



# Decrementor

Software Engineering COMP 4110  
University of Massachusetts Lowell  
Fall 2025

Team members: Angel Chikumbirike, Abhiram Garre,  
Orion Golden, Nicholas Johnson, Senny Lu, Phyo Naing

Instructor: Dr. James Daly

# Project Overview

***Decrementor*** is a roguelike card game that allows players to fight enemies by forming valid equations.

## Motivation:

A good foundation in math is very important. Our game aims to solidify that foundation.



# Overview of Features

Unlimited Game Play

Creation of equations with PEMDAS

Deck Building With Customization

Score and Leaderboard

Unique Random Enemies

# Domain Research

Looked into other educational games.

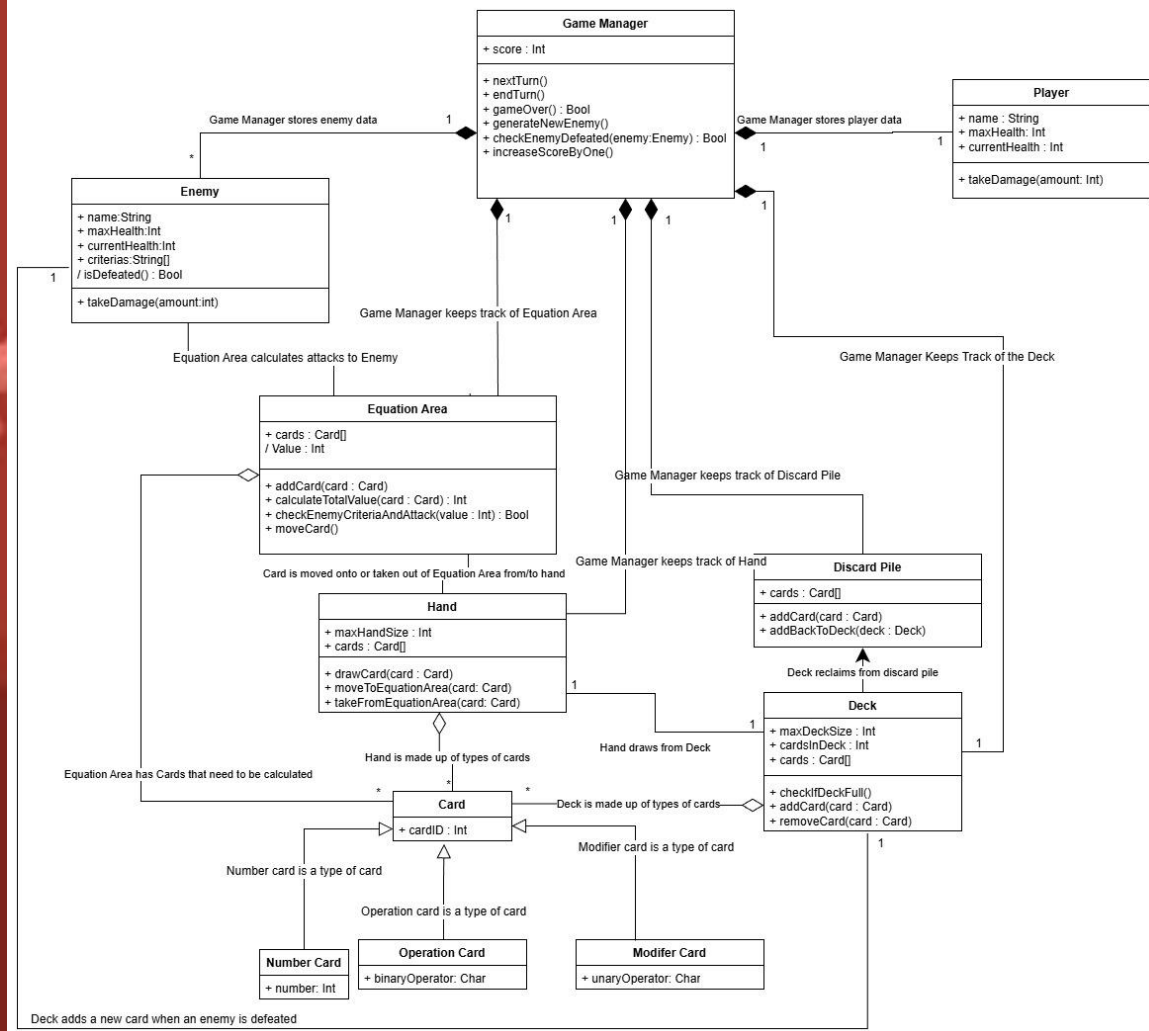
We needed to find a way to balance fun with education

Project Constraints from Massachusetts Mathematics  
Common Core standards

- Age appropriate & accessible.
- Educational on a 4th grade level.
- Team knowledge of tools

# Class Diagram

- Object oriented design
- Composition over inheritance



# Demonstration



# DECREMENTOR



# Main Menu Screen

## DECREMENTOR

Play

Settings

Leaderboards

# Settings Screen



Volume: 



# Leaderboard Screen

Position	Name	Score
1	Senny	18000.0
2	Guy Below Me Kinda Sucks	15000.0
3	Nicholas Johnson	15000.0
4	Bill	12000.0
5	Nicholas Johnson 2	12000.0
6	Abhiram Garre	11000.0

Back

# Game Play Screen

HP:



Your turn

SCORE:00000000

Level: 1

50.0



Less than 25 (+10)(x1.2)

Is Prime (x2)

The two text above are requirements that  
apply a multiplier to damage. The orange  
requirement is mandatory to damage enemy,  
while green is not.



