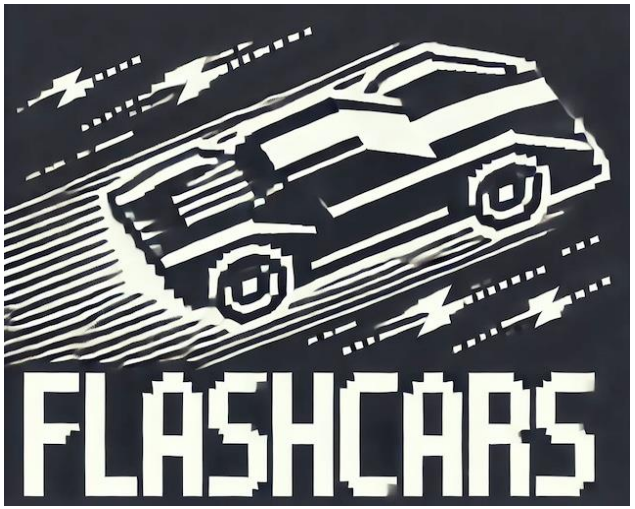


Software Engineering COMP 4110
University of Massachusetts Lowell
Fall 2024

Team members:

Project Manager: James Walsh
Facilitator: Isaiah Andrade
Customer Liaison: Salwan Sabil
Configuration Manager: Gavin Ippolito

Instructor: Dr. James Daly

Project Overview

- FlashCars transforms traditional flash card studying methods into an engaging educational trivia game.
- Players answer questions correctly to advance in a competitive car race.
- Traditional studying methods can feel uninspiring for students.
- FlashCars addresses this by:
  - **Making learning more interactive.**
  - **Help students retain knowledge better by combining learning with play.**
  - **Encourage study habits through a creative racing mechanic.**

Overview of Features

- Users get started by selecting a difficulty level (easy or hard) and a subject (math, science, or history) through on-screen buttons. After making their choices, they can click a button to display the game screen.
- Upon starting the game, a question is displayed at the top of the screen with answer options below and the player's car on the track above the questions.
  - **Correct answers move the car forward, while incorrect answers leave it in place.**
  - **The user is competing against a CPU opponent that is also moving towards the finish line.**
  - **The game ends once either vehicle reaches the finish line.**
- Users can also create an account by providing a username and password. The username will be displayed on screen once logged in.

