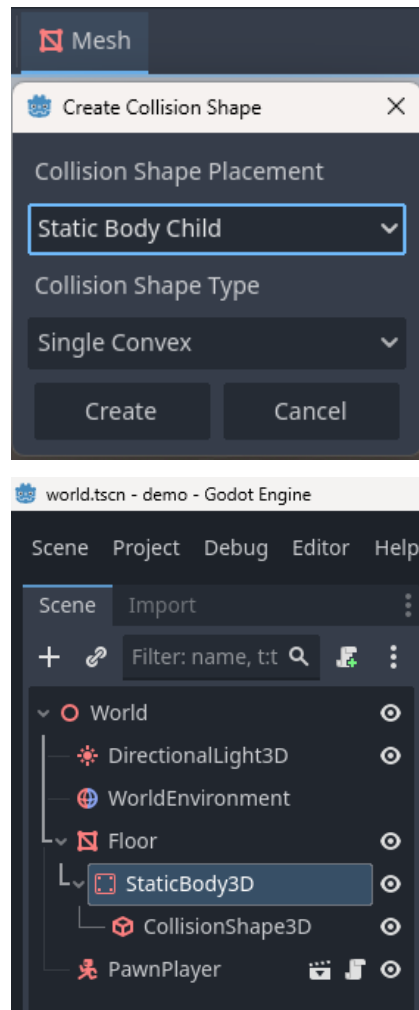
1 - Setting up the game project

Launch Godot, create a new project, choose a location, and give it a name.

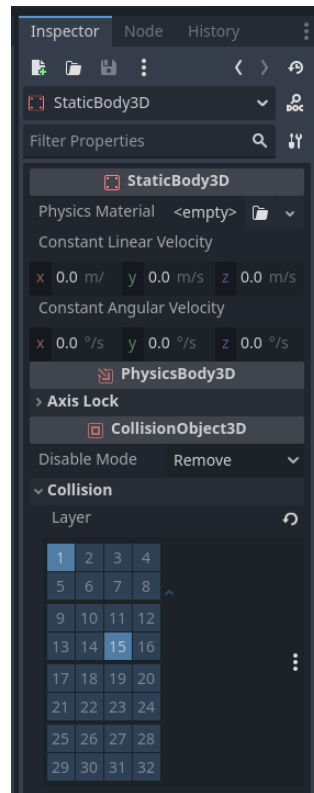


2 - Setting up the playable area

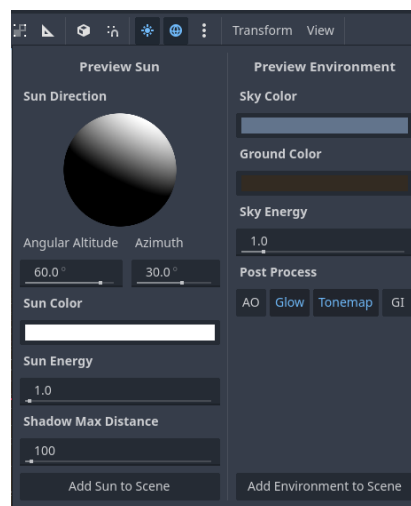
- Create the root node.
 - Click + and select 3D Scene.
 - Rename the root node Node3D → "World".
- Add the floor.
 - Select World, Click +, choose MeshInstance3D.
 - Rename it Floor.
 - In the Mesh property, select PlaneMesh.
 - Set Transform → Scale to 20, 20, 1.
- Add collision to the floor.
 - With Floor selected, click Mesh → Create Collision Shape.
 - Set Collision Shape → Type to Single Convex.



- Set the collision layer for the floor.
 - Select the StaticBody3D node that was created for the Floor.
 - In the Collision → Layer property, set it to 15. (This is important to ensure proper alignment of the grid on the floor.)



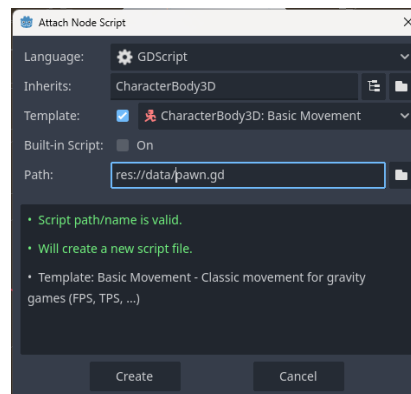
- Add light.
 - Add a Sun (Directional Light).
 - Add an Environment.



