

Realms of Mastery Proposal

- **Student Name:** Alena Durel
- **Major:** Computer Science and Cybersecurity
- **Degree:** Bachelor of Science
- **Advisor Name:** Professor Julie Henderson
- **Expected Graduation Date:** May 2024

Problem Statement

While teachers strive to educate their students in the classroom, they face challenges with keeping students engaged and actively learning. Elementary-aged children have a very limited attention span and often get bored or distracted during lessons. Thus, there is a need to develop innovative and creative solutions to engage and entertain students, while also cultivating their learning and understanding of the material. I propose an adventure style game that will provide students with a stimulating environment in which to reinforce the skills that they are taught in their lessons. This game will be aimed towards 3rd and 4th grade students and will be based on the South Carolina Academic Standards. By basing this game on the standards, it will not be taking away from time spent learning, but rather can be used as a tool to help fill the gaps and keep students engaged with the material. With the vast expansion of technology, it is important to find ways to integrate these advancements with education and use them to facilitate learning rather than hinder it.

Project Description

Realms of Mastery will be an adventure style game that is primarily intended for use by 3rd and 4th grade student, and will be based on the South Carolina Academic Standards. The student will get to choose their character and fighting style (math or ELA based) and will travel the realm, while answering a variety of questions to defeat monsters, collect some treasure, and gather achievements. This game will also feature a boss rush mode that will allow students to practice questions geared towards a specific standard that they might be struggling with.

Proposed Implementation Language(s)

My project will be implemented in Java.

Libraries, Packages, Development Kits

1. `javax.swing.JPanel`
2. `javax.swing.JFrame`
3. `java.io.*`
4. `java.awt.*`
5. `javax.imageio.*`

Software/Equipment Needed

- 1. **Java**
 - Needed to develop and run the application.
- 2. **IntelliJ**
 - IDE used to develop this program
- 3. **Visual Studio Code**
 - IDE used to develop this program
- 4. **CotEditor**
 - Text editor for configuring all *.txt files used in this program
- 5. **Piskel**
 - Pixel art web app used to create sprites

Motivation

I have chosen to complete this project for several reasons:

- 1. Before deciding to major in computer science, I wanted to be an educator. Although I decided to pursue a different career, I still value education and the necessity of great teachers and tools to foster a love of learning in students. I would like to create a program that can be used to help further practice what is taught in the classroom and educate students in a stimulating and engaging format.
- 2. I have always wanted to develop a game, and this project will give me the opportunity to create a program that I am excited about and proud of.
- 3. I believe that this project will allow me to push myself further in my journey as a software developer and will be good test of the skills that I have developed over the years through academic work, personal projects, and internships.

Outline of Future Research Efforts

I will be researching the academic standards that I intend for my game to encompass as well as researching different teaching methods and learning styles. In addition to this, I will be partnering with Ashlyn Durel, a fourth grade teacher, to ensure that the game will meet the academic standards and will be useful as a learning enrichment tool.

Schedule

Task	Start Date	Completion Date (Estimated)
Create Proposal Document	August 23, 2023	August 23, 2023
Create Requirements Document	August 23, 2023	August 23, 2023
Proposal Final Draft	August 23, 2023	August 29, 2023
Requirements Final Draft	August 23, 2023	August 29, 2023
Create Project	August 23, 2023	August 23, 2023
Install Necessary Software/Libraries	August 23, 2023	August 23, 2023
Basic Map and Sprites	August 23, 2023	September 16, 2023
Tile Screen and Character Selection	August 26, 2023	September 2, 2023

Task	Start Date	Completion Date (Estimated)
Inventory	September 2, 2023	September 9, 2023
Treasure Collection	September 9, 2023	September 16, 2023
Fighting Monsters	September 16, 2023	September 30, 2023
Add Questions	September 2, 2023	September 30, 2023
Achievements and Stats Page	September 30, 2023	October 7, 2023
Shops and NPCs	October 7, 2023	October 14, 2023
Saving Mechanic	September 9, 2023	October 14, 2023
Boss Rush Mode	October 14, 2023	October 28, 2023
Create a Test Plan	October 28, 2023	December 1, 2023
Testing Project for Bugs/Issues/Etc.	January 1, 2024	January 13, 2023
Compile Results & Analyze/Fix Bugs	January 13, 2024	January 20, 2024
Outside Testing	February 1, 2024	March 1, 2024
Compile Results & Analyze/Fix Bugs	March 2023	March 2023
Complete Project & Defend Project	April 17, 2024	April 17, 2024