Future Work

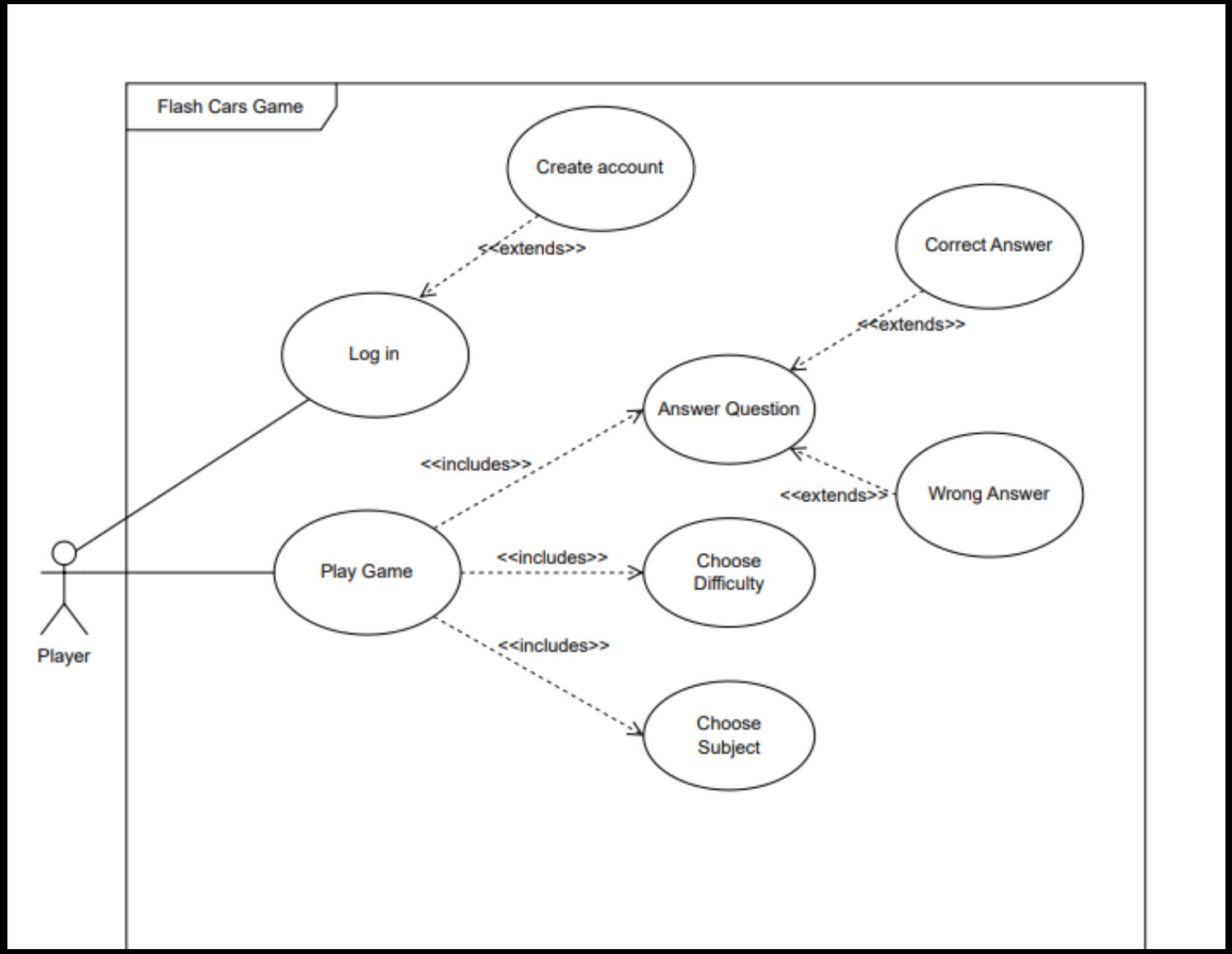
- Some improvements for the future include:
  - **Hide password while typing**
  - **Require strong passwords and unique usernames**
  - **Audio feedback**
  - **Screen to view statistics/account**
  - **Option to delete/modify account**
  - **Option for user to input their own questions**
  - **More premade question sets**
  - **Option to type in answers**
  - **Option to select vehicle**
  - **Changes in speed based on correct/incorrect answers**
  - **Hints for questions answered incorrectly**
  - **UI modifications**

