



Golf Game in Java (Documentation)

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To - Do List (Backlog)

Aa Components	Description	Deadline	Status	Demo	Learning goal
<u>Get basic window running</u>	Get window working that works as normal	@October 5, 2024	Done		
<u>Make a Game Panel</u>	Make a game panel to display the graphics of the game	@October 6, 2024	Done		
<u>Set up Game Loop</u>	Game Loop logic that handles the framerate and render cycle of the objects	@October 8, 2024	Done	Debugging in console	Understand and create an internal game clock that accounts for FPS

Aa Components	Description	Deadline	Status	Demo	Learning goal
<u>Make a ball object</u>	The golf ball object that should be able to inherit different properties depending on what powerups we get	@October 10, 2024	Done	Visual representation	Understand and create a ball object that can be easily modified for different interactions later on
<u>Make physics logic</u>	Make accurate calculations to represent the ball moving across the window without it being able to leave it's space or break the logic	@October 13, 2024	Done	Taking mouse input and behaving according to real life physics	Create a real and modular physics system that correctly calculates the trajectory and different forces that act on the ball whilst also learning and understanding more about real life physics
<u>Make collision logic</u>	Make accurate calculations to represent the ball interacting with the surrounding obstacles	@October 15, 2024	Done	Interacting with the environment correctly	How to create collision checkers that can be applied to a variety of different objects whilst maintaining functionality
<u>Create Hole Object</u>	The hole object that will	@October 16, 2024	Done	Ball stopping and dissapearing	

Aa Components	Description	Deadline	Status	Demo	Learning goal
	represent the end goal of each level			once it hits the hole with velocity under a certain value	
<u>Create main course & levels</u>	Create a main course that will be split up in several levels	@October 18, 2024	Done	Visual representation	Level design
<u>Add Obstacles to the course</u>	Add environment obstacles such as water and sand	@October 19, 2024	Done	Visual representation	Obstacle design
<u>Introduce visual representation of ball and power levels</u>	Correctly represent the power level of the shot from memory to GUI	@October 22, 2024	Done	Visual representation	UI implementation and linking between objects of different classes
<u>Adding Main Menu</u>	Create a menu state to display start settings and exit game options	@October 24, 2024	Done	Visual representation	Learning to create different game states
<u>Audio + SFX</u>	Add basic sfx of hitting ball, getting a hole in one, etc...	@October 25, 2024	Done	Audio representation	Creating audio and sound effects for the game using 3rd party software

Aa Components	Description	Deadline	Status	Demo	Learning goal
<u>Settings Menu</u>	Added a basic settings menu to handle global preferences	@October 26, 2024	Done	Visual representation	



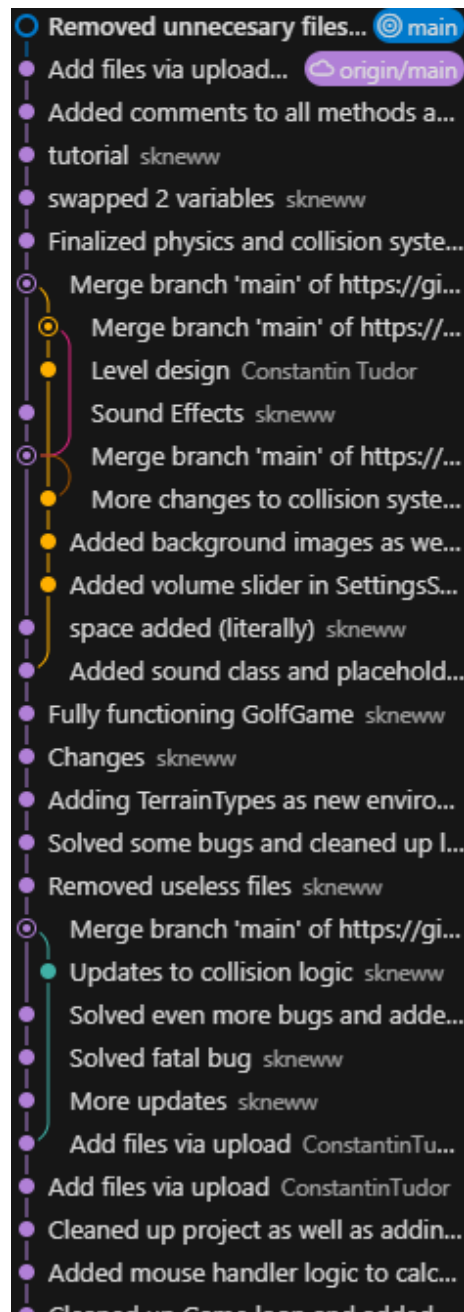
Advanced Topics To Be Used:

1. Version Control using GitHub repositories
 - a. Created Github Repo Golf Game and shared it with partner
 - b. Committing daily updates to the source code as well as updating the documentation
2. Game Design
 - a. Level Design
 - b. Music and SFX

Advanced Topics Integration into Project

1. Version Control

- a. We integrated a github repository into our vscode workspace that allowed us to make on the go updates to the whole code base and apply it globally instantly
- b. Handled all merge request as well as documenting each step for clarification purposes



2. Game design

- a. We recorded and mixed every sound in the game, trying to recreate them as close as possible to reality
- b. Designing the levels for a fun but surprisingly challenging experience.

Manual

The game we've been working on is a 2D Top Down Golf Game made in Java. The gameplay loop revolves around golf, with the player being able to press and aim in a direction to push the ball, with the goal to reach the hole, under the optional requirement set on by the PAR. The game consists of 4 simple levels, 2 pixel art inspired and 2 normal levels that replicate real life golf tracks, to present the possibilities available with the current systems integrated in the game, from the level designer to the sound handler and mouse handler.

We've learned the core mechanics behind video game development, from the creation of a in-game clock to regulate fps, to drawing models and creating correct physics and game logic that allows for correct play regarding of the state of the game, which gave us a peek into the real deal, whilst also helping us further develop key skills from this course. We also explored the use of the Swing library for creating the graphical user interface, including but not limited to: the game window, every button and slider, as well as every draw method call. Another significant part of this project has been handling user input. In this sense we implemented a custom `MouseHandler` class that extends the `MouseAdapter`, enabling players to interact with the game intuitively. Physics simulation was another area we tackled. Although the game operates in a 2D space, simulating realistic ball movement and collision detection presented its own set of challenges. We implemented basic physics principles, such as velocity, friction, and collision response, to make the ball's movement feel natural. Moreover, for the increase challenge and touch of realism, we also added custom terrain areas such as : Grass, Sand and Water. Sound integration also played a critical role in the immersion of the player. Such, we added a `Sounds` class to handle audio playback, allowing us to add sounds for interactions with the ball or the environment. In terms of level design, we created a `LevelManager` class as a modular way to store levels, as well as acting as a very barebones level editor.

Overall, this was a very interesting project to come up and make during these 2 weeks, and I feel like our cooperation skills, as well as problem solving and thinking strategies, improved a lot as we tackled the difficulties of creating a game as good as we intended.

