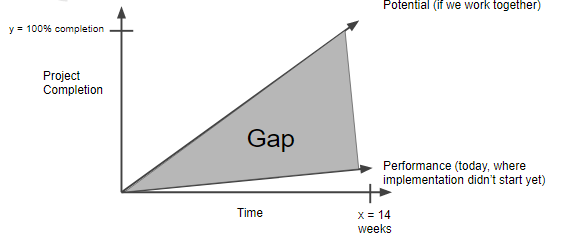
**“Capstone Defense” Project Documentation**

1. **Project vision** 
   1. **Backgrounds**

* Mitchell O’Hair: Computer Science, Java, C#, Unity, MySQL, Blender
* Doug Hartley: Computer Science, Java, quality assurance testing, diagrams, HTML
* James Bridges: Information Technology, Java, C#, Unity, MySQL, Html, Php, CSS, JavaScript
* Jagjot Singh: Computer Science, MySQL, Html, PHP, CSS, Java and JavaScript
* Jenna Mackool: Information Technology, Web Development, HTML, CSS,
* Stevan Rajkovic: Information Technology, QA, Java, PHP, CSS, HTML, C++, Shell scripting
  1. **Socio-economic Impact, Business Objectives, and Gap Analysis**

The socio-economic impact of this project is minimal. It will likely do little to change the lives of anyone except maybe put a smile on their face for an hour or so. This game should be enjoyable to young children and the elderly alike. Our Business Objective is to have monetization from either in-game purchases and/or Unity ads.



* 1. **Security and ethical concerns**

The database must be secure to prevent data breach

In order to view player data from the database, a login is required via the accessible website

Player time: how much time is too much?

Will not monetize via “loot boxes” as they are predatory in nature towards people with gambling addictions.

* 1. **Glossary of Key Terms**

Tower Defense: A genre of game in which the player places structures that hold off increasingly challenging discrete waves of virtual opponents. These games are typically endless and associated with a survival score.

1. **Project Execution and Planning** 
   1. **Team Information**

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* 1. **Tools and Technology**

GitHub for file sharing

Trello for Sprint management

Visual Studio for IDE

Unity as the Game Engine

Discord and email for communication

Blender for 3D asset creation (and unity asset store)

* 1. **Project Plan**

Tower Defense - a player places structures to hold off discrete waves of opponents; the longer the player stays alive, the better the score

3D point defense game using C# and Unity gaming engine

Audio will also be implemented using Unity

High scores and login information stored in SQL database

Website protected by username/password shows high scores

* 1. **Best standards and Practices**

1. **System Requirement Analysis** 
   1. **Function Requirements**
   2. **Non-functional Requirements**
   3. **On-Screen Appearance of landing and other pages requirements.**
   4. **Wireframe designs**
2. **Functional Requirements Specification** 
   1. **Stakeholders**
   2. **Actors and Goals**
   3. **User stories, scenarios and Use Cases**

As a user, I want to create a new user account for the game.

As a user, I want to set up/change the password for my user account.

As a user, I want to change the username affiliated with my user account.

As a user, I want a way to verify my email address.

As a user, I want to be able to unlock my account if it was locked for security reasons.

As a user, I want to log into my account using the website.

As a user, I want to log into my account using the desktop app.

As a user, I want to be able to play the game without distractions.

As a user, I want to check my personal high score in the game.

As a user, I want to be able to view the leaderboard for all the high scores that exist.

As a user, I want to be able to post a new high score if I’m able to achieve it.

As a user, I want to be able to remove a high score if I don’t want to see it on the leaderboard.

As a developer, I want to implement the game using the C# programming language.

As a developer, I want to use the Unity gaming engine to implement graphics.

As a developer, I want to use mySQL for the database implementation.

As a developer, I want to use HTML for website formatting and integrate PHP for added functionality.

As a developer, I want to maintain performance of the game by curating efficient algorithms.

As a developer, I want to host the website publicly.

As a developer, I want to use encryption when transferring data from the user to the webpage.