Domain Research

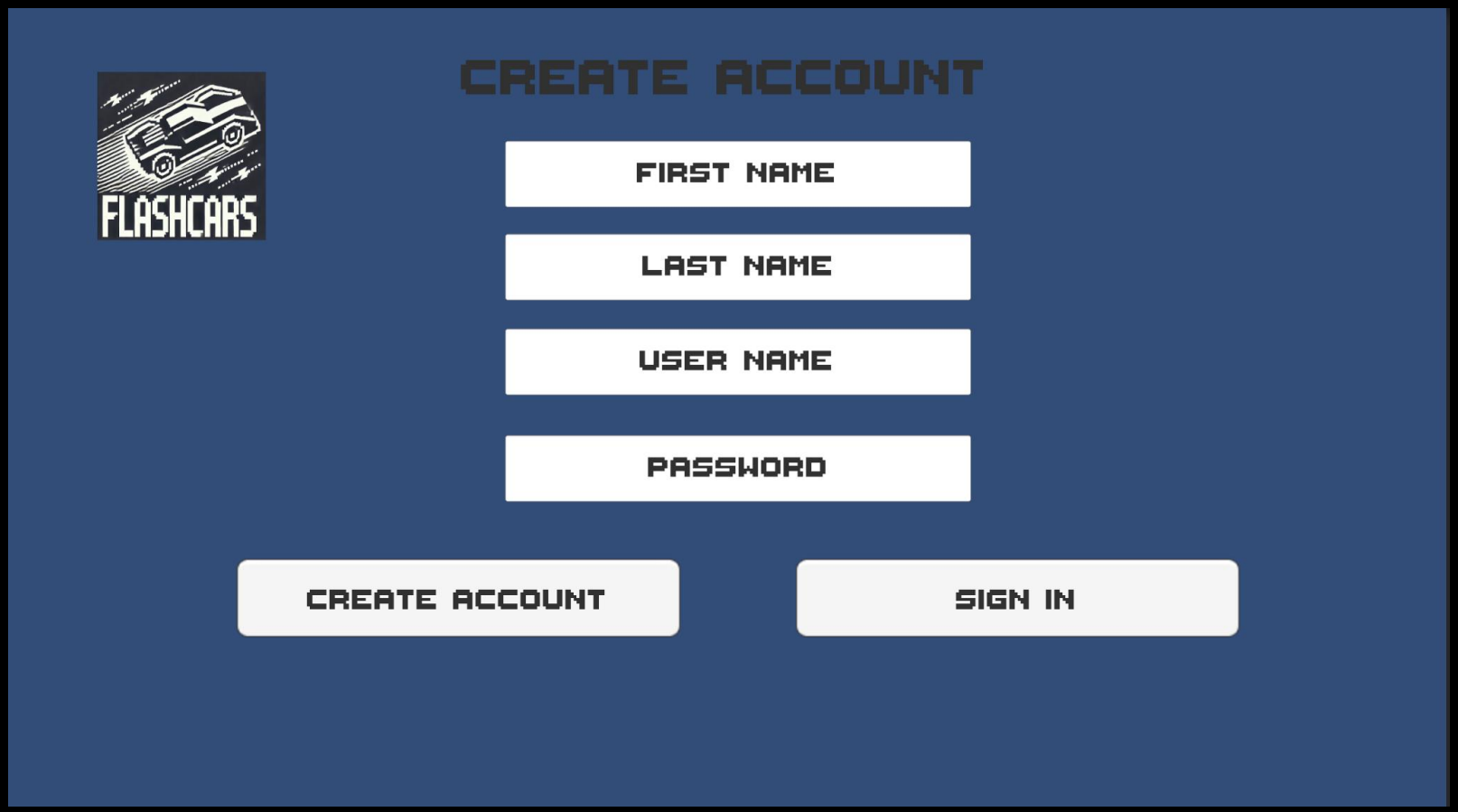
- To ensure FlashCars aligns with key educational standards for 4th and 5th graders, resources such as the Massachusetts Department of Education and Common Core State Standards were utilized.
- Extensive research of educational content was applied to integrate math, history, and science topics and questions to accurately reflect the 4th and 5th-grade curriculum standards.

- Project Constraints:
  - **Constraint 1: Target system must be a laptop or desktop with a keyboard and mouse.**
  - **Constraint 2: Hardware requirements include 16 GB of RAM, 100 GB SSD, and a GPU with 1 GB memory.**
  - **Constraint 3: The game requires the latest version of Unity and an internet connection for initial setup.**

