UNIT SELECTION AND CURSOR INTERACTION

By: Nathan Lovato - January 30, 2021

MENU

TRPG Unit movement

Handling grid interactions text

The Grid text

Creating the Unit text

The player's cursor text

Pathfinding and path drawing text

Drawing the path text

The flood fill algorithm text

Unit selection and cursor interaction text

In this lesson, we'll work on the last piece of the puzzle: coordinating interactions between the cursor, the units, and the board.

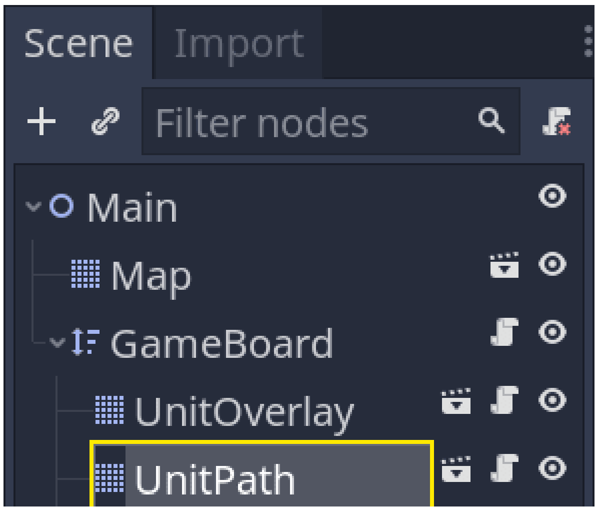
Here are the interactions we want to allow:

1. If the cursor hovers a cell and it contains a unit, the player can select it.
2. When a unit is selected, pressing `Esc` deselects it.
3. When a unit is selected and the cursor hovers a different cell, pressing `Enter` or clicking the cell issues a move command.

Selecting a unit should also make the *UnitOverlay* and *UnitPath* nodes display information about where the unit can and will move.

We'll coordinate these actions with the *GameBoard*.

In the *Main* scene, if you haven't already, you should first instantiate *UnitPath* as a child of *GameBoard*.



Everything else will happen in `GameBoard.gd`. Open the script and let's start adding features.

We'll start with two properties to track the active unit and cache a reference to our *UnitPath*.

```
# The board is going to move one unit at a time.
When we select a unit, we will save it as our
# `_active_unit` and populate the walkable cells
below. This allows us to clear the unit, the
# overlay, and the interactive path drawing later
on when the player decides to deselect it.
var _active_unit: Unit
# This is an array of all the cells the
`_active_unit` can move to. We will populate the
array when
# selecting a unit and use it in the
`_move_active_unit()` function below.
var _walkable_cells := []

onready var _unit_path: UnitPath = $UnitPath
```

Then, let's add functions for the main commands we want to handle: select, move, and deselect. We have one function corresponding to each command, with an extra one to clear the properties we just defined, `_clear_active_unit()`.

```
# Selects the unit in the `cell` if there's one
there.
# Sets it as the `_active_unit` and draws its
walkable cells and interactive move path.
# The board reacts to the signals emitted by the
cursor. And it does so by calling functions that
# select and move a unit.
func _select_unit(cell: Vector2) -> void:
    # Here's some optional defensive code: we
return early from the function if the unit's not
    # registered in the `cell`.
    if not _units.has(cell):
        return

    # When selecting a unit, we turn on the
overlay and path drawing. We could use signals on
the
    # unit itself to do so, but that would split
the logic between several files without a big
    # maintenance benefit and we'd need to pass
extra data to the unit.
    # I decided to group everything in the
GameBoard class because it keeps all the
selection logic
    # in one place. I find it easy to keep track
of what the class does this way.
    _active_unit = _units[cell]
    _active_unit.is_selected = true
    _walkable_cells =
get_walkable_cells(_active_unit)
    _unit_overlay.draw(_walkable_cells)
    _unit_path.initialize(_walkable_cells)


# Deselects the active unit, clearing the cells
overlay and interactive path drawing.
# We need it for the `_move_active_unit()`
function below, and we'll use it again in a
moment.
func _deselect_active_unit() -> void:
    _active_unit.is_selected = false
    _unit_overlay.clear()
    _unit_path.stop()


# Clears the reference to the _active_unit and
the corresponding walkable cells.
# We need it for the `_move_active_unit()`
function below.
func _clear_active_unit() -> void:
    _active_unit = null
    _walkable_cells.clear()


# Updates the _units dictionary with the target
position for the unit and asks the _active_unit
to
# walk to it.
func _move_active_unit(new_cell: Vector2) ->
void:
    if is_occupied(new_cell) or not new_cell in
_walkable_cells:
        return

    # When moving a unit, we need to update our
`_units` dictionary. We instantly save it in the
    # target cell even if the unit itself will
take time to walk there.
    # While it's walking, the player won't be
able to issue new commands.
    _units.erase(_active_unit.cell)
    _units[new_cell] = _active_unit
    # We also deselect it, clearing up the
overlay and path.
    _deselect_active_unit()
    # We then ask the unit to walk along the path
stored in the UnitPath instance and wait until it
    # finished.

_active_unit.walk_along(_unit_path.current_path)
    yield(_active_unit, "walk_finished")
    # Finally, we clear the `_active_unit`, which
also clears the `_walkable_cells` array.
    _clear_active_unit()
```

