Drew Kinsey
Game Design and Development
Dr. Ramsey
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The Chase

Lessons

In this project, the biggest challenge I faced was learning a new coding language. GDScript was new to me this semester and it was the first hurdle to conquer. It is similar to python in format which allowed me to work through it. Learning the language earlier would have allowed me to make a game with better mechanics. For example, the enemy can and will get stuck on obstacles because of the chase mechanic.

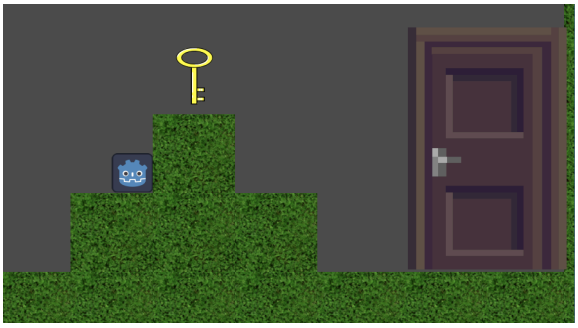
Project Evolution

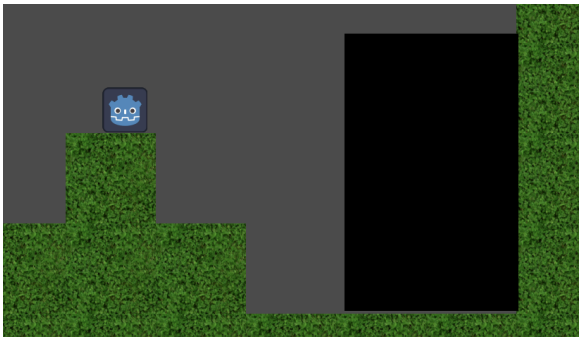
This game was intended to be an obstacle course with an enemy chasing the player. A side scrolling game was the best option to be able to do this. I followed a tutorial on creating a side scrolling game. For the first iteration, the first level of the game was created. This was very bare bones. There was no loss or win conditions in the game. The enemy followed the player and grabbing the key opened a door. This was the scaffolding for the remainder of the game. For the final hand in, two more levels were added. In addition to the levels, losses and level completion was added. There are labels to help guide the player on playing the game.

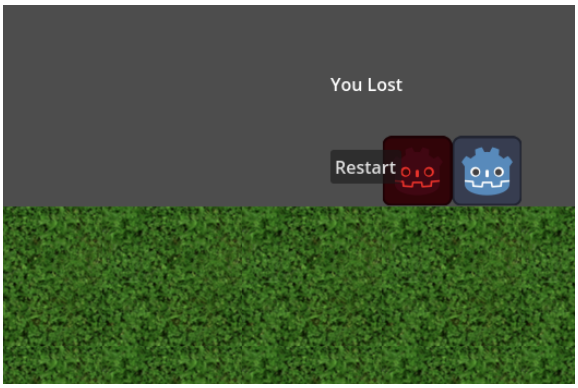
What would make this assignment string better?

The biggest challenge of this assessment for me was learning GDScript and the way to navigate and use Godot. During a lot of the semester, we did not use the language for a while. Starting a little earlier or even having smaller assignments to get the feel of Godot would have been helpful in aiding learning the new language.

Github: https://github.com/drew-kinsey-09/The_Chase







Button script:

```
1   extends CanvasLayer
2
3   signal start_game
4
5   # Called when the node enters the scene tree for the first time.
6   func _ready() -> void:
7       pass # Replace with function body.
8
9
10  # Called every frame. 'delta' is the elapsed time since the previous frame.
11  func _process(delta: float) -> void:
12      pass
13
14
15  func _on_start_button_pressed() -> void:
16      $Start_button.hide()
17      $Press_button.hide()
18      $Controlls.hide()
19
20      start_game.emit()
```

Player Script:

```gdscript
extends CharacterBody2D

signal win
signal lose

const SPEED = 500.0
const JUMP_VELOCITY = -500.0
var can_move = false


func _physics_process(delta: float) -> void:
	if can_move:
		if not is_on_floor():
			velocity += get_gravity() * delta

		if Input.is_action_just_pressed("ui_accept") and is_on_floor():
			velocity.y = JUMP_VELOCITY

		var direction := Input.get_axis("ui_left", "ui_right")
		if direction:
			velocity.x = direction * SPEED
		else:
			velocity.x = move_toward(velocity.x, 0, SPEED)

		move_and_slide()


func _on_area_2d_body_entered(body: CharacterBody2D) -> void:
	win.emit()


func _on_button_start_game() -> void:
	can_move = true

```

```
36 func _on_enemy_lose() -> void:
37     can_move = false
38
39
40 func _on_door_body_entered(body: Node2D) -> void:
41     win.emit()
42
43
44 func _on_hitbox_body_entered(body: CharacterBody2D) -> void:
45     can_move = false
46     lose.emit()
47
```

