Content Independent Classroom Gamification
Team Name: The Missing Semicolons
Team Members: Nigel Haney, Stefon Martin, Brendan Lauck, Kevin Tran, Ash Mahein
Mentor: Chris Cain
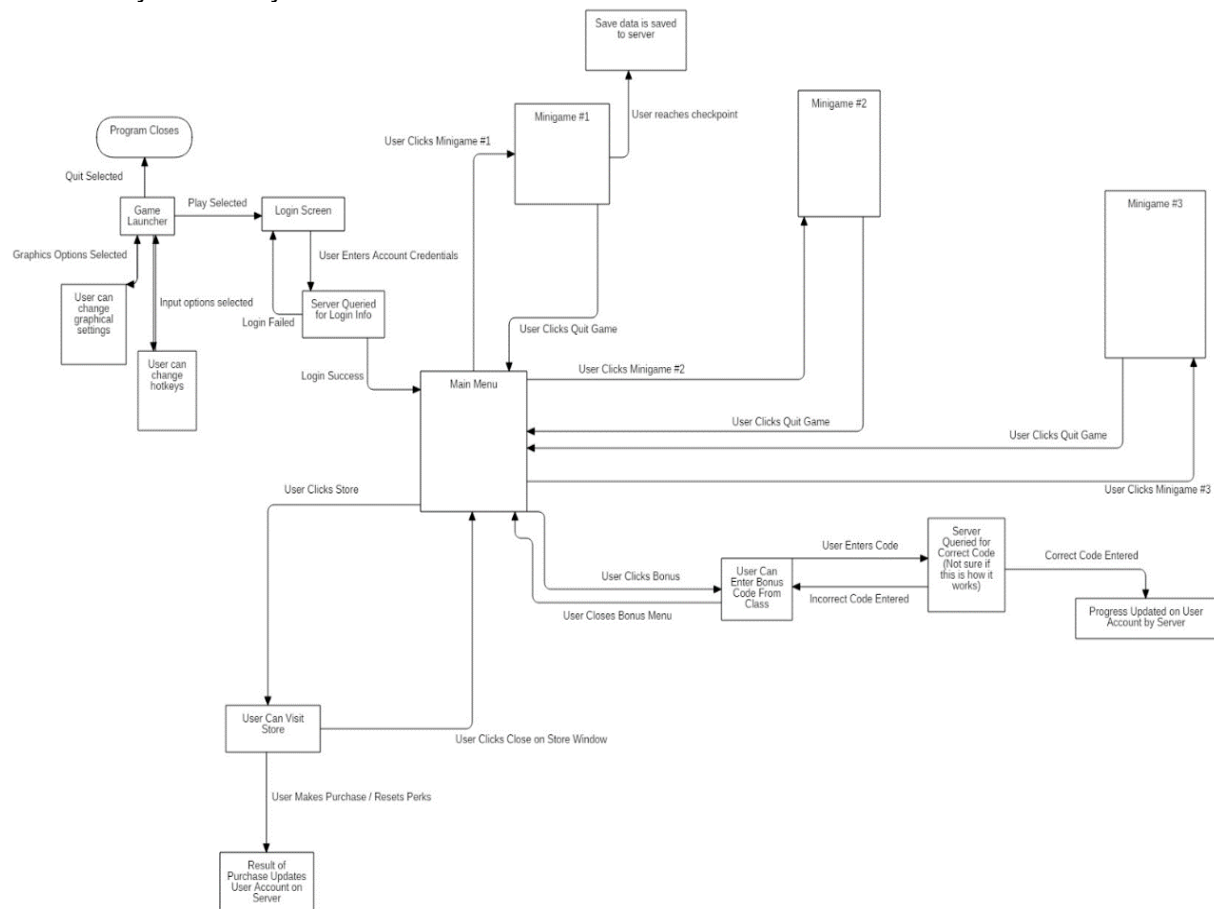Instructor: Behrooz Shirazi

