**Software Requirements Specification**

**for**

**<ChemXplosion>**

**Version 2.0**

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**Revision History**

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| --- | --- | --- | --- |
| **Name** | **Date** | **Reason For Changes** | **Version** |
| Brendon Serrano | 11/27/2017 | Game setup has changed | 2 |
|  |  |  |  |

# **Introduction**

## **Purpose**

* The purpose of this project is to design a 3D based learning module that will be both fun and educational for Chemistry students beginning to learn chemical reactions.

## **Project Scope**

* This learning module/game is intended for anyone looking to learn chemical reactions through a fun user-friendly game. The user will start the game within a sci fi spaceship. In order to escape the spaceship, the user will need to learn specific chemical reactions, apply critical thinking, problem solving, and situational awareness to help them through each level.

# **Overall Description**

## **Product Features**

* The client will need to be able to maneuver through a set of levels that will test what they learned from surrounding monitors in each room.

## **Operating Environment**

* The software will run by WebGL created through Unity to run on any browser on the web. Game will begin immediately once game is loaded.

## **Design and Implementation Constraints**

* This program must be in accordance with all Requirements and coding standards.  Any deviation from either Requirements or coding standards without consent from an authority figure on the project may result in lost points.

## **User Documentation**

* There will be hints included in the software accessed after one minute of failure to complete task.
* There will be a small “thought” box that will appear listing locations (monitors) to look into to find answers to problems.

# **System Features**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Subsystem | Title | Tracking ID | Priority | Status |
| Main Instance Subsystem | Start New Game | MI01 | High | Not Complete |
| Resume Game | MI02 | High | Not Complete |
| Quit Game | MI03 | High | Not Complete |
| In game Instance Subsystem | Resume Game | II01 | High | Complete |
| Restart Game | II02 | High | Complete |
| Video | II03 | High | Not Complete |
| Audio | II04 | High | Not Complete |
| Quit | II05 | High | Complete |
| Chemical Puzzle Subsystem | Solve Puzzle | PZ01 | High | Not Complete |
| Fail Puzzle | PZ02 | High | Not Complete |
| Game Attribute Subsystem | Change Location | GA01 | High | Not Complete |
| Show Score | GA02 | Low | Not Complete |
| Request Hint | GA03 | Low | Not Complete |
| Save Game | GA04 | High | Not Complete |
| Load Game | GA05 | High | Not Complete |
| Game Over | GA06 | High | Not Complete |

## **Functional Requirements:**

**3.1 Level Design:**

* Puzzle 1: A large sci fi room connected to a hall way lacking windows, with a complicated locked door allowing access to the next puzzle room. Within the current room lies a significant amount of complicated looking technology along with a set of crates. Each crate contains a set of compounds. At the end of the hall is a locked door with monitor containing the compounds needed to cause a thermite reaction, except the reaction is missing a set of compounds. The user must figure out which compound from the crates solve the reaction.
* Puzzle 2: Large comfortable living space containing organic plant life, more complicated looking machinery, as well as a medical facility. Within the main room remains a large door seemingly damaged but being held slightly open by a hydraulic press. In order to activate the press to open the doors, another set compounds must be used from the surrounding crates.

**3.2 How To**

* How to start a New Game
  + Once game is loaded in browser. User may choose from the Start Menu to:
    - Start Game, Help (for controls), Options, or Exit the game.
  + Once User begins game the menu will change Slightly:
    - Resume Game, Restart Game, Video Settings, Audio Settings, or Quit
* How to play Game
  + Common Commands
    - Uni-directional Movement - forward (w), left (a), right(d), backward (s), up (space)
    - Interact with stationary objects - (E button)
    - Picking/Dropping objects - (Left Click)
    - Interacting with Menu System - (Esc to Menu)
  + To progress through game there will be puzzles revolving around chemical reactions displayed upon certain monitors. Each reaction must be completed in order to complete each puzzle.
* How to Win
  + All Puzzles must be completed within the current level. Once first level puzzles are completed the player may step on a “teleporter” that is accessible in the beginning room. Teleporter will send player to level two. Currently as project stands, completing level one will win the game.

1. **External Interface Requirements (Non-Functional Requirements)**

## **User Interfaces**

Minimum requirements: a text console above a textbox so the user can enter commands and read the returned input in a confined area.  A list of common commands to the right or left would be helpful to get new users playing.

## **Hardware Interfaces**

* *Desktop:*
  + *OS: Windows XP SP2+, Mac OS X 10.9+, Ubuntu 12.04+, SteamOS+.*
  + *Graphics card: DX9 (shader model 3.0) or DX11 with feature level 9.3 capabilities.*
  + *CPU: SSE2 instruction set support.*