# 4.0 Software Development Plan

## 4.1 Plan Introduction

Interrobang is a First Person 3D Puzzle Video Game built around a looping map design.

We believe this project will be an appropriate project for 401, as it will force us to see through design decisions, and realize these ideas through code. It was also allow us to learn new software, as well as the C++ programming language. The project is also scalable, as the basic idea for the game is easily doable within a single, but can grow far beyond this, depending on how much our team is able to get done. Likewise, this will allow us to learn skills necessary for working in a group, and how to properly divide work so that it will get done in the most efficient manner. Development will involve learning basics of Unity and Maya, brainstorming ideas for the game, learning best practices for implementing these ideas, modeling basic objects for the game in Maya, and developing the mechanics of the game through various C++ scripts. The culmination of this process will result in a fully functioning game with most if not all of the brainstormed ideas working as intended.

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| --- | --- |
| Sub-task Completion Dates | |
| Basic movement is working in Unity: Basic character movement is working | Week 5 |
| Basic Level is finished in Unity: The general format of what the main level within the game is finished | Week 5 |
| Brainstorming for assets: Assets the project needs to get developed in Maya are discussed so that they can eventually make their way into the game. | Week 6 |
| Level Testing: Level is tested against the player movement. Changes are made until both movement and level complement each other | Week 6 |
| Asset Creation: Assets have been created and added to the game. More assets are given to the asset creator to continue creating. | Week 7 |
| Visual Design: Visuals of the game are discussed, art director is tasked with converting the basic level into a level that incorporates this visual design concept. | Week 7 |
| MVP Completed: Minimal Viable Product finished, which includes character moving flawlessly in the main level, with the character able to loop through the level five times, and complete five different puzzles each time, to demonstrate the core tenants necessary for the game. |  |

### 4.1.1 Project Deliverables

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| --- | --- |
| Project Deliverables | |
| Project Proposal Presentation / Document   * Present powerpoint and document outlining Interrobang to class | Week 02 |
| Requirements Specification  Initial Development Schedule (Part of SDP draft)   * List out what we will need for the project and create an initial schedule to get things done by   Oral Status Reports   * Oral description of how Interrobang is moving along. | Week 05 |
| Written Status Reports in the project SDF   * Actual written document outlining progress on Interrobang | Week 06 |
| Software Development Plan Document   * The entire finished plan for how Interrobang will be developed | Week 07 |
| Written Status Reports in the project SDF   * Actual written document outlining progress on Interrobang | Week 08 |
| Written Status Reports in the project SDF   * Actual written document outlining progress on Interrobang | Week 10 |
| Project Preliminary Design Review Presentation   * Show off the minimum viable product of what we have so far.   Software Design Description Document (Architecture Section)   * Go into gorey detail about how Interrobang works in a description document. | Week 11 |
| Project Critical Design Review Presentation   * Show off what changes we have implemented from previous week   Software Design Description Document   * Finishing touches on description document   Written Status Reports in the project SDF   * Actual written document outlining progress on Interrobang | Week 12 |
| Presentation/Demonstration   * Formal presentation of Interrobang   Test and Integration Plan   * Formal plan on how testing will be implemented into game   Written Status Reports in the project SDF   * Actual written document outlining progress on Interrobang | Week 14 |
| User's Manual Final Updates   * Finished user’s manual with details on how to play Interrobang   Oral Status Reports   * Oral description of how Interrobang is moving along. | Week 15 |
| FINAL Product Delivery (Final Report and Code)   * Final report on how development of Interrobang turned out along with all the code used for the game. * December 19th   User's Manual Final Updates   * Finished user’s manual with details on how to play Interrobang | Week 16 |
| FINAL Project Presentation   * Final presentation of Interrobang | Week 16 |

## 4.2 Project Resources

### 4.2.1 Hardware Resources

|  |  |  |
| --- | --- | --- |
| Resource | Development | Execution |
| Windows 10  Intel Core i7, 2.4 GHz  8 GB ram | X | X |
| Mac OS  Intel Core i5, 2.7 GHz  8 GB | X | X |
| Windows 10  Intel Core i3, 2.3 GHz  8 GB ram | X | X |

### 4.2.2 Software Resources

The two main resources that will be used in this project are Unity and Maya. Unity will handle the bulk of the core game design processes, as well as house the finished video game application. Maya will be used to design and model assets for the game to be imported into Unity. Music composition software Finale and music mixing software Fl Studios will be used as well in order to develop sound clips and music for the game. Visual Studios will be used to write and compile code written in C++.

|  |  |  |
| --- | --- | --- |
| Resource | Development | Execution |
| Windows 10 OS/Mac OS | X | X |
| Unity | X |  |
| Maya | X |  |
| Visual Studio | X |  |
| Finale | X |  |
| Source Tree | X |  |
| FL Studios | X |  |