3 - Player scene and input actions

- Create the player scene.
 - Click +, select 3D Scene.
 - Add a CharacterBody3D.
 - Choose "Make Scene Root".
 - Rename it PlayerPawn.
- Add the player body.

- Select PawnPlayer, click +, choose CharacterBody3D.
- Rename it Pawn.
- Add a visual mesh.
 - * With Pawn selected, click +, choose MeshInstance3D.
 - * In the Mesh property, select CapsuleShape3D.
- Attach a Camera3D to the player.
 - Select the Pawn (CharacterBody3D) node, click +, and add a Camera3D node.
 - Set the Transform → Position to 6, 8, 6.
 - Set Rotation X to -45° and Rotation Y to 45°.
- Moving the player with code.
 - Attach a script to the player.
 - * Select the Pawn (CharacterBody3D) node.
 - * Click Attach Script.
 - * Choose the template CharacterBody3D.gd.
 - * Confirm to attach it.



```

1 extends CharacterBody3D
2
3
4 const SPEED = 5.0
5 const JUMP_VELOCITY = 4.5
6
7
8 func _physics_process(delta: float) -> void:
9     # Add the gravity.
10    if not is_on_floor():
11        velocity += get_gravity() * delta
12
13    # Handle jump.
14    if Input.is_action_just_pressed("ui_accept") and is_on_floor():
15        velocity.y = JUMP_VELOCITY
16
17    # Get the input direction and handle the movement/deceleration.
18    # As good practice, you should replace UI actions with custom gameplay actions.
19    var input_dir := Input.get_vector("ui_left", "ui_right", "ui_up", "ui_down")
20    var direction := (transform.basis * Vector3(input_dir.x, 0, input_dir.y)).normalized()
21    if direction:
22        velocity.x = direction.x * SPEED
23        velocity.z = direction.z * SPEED
24    else:
25        velocity.x = move_toward(velocity.x, 0, SPEED)
26        velocity.z = move_toward(velocity.z, 0, SPEED)
27
28    move_and_slide()

```

- Add a Raycast3D node.
 - Select PawnPlayer.

- Click + and add a Raycast3D node.
- Rename it RayCastFromMouse.
- Attach the script.
 - Select RayCastFromMouse.
 - Click Attach Script.
 - Choose the script ray_cast_from_mouse.gd.
 - Fill in the script

```

1 extends RayCast3D
2
3 @onready var ray_cast_from_mouse: RayCast3D = $"."
4 @export var debug_sphere_ray_cast_: MeshInstance3D
5 @onready var camera_3d: Camera3D = $"../Camera3D"
6
7 func _ready() -> void:
8
9     # Create a sphere for raycast debugging.
10    debug_sphere_ray_cast_ = MeshInstance3D.new()
11    debug_sphere_ray_cast_.mesh = SphereMesh.new()
12    var mat_target = StandardMaterial3D.new()
13    mat_target.albedo_color = Color.GREEN
14    debug_sphere_ray_cast_.material_override = mat_target
15    debug_sphere_ray_cast_.scale = Vector3(0.3, 0.3, 0.3)
16    add_child(debug_sphere_ray_cast_)
17
18 func _process(delta: float) -> void:
19
20     # Position the debug sphere at the ray intersection point from the mouse.
21     if(ray_cast_from_mouse):
22         debug_sphere_ray_cast_.global_transform.origin = get_ray_intersection_position()
23
24 func get_ray_intersection_position() -> Vector3:
25
26     var intersect_ray_position: Vector3 = Vector3.ZERO
27
28     var mouse_pos: Vector2 = get_viewport().get_mouse_position()
29     var ray_origin: Vector3 = camera_3d.project_ray_origin(mouse_pos)
30     var ray_direction: Vector3 = camera_3d.project_ray_normal(mouse_pos)
31     var ray_length: int = 2000
32
33     # Position and orient the RayCast.
34     ray_cast_from_mouse.global_position = ray_origin
35     ray_cast_from_mouse.target_position = ray_direction * ray_length
36     ray_cast_from_mouse.collide_with_areas = true
37
38     ray_cast_from_mouse.collision_mask = 0 # Reset.
39     ray_cast_from_mouse.set_collision_mask_value(1, true)
40     ray_cast_from_mouse.set_collision_mask_value(15, false) # Ignore this layer.
41
42     var debug_sphere_raycast: MeshInstance3D
43
44     ray_cast_from_mouse.force_raycast_update()
45
46     # Force an immediate RayCast update.
47     if ray_cast_from_mouse.is_colliding():
48         var collider: Node3D = ray_cast_from_mouse.get_collider()
49
50         intersect_ray_position = ray_cast_from_mouse.get_collision_point()
51         print("[GetRayIntersectionPosition] Collision detected at: ", intersect_ray_position
52 )
53         print("[GetRayIntersectionPosition] Collision detected with: ", collider.name)
54
55     return intersect_ray_position

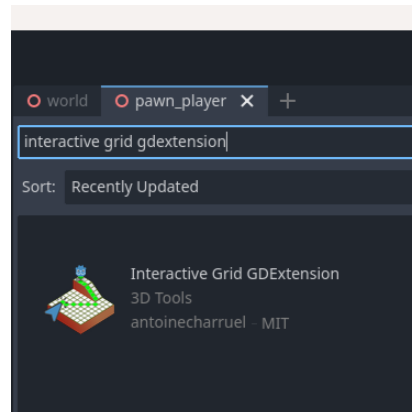
```