Door Script:

```
1  extends Node2D
2
3  func _ready():
4      $opened.visible = false
5      $closed.visible = true
6
7
8  func _on_key_body_entered(body: PhysicsBody2D) -> void:
9      $opened.visible = true
10     $closed.visible = false
```

Enemy Script:

```gdscript
extends CharacterBody2D

signal lose

var key_taken = false
var run_speed = 450
var can_move = false
@onready var player = $"../Player"

# Got this function from https://kidscancode.org/godot_recipes/4.x/ai/chasin
func _physics_process(delta):
    # found using google ai with prompt
    # "make enemy wait to move until you move godot" on 11/20/2025
    if can_move:
        velocity = Vector2.ZERO
        if player:
            velocity = position.direction_to(player.position) * run_speed
        move_and_slide()

func _on_button_start_game() -> void:
    can_move = true

func _on_player_win() -> void:
    if key_taken:
        can_move = false

func _on_hitbox_body_entered(body: PhysicsBody2D) -> void:
    can_move = false
    lose.emit()

func _on_key_body_entered(body: Node2D) -> void:
    key_taken = true

func _on_player_lose() -> void:
    can_move = false
```

Key Script:

```
1   extends Area2D
2
3
4   var key_taken = false
5   var door_open = false
6
7
8
9   func _on_body_entered(body: PhysicsBody2D):
10      if key_taken == false:
11          key_taken = true
12          $Key3.hide()
13
14  func _process(delta):
15      if key_taken == true:
16          if door_open == false:
17              door_open = true
```

Lost Script:

```
extends CanvasLayer

var loss = 0

# Called when the node enters the scene tree for the first time.
func _ready() -> void:
	$lost_text.visible = false
	$restart_loss.visible = false


# Called every frame. 'delta' is the elapsed time since the previous frame.
func _process(delta: float) -> void:
	pass

func _on_player_lose() -> void:
	loss += 1
	if loss > 1:
		$lost_text.visible = true
		$restart_loss.visible = true


func _on_enemy_lose() -> void:
	loss += 1
	if loss > 1:
		$lost_text.visible = true
		$restart_loss.visible = true


func _on_button_start_game() -> void:
	$lost_text.visible = false
	$restart_loss.visible = false
```

New Level Script:

```
extends Button



# https://www.youtube.com/watch?v=GZrALMvOwY8&t=850s
# This video helped formatting to go between levels
func _on_pressed() -> void:
    var current_scene_file = get_tree().current_scene.scene_file_path
    var next_level_number = current_scene_file.to_int() + 1
    if next_level_number > 3:
        next_level_number = 1
    var next_level_path = "res://levels/level_" + str(next_level_number) +
    get_tree().change_scene_to_file(next_level_path)
```

Restart Lost Script:

```
extends Button


# Called when the node enters the scene tree for the first time.
func _ready() -> void:
    pass # Replace with function body.


# Called every frame. 'delta' is the elapsed time since the previous frame.
func _process(delta: float) -> void:
    pass


func _on_pressed() -> void:
    get_tree().reload_current_scene()
```

Restart Win Script:

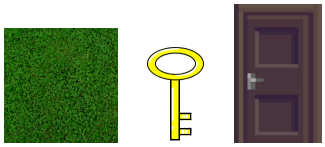
```
extends Button


# Called when the node enters the scene tree for the first time.
func _ready() -> void:
    pass # Replace with function body.


# Called every frame. 'delta' is the elapsed time since the previous frame.
func _process(delta: float) -> void:
    pass


func _on_pressed() -> void:
    get_tree().reload_current_scene()
```

Win Script:

```
extends CanvasLayer

var key_taken = false

# Called when the node enters the scene tree for the first time.
func _ready() -> void:
    $win_label.visible = false
    $restart_win.visible = false
    $new_level.visible = false

# Called every frame. 'delta' is the elapsed time since the previous frame.
func _process(delta: float) -> void:
    pass


func _on_player_win() -> void:
    if key_taken:
        $win_label.visible = true
        $restart_win.visible = true
        $new_level.visible = true


func _on_key_body_entered(body: Node2D) -> void:
    key_taken = true
```

Works Cited

I used the website open game art to get textures and icons for my game that are in the creative commons. All of these are from the website with their own links.



https://opengameart.org/content/30-grass-textures-tilable
https://opengameart.org/content/key-1
https://opengameart.org/content/pixel-art-door

https://www.youtube.com/watch?v=tN76BJ2XyDQ
I used this link to help find a way to open the door when the key is collected.

https://kidscancode.org/godot_recipes/4.x/ai/chasing/index.html
I used this website to help get the enemy to chase the player around the screen.

https://www.youtube.com/watch?v=GZrALMvOwY8
I used this to help me switch to the next level.