Use-Case Diagram



Demonstration: Creating an Account



Demonstration: Sign in

SIGN IN

USERNAME

PASSWORD

LOGIN

FLASHCARS

Demonstration: Main Menu

FLASHCARS

SUBJECT

SELECT

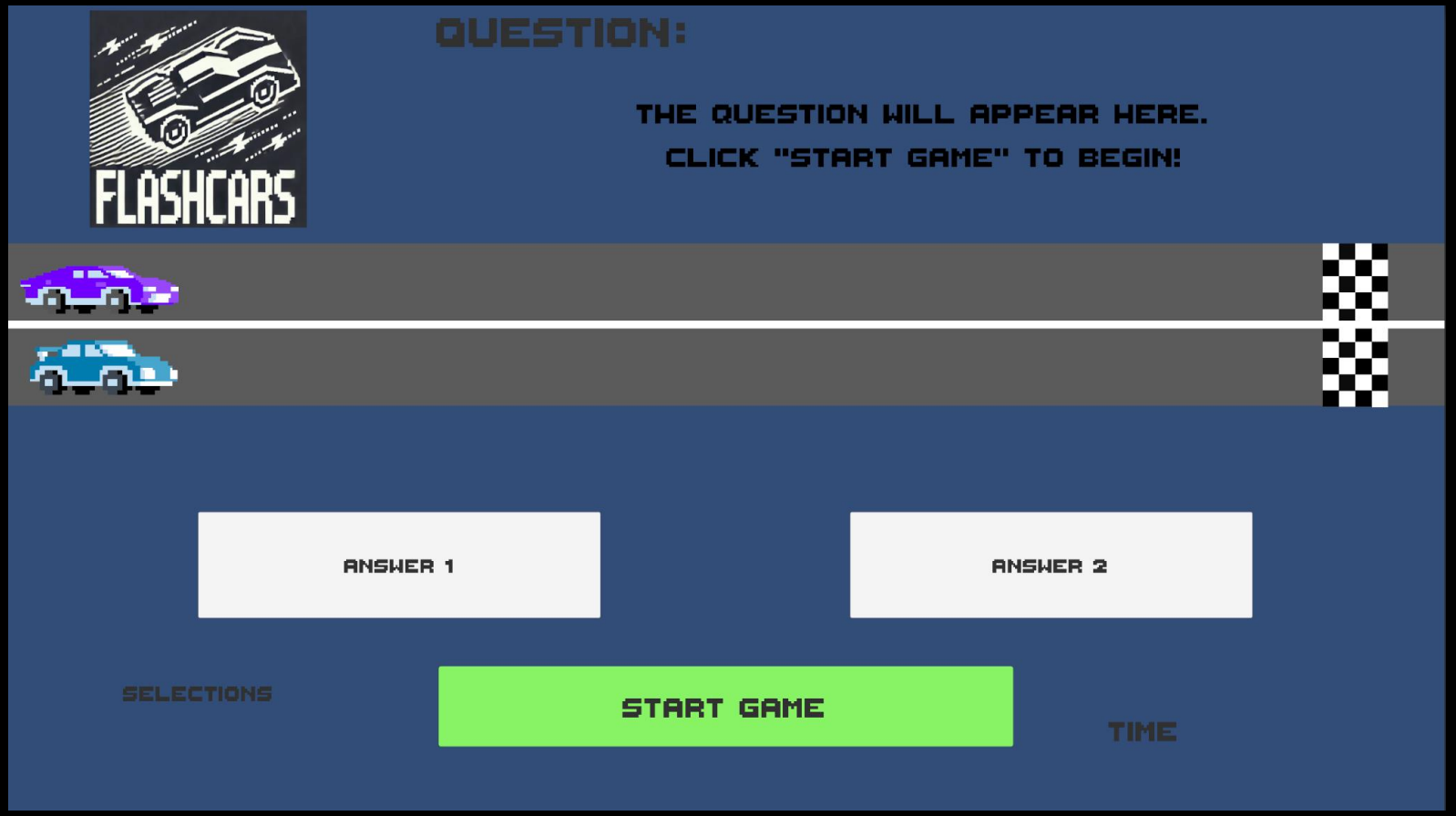
DIFFICULTY

SELECT

LOAD GAME

USER:

Demonstration: Game Play



Demonstration: End of Game

CONGRATULATIONS!

YOU WIN!