Equation Area

Equate

Pull card here



# Game Play Screen

HP:



Your turn

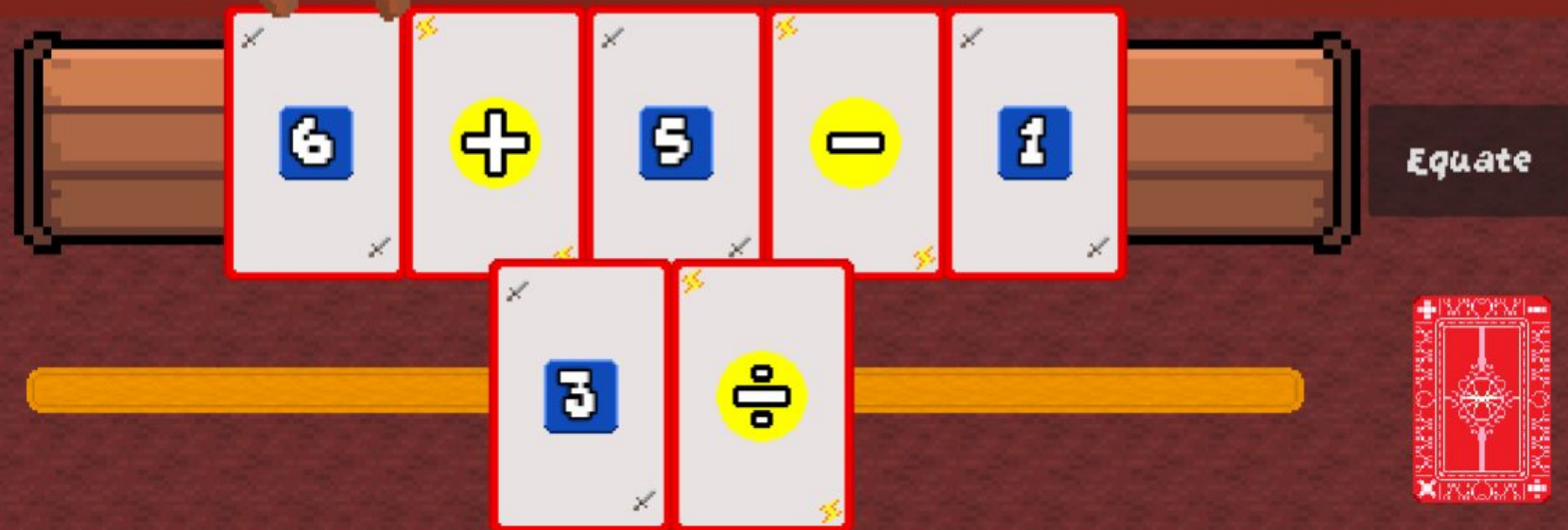
SCORE:00000000

Level: 1

50.0

Multiple of 5 (+10)(x1.5)

Multiple of 3 (x1.5)

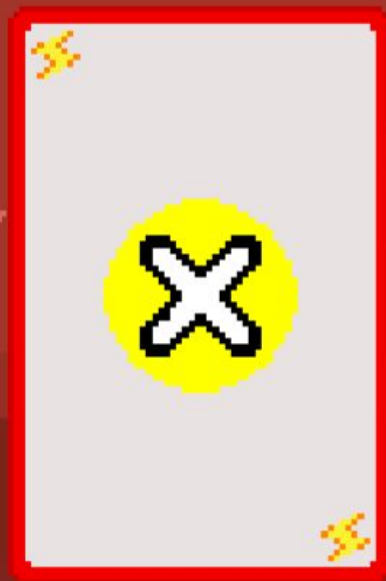


# Pause Menu Screen



## Adding Cards Screen

Pick A Card To Add To Your Deck



SKIP

## Losing Screen

**You Died!**

**Score: 2000**

**Name :**

**Submit**

**Back**



# Live Demo





## Improvements + Future Features

- More Requirements
- Requirement Balancing
- More Variety In Levels
- Formal Tutorial Level
- Increase in Variety of Cards



# Acknowledgements

We gratefully acknowledge and appreciate the participation of our Professor, Dr. James Daly from University of Massachusetts at Lowell

Questions?



DECREMENTOR

