The pixel wizard test plan

GMIT | Dublin Road, Galway

Software Testing project

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2020

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# Introduction

*‘Testing can only show the presence of bugs, never the absence.’*

This test plan is to outline a testing strategy for ‘The Pixel Wizard’, a 2D, cross platform game. As it is impossible to exhaustively test any project the aim here is to help expose any defects in the major components of the game and by doing so, determine if the product is ready for market. As the game is already produced, we will be taking a reactive testing approach. As we are an independent group there will be less bias when testing which will increase productivity.

# Objectives

The main objective is to identify any defects within the game. This will be accomplished by testing the main components. We have chosen four components to focus on, as highlighted in the design document, see below.

* In Game Menus
* Save Functionality
* Control Mechanisms
* Game Play

These four parts will be tested to ensure the game is in a playable state before release. Test cases will be drafted for each component to outline the tests to be conducted and their outcome logged.

If defects are found, they will be logged, categorized and the development team will be notified.

# Tasks

There will be several tasks to be completed through the testing process, these include:

* Identifying components to be tested.
* Decide on a testing method appropriate for each component.
* Design test cases.
* Preform test under varying conditions.
* Logging test result.
* Categorizing errors. (Trivial to Blocker)
* Notifying development team with change request.
* Preform confirmation/regression test.
* Conduct closed beta testing.

# Scope

As mentioned above there are four areas where we will focus our testing. These components will be tested individually, where possible, and in conjunction with one another. The purpose is to test as much as possible to ensure the product is ready for consumption. This will include closed beta testing.

## Areas of Testing

1. **Individual functions:** Testing, where possible, each function on its own. Ensuring we test all possible code paths
2. **Combination of classes/functions:** Testing, where possible, classes and functions that interact with each other.
3. **Player Interfaces:** Testing all routes possible for a user to navigate on the in-game menus and game options. Testing game visuals and SFX.
4. **Game Play:** Testing the complete product to ensure all parts work together and do not cause any critical errors.
5. **Beta Testing:** When the testing team is satisfied with the in-house testing, we want to make available to a small public group to test the game in real world circumstances.

## Tactics

We plan on having our testing (up to beta) complete in 6 days. We are allowing a further 6 days for beta testing. The team will be notified of their individual responsibilities at our initial meeting, these responsibilities will then be reiterated via email and issues will be opened on our central repository assigning each team member their tasks.

**Day 1:**

**Entry Criteria:** Test cases developed.

**Exit Criteria:** 100% completion of test cases, no major errors, 1-5 minor or low-level errors acceptable.

**Note:** Testing each function and any available code paths.

|  |  |  |
| --- | --- | --- |
| Test | Member | Due |
| Unit Testing | D. Lally | Day 2, @ 1300 |
|  | M. Hynes |  |
|  | J. Esus |  |

**Day 2 & 3:**

**Entry Criteria:** Unit Testing complete.

**Exit Criteria:** 100% completion of test cases, 1-3 trivial level errors acceptable.

**Note:** Testing classes and functions working in tandem

|  |  |  |
| --- | --- | --- |
| Test | Member | Due |
| Integration Testing | D. Lally | Day 4, @ 0900 |
|  | M. Hynes |  |
|  | J. Esus |  |

**Day 4:**

**Entry Criteria:** Integration Testing complete.

**Exit Criteria:** 100% completion of test cases, 1-3 minor or trivial level errors acceptable.

**Note:**

* Testing menus and in game options. Testing visuals i.e. aminations.
* Testing player movement/actions

|  |  |  |
| --- | --- | --- |
| Test | Member | Due |
| Interface Testing | D. Lally | Day 5, @ 0900 |
|  | M. Hynes |  |
| Avatar Testing | J. Esus | Day 5, @ 0900 |