YOU ANSWERED ALL QUESTIONS CORRECTLY IN:

PLAY AGAIN YOUR TIME EXIT GAME

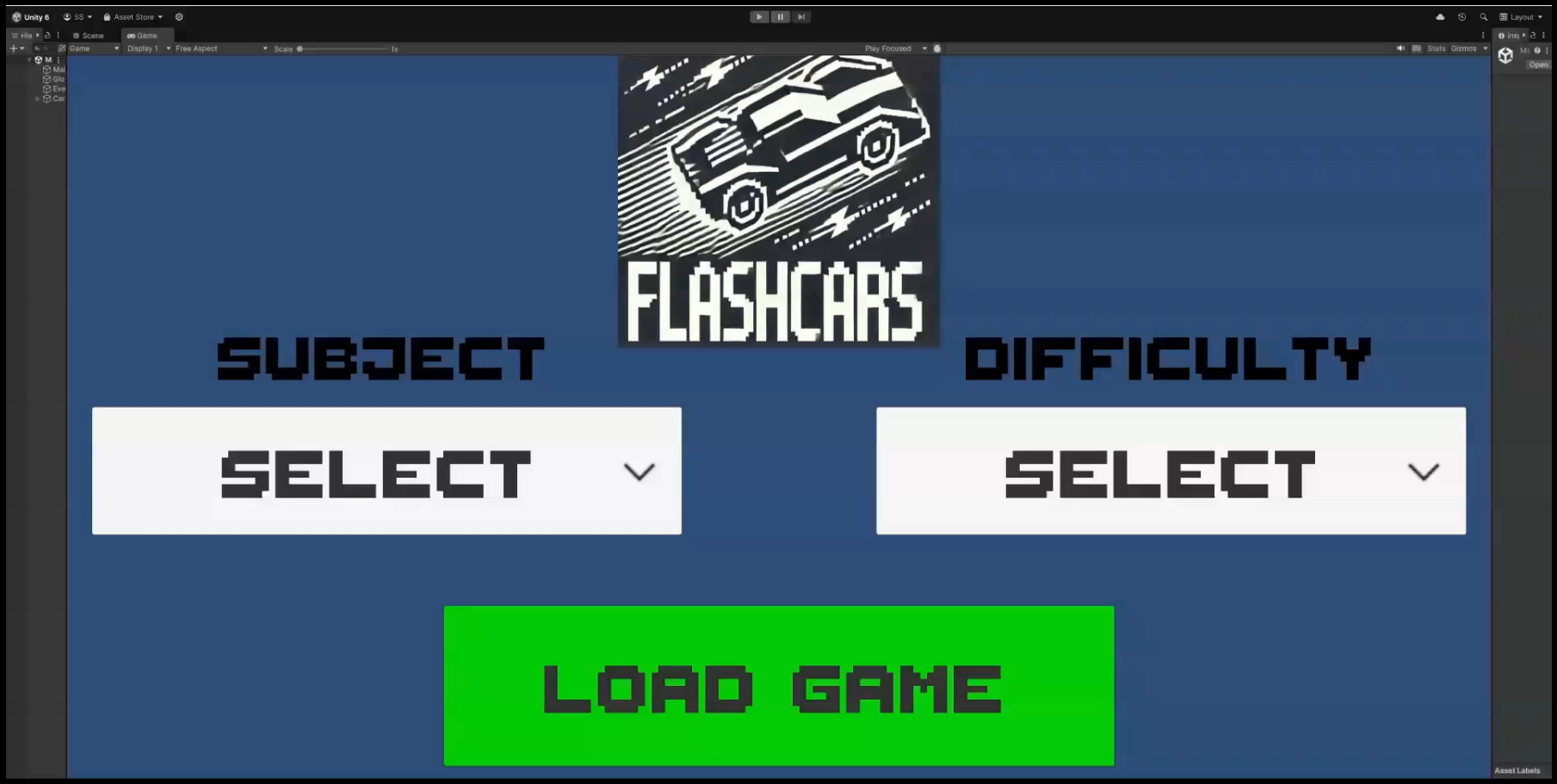
YOU LOST

BETTER LUCK NEXT TIME

THE CPU WON IN:

PLAY AGAIN TIME EXIT GAME

Demonstration: Video



Acknowledgements

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