**CEN 4090L: Software Engineering Lab**  
**Florida State University**  
**- Group Project Proposal –**

**1. Project title**

Gather. Arm. Manage. Endure. (G.A.M.E)

**2. Brief overview of what you are proposing**

We are planning to make a single-player video game that is a mixture of tower defense, platforming, puzzles, and resource managing. We plan to incorporate physics-based movement and randomly seeded resources to find as you explore. We aim to have waves of enemies to defend against, science-based puzzles to solve which will unlock unique upgrades, as well as an intriguing, mysterious story and increasing difficulty. We want the game to have a cyberspace-theme, with music and designs fitting that aesthetic.

**3. Motivation**  
We want to develop this project because none of us have made a very fleshed out game before, and those of us that do not know JavaScript would like to learn it. Also, we want to make something that we have creative liberty in and a passion for, so that we stay excited to work on the project.

**4. Features to be implemented and types of users**  
In addition to the gameplay already described, we plan to implement a tutorial, several difficulty levels, game settings, info panels, short upgrade paths, character customization, achievements, music and sound design. We do not plan to have different roles.

**5. Risk / Challenges**

* We are all somewhat unfamiliar with creating a game on this scale
* Most of us are unfamiliar with the language chosen, so we will need to learn it
* Coordinating the different aspects of the game done by different group members will be challenging

**6. Existing related projects**

Several games that have somewhat similar gameplay and concepts are:

* Mindustry - <https://store.steampowered.com/app/1127400/Mindustry/>
* Kingdom: New Lands - <https://store.steampowered.com/app/496300/Kingdom_New_Lands/>
* Dome Keeper - <https://store.steampowered.com/app/1637320/Dome_Keeper/>

Our game, G.A.M.E., will be different from these as we will have puzzles based on scientific concepts such as physics, chemistry, and computer science. We will have a story for the players to uncover as they get further, as well as hiding some easter eggs throughout. Our theme is also different as it will be more cyber-space themed, and our combat will be more involved than these as they rely more on having AI fight for you. We will also have unique achievements and customization options.

**7. Intended platform / programming language**  
We will be coding in JavaScript using the Phaser framework.

**8. Third-party libraries / APIs to be used**  
We plan to use the Phaser.js library to have access to sprites, animations, backgrounds etc. that we will combine with our own original code to make our game.

**9. Team members, expertise, project responsibilities, and team organization**  
Team Members:

* Joshua Krug (jak21i): C++, Java, C#, Python, x86 Assembly, Computer Security, Physics, Chemistry. I’m the lead on writing the story, creating the scientific puzzles, and coding the puzzles and player weapon systems.
* Jacob Copham (jlc21b): C++, C#, Python, very ready to learn. I can take the lead on resource collection and upgrades.
* Ethan Lin (el21v): C++, C, Java, JavaScript, PHP, ASM, SQL. Taking charge of settings and achievements.
* Blake Barth (bmb22b): C++, C#, Python. I can take charge of the enemy AI. Enemy types, difficulty, spawn rate, etc.
* Aamir Baloch (amb21w): C++, C, C#, Python, Java, x86 Assembly, Computer Security, SQL. I can take charge of character design, music/theme integration, combat, and worldly interaction elements.

We are deciding on tasks together as a group based on each person's interests and skills, so we do not have a group leader or manager. We are using a Discord server to communicate, and we are meeting on Discord twice a week. We will meet in person as needed but at least once every two weeks. We will use GitHub to manage our files, create branches for new features, and handle merge requests and conflicts.