Section 0: Summary

Title

Hello Golf!

Team members

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Concept Statement

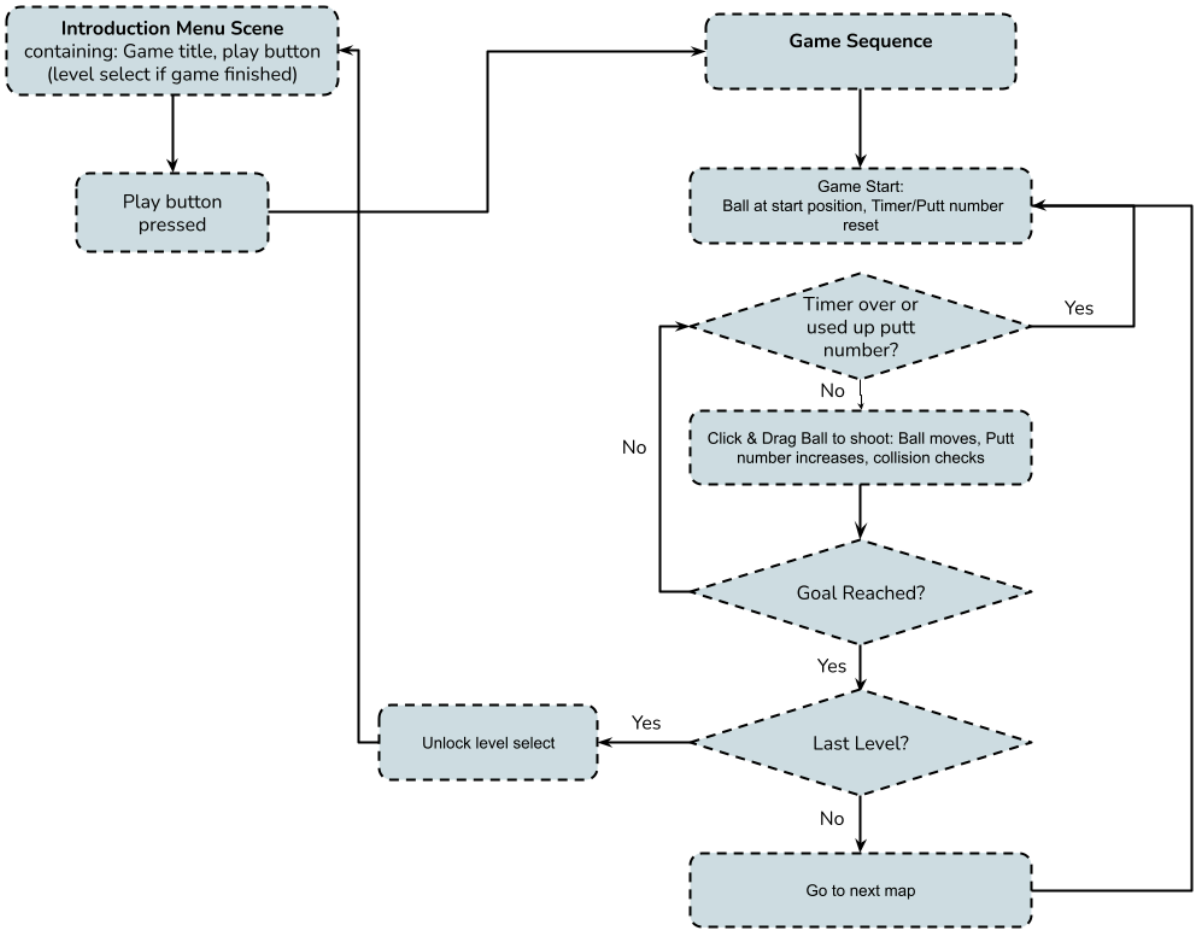
Hello Golf! is a fun mini-golf inspired game! The goal is for the player to aim the ball into the putt within the allotted time and number of hits. Difficult obstacles combined with helpful power-ups make this game an interesting challenge!