## 4.3 Project Organization

* Merci Magallanes: Art Director, Asset Creation/3D modeler, UI Artist, Animator
  + Merci is in charge of creating the overall art direction of the project to make sure the visual style of the game is consistent and complements the rest of the game. Along with this, she is tasked with using Maya to make any assets that are not easily available within Unity. Simple animations may also be necessary, and thus Merci will be the one to handle the situations in which animation is appropriate. Lastly, she will be given the duty of designing a user interface that is both effective and complements the games visuals.
* Joey Martinez: Project Manager, Game Designer, Level Designer, Additional Programming, Music Producer/Audio Mixing and Mastering Engineer
  + Joey will handle manage the overall project in terms of organizing each member in the project and their roles within the group. He will make sure that each person knows what needs to get done during each week. Likewise, the overall concept of the game will be designed by Joey and it will be Joey’s job to make sure everyone on the group knows of this direction. Lastly, Joey will handle making sure music and audio clips make it into the game, and that there is an overall acceptable quality to all of the audio files.
* John Hardy: Lead Programmer, UI Developer, Technical Director, Quality Assurance Tester, Version Control Manager
  + John is tasked with developing most of the code used to handle the designs expected to be in the game. He will make sure that all the design decisions developed by Joey will be interpreted into the game correctly through code, so that it best reflects the original intent of the design. Likewise, he is tasked with making sure that all code is tested and working correctly. He will also be tasked with making sure the UI will adhere to the design given by Merci. Lastly, he is in charge of making sure version control happens correctly, and in a clear and efficient manner.
* Christian Alva: Music Composer
  + Christian will handle creating a score that both engages the player and complements the tone and feel of the game.

The Project manager will handle making sure everyone knows the work that needs to get done each week, and to remind each member of the planned schedule. Communication of this will happen at biweekly meetings in the Keck Lab. Communication outside of meetings will happen through Slack, and in urgent cases, text message. All members, except for the music composer, will be pushing code to Github. Each member will be expected to communicate effectively through commit messages, during meetings, and through slack messages the changes they have made so that everyone knows the current state of the project. Overall, version control will be overviewed by the Version Control Manager to make sure conflicts are handled, everything is up to date, and that all commits contain working, efficient, and clean code.

## 4.4 Project Schedule

### 4.4.1 PERT / GANTT Chart

### 4.4.2 Task / Resource Table

|  |  |  |
| --- | --- | --- |
| Task | Persons Assigned | Equipment |
| Basic Character Movement | John Hardy | Computer, Unity, Visual Studio |
| Basic Level Design | Joey Martinez | Computer, Unity |
| Level Testing | John Hardy, Joey Martinez | 2 Computers, Unity |
| List of Necessary Assets | Merci Magallanes, Joey Martinez | 2 Computers |
| Basic Assets Made | Merci Magallanes | Computer, Maya |
| Preliminary Functionality (Death, win teleport) | John Hardy, Joey Martinez | 2 Computers, Unity, Visual Studio |
| Death Screen | John Hardy, Merci Magallanes | 2 Computers, Unity, Visual Studio |
| Win Screen | Merci Magallanes, John Hardy | 2 Computers, Unity, Visual Studio |
| 5 puzzles designed and implemented | Joey Martinez, John Hardy | 2 Computers, Unity |
| Minimal Art Design Included | Merci Magallanes | Computer, Unity, Maya |
| Level Advancement | John Hardy | Computer, Unity, Visual Studio |
| Advanced Movement | John Hardy | Computer, Unity, Visual Studio |
| Basic Animations | Merci Magallanes, John Hardy | 2 Computers, Unity, Maya, Visual Studio |
| Basic Player Interaction (button presses, spikes, etc.) | John Hardy | Computer, Unity, Visual Studio |
| Last Necessary Assets | Merci Magallanes | Computer |
| Miscellaneous Animations | Merci Magallanes | Computer, Unity, Maya |
| 15 puzzles Made and Implemented | Joey Martinez | Computer, Unity |
| Miscellaneous Tweaks (objects aligned correctly, aethetic appearances, etc.) | Joey Martinez, John Hardy | 2 Computers, Unity |
| Basic Testing | Joey Martinez, John Hardy | 2 Computers, Unity |
| Advanced Player Interaction (Speed up pads, bouncy spikes, Teleportation Pads, etc.) | John Hardy | Computer, Unity |
| Forest Ending Added | Joey Martinez | Computer, Unity |
| Music Mixed | Joey Martinez | Computer, FL Studios, Finale |
| Music Added | Joey Martinez | Computer, Unity |
| Sound FX added | Joey Martinez | Computer, Unity |
| Start Screen | John Hardy, Merci Magallanes | 2 Computers, Unity |
| Setting Screen | John Hardy | Computer, Unity |
| More artwork and Assets added to help tone of game | Merci Magallanes | Computer, Unity, Maya |
| Testing/Bug fixing | John Hardy | Computer, Unity, Visual Studio |
| More Puzzles Added | Joey Martinez | Computer, Unity |
| Voice Over for Poems | Joey Martinez | Computer, Unity, FL Studios, Finale |
| Credits | John Hardy | Computer, Unity, Visual Studio |