**Professor Panic: The Academic Exodus**

Software Development Plan

Version 1.1

12/01/2023

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**Software Development Plan**

**12/01/2023**

**WESTERN NEW ENGLAND UNIVERSITY**

**CPE -425, 525 SOFTWARE ENGINEERING**

**Team#1 Project**

DOCUMENT APPROVALS

|  |  |  |
| --- | --- | --- |
| **NAME** | **SIGNATURE** | **DATE** |
| David Melanson (Project Lead) |  |  |
| Kalyan Bhagavan |  |  |
| Matthew Dingman |  |  |
| Philip Brehart |  |  |
| Logan Paranto |  |  |
| Sydney Adams-Jones |  |  |

# DOCUMENT CONTROL / REVISION HISTORY

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| **TITLE** | Software Development Plan |
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| **URL** | https://github.com/PJB01/Academic-Exodus |

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| --- | --- | --- | --- |
| **Date** | **Version** | **Description** | **Author** |
| 09/26/2023 | 0.0 | Initial Draft | DM |
| 10/02/2023 | 1.0 | Completely changed doc to meet spec | DM |
| 12/01/2023 | 1.1 | Dates removed, place added for signatures, rev history format changed, tailored for accuracy | ALL |
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**Preface**

This document was created to categorize and catalogue all information pertaining to the software development process of the project, currently called *Professor Panic: The Academic Exodus*, hereafter called the game or the project when not specifically called by name. This document serves as a guide for team members to use toward the goal of completing this project. It also will be used by those reviewing the quality of the project and the processes used to develop it.

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**Project Organization**

**Members:**

Logan Paranto – Graphical Software Engineer

Phil Brehart – Backend Software Engineer

Sydney Adam-Jones – Graphical Software Developer

Matt Dingman – Backend Software Engineer

Kalyan Bhagavan – Scrum Master, Supporting Software Engineer

David Melanson – Group Lead, Environment and Test

**Roles:**

Backend Software Engineering – Develop all unseen functions required for the successful implementation of game.

Graphical Software Developer – Create all images required; includes but is not limited to player character, enemies, items, and environment. Aid in software development for implementation of these as necessary.

Scrum Master – Establish and maintain all aspects of scrum methodology for the group. Ensure all members of group understand the methodology, practice of, and team organization. Reduce all tasks to constituent parts, assign these as fit by role definitions. Lend expertise to Group Lead.

Supporting Software Engineer – When time allows and as needed, aid all other teams with their workload.

Environment and Test – Create environment functionalities, implementing that which is created by graphical team. Create methodologies for testing software created and implement.

Group Lead – Set up meetings, make executive decisions where necessary, take responsibility for overall success of project and members.

**Scope**

This Software Development Plan establishes the plan for software implementation, test, and qualification of the game *Professor Panic: The Academic Exodus*; created for the class CPE 425/525 under the direction and tutelage of Robert Despang, PhD. Updates to this document address any change to be made to anything contained within and shall be outlined in the table provided under **Record of Changes**. This software is to be developed using the Python programming language, specifically the module therein called “Pygame”.

**Project Premise**

The game shall be based on the general experiences of all Electrical and Computer Engineering students that pass through Western New England. In general, the goal is to escape from Sleith Hall, the building where most of the classes pertaining to this group of students take place. To accomplish this goal, one must travel through the halls, going from room to room to acquire new items and defeat enemies. There shall be three floors to conquer, the first two of which shall have five rooms (to be revised later as needed), the last of which shall only have a boss to fight. Upon defeating the final boss on the third floor, the user will be allowed to leave Sleith and will have won the game. Progression items will allow the user to go from floor to floor and provide them with the capability to defeat these bosses and make defeating basic enemies easier.

**Project Schedule**

1. **Game Conceptualization** 
   1. Define game concept
   2. Create high-level story
2. **Game Mechanics Design** 
   1. Define player controls
   2. Design character movements
   3. Define power-ups and obstacles
3. **Character and Enemy Design** 
   1. Design player character and behaviors
   2. Design enemy characters and concepts
4. **Level Layout Design** 
   1. Create floor layouts
   2. Design boss encounter for floor 1
   3. Design transitions between floors
   4. Create room layouts for each floor
5. **Player Movement and Interaction** 
   1. Implement player movement
   2. Implement player interaction with objects
6. **Enemy AI and Combat** 
   1. Implement enemy AI behaviors
   2. Create combat system
7. **Game Logic** 
   1. Implement game rules and scoring
   2. Implement floor to floor transition
8. **Integrate Graphics**
9. **Environment and Gameplay Testing** 
   1. Test player movements and controls
   2. Test enemy behaviors and combat
   3. Test floor transitions in-game
   4. Optimize
10. **Defect Improvement**

10.1. Fix defects found in testing

1. **Documentation and Deployment**

11.1. Create installer or package for players

11.2. Create user manuals and round up documentation as need be

1. **Project Wrap-up**

12.1.Conduct all final testing and quality assurance

**Resources**

**Monetary**

Estimations for monetary resources required came out to $94,200. This includes an estimated 5 hours per week for all 6 members of the team, plus 2 hours of meeting time per week, resulting in an estimated 504 total hours spent. An additional $1000 per person was added to supply a personal computer for each member of the group.

**Development Methodology**

Following the experience of the group’s scrum master an agile methodology was chosen to follow for the development of the project. Specifics of this can be seen in Figure 1 (pg. 5). Following this framework, the group intends to follow dynamic phases throughout the process, broken up into 6 main phases, with further deductions shown in the above-mentioned figure. These steps are as follows:

1. Plan
2. Design
3. Develop
4. Test
5. Deploy
6. Review

Each further deduced step of this process will have its own set of these phases and repetition of the process will be enacted until the product is sufficient. A constant integration focused approach will serve to lighten the load during the final stages of the project, having most of the game already together, leaving the possibility for a focus on testing and bug detection. The team will meet once or twice weekly as needed to review work done, set and review goals for the coming week, and to assess progress.