First Generation

CS4961 Senior Design

Software Design Specification

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**Section 1: Introduction**

1.1  **Purpose**

This document will outline in detail the software architecture and design for the First Generations Game (FG). This document will provide several views of the system's design in order to facilitate communication and understanding of the system. It intends to capture and convey the significant architectural and design decisions that have been made for FG.

1.2  **Scope**

This document provides the architecture and design of FG. It will show how the design will accomplish the functional and non-functional requirements detailed in the FG game design document.

1.3  **Intended Audience**

This document is written on a technical level to address the College of Arts and Letters and CSULA Computer Science department.

1.4  **References**


1.5  **Definitions**

[SEE Section 8: Glossary]

**Section 2: System Overview**

First Generation (FG) is being built for the College of Arts and Letters to help simulate a college experience for high school students. FG is being built for mobile devices.

The scope of the project is to make a mobile application for mobile platforms where the user can experience a year at college. Users of FG will be able to choose their own adventure. This adventure will have many options for the user to choose from. These options will change the story depending on what the user chooses.
2.1  Context Diagram (level 0 Data Flow Diagram)

Data Flow Diagram (DFD): Level 0

User Input
- Touch Input

First Generation Application
2.2.1 Startup
2.2.2 Main Menu
2.2.3 Game

Output
- Graphics
- Sound
- Vibration
2.2 Context Diagram (level 1 Data Flow Diagram)

Section 3: Design Considerations

3.1 Goals
The user will experience by playing as a single player student based on RPG game. He or she will make their way to the first year of college and by losing player stats through various mini games, side quests, and by interacting with the NPCs. The game is also to make the school to be a better place by doing taking the courses and interacting with the characters inside the game.

3.2 Development Methods
This project is being developed using the Unity game engine software.
Section 4: Architectural Strategies

4.1 Use of a particular type of product (programming language, database, library, etc.)

Unity Game Engine is used in our game to implement it. The language that we used in this RPG game is the C#. We are used the Maya program to check out the 3D model. The music were made through the program called MuseScore 2.

4.2 Reuse of existing software components to implement various parts/features of the system

Unity assets were used in our game to test our model and build the scene with the existing components from the assets.

4.3 Future plans for extending or enhancing the software

Future plans for FIRST GENERATION GAME are including but not limited to:

- Implement better environments by adding more 3d structures and the objects into the scene.
- Adding multiplayer to interact with the other player online.
- Online activities like accessing into the twitter and the facebook to share.
- Adding the GPS system in our game to find the current location of the player.

4.4 User interface paradigms (or system input and output models)

The user interface will have the main menu UI such as new game which is an avatar selection screen. And will also have the continue and options buttons. The options will include all the features that the other game have. The graphic settings will control the level between low medium, and high. The sound and the music will also be implemented on the options so that the user have in control of them. Lastly, the vibration will also be under the options so that the user can either turn it on or off.

4.5 Error detection and recovery

Data throughout the gameplay is going to be saved so any errors that may intrude gameplay will not affect saved data.

4.6 External databases

No external databases will be utilized unless specified.

4.7 Distributed data or control over a network

Control over a network will only be utilized with a username within the software. Authenticated users will only have access to their own data.
4.8 **Generalized approaches to control**

Approaches to control shall be achieved when the user successfully enters their personal username.

4.9 **Concurrency and synchronization**

The mobile device shall be synchronized to a saved data platform.

4.10 **Communication mechanisms**

Communications within the software will be done over a mobile network or wireless fidelity (Wi-Fi) connection.

**Section 5: System Architecture**

5.1 **component-1 (subsystem-1) Mobile Device (AOS/IOS)**

5.1.1 – The mobile device will be where the application will be installed. The mobile device will provide the user touch screen interaction with the software.

**Section 6: Detailed System Design**

6.1 **Module-1 Startup (SM)**

6.1.1 - The Startup Module (SM) is responsible for initializing all necessary game data when the software application is opened. The SM will check if there is previous saved game data; the saved game data will be loaded into the application if it exists.
6.2 Module-2 Main Menu (MMM)

6.2.1 - The Main Menu Module (MMM) is responsible for loading and displaying the initial menu screens when the software application is opened. The (MMM) is also responsible for loading a new game if saved game data does not exist, and it is responsible for loading the game from the last save game point if saved game data exists. The (MMM) allows the user to select a player avatar and enter a name for the player avatar to load into the game. Additionally, the (MMM) is responsible for allowing the user to alter several different game settings.

6.3 Module-3 Game (GM)

6.3.1 - The Game Module (GM) is responsible for running the main game in an open world map including 3D models and a 2D HUD. The (GM) will be responsible for displaying, tracking, and modifying time, player, college, NPC, and quest statistics. The (GM) is also responsible for controlling dialogue interactions between the player and the NPCs. Additionally, the (GM) is responsible for allowing the user to alter several different game settings.

Section 7: Graphical User Interface Design

<table>
<thead>
<tr>
<th>The GUI was designed to be simple and bold.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="GUI Screen 1" /></td>
</tr>
<tr>
<td>There was a desire to not clutter the screen during the main gameplay.</td>
</tr>
<tr>
<td><img src="image2" alt="GUI Screen 2" /></td>
</tr>
</tbody>
</table>
The main menu, the phone, has big, simple buttons that are clearly marked what their function was.

**Section 8: Glossary**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>2D</td>
<td>Two Dimensional</td>
</tr>
<tr>
<td>3D</td>
<td>Three Dimensional</td>
</tr>
<tr>
<td>AOS</td>
<td>Android Operating System</td>
</tr>
<tr>
<td>FG</td>
<td>First Generation</td>
</tr>
<tr>
<td>GUI</td>
<td>Graphical User Interface</td>
</tr>
<tr>
<td>HUD</td>
<td>Heads-Up Display</td>
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<tr>
<td>IAP</td>
<td>In-Application Purchase</td>
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<tr>
<td>IOS</td>
<td>iPhone Operating System</td>
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<tr>
<td>MT</td>
<td>Micro Transactions</td>
</tr>
<tr>
<td>NPC</td>
<td>Non-Playable Character</td>
</tr>
<tr>
<td>UI</td>
<td>User Interface</td>
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