CAPESTONE

By,

Stephen McCormick

&

Erik Lougee

Stephen McCormick

- The primary duty for Stephen McCormick was web development. Stephen was tasked with creating and maintaining the website content and appeal.
- Style and keeping game details up to date were also a part of this. He was also in charge of PHP and other server side code for signing up, logging in, and retrieving data from the database to be used in the game. Stephen also, on more than one occasion, assisted Erik Lougee in JavaScript development and troubleshooting.
- He also took part in level design and implementation. There was a joint effort between Stephen and Erik when integrating PHP and JavaScript with AJAX.

Erik Lougee

- I worked mainly on the Javascript game engine, game / level design, and rules of the game. Stephen and I both collaborated on aspects such as database design and problem solving.
- There were many issues we came across that, with some diligence, were able to overcome.
- It was a pleasure working with Stephen and I hope that our technical careers intertwine in the future. One thing we cannot agree upon, however, is whether or not writing in third or first person is better.

The Adventure

- The Capestone adventure follows the struggles of our hero as they descend into the depths of the earth. You are that hero and your goal is to retrieve the mythical Capestone. The road you travel through as your progress dungeon level after dungeon level will be hard. The monsters will become stronger and appear more frequently. You will embark on these tasks alone with nothing more to help you but the items you find along your way. With due diligence you will be able to retrieve the mystical Capestone and save the world!

The Engine

- The user interface for this game is powered by JavaScript.
- The game Engine is determined and controlled through a JavaScript file filled with static and dynamic functions.
- Everything from randomization of the dungeons to the monsters and how they react to you are moderated by our JavaScript coded engine.

The Horsepower

- All backend processing is completed by PHP.
- When signing up to start your adventure or logging in to continue, PHP will handle the verification and authentication between the user and the database.
- When a user successfully logs in all data for monsters, items, inventory, and hero will be retrieved from the database and handed off to JavaScript for compiling.
- When the user triggers a save action (traversing stairs to the next or previous level), JavaScript will enact an AJAX call to pass all relevant information back to PHP for saving into the database.