**Day 5:**

**Entry Criteria:** Interface Testing complete.

**Exit Criteria:** 100% completion of test cases, 5 minor or trivial level errors acceptable.

**Note:** Testing the game in its entirety

|  |  |  |
| --- | --- | --- |
| Test | Member | Due |
| System Testing | D. Lally | Day 6, @ 0900 |
|  | M. Hynes |  |
|  | J. Esus |  |

**Day 6:**

**Entry Criteria:** System Testing complete. All know defects fixed.

**Exit Criteria:** 6-day period ending in a virtual meeting with the closed beta group.

**Note:** Testing the game in its entirety, in real world circumstances, with volunteer gamers.

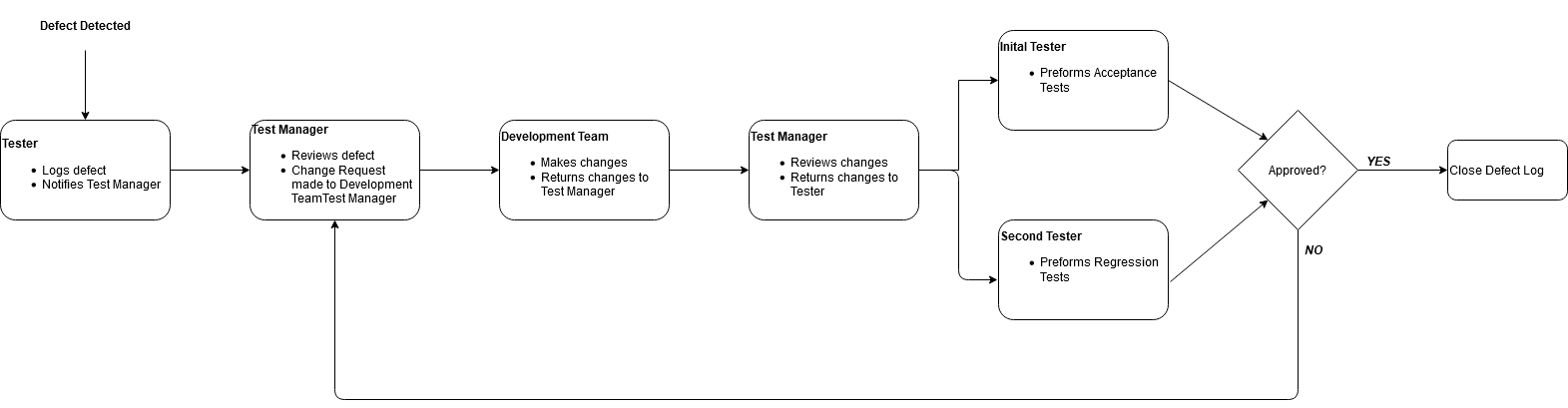
Assuming there are no major bugs found during the initial in-house testing, we will release the game into our closed beta test group. This group consists of volunteer community gamers. This period is important to the testing plan because we can simulate a larger player base, and have the community try to break the game in ways that specified testing may not be able to pick up on. This period of testing is to last 6 days. During which the community will give feed back on any errors they may encounter.

## Error Control

The testing team (in-house) will be working off a 5-level categorizing system:

1. Blocker – System crash, data loss
2. Critical – Lack of functionality with no available work around
3. Major – Degrade in quality, available work around
4. Minor – No error message/ insufficient info in message
5. Trivial – Style errors, spelling mistakes

All bugs must be categorized and logged in the centralised repository for the testing manager to review. After reviewing the manager will notify the development team and request changes to be made. When the bug is eliminated, confirmation testing will be performed by the tester who highlight the issue in the first place, regression testing to be done in line by a second team member. Once confirmation and regression testing has passed, we can move on to the next stage of the STLC.



# Testing Strategy

## Testing Environment

We will provide our own testing environments throughout the initial testing phase. Beta testing will be conducted on volunteers own devices. Environments include;

* PC – Low end laptop to high end gaming rig
* Mobile – Android, IOS, other
* Tablet – Android, IOS, other

## Interfaces

Test cases to be written by M. O’Hammad and conducted by M. Hynes and D. Lally. Defects to be reviewed by M O’Hammad.