Section 1: Gameplay

Progress

When the user first opens the game, there will be a menu screen with the game title and a start button. When the user presses the start button, they will be brought to the first level, featuring a golf ball, a goal hole, and several obstacles. The user will attempt to shoot their ball into the hole, by clicking and dragging, while attempting to minimize the time and number of strokes. If the user gets the ball in the hole within the max time and stroke count, they will proceed to the next level. If a level is failed, the user will be taken back to the start, where they will repeat it. There are a total of 3 levels. Once all of the levels are completed, the user will be taken back to the home screen, with a new “Level Select” button, where they can choose any level of the three to play.

Flow Chart



Win/Loss Conditions

The user “wins” the game if they can successfully navigate through all three levels! Each level (subsequently increasing in difficulty by wall and obstacle placement) will have a time and stroke limit, which the user must stay within. If they take too many strokes, they will have to start the level over again! Don’t fear, though, there are power-ups that will help with this!

Special Features

This game features a number of different obstacles and power-ups. The most basic obstacles will be walls, which will be modeled with elastic collisions.

There are also game-wide obstacles, which will affect the drag on the golf ball, as well as powerups, which the user can pick up and use whenever they like.

Powerups

- **Hole Magnet:** applies a gravitational field to the hole which might pull the ball in
- **Teleportation:** allows the player to teleport their ball to a different location (within a certain distance)
- **Hello Again!:** increases the stroke limit for the current level
- **Reversal:** allows the player to redo their last shot

Obstacles

- **Ice:** a part of the map with less friction
- **Honey:** a part of the map with more friction
- **Fan:** produces a wind that pushes the ball
- **Velocity Pad:** increases the velocity of the ball when rolled over on

Physics Engine

- Ball motion: The ball position will be calculated from its velocity and acceleration at each frame. Shooting a ball would give the ball a velocity. The ball would be affected by velocity-dependent friction (drag) from the ground, and the friction coefficient would differ based on the type of ground (regular, ice, honey).
- Obstacle/Wall collision: The obstacles and walls will be solid objects that the ball could collide with. When colliding, the velocity component parallel to the collision would be preserved, while the component perpendicular to the collision would be reflected while the magnitude being slightly damped.
- Hole collision: The hold is a non solid item that the ball cannot physically collide with. When in contact with the ball, it will be a win condition.
- Powerup item pickup: The powerup item is a non solid item that the ball cannot physically collide with. When in contact with the ball, the item will disappear and the user wil, gain the powerup functionality that they can use anytime.

Graphics

- 2D top-down perspective
- Camera follows the ball

- Simple shapes. Circle for ball, squares for walls, etc.

Control

The user will shoot the golf ball by clicking and dragging with the mouse, with launching happening at release. This is only available when the ball's velocity is 0. Dragging farther will increase the speed that the ball is launched with, but it will also add oscillations to the aiming system, which will decrease accuracy! When a powerup is collected, a button will appear on the screen corresponding to that powerup. When a user wants to use the powerup, they will press a corresponding keyboard button and it will be applied to the game.

Inspiration - [Putt Party]

Personal Power-ups

GHOST BALL
Your ball goes through all walls and obstacles and floats across gaps

HOLE MAGNET
Your ball can't resist the hole's magnetic personality

REWIND
Rewinds your ball to the previous location and removes a stroke

TELEPORT
Teleport somewhere else, does not count as a stroke

STEADY AIM
Removes aim "wobble" for your next shot

UNLOVABALL
You are not feeling very loved as you push all your friends away

CHIP SHOT
Shoot your ball up and forward into the air potentially jumping over obstacles

Section 2: Feature Set (Ritta Maria Adoniya)

*Please comment on our distribution of tasks!