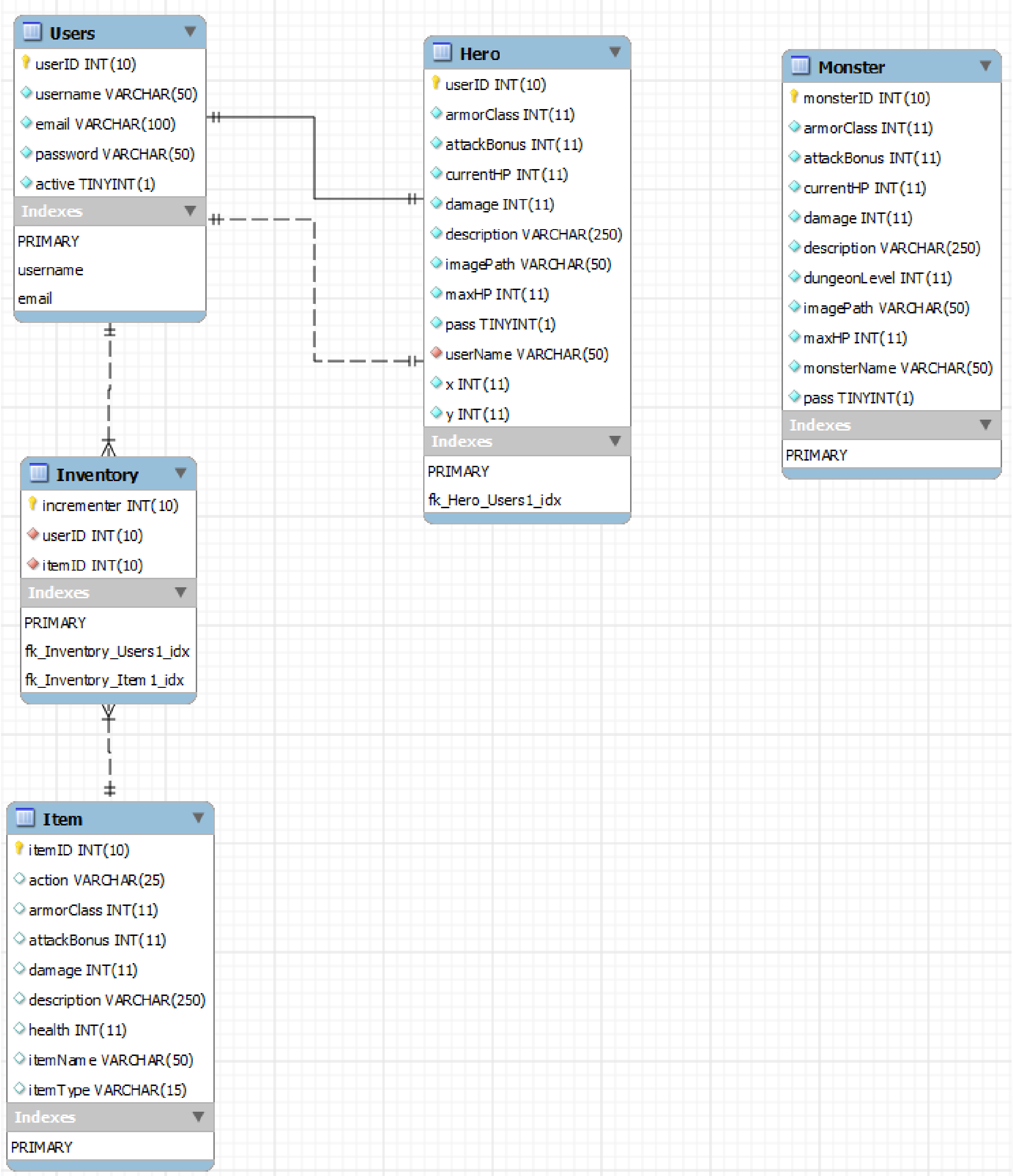
Timeline

- Week 1 - Set up our development environment, upload the code base and version it, and start to create a prototype and proposal.
- Week 2 - Started to work on the website and created the proposal page with a PDF viewer, took care of user sign up and login, and started to work on the game.js file.
- Week 3 – Completed database design, worked on enemy AI, implemented the ability to get hero data using PHP in conjunction with the database.
- Week 4 – Worked on AJAX calls to send data to PHP to be stored in the database. This took a combined effort to achieve. Added base monsters and items to the database. Started the technical document, which we added to as we continued the project.
- Week 5 – Continued to work on AJAX and made queries to the database to send monster, item, hero, user, and inventory to Javascript. Deprecated the idea of storing functions into a database and decided to add a Javascript file for this purpose. Overcame the ‘circular logic’ error we were receiving.

Timeline (Continued)

- Week 6 – Added many dungeon quadrants to the dungeon array, worked on the ability to randomize dungeon layout, and added items and more monsters to the database. Added the ERD to the website.
- Week 7 – Added the ability to open doors and chests, which was quite a hurdle, worked on the aesthetics of the website. Added the ability to show hero's hit points and other statistical values.
- Week 8 – Added randomized items to chests, successfully implemented dungeon level and equip functionality.
- Week 9 – Added the ability to drink potions, drop items, and completed the ability to traverse stairs. Added monsters for dungeon level four.
- Week 10 – Finished up the final dungeon level and the ability to complete the game.

The Schema



Users

userID INT(10)
username VARCHAR(50)
email VARCHAR(100)
password VARCHAR(50)
active TINYINT(1)

Indexes

PRIMARY
username
email

Hero

userID INT(10)
armorClass INT(11)
attackBonus INT(11)
currentHP INT(11)
damage INT(11)
description VARCHAR(250)
imagePath VARCHAR(50)
maxHP INT(11)
pass TINYINT(1)
userName VARCHAR(50)
x INT(11)
y INT(11)

Indexes

PRIMARY
fk_Hero_Users1_idx

Monster

monsterID INT(10)
armorClass INT(11)
attackBonus INT(11)
currentHP INT(11)
damage INT(11)
description VARCHAR(250)
dungeonLevel INT(11)
imagePath VARCHAR(50)
maxHP INT(11)
monsterName VARCHAR(50)
pass TINYINT(1)

Indexes

PRIMARY

Inventory

incrementer INT(10)
userID INT(10)
itemID INT(10)

Indexes

PRIMARY
fk_Inventory_Users1_idx
fk_Inventory_Item 1_idx

Item

itemID INT(10)
action VARCHAR(25)
armorClass INT(11)
attackBonus INT(11)
damage INT(11)
description VARCHAR(250)
health INT(11)
itemName VARCHAR(50)
itemType VARCHAR(15)

Indexes

PRIMARY

The Obstacles

- Learning and researching the AJAX functionality with objects and multidimensional arrays
- The logic of checking for actors encountering doors, chests, walls, and other actors
- Implementing collision detection for both the hero and monsters on level loads
- Our failed attempt at retaining all dungeon code within the database

Summary

- Over the past 10 weeks, we came across many obstacles that required some serious thought, but there was no huge issues that we could not overcome. Through working together, we were able to produce a large body of work that we are both proud of. We hope to continue to the project in the future and add more functionality and gameplay elements to achieve an even greater end result. You can always improve your abilities, educate yourself further, and achieve greatness.