H.I.C. (Hero Innovation Coliseum)

Contact Information

Robert Fowler
    Email: RobertEFowler3@gmail.com
    Cell: (770) 500-6996

Abstract

Hero Innovation Coliseum, or H.I.C. for short, is an arena style video game. A fast paced
and competitive environment designed to test the skills and creativity of the players.
Equipped with abilities, which they have personally designed and created, players must
overcome and defeat each other to prove their worth in the coliseum.

Background

## Prior Work by Others:

Battlerite

Battlerite is a popular released video game on the market today. It will be used as a reference throughout the project to create H.I.C. and form a similar feel and playstyle.

Unreal Engine

Unreal Engine is one of two major game engines used in the industry today. It will provide an excellent foundation for the development of H.I.C., as well as providing useful tutorials on many aspects of game development.

Skillshots

Skillshots are a way of implementing an ability that requires it to be aimed accurately at the target. Below are several examples of how skills can be implemented; aiming a basic shot, charging larger attacks, and placing area of effect attacks.
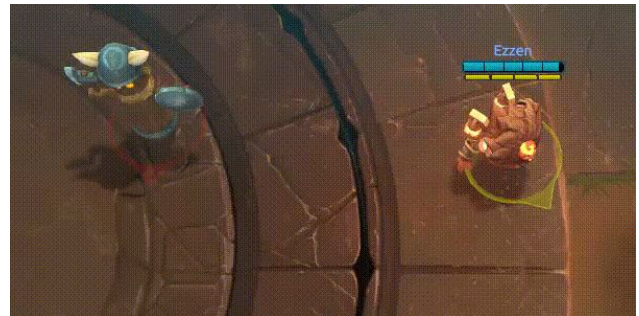
These gifs were taken from Battlerite as reference for Skillshots

Prior Work by Myself:

Design

Having previously worked out many design decisions for H.I.C. on paper, I am armed with an excellent path and vision of what the video game will look and feel like.

Game Design Class

Having taken the special topics class provided at BYU-Idaho, I have learned many principles of game design and development that I can implement in this project. Some of the principles I learned are how animations function, sound can be input, and collision detection.

Description

H.I.C. will be a videogame targeting the gamer who is looking for a competitive environment that also allows them to use their creativity to the highest potential. To provide this type of environment, I plan to implement the following three principles:

1) Fast Paced Environment

To create a fast paced environment, that inspires intense competition, H.I.C. will be created with a small arena. This arena will also shrink in size as time moves on. This creates a theoretical clock for the player to race against.

This gif was taken from BattleRite to show a potential option of shrinking the arena

2) Infinite Creativity

Many games of this type and style create classes that have a set ability library for the player to choose from. The plan for H.I.C. is to create a template with which the player can create their own abilities. They will do this through a point buy system. This type of system will create a balanced environment as no one ability can do it all.

The player may use the points to create a wide variety of abilities. For example, the player could use points to make an ability deal more damage, have a longer range, or cast faster. Another way a player can upgrade his ability with points to buy harmful effects that take hold on a player hit by such an ability. Examples of a harmful effect are to stun, to slow, to silence, etc. Maybe they want to add a beneficial effect that will help them, such as giving them a boost of speed, giving them more health, a shield from the next ability, etc.

To ensure that the player has to think about these created abilities in a strategic way the player may only equip four abilities at a time. This will cause the player to still think about the abilities he is creating instead of just making as many as he can keybind to his peripherals.

Below is an attached sketch of the way the creation screen would look like. Simply a prototype creation screen many or all aspects of it are subject to change.