Priority 1 Features (Game would not work without it)

- Ball-shooting mechanics (click + drag) + graphical indicator (line for trajectory, length depending on distance dragged)
- Ball motion (Time marching, acceleration/velocity, friction/drag with ground)
- Camera Control (Scrolling) to follow ball + transition between maps
- Wall / obstacle coordinate + Obstacle collision system + Obstacles translating/rotating

Priority 2 Features

- Gameflow Mechanics
    - Timer/Limited Stroke Count
    - Win/Loss handling
    - Stop/Start/Restart the game
    - Options menu
- Map-affecting obstacles (preset)
    - Ice (less friction between ball + ground)
    - Honey (more friction between ball + ground)
    - Associated graphics
- Powerup Items user Interaction
    - Graphical indicator for powerup items (small icon-like items that bob up and down)
    - Make powerup item able to be picked-up (collision with player, disappears afterwards)
    - Graphical indicator (button) would display all items player picked up

Priority 3 Features

- Power items effects (but cooler and more difficult)
    - Reversal: Reverts a putt. Puts back the ball to position before putt and decreases the number of putts.
    - Teleportation (moving the ball + mouse functionality to select location)

    - Hole magnet: Apply gravity towards hole within a certain range

- Velocity/Acceleration-affecting obstacles and their graphics
    - Speed increasing pad: instantaneously increases your a?
    - Fan: velocity-affecting
- Ball shooting with Oscillation
    - Oscillating aiming
    - Different graphical indicator when oscillating (increasing oscillation speed + magnitude proportional to distance dragged)

Priority 4 Features (Cool but not necessary)

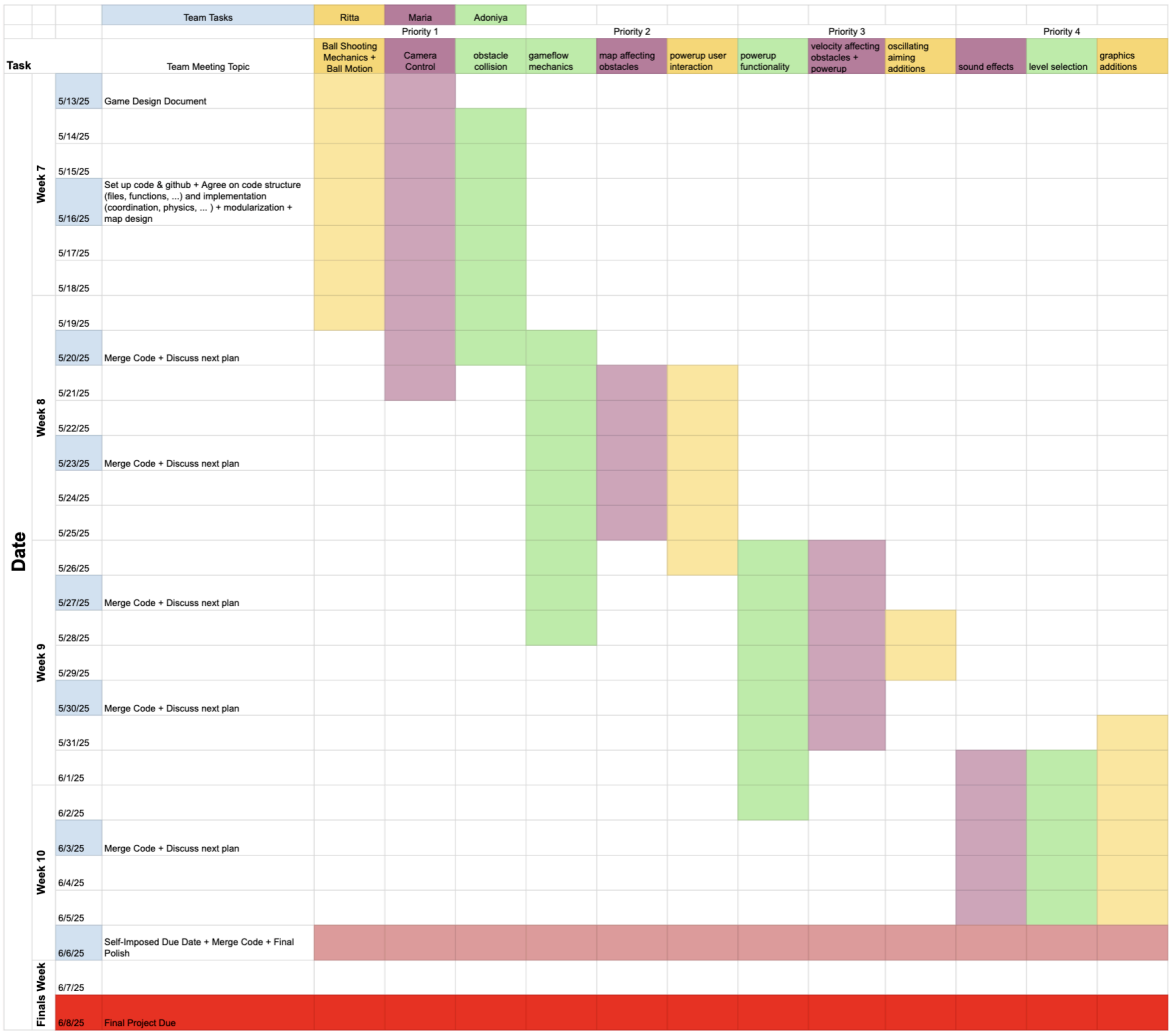
- Sound effects (Associated with collisions, powerups, etc.) / Background Music
- Graphics:
    - Pixel shader (If rendering code is provided)
    - Camera Shake
    - Particle Effects
- Level select (after completing game, make player be able to select level)

