Angle Anglers
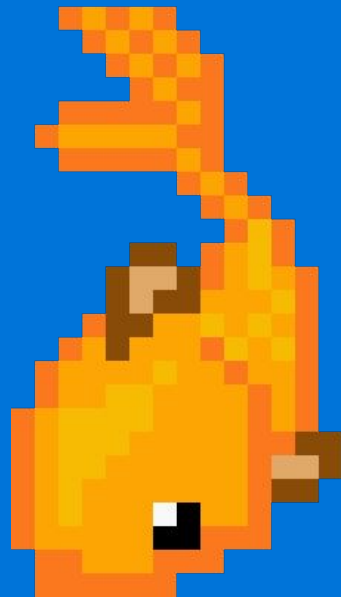
COMP.4110 - Software Engineering I
University of Massachusetts Lowell
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In the image, a speech bubble reads:

Lloyd
If fishing at a hospital is wrong, I don't want to be right.

"Every good video game has fishing in it." - Literally Everybody

Project Overview

- "Angle Anglers" is a fishing game that aims to teach students in the 5-7th grade the basics of angles.
- This is accomplished by a "collectathon"-esque game where players aim to collect all of the available fish.
- The covered topics consist of identifying angles and finding the supplementary angles.

Project Goals

- Help students learn how to identify angles and find supplementary angles in a fun and engaging way.
- Improve students' mental math skills through repetition.
- Encourage social interaction through the sharing of findings.

Project Constraints

- Create a game that is fun yet also educational.
- Have the game be playable in small bursts of down time.
- Simplifying idea to have a completed prototype in allotted time.
- Use the Unity game engine to create this project.

Domain Research

- Researched the Massachusetts Mathematics Common Core standards to fine tune the difficulty of the game.
- Looked into various fishing minigames in popular games to figure out how to design the main fishing loop.
- Researched other educational games to find the right balance between educational and fun.

Features

- Explorable overworld with buildings and water areas from a top down perspective.
    - Two Fishing Areas: The ocean and lake.
    - Three Buildings: An academy (how to play), a science lab (encounter rate information), and a store (shop)
- Fishing game revolving around determining angles.
- Difficulty progression system via rod upgrades.
- Compendium that records the fish a player has caught.
- Statistics (Money earned, Fish Caught, etc).