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ABILITY TYPE              BASIC
SKILL TYPE                MELEE LINE

DAMAGE              ◀ DEFAULT ▶
RANGE              ◀ DEFAULT ▶
CAST TIME          ◀ DEFAULT ▶
CHARGE TYPE        ◀ DEFAULT ▶
CHARGE TIME        ◀ DEFAULT ▶
TRAVEL TIME        ◀ DEFAULT ▶



TOTAL POINTS 100:         SPENT POINTS: 0
```

3) Highest Skill Wins

There are ways to increase the odds for the higher skilled players to win. One method H.I.C. will implement is to make each match a best of five format. This means that for a player to win a match they would have to win three rounds. Between each round, each player will have the opportunity to change their four equipped abilities so that they can adapt to their opponent. Thus, creating an even more competitive environment.

Significance

Use Existing Code Wherever Possible

Using the Unreal Engine will allow a large portion of the code for H.I.C. to come from the engine itself. This code will handle many of the complicated aspects of a video game. For example the physics engine, graphics rendering, collisions, etc.

Are often completed in teams

I may not have a traditional team within the Senior Project course. However, I will be reaching out to various people to help in the creation of the art assets for the game. This allows me to focus on the coding and development of the video game and its complexities without worry about the art and animations. As well, as various friends who have offered to test video games and give feedback. Given a theoretical team in spotting bugs, errors, and design faults in the product.

Have potential real-world impact

H.I.C. will give a setting for creativity unlike any game before. Giving a player near infinite choice in the design, feel, and playstyle of their individual characters while still providing a balanced and competitive environment.

Build your portfolio/resume

According to many interviews with game designers the highest barrier of entry for most applicants is that they have no completed game in their portfolio. With the goal to work in this industry there is no project that would help my portfolio more than a project such as H.I.C.

Require a full semester's level of effort

This will require a full semester's level of effort. Well above the 126 hour requirement. Being a video game project from the ground up there is many aspects to ponder, design, and program throughout the process. As well as, providing many opportunities to stretch and add more features to the final product.

Are Completed

This can be a massive worry to any instructor involved in approving a project of this size. I am highly motivated to complete a project of this type and quality in order to further future career prospects. I can and am committed to complete this project within the time frame required.

New Computer Science Concepts

Online Connection

Having never previously completed a project where a connection over the internet was necessary I will need to learn this concept to complete H.I.C.. This will be a very new concept to learn, but a very important one as it is a concept used by nearly every video game being created in the industry today.

Secure Numbers(Can't be changed by client)

One potential failure of a small video game is providing a system that can too easily be tampered with. Players will always seek an advantage in a game whether through the design or through the faults in the code. H.I.C. will have to deter the user from attempting such tampering. As well as having a system in place where those caught tampering with the code can be disciplined appropriately.

Working with a Game Engine

Having very little experience working with established game engines I will need to learn the ins and outs of Unreal Engine. Having this experience will make me a more valuable candidate for future job positions as many developers in the industry use Unreal Engine to create their products.

Interestingness

I understand that many video game projects are declined as senior projects because of the amount of work involved in creating them. This is true, there is a lot of detail that goes into the creation of a video game that causes their development to take a large amount of time and resources. To fully grasp the level of detail needed just read the article [The Door Problem.](#) I believe it is important for me to acknowledge the difficulty of this project before I explain why I am prepared and motivated to overcome these hurdles. There are three main motivations that will drive me to complete the development of H.I.C. Below I explain each of these motivations beginning with my weakest motivation and ending with my strongest.

Career Preparation

With plans to work in the video game design and development industry I have done a large amount of research so that I know what I am going into. There are two aspects of this project that I believe will prepare me for my future career. First, is the obvious that it will give me the opportunity to learn how a video game is created from ground up. Second, is that the workload this game will require is similar to the workload in the industry. It is no secret that this project will require more hours than another senior project, but it is also no secret that many companies over work their game developers. Many employees of the industry state that they work 60-70 hours a week to complete a video game before a deadline. Knowing this I am motivated to grow my work ethic so that I can handle the workload required once I begin in the industry.