And with the functions defined, we can implement the interactions.

For two of them, we need to connect our *Cursor*'s signals to the *GameBoard*. To do so, you can head back to the editor, select the *Cursor*, and in the *Node* dock, connect both moved and accept_pressed to the *GameBoard* both `moved` and `accept_pressed` to the *GameBoard*.

Back to `GameBoard.gd`, we can use the signal callbacks to select, move units, and update the *UnitPath*'s drawing.

```
# Updates the interactive path's drawing if
there's an active and selected unit.
func _on_Cursor_moved(new_cell: Vector2) -> void:
    # When the cursor moves, and we already have
an active unit selected, we want to update the
    # interactive path drawing.
    if _active_unit and _active_unit.is_selected:
        _unit_path.draw(_active_unit.cell,
new_cell)


# Selects or moves a unit based on where the
cursor is.
func _on_Cursor_accept_pressed(cell: Vector2) ->
void:
    # The cursor's "accept_pressed" means that
the player wants to interact with a cell.
Depending
    # on the board's current state, this
interaction means either that we want to select a
unit all
    # that we want to give it a move order.
    if not _active_unit:
        _select_unit(cell)
    elif _active_unit.is_selected:
        _move_active_unit(cell)
```

All we're missing now is `Esc` to cancel the selection.

To do so, we can use the `_unhandled_input()` callback.

```
func _unhandled_input(event: InputEvent) -> void:
    if _active_unit and
event.is_action_pressed("ui_cancel"):
        _deselect_active_unit()
        _clear_active_unit()
```

And with that, you should be able to select and move units. Also, you can place multiple units on the board. Just ensure they aren't on the same cell to avoid errors.

Just ensure they aren't on the same cell to avoid errors.

This concludes our free tactical RPG movement series with Godot.

If you'd like to go further, check out our course Godot 2D Secrets, from which it was open-sourced.

It comes with longer tutorial series than this one, challenges to improve your game development skills, questions and answers, and lifetime free updates.

It also funds the hundreds of hours we spend creating free tutorials and open-source projects.