- Save and add the player to the main scene.
 - Save the player scene as pawn_player.tscn.

- Open world.tscn, and drag pawn_player.tscn into the scene as an instance.
- Set the Transform → Position to 0, 0, 0.

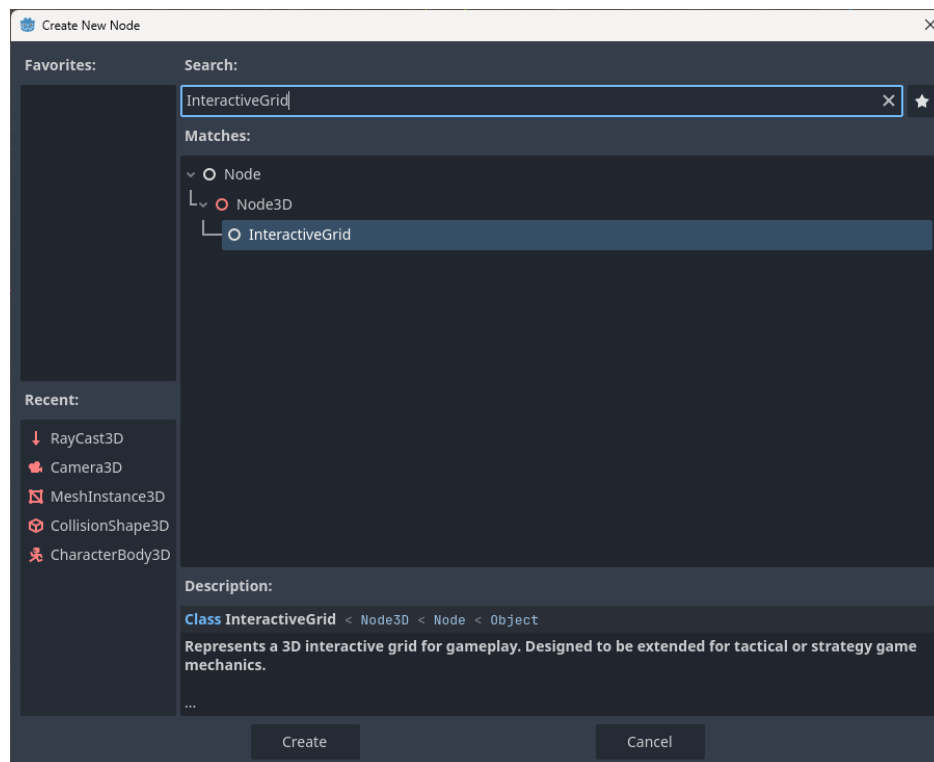
4 - Install interactive grid addons

- In Godot, click AssetLib.
 - Search for Interactive Grid GDExtension by antoinecharruel.
 - Download and install.



5 - Setup interactive grid addons

- Open the PawnPlayer scene.
- Select CharacterBody3D (Pawn), click +, and add a InteractiveGrid node.



If you see the error:

ERROR: servers/rendering/renderer_rd/storage_rd/mesh_storage.cpp:1827 - Condition "multimesh->mesh.is_null()" is true.

Don't worry—this is normal. It simply means that the InteractiveGrid node does not yet have a multimesh assigned. You can fix it by adding a mesh in the Cell Mesh property.

