**Tower Defense Test Plan**

**Group 11**

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1. **Introduction**

The purpose of this test plan document is to provide an overview of the strategies used to test the Tower Defense game. The test design is requirements based as testing criteria is determined based on the expected functionality defined in the Tower Defense game requirements document. All test cases will refer to sections specified in the requirements document. This document will be split into two parts: a section stating the testing requirements, including what section they cover, and a section displaying each test case, including the input and expected output. The actual outputs are specified in the test report document.

1. **Testing Requirements**
   1. Start Menu

*2.1.1 Requirement 3.2.1.1*

Click Start button to start the game.

*2.1.2 Requirement 3.2.1.1*

Click Exit button to exit the game.

* 1. Layout

*2.2.1 Requirement 3.2.1.2.1*

Layout loads and displays the map, route, tower selector, money, and lives

* 1. Money

*2.3.1 Requirement 3.2.1.3*

Tower can be placed if money is greater than tower cost.

* 1. Lives

*2.4.1 Requirement 3.2.1.4*

Lives decrease for each enemy to reach the end of the map. If lives expire, the game ends.

* 1. Start Level

*2.5.1 Requirement 3.2.1.5*

Mobs flow once the game is started.

* 1. Exit

*2.6.1 Requirement 3.2.1.6*

Ability to exit the game while the game is playing.

* 1. Place Towers

*2.7.1 Requirement 3.2.1.7*

Select tower and place onto the map.

*2.7.2 Requirement 3.2.1.7*

Cannot overlap towers.

*2.7.3 Requirement 3.2.1.7*

Cannot place towers on mob route.

* 1. Towers

*2.8.1 Requirement 3.2.1.8.1.1*

Towers have a graphic.

*2.8.2 Requirement 3.2.1.8.1.3*

Towers attack mobs only within range.

*2.8.3 Requirement 3.2.1.8.1.6*

Placed towers reduce the user’s money total.

* 1. Enemies

*2.9.1 Requirement 3.2.1.9.1.1*

Enemies have a graphic.

*2.9.2 Requirement 3.2.1.9.1.2*

Enemies move through the route at a given speed.

*2.9.3 Requirement 3.2.1.9.1.3*

Enemies have a health that decreases as they are hit by tower attacks.

1. **Test Cases**

* 1. Start Menu

Test 1 & 2

**Purpose:**

Test the start menu play and exit functionality.

**Setup:**

Start the TD.jar file and clicking either the play button or exit button.

**Inputs and Outputs**

|  |  |
| --- | --- |
| **Input** | **Expected Output** |
| Click Start Button | Start the Game |
| Click Exit Button | Game Closes |

**Testing Requirements Covered:**

*2.1.1, 2.1.2*

* 1. Layout

Test 3

**Purpose:**

Check if the layout is displayed along with the route when the game starts.

**Setup:**

Click the start button on the menu and view the window that loads.

**Inputs and Outputs**

|  |  |
| --- | --- |
| **Input** | **Expected Output** |
| Click Start Button | Layout Loads |

**Testing Requirements Covered:**

*2.2.1*

* 1. Money

Test 4

**Purpose:**

Test the ability to place a tower when money is below tower cost.

**Setup:**

Place towers on the map until money total is below tower cost.

**Inputs and Outputs**

|  |  |
| --- | --- |
| **Input** | **Expected Output** |
| Click to Place a Tower | Tower is Not Placed |

**Testing Requirements Covered:**

*2.3.1*

* 1. Lives

Test 5

**Purpose:**

Test that lives decrease as necessary.

**Setup:**

Start the game and do not place any towers.

**Inputs and Outputs**

|  |  |
| --- | --- |
| **Input** | **Expected Output** |
| Click Start Button | Game Ends when Lives Decrease to 0 |

**Testing Requirements Covered:**

*2.4.1*

* 1. Start Level

Test 6

**Purpose:**

Check if mobs flow once game is started.

**Setup:**

Click start button on startup menu.

**Inputs and Outputs**

|  |  |
| --- | --- |
| **Input** | **Expected Output** |
| Click Start Button | Mobs Flow |

**Testing Requirements Covered:**

*2.5.1*

* 1. Exit

Test 7

**Purpose:**

Test if the game can be closed after started.

**Setup:**

Click the start button of the menu.

**Inputs and Outputs**

|  |  |
| --- | --- |
| **Input** | **Expected Output** |
| Click the Window Exit Button | Game Exits, Window Closes |

**Testing Requirements Covered:**

*2.6.1*

* 1. Place Towers

Test 8 & 9 & 10

**Purpose:**

Test if towers can be correctly placed on the map.

**Setup:**

Click the Start button on the startup menu.

**Inputs and Outputs**

|  |  |
| --- | --- |
| **Input** | **Expected Output** |
| Click the Tower Select Button and Click a Location on the Map | Tower Placed at Location |
| Place a Tower and Click to Place another Tower on the same Location | No Second Tower Placed |
| Click the Tower Select Button and Click on a Location on the Route | No Tower Placed |

**Testing Requirements Covered:**

*2.7.1., 2.7.2, 2.7.3*

* 1. Towers

Test 11 & 12 & 13

**Purpose:**

Test all of the functionalities of the towers.

**Setup:**

Click the Start button on the startup menu and place a tower on the map.

**Inputs and Outputs**

|  |  |
| --- | --- |
| **Input** | **Expected Output** |
| Place Tower on Map | Graphic Appears at Location Placed |
| Place a Tower in the Top Left Most Location of the Map | Tower Attacks Enemies only within Range |
| Place Tower on Map | Money Value Decreases on Screen |

**Testing Requirements Covered:**

*2.8.1, 2.8.2, 2.8.3*

* 1. Enemies

Test 14 & 15 & 16

**Purpose:**

Test all of the functionalities of the enemies.

**Setup:**

Click the Start button on the startup menu.

**Inputs and Outputs**

|  |  |
| --- | --- |
| **Input** | **Expected Output** |
| Click Start Button | Enemies Appear in Waves with a Graphic |
| Click Start Button | Enemies Move through the Map on the Route |
| Place Tower within Range | Enemy Health Bar Shows Health Decrease as It Is Hit by Tower Attack |

**Testing Requirements Covered:**

*2.9.1, 2.9.2, 2.9.3*