Dream Project

During my career as a student I have always had ideas for creating a video game, but there were important concepts I wanted to learn before I began development. For example computer graphics, database management, and machine learning. I also learned things I did not expect to be helpful before taking the class. For example, how to create a System Requirements Specification and its importance. Being in my final semester I feel more prepared than ever to be able to create a polished final product. This time has also given me a chance to refine my ideas. At first I was flooded with different game ideas that could potentially be great. But I have now been able to refine and reduce these ideas into one game, H.I.C., that I believe will show the best of what I can create. With an interesting design, simple concept, and engaging gameplay I believe it will have the capability of attracting many gamers.

Video Games Inspire Better Lives

I have always been passionate about video games. I started playing at a very young age and while I did go through a time where they had a negative impact on my life. I grew

through that stage and I learned how to harness games to improve my life. Games have taught me many life skills that have made me who I am today. Such as social skills, problem solving skills, creativity, and motivation. I want to help create games that inspire these positive impacts in people's lives. Games that help them grow these skills and truly inspire people be better. This motivation to show that games can have a positive effect in people's lives is the entire reason I have shaped my life to go into this industry. It will likewise be a motivation that will keep moving and help me overcome any hurdles that occur in the development of H.I.C.

Tasks and Schedule

Requirements Specification

Start Date: May 1st   End Date: May 18th   Estimated Hours: 25

Description

A complete requirements specification will be produced during this time frame. It will include a detailed report all of the functional requirements of H.I.C. As well as detailing which requirements are required for the final product and which requirements could be potential stretch goals or future patches for the videogame.

Preliminary Meeting with Artists

Start Date: May 1st   End Date: May 18th   Estimated Hours: 3

Description

H.I.C. will need to have 3D art so that it can also look like a finished product. This task details the deadline for finding an artists and discussing the feel the art of the video game should purvey.

Environment Established

Start Date: May 18th   End Date: June 1st   Estimated Hours: 35

Description

To complete this task a basic environment will need to be created using the Unreal Engine. This includes a basic user interface, an un-textured testing environment including a target dummy, and a basic attack to ensure that collision detection, health updates, and animations are working as expected.

Ability Template Created

Start Date: June 1st   End Date: June 15th   Estimated Hours: 20

Description

Creating the templates for the abilities is what will set H.I.C. apart from other games in the genre. A template will be created for the different types of skill shots, and then defaults developed for each template.

Ability Creation

Start Date: June 15th   End Date: June 29th   Estimated Hours: 20

Description

This task will have three main points. First, to create the user interface used by players to create abilities. Second, to test the creation of different abilities to validate they are functioning as expected. Lastly, to begin the process of balancing the system for point buying abilities.

Online Connectivity

Start Date: June 29th   End Date: July 13th   Estimated Hours: 20

Description

To complete this task H.I.C. will need to be able to connect two players from separate clients to each other who can then play a smooth match using that connection. The second piece of this task is to create a matchmaking system that will ensure players are matched against those of equal skill.

Art Assets Input

Start Date: June 29th   End Date: July 13th   Estimated Hours: 2

Description

This is the deadline for creating a finished, tested, and polished product. Meaning the art assets will also need to be input into the game replacing the un-texturized arena that was used during the development process.

Testing and Completion

Start Date: July 13th   End Date: July 23rd   Estimated Hours: 10

Description

Throughout development there will be various people testing the video game as "Alpha Testers." This final task will be creating a Beta test environment. Where feedback can be collected and applied to ensure a truly polished product upon completion.

Total Estimated Hours: 135

Required Resources

Unreal Engine

For the purposes of this project this engine is free to use. Unreal Engine is one of the two most common game engines used by companies in the industry. An extremely powerful game engine that can be used to create visually stunning video games this tool will powerful tool and resource in the creation of H.I.C.

Art Assets

Art Assets will be required for this project. There are potentially people who will be willing to complete the work for free as a way of increasing their portfolio. The resources will be necessary in providing a polished and complete video game.