State Diagram
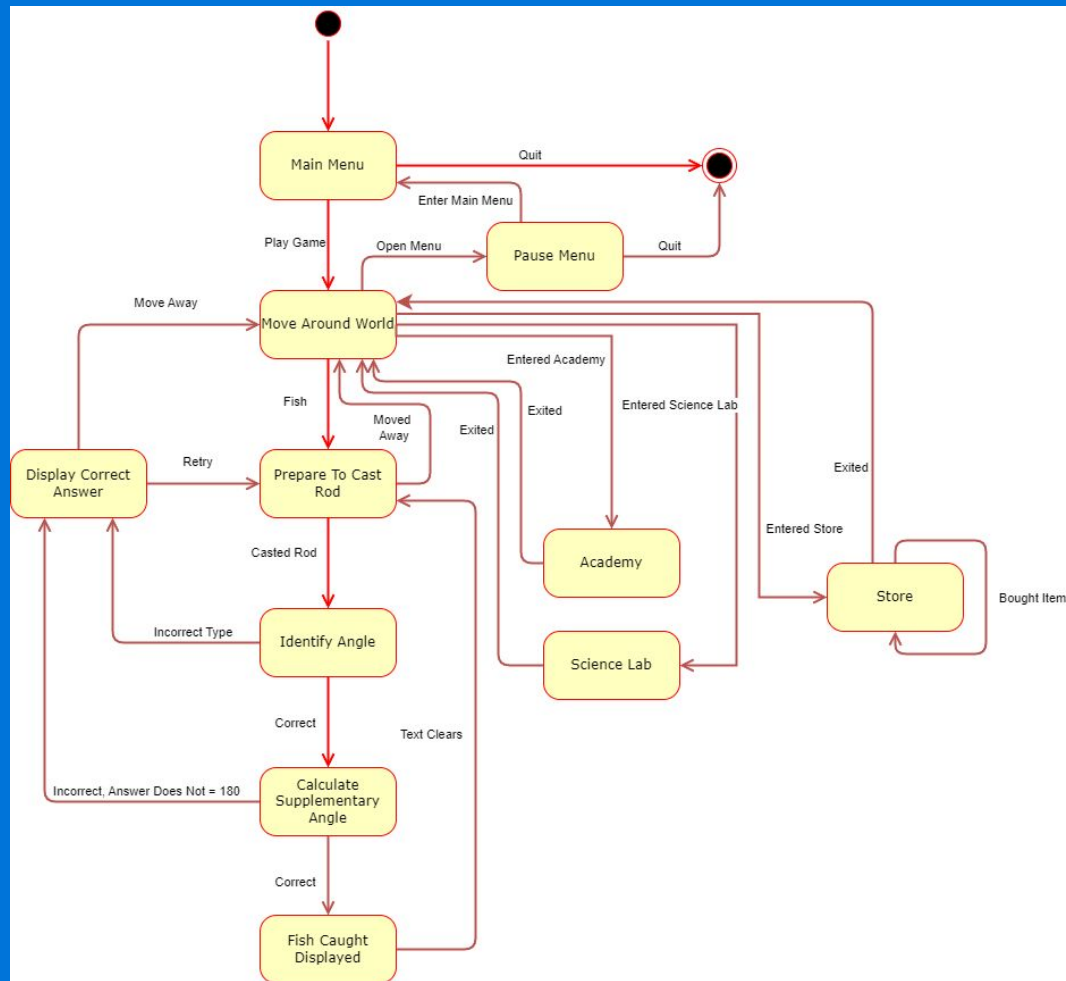
Prototype Demo

Demo Part I

- This short demo videos displays the overworld map.
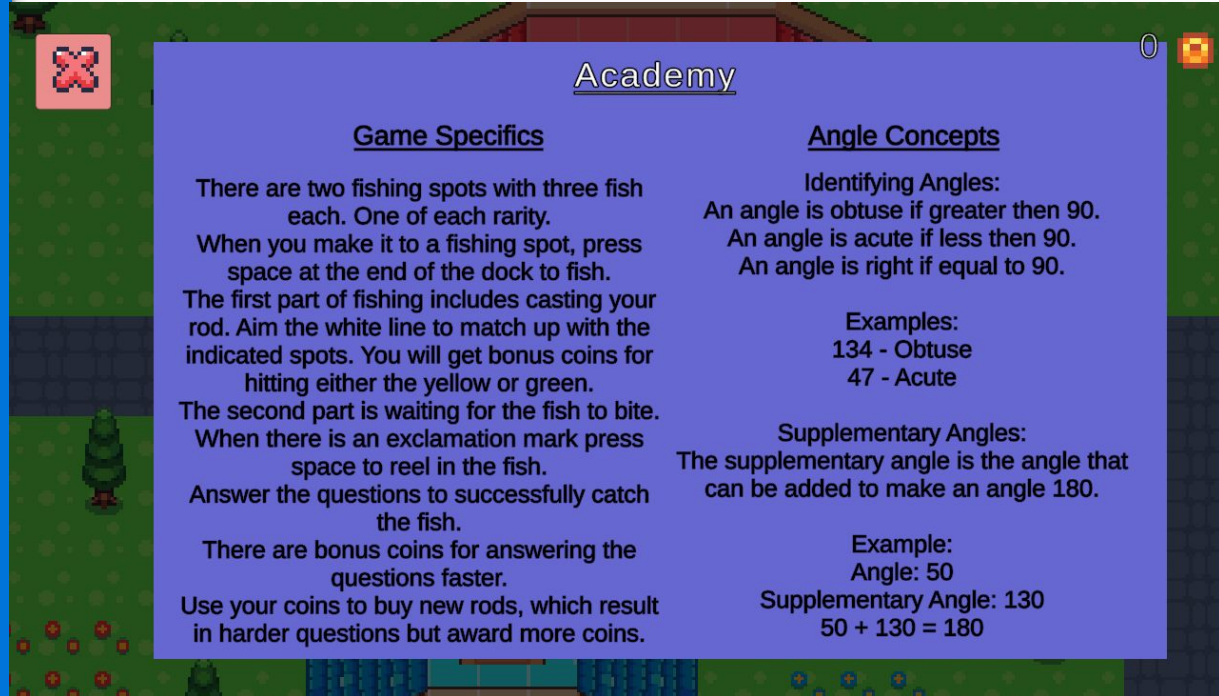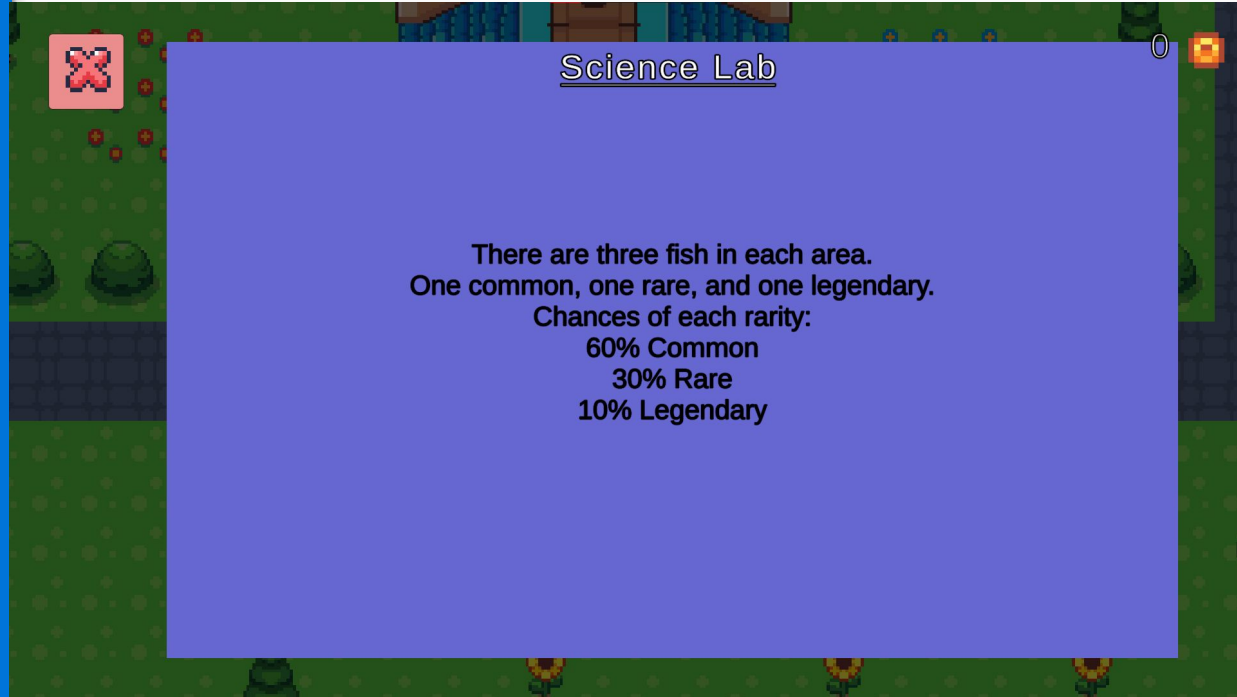- At the end the player uses the zoom out button to view the entire map.

