

BlockPusher

Game Engine and Web IDE

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Motivation

The goal of this project was to build a simple game engine that allows code to be modified as the game runs, as well as a web integrated development environment (IDE) and interface that allows created games to be easily shared.

Background

Video game development is an arduous undertaking, often involving a steep learning curve with many complex tools. Testing game code can be especially time-consuming as it often requires restarting the game to test each small change to the code. Because of this, we developed a development environment that emphasizes ease of use and rapid iteration.

Project Summary & Major Tasks

- Game Engine
 - Supports audio, collision detection, input, user objects and world, and time.
- Website
 - Supports storing and sharing games and assets.
- Editor
 - Supports syntax highlighting and Intellisense as well as level editing and file management.

Limitations & Challenges

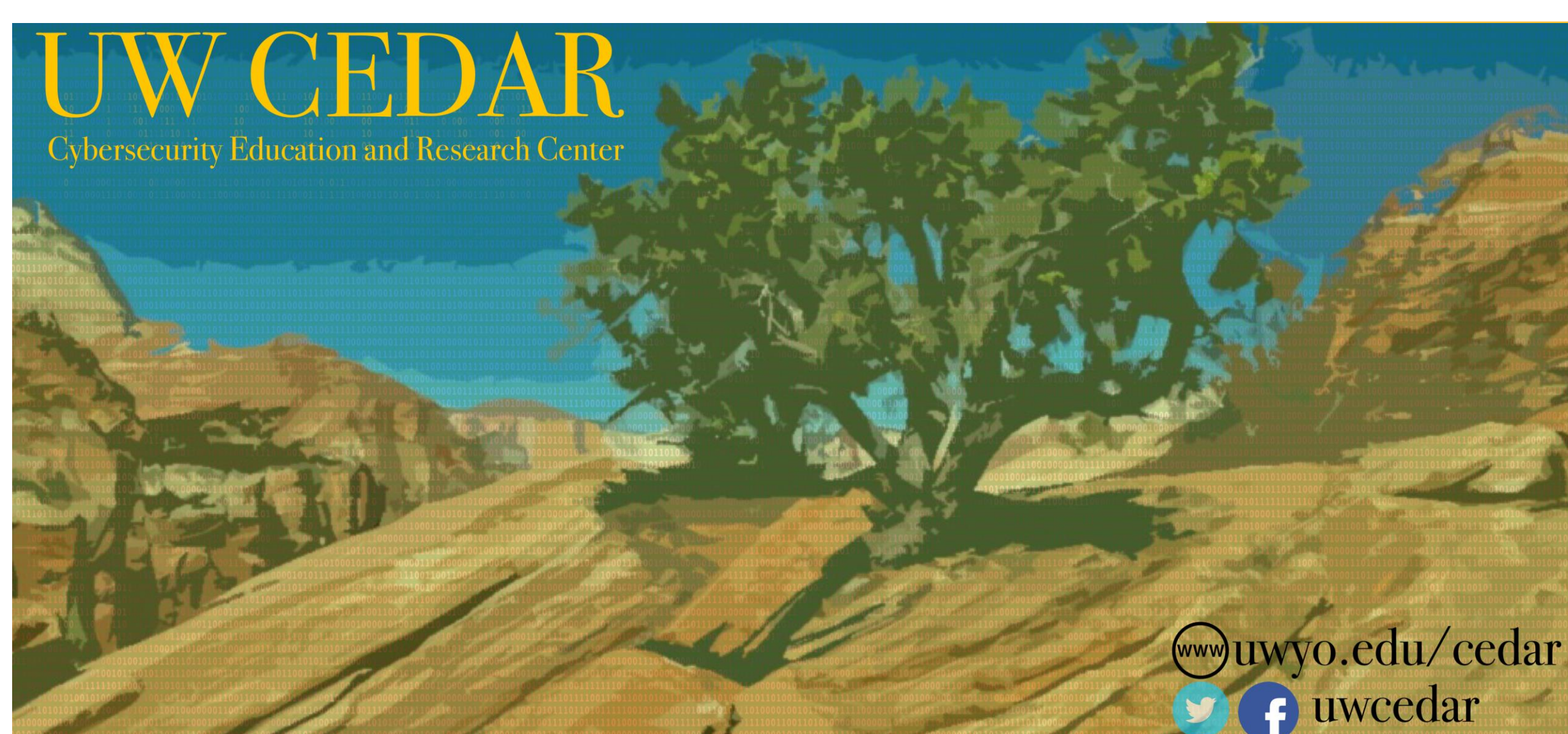
Due to time and manpower constraints, we decided to make the game engine as simple as possible. It only supports basic 2D graphics and axis-aligned bounding box collision as well as the usual game development components. One major challenge was security, which is always a concern when allowing users to run arbitrary code. In order to mitigate risks of malicious games, the engine is executed inside a sandboxed frame with a highly restricted content security policy.

Results

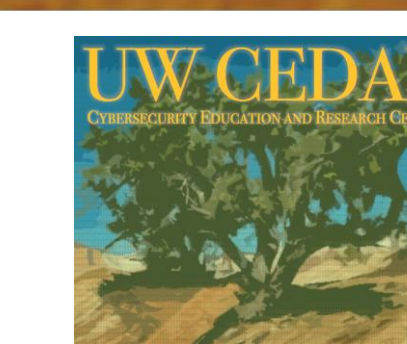
The result is a single ASP.NET MVC web application which serves the engine and editor.

Conclusions & Future Work

We were able to complete almost all of the tasks we set for ourselves. Our editor and engine allow users to rapidly iterate on a game concept and our website allows games to be shared with friends. Future work includes refining currently implemented components for performance as well as adding more features to the engine and website to facilitate faster prototyping of game concepts.



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