- Add a cell_mesh
 - Select InteractiveGrid, go to the Inspector → Cell Mesh property.
 - Click on the mesh field and select BoxMesh.
 - Set the size to 0.8, 0.1, 0.8.

6 - Interactive grid scripting

- Attach a script
 - Select the InteractiveGrid node.
 - Click Attach Script.
 - Choose or create the script interactive_grid.gd.
 - Fill in the script.

```

1 extends InteractiveGrid
2
3 @onready var pawn: CollisionShape3D = $"../Pawn"
4 @onready var ray_cast_from_mouse: RayCast3D = $"../RayCastFromMouse"
5 @onready var camera_3d: Camera3D = $"../Camera3D"
6
7 func _ready() -> void:
8     pass
9
10 func _process(delta: float) -> void:
11     if pawn != null:
12         # Highlight the cell under the mouse.
13         if self.get_selected_cells().is_empty():
14             self.highlight_on_hover(ray_cast_from_mouse.get_ray_intersection_position())
15
16 func _input(event):
17     if event is InputEventMouseButton and event.button_index == MOUSE_BUTTON_RIGHT:
18         # -----
19         # RIGHT MOUSE CLICK.
20         # -----
21         if event.pressed:
22             print("Right button is held down at ", event.position)
23
24         if pawn != null:
25             # Makes the grid visible.
26             self.set_visible(true)
27             # Centers the grid.
28             # ! Info: every time center is called, the state of the cells is reset.
29             self.center(pawn.global_position)
30
31             var index_cell_pawn: int = self.get_cell_index_from_global_position(pawn.
global_position)
32
33             # Manually set cell as unwalkable.
34             set_cell_walkable(75, false);
35
36             # Check if the cell is walkable
37             print("Cell 75 is walkable ? : ", is_cell_walkable(75))
38
39             # Hides distant cells.
40             self.hide_distant_cells(index_cell_pawn, 6)
41             self.compute_inaccessible_cells(index_cell_pawn)
42
43             # Manually set cell color.
44             var color_cell = Color(0.3, 0.4, 0.9)

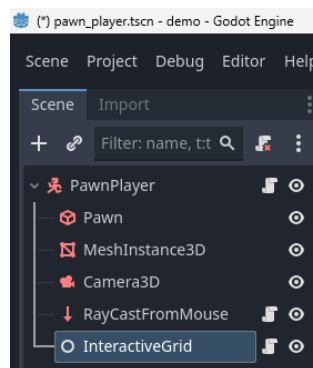
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```

45         self.set_cell_color(65, color_cell)
46     else:
47         print("Right button was released")
48
49
50     if event is InputEventMouseButton and event.button_index == MOUSE_BUTTON_LEFT:
51         # -----
52         # LEFT MOUSE CLICK.
53         # -----
54         if event.pressed:
55             print("Left button is held down at ", event.position)