A.   Project Description

        Content-Independent Classroom Gamification will be used to show many students that it is possible to learn and engage in a lecture hall setting and having fun while doing so. Gamification is a technique used to motivate and influence students to pay attention in class, engage with peers, and learn along the way. A senior design team last semester began to develop a gamification environment using Unity and MongoDB, and this year our team will be building on and fixing what teams in previous years have come up with. This project is a good fit for students who have an interest in game development and want to further their knowledge in the process. Since many of us in the group are unfamiliar with the Unity this will be a big opportunity for us to learn more about creating a game using the engine.
        The gamification as of now includes three incremental minigames that may appeal to the various users. The first game has somewhat of a Pokémon style of play feel to it, you start off as a boy lost in a town and you interact with objects when you walk into them or click them with your mouse. Our second game is the well-known logic-based puzzle game called sudoku, we provide the user with three options of difficulty and the higher difficulty you choose will earn you a greater amount of coins. Lastly, for our final game we have a space shooter game where you are looking to shoot and destroy enemies in voyage throughout space. The space game is currently very buggy and will require some tweaking and additions throughout the later developments of our project.
        These mini-games have been taken into account different player types and preferences so that the game is not centered around one general audience. Students make incremental progress by playing any of the three games. They earn active playing time by showing up to class and participating. During class time, if the student is paying close attention and following along with the lecture or discussion they will see a keyword that will be used to earn them some stamina or prize for the day. In order for this to happen the professor will have to put in the special keyword in the class lecture slides or notes.
        The game and classes are intertwined. Progress in class will tie into progress in the game in new and exciting ways. As of now the game is being deployed only in Computer Science 111 this spring. Students are required to create an account and begin playing the game.

Game Play Hierarchy Chart

Program Closes

Quit Selected

Play Selected

Game Launcher

Login Screen

Graphics Options Selected

User Enters Account Credentials

User can change graphical settings

Input options selected

Server Queried for Login Info

Login Failed

User can change hotkeys

Login Success

Main Menu

User Clicks Minigame #1

Minigame #1

User reaches checkpoint

Save data is saved to server

Minigame #2

Minigame #3

User Clicks Quit Game

User Clicks Minigame #2

User Clicks Quit Game

User Clicks Quit Game

User Clicks Minigame #3

User Clicks Store

User Clicks Bonus

User Can Enter Bonus Code From Class

User Enters Code

Server Queried for Correct Code (Not sure if this is how it works)

Correct Code Entered

User Closes Bonus Menu

Incorrect Code Entered

Progress Updated on User Account by Server

User Can Visit Store

User Clicks Close on Store Window

User Makes Purchase / Resets Perks

Result of Purchase Updates User Account on Server

One key limitation of the final product is that there is no web based application for the game play. As of now every user has to start the game by using the sent out package of executables. Another key limitation right now is that if there's ever a bug fix everyone playing the game has to redownload the newest and latest version of the game. We currently don't have the knowledge or tools to build a web based application that will automatically update the game if there is ever a bug fix. These are a few items that we will not be able to include in our product as of now, but maybe in the coming semester. One last limitation for our final product will be 3D game design. Even though Unity allows for 3D game design we have agreed as a group that we will stick to only implementing the game in 2D.

The game is made using Unity and MongoDB. These are valuable software packages that will help a lot as we begin to develop and fix the game. As a team we will stick to using these packages and try not to implement the product using another software or framework. Unity being a great cross-platform game engine will be very beneficial to our group as we move ahead with our vision for this product. As for the backend and database design we believe that the previous teams idea of using MongoDB will be interesting. Currently not many in our team are familiar with MongoDB but we are eager to learn more about it and its usage in our game. MongoDB is an excellent open source cross-platform database program. MongoDB uses JSON-like documents with schemas.

During our design process our team will be highly involved in testing our product as we move forward with our beta release. As of now our team has noticed several bugs and we plan on fixing all of them. Before our beta is released we would like to spend some time doing some internal testing to minimize the need for bug fixing once we deploy the game. Our team will go

through a phase of unit testing to make sure every aspect of the game is working well. As we deploy the game our team will continue to conduct tests to find and patch any bugs that we may encounter. When the game is deployed we will also have a test group of students from Computer Science 111 that will be able to inform us of any uncaught bugs.

Stakeholders of our product are all team members, our mentor Chris Cain, and most importantly the students and professor of Computer Science 111. The potential users and consumers of our product would be all team members, all students and professor of Computer Science 111, and our mentor. All members of our team would use the product on a daily basis to search for bugs, implement new mini games, and lastly update the current three mini games. The students in Computer Science 111 would log onto the product in order to show they went to and participated in class. The professor for Computer Science 111 will write down certain clues for their class so they may use what they learned or saw in class that day in their gameplay. Lastly, our mentor would also use the product in order to track our teams progress in order to see how far along we have come. Our team doesn't see any special considerations of the stakeholders now.