**Main Menu:**

* **Play Game:** When selected brings user to game scene
* **Settings:** When selected brings user to settings scene
* **Load Game:** When selected brings user to load scene
* **Delete Game:** When selected brings user to modified load scene (including check box and delete option).
* **Exit Game:** When selected terminates application on device.

**Pause Menu:**

* **Save Game:** When selected saves game progress and returns user to main menu scene
* **Settings:** When selected brings user to settings scene
* **Exit Game:** When selected brings user to main menu scene

## Player Controls

Test cases to be written by M. O’Hammad and conducted by J. Esus. Defects to be reviewed by M O’Hammad.

* Testing player controls on all platforms

## Game Play

Test cases to be written by M. O’Hammad and conducted by M. Hynes, D. Lally and J. Esus. Defects to be reviewed by M O’Hammad.

* Interaction with all enemy types
* Interaction with all weapon types
* Interaction on all levels
* Interaction with save, load and delete.

# Resources

External

In order to complete the testing to a professional standard our team will need the following resources before testing can begin.

|  |  |
| --- | --- |
| Provider | Resource |
| Management Team / Stakeholder | Project specification |
| Design Team | Design document |
| Development Team | Source Code & relevant documentation (e.g. ReadMe.md) |
| Graphical Designers | Game Assets & relevant documentation |
| Audio Technician | Game SFX & music assets |

Internal

In order to complete testing to a professional standard our team will provide the following resources.

**Hardware:**

* Android Mobile Devices - Versions: Lollipop to Android 10
* IOS Mobile Devices – Versions: 4.2.1 to Current
* Low spec laptop (<=4G RAM, Entry grade CPU, No GPU)
* High spec gaming PC (>=16G RAM, Latest Gen CPU, Dedicated GPU, System Cooling)

**Software:**

* Android: Java testing solution
* IOS: Swift testing solution
* PC: Unity testing solution

**Man Hours:**

* **Test Plan:** 32 hours, estimated
* **Test Case Development:** 32 hours, estimate
* **Testing:** 132 hours, estimate
* **Total:** 196 hours, estimate

# Roles & Responsibilities

|  |  |  |
| --- | --- | --- |
| Member | Role | Responsibility |
| M O’Hammad | Team Lead / Manager | * Team Management * Test Case Design * Defect Review * Main Liaison |
| M. Hynes | Tester | * Testing * Defect Logging |
| D. Lally | Tester | * Testing * Defect Logging |
| J. Esus | Intern Tester | * Testing * Defect Logging   **Note:** All work to be reviewed |

# Schedules

We aim to work ahead of the requested schedule to allow extra time for change requests during the STLC.

|  |  |  |
| --- | --- | --- |
| Stage | Requested Date - 2020 | Target Date - 2020 |
| Test Plan | 14th May | 12th May |
| Test Cases | 22nd May | 21st May |
| In-house Testing | 29th May | 28th May |
| Beta Testing | 30th May – 4th June | Same |
| Final Report | 12th June | 10th June |

# Risks

As with all projects there are many risks to consider. Those risks are greatened when working across differing organisations. Most can be avoided with proper planning or overcome with additional time and/or finances. Below we highlight some of the risks we feel could impede our progress;

|  |  |  |
| --- | --- | --- |
| Risk | Avoidance Suggestion | Contingency |
| Communication Failures | * Select individual liaisons * Move testing team to development team location | * Added time to deadline * Increase testing team size * Increase testing team hours per day |
| Severe Defects | * For Exploratory testing to be complete by development team | * Added time to deadline * Increase development team size * Increase development team hours per day |
| Leave (expected  or unexpected) | * Check Rota for holidays and assign members available for length of SDLC * Add one more tester | * Added time to deadline * Increase team size * Increase team hours per day |
| Unforeseen Circumstances | * N/A | * Added time to deadline * Increase testing / development team size * Increase testing / development team hours per day |