56
57             if pawn != null:
58                 # Select a cell.
59                 if self.get_selected_cells().is_empty():
60                     self.select_cell(ray_cast_from_mouse.get_ray_intersection_position())
61
62                 # Retrieve the selected cells.
63                 var selected_cells: Array = self.get_selected_cells()
64                 if selected_cells.size() > 0:
65
66                     get_cell_global_position(selected_cells[0]))
67
68                 var index_cell_pawn = self.get_cell_index_from_global_position(self.
69 get_grid_center_position())
70                 print("Pawn index: ", index_cell_pawn)
71
72                 # Retrieve the path.
73                 var path: PackedInt64Array
74                 path = self.get_path(index_cell_pawn, selected_cells[0]) # only the
75 first one.
76                 #path = self.get_path(index_cell_pawn, self.get_latest_selected()) # the
77 last one.
78                 print("Last selected cell:", self.get_latest_selected())
79                 print("Path:", path)
80
81                 # Highlight the path.
82                 self.highlight_path(path)
83
84     else:
85         print("Right button was released")

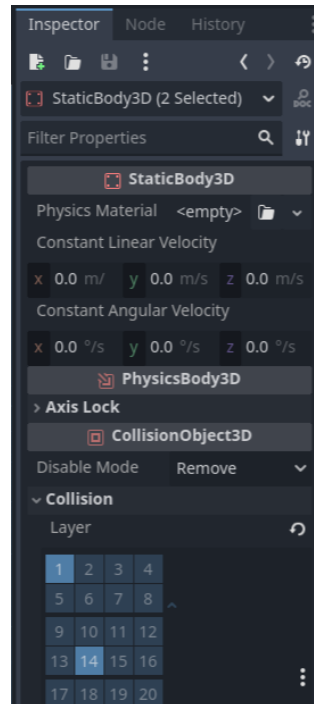
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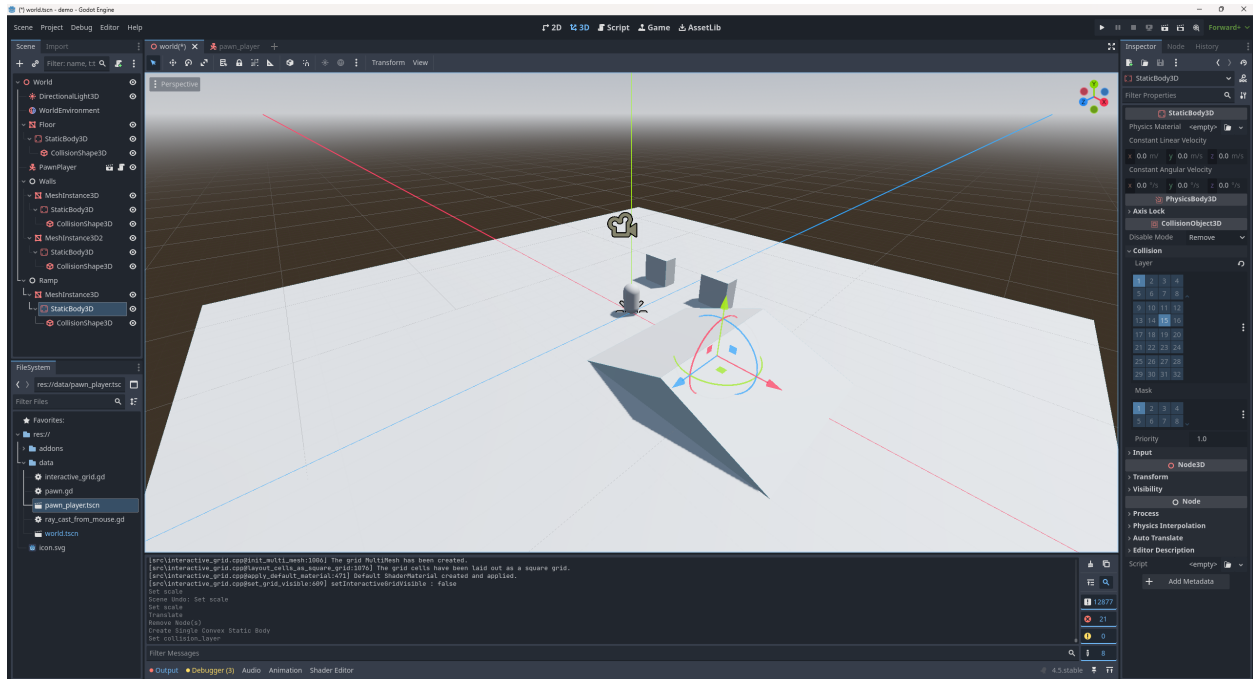
7 - Setup World Scene for interactive grid addons

- Create a wall.
 - Add a parent node for walls.
 - Click +, select Node3D.
 - Rename it Walls.
 - Add the wall mesh
 - Select Walls, click +, choose MeshInstance3D.
 - In the Mesh property, select CubeMesh.

- Set Transform → Scale to 3.0, 3.0, 0.5.
- Add collision
 - In the Inspector, check Use Collision.
 - Set the Collision Shape Type to Single Convex.
 - Assign the wall to Collision Layer 14.



- Create a ramp.
 - Add a parent node for ramps.
 - * Click +, select Node3D.
 - * Rename it Ramps.
 - Add the ramp mesh.
 - * Select Ramps, click +, choose MeshInstance3D.
 - * In the Mesh property, select PrismMesh.
 - * Set Transform → Scale to 10.0, 2.0, 3.
 - Add collision.
 - * In the Inspector, check Use Collision.
 - * Assign it to Collision Layer 15 (same as the floor).



Here is what the World scene structure looks like after setting up walls, ramps, the floor, and the interactive grid:

8 - Run the game and test the grid

Enjoy testing your interactive grid!

You should be able to move the player using the arrow keys.