Demo Part II

- This screenshot shows the academy screen.
- It displays more information about how to fish and explains the math concepts behind the game.

Academy

Game Specifics

There are two fishing spots with three fish each. One of each rarity.
When you make it to a fishing spot, press space at the end of the dock to fish.
The first part of fishing includes casting your rod. Aim the white line to match up with the indicated spots. You will get bonus coins for hitting either the yellow or green.
The second part is waiting for the fish to bite. When there is an exclamation mark press space to reel in the fish.
Answer the questions to successfully catch the fish.
There are bonus coins for answering the questions faster.
Use your coins to buy new rods, which result in harder questions but award more coins.

Angle Concepts

Identifying Angles:
An angle is obtuse if greater then 90.
An angle is acute if less then 90.
An angle is right if equal to 90.

Examples:
134 - Obtuse
47 - Acute

Supplementary Angles:
The supplementary angle is the angle that can be added to make an angle 180.

Example:
Angle: 50
Supplementary Angle: 130
50 + 130 = 180

Demo Part III

- This screenshot shows the science lab screens
- It shows the percentage chance for each rarity of fish.

Science Lab

There are three fish in each area.
One common, one rare, and one legendary.
Chances of each rarity:
60% Common
30% Rare
10% Legendary

Demo Part IV

- This screenshot shows the store.
- Three different fishing rods are purchasable and their effects are listed.
- There is also a diamond that is purchasable for those who want to get it.

Store

Beginner Rod

Changes the numbers to be multiples of 5. Gives 5 extra coins when catching a fish.

250 Coins

Journeymen Rod

Changes the numbers to be even numbers. Gives 10 extra coins when catching a fish.

500 Coins

Master Rod

Changes the numbers to be what it lands on. Gives 20 extra coins when catching a fish.

1000 Coins

Diamond A trophy of your achievements!

9999 Coins

0

Demo Part V

- This video shows fishing.
- Two fish are caught, the first is at the ocean and the second is at the lake.
- There are different bonuses applied to the reward you get.

Demo Part VI

- This video displays the pause menu.
- Here you can equip the different fishing rods.
- You also can see the player stats screen and the compendium of fish.

Equip Rod

Novice Rod

Controls

Main Menu

Exit

Stats

Total Fish Caught: 2
Total Fish Missed: 0
Total Money Earned: 86
Perfect Hits: 2
Good Hits: 0
Bad Hits: 0

Fish Caught

86

Improvements

- Add more variety to the areas with better map design.
- More interactables that add little things to the game.
- Add NPCs to the game.
- Add a greater number of fish.
- Better indicators for bonuses.
- More items like bait.

Future Features

- Multiplayer versus where the player who gets the higher reward wins.
- Turn the game into a more MMO-like game similar to Club Penguin.
- Offer more educational content in the form of information about the ecosystems and fish present in the game.
- A wider variety of mini games that teach different math concepts.

Thanks for Listening

Any Questions?