Priority 5 Features (Cool but **extra** not necessary ?)

- Power item effects
    - One More Putt: Adds 1 to the fail threshold

Section 3: Timeline

Timeline Gantt Chart



			Team Tasks	Ritta	Maria	Adoniya									
					Priority 1			Priority 2			Priority 3			Priority 4	
Task			Team Meeting Topic	Ball Shooting Mechanics + Ball Motion	Camera Control	obstacle collision	gameflow mechanics	map affecting obstacles	powerup user interaction	powerup functionality	velocity affecting obstacles + powerup	oscillating aiming additions	sound effects	level selection	graphics additions
Date	Week 7	5/13/25	Game Design Document												
		5/14/25													
		5/15/25													
		5/16/25	Set up code & github + Agree on code structure (files, functions, ...) and implementation (coordination, physics, ...) + modularization + map design												
		5/17/25													
		5/18/25													
	Week 8	5/19/25													
		5/20/25	Merge Code + Discuss next plan												
		5/21/25													
		5/22/25													
		5/23/25	Merge Code + Discuss next plan												
		5/24/25													
		5/25/25													
	Week 9	5/26/25													
		5/27/25	Merge Code + Discuss next plan												
		5/28/25													
		5/29/25													
		5/30/25	Merge Code + Discuss next plan												
		5/31/25													
		6/1/25													
	Week 10	6/2/25													
		6/3/25	Merge Code + Discuss next plan												
		6/4/25													
		6/5/25													
		6/6/25	Self-Imposed Due Date + Merge Code + Final Polish												
	Finals Week	6/7/25													
		6/8/25	Final Project Due												

Section 4: Disaster Recovery

Ritta:

If I fall behind, I will try to prioritize the most essential mechanics. I will make sure the ball-shooting mechanics and motion work well, and focus less on the graphical aspects which would take a long time. I could also talk with my group members and TAs to discuss the scope of the game.

Maria:

If I fall behind, I plan on informing my group as soon as possible, especially if I believe it puts other tasks in jeopardy (as future tasks depend on the prior tasks). I

would also set aside more time to work on whichever task it is that I fell behind on, particularly the tasks that are of a more essential priority.

Addie:

If I fall behind, I will make sure to inform my group mates of where I am in the process and what is going on. To get back on track, I will try my best to focus only on the essential tasks so that there is the highest possible chance of making a truly functional game. I will also work with my group to create a revised plan (and possibly even ask them for assistance) so that we as a group can tackle this issue.