THE GAMEBOARD CODE

Here's the complete *GameBoard* script.

```
class_name GameBoard
extends Node2D

const DIRECTIONS = [Vector2.LEFT, Vector2.RIGHT,
Vector2.UP, Vector2.DOWN]

export var grid: Resource =
preload("res://Grid.tres")

var _units := {}
var _active_unit: Unit
var _walkable_cells := []

onready var _unit_overlay: UnitOverlay =
$UnitOverlay
onready var _unit_path: UnitPath = $UnitPath


func _ready() -> void:
    _reinitialize()


func is_occupied(cell: Vector2) -> bool:
    return true if _units.has(cell) else false


func get_walkable_cells(unit: Unit) -> Array:
    return _flood_fill(unit.cell,
unit.move_range)


func _reinitialize() -> void:
    _units.clear()

    for child in get_children():
        var unit := child as Unit
        if not unit:
            continue
        _units[unit.cell] = unit


func _flood_fill(cell: Vector2, max_distance:
int) -> Array:
    var array := []
    var stack := [cell]
    while not stack.empty():
        var current = stack.pop_back()

        if not grid.is_within_bounds(current):
            continue
        if current in array:
            continue

        var difference: Vector2 = (current -
cell).abs()
        var distance := int(difference.x +
difference.y)
        if distance > max_distance:
            continue

        array.append(current)
        for direction in DIRECTIONS:
            var coordinates: Vector2 = current +
direction
            if is_occupied(coordinates):
                continue
            if coordinates in array:
                continue
            stack.append(coordinates)
    return array


func _select_unit(cell: Vector2) -> void:
    if not _units.has(cell):
        return

    _active_unit = _units[cell]
    _active_unit.is_selected = true
    _walkable_cells =
get_walkable_cells(_active_unit)
    _unit_overlay.draw(_walkable_cells)
    _unit_path.initialize(_walkable_cells)


func _deselect_active_unit() -> void:
    _active_unit.is_selected = false
    _unit_overlay.clear()
    _unit_path.stop()


func _clear_active_unit() -> void:
    _active_unit = null
    _walkable_cells.clear()


func _move_active_unit(new_cell: Vector2) ->
void:
    if is_occupied(new_cell) or not new_cell in
_walkable_cells:
        return

    _units.erase(_active_unit.cell)
    _units[new_cell] = _active_unit
    _deselect_active_unit()

_active_unit.walk_along(_unit_path.current_path)
    yield(_active_unit, "walk_finished")
    _clear_active_unit()


func _on_Cursor_moved(new_cell: Vector2) -> void:
    if _active_unit and _active_unit.is_selected:
        _unit_path.draw(_active_unit.cell,
new_cell)


func _on_Cursor_accept_pressed(cell: Vector2) ->
void:
    if not _active_unit:
        _select_unit(cell)
    elif _active_unit.is_selected:
        _move_active_unit(cell)


func _unhandled_input(event: InputEvent) -> void:
    if _active_unit and
event.is_action_pressed("ui_cancel"):
        _deselect_active_unit()
        _clear_active_unit()
```

← PREVIOUS

MADE BY

Nathan Lovato

GDQuest founder. Courteous designer with a taste for Free Software. I promote sharing and collaboration.

RELATED COURSES

3 COMMENTS

JO JOHN
September 28, 2021

How to instantiate unit scene and add it to the gameboard using gdscript?

REPLY TO JOHN

JI JIM

JI

October 31, 2021

Very interesting tutorial. But when I get to the end, I still cannot select the unit with the cursor. A light orange aura surrounds the squirrel unit, and a dark orange path comes from one position. It also did movement at the start, but I deleted the hard coded text forcing that from earlier in the tutorial, but that did not fix the ability to select them. On the terminal, I get the error message:

```
E 0:04:11.687   event_get_action_status: The
InputMap action "click" doesn't exist.
     Condition "!E" is true. Returned: false
    core/input_map.cpp:240 @
event_get_action_status()
   Cursor.gd:43 @ _unhandled_input()
```

And this points to line 43 of my Cursor.gd script:

```
elif event.is_action_pressed("click") or
event.is_action_pressed("ui_accept"):
                #  In that case, we emit a signal
to let another node handle that input. The game
board will
                #  have the responsibility of
looking at the cell's content.
                emit_signal("accept_pressed",
cell)
                get_tree().set_input_as_handled()
```

On the Cursor node, I have added the signals described above. So I am not sure what I have missed.

REPLY TO JIM

JA

JACK

November 30, 2021

Hey I had the same error, not sure if you got around to fixing it yet. What fixed it for me is I went into Input Map in the Project Settings and bound left mouse click to a input named “click” which is defined in the cursor script. Hope that helped

REPLY TO JACK

Type here...

Supports GitHub-flavored Markdown.

Name

Your name

Website (optional)	**Email** (optional)
https://example.com	johndoe@example.com

Enter your email to get notified when someone replies to your comment.
We encrypt your addres with a strong 256-bit AES encryption.
We'll only use your address for notifications. You can unsubscribe anytime.

SEND COMMENT