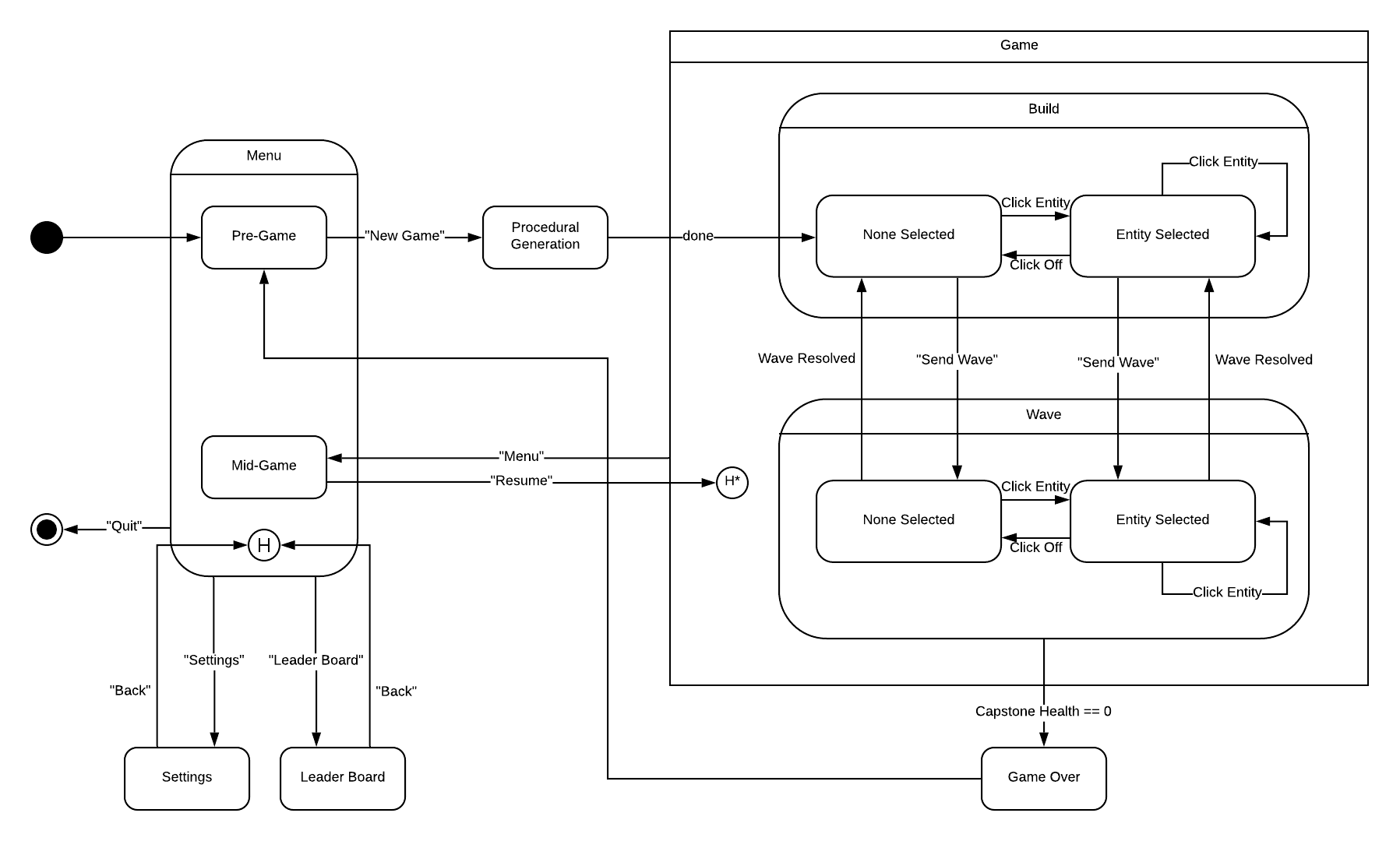
As a developer, I want to ensure that the database is stored securely.

As a developer, I want to port the game onto Android.

As a developer, I want to lock user accounts if they are trying to be compromised.

* 1. **System Sequence / Activity Diagrams**

1. **User Interface Specifications** 
   1. **Preliminary Design**
   2. **User Effort Estimation**
2. **Static Design** 
   1. **Class Model**
   2. **System Operation Contracts**
   3. **Mathematical Model**
   4. **Entity Relation**
3. **Dynamic Design 7.1. Sequence Diagrams.** 
   1. **Interface Specification**
   2. **State Diagrams**



1. **System Architecture and System Design** 
   1. **Subsystems / Component / Design Pattern Identification**
   2. **Mapping Subsystems to Hardware (Deployment Diagram)**
   3. **Persistent Data Storage**
   4. **Network Protocol**
   5. **Global Control Flow**
   6. **Hardware Requirement**
2. **Algorithms and Data Structures** 
   1. **Algorithms**
   2. **Data Structures**
3. **User Interface Design and Implementation** 
   1. **User Interface Design**
   2. **User Interface Implementation**
4. **Testing** 
   1. **Unit Test Architecture and Strategy/Framework**
   2. **Unit test definition, test data selection**
   3. **System Test Specification**
   4. **Test Reports per Spring**
5. **Project Management** 
   1. **11.1 Project Plan**
   2. **11.2 Risk management**
6. **References**