# Requirement Testing Update

P ( performance requirements), E (external interface requirements), F (functional requirements), and N (non-functional requirements).
Green highlighted test shows what has been added text.      Red highlighted text shows writing which is no longer relevant.

| ID | Requirement | Fit criteria | Pass/Fail | Tests that satisfy this requirement |
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| P1 | The game must run on Windows 10 in Java. | P1.1 - The computer boots into Windows 10. | Pass | N/A |
| | | P1.2 - Java is installed on the computer. | Pass | N/A |
| | | P1.3 - The source code is written in Java. | Pass | N/A |
| P2 | The game must run smoothly on the university computers. | P2.1 - The game runs at a minimum of 30 frames per second at all times. | Fail Pass | Cannot say with confidence if this is the case, but never during testing was a law framerate noticeable. Using Fraps to test the frame rate, the game stays consistently at 60 fps apart from occasionally dipping below 30 very briefly between screens which is not long enough to affect user enjoyment. |
| | | P2.2 - The game responds to user to input within 25ms. | Fail Pass | 10.x all concern this requirement and most pass but we could not measure response time. However, there is no noticeable delay. Input appears instantaneous in all cases and this coupled with the consistent fps leads us to the conclusion that the input is fast enough. |
| E1 | The user must be able interact with the system using an input system available to university computers. | E1.1 - The user can navigate the menus. | Pass | See UI black-box tests 6.x, 7.x, 8.x |
| | | E1.2 -  User is able to move their character. | Pass | 10.3 |
| E2 | The system must provide feedback to the user. | E2.1 - There must be some visual output from the system. | Pass | 5.1 the DesktopLauncher takes the user to the menu. |
| F1 | The game must be split up into different stages which each have a few waves of | F1.1 - The game returns you to the stage select screen once you complete a stage. | Pass | 9.7 |

| | | F1.2 - Zombies are spawned at the start of each wave. | Pass | Zombies must have been spawned for test 9.8 to pass. |
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| F2 | The game must get progressively more difficult. | F2.1 - More zombies are spawned in later waves and stages. | Pass | 9.8 |
| | | F2.2 - More difficult zombie types are spawned at later waves and stages. | Fail Pass | There is currently only one zombie type. All three zombie types spawn during the game, with more waves of the trickier zombies as you progress. |
| F3 | There must be three different player types the user can choose to play as with different abilities. | F3.1 - The different player types have different stats. e.g. run speed, hit points. | Pass | 2.3.1, 2.3.2 |
| | | F3.2 - The different player types have special abilities. e.g weapons, armour. | Pass | Special abilities have been implemented for each player type. |
| F4 | There must be at least 3 zombie types (based on societies) with different abilities. | F4.1 - The different zombie types have different stats. e.g. run speed, hit point. | Fail Pass | There is currently only one zombie type. There are now 3 different zombie types (not including the 2 bosses) which all differ from one another in both speed and in health. They were not given weapons/armour or a society to represent so not to lose the zombie-apocalypse scenario. |
| | | F4.2 - The different zombie types have special abilities. e.g weapons, armour. | Fail | |
| | | F4.3 - Each zombie type must reference a university society. | Fail | |
| F5 | There must be a mini game, completely different from the main game. | F5.1 - The mini-game has a different objective to the main game. | Fail Pass | There is currently no minigame. The minigame is a Goose Shooter. One wins the game by getting hitting ten geese and then gains points. It is accessed via a button on the main menu. |
| | | F5.2 - It is playable from the main menu. | Fail Pass | |
| F6 | There must be five different power-ups which are sometimes dropped when a wave is completed. | F6.1 - One power-up is dropped at the end of every wave. | Pass | 9.9 |
| | | F6.2 - When a power-up is dropped it is selected randomly from all the power-up. | Fail Pass | Difficult to test whether something is random. There are 5 powerups and all of them are given an equal chance of spawning using a random number |

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| | | | | generator to generate a number from 1 to 5 and then deciding on the powerup based on this. |
| F7 | There must be two bosses. One half way through the game and one at the end. | F7.1 - The third and sixth stage finish with a boss. | Fail Pass | There are currently only 3 levels and no bosses. There are now 6 levels and 2 bosses, one on level 3 and one on level 6. |
| F8 | The game must be able to be saved and then reloaded at any time. | F8.1 - The game state is encoded into text to be stored in a plain text file. | Pass | Game can be saved however only between levels |
| | | F8.2 - Loading a game save returns the game to the exact state it was in when it was saved. | Pass | |
| F9 | The zombies must seek out the player and do damage when they are within range. | F9.1 - The player loses a number of hit points depending on the zombie type. | Pass | There is now three Zombie types in the game which deal different damages to the player. |
| | | F9.2 - The player loses the hit points every second the zombie is within a distance of 20 from the player. | Pass | 3.1.x are concerned with a zombie doing damage to a player depending on the range. 3.2.x test the cooldown time on the zombies attack. All tests pass. |
| F10 | The player should do damage to a zombie when they are in range and the user attacks in the correction direction. | F10.1 - The zombie loses a number of hit points depending on the weapon the player is using. | Fail | There are currently no weapons in the game. The player can only use their fists. |
| | | F10.2 - The zombie loses the hit points when the user clicks in the direction of the zombie as long as it is within the range of the weapon. Range represented as a sector. | Pass | 2.2x test the players attack method on a zombie, all tests pass. 10.2 ensures that the left mouse button causes the player to attack. |
| F11 | There must be a Points System to show the player's progress. | F11.1 - The player gains points for avoiding zombies for 10 seconds. | Pass | Player slowly gains points until hit by a zombie, which sets a 10 second timer which counts down until the player gets points again. The player does not see the timer. |
| | | F11.2 - The player gains points for killing zombies or bosses. | Pass | When the player decreases a zombie's health to 0, the zombie will die and the player will gain a set number of points |

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| | | F11.3 - The player gains points for reaching a designated "safe zone". | Pass | When reaching the safe zone (the Library) for the first time, the player will gain a set number of points |
| | | F11.4 - The player gains points for finishing the minigame. | Pass | Finishing the minigame by shooting 10 geese in the minigame within a certain time limit will result in the player gaining a set number of points. |
| F12 | There must be a safe location within the different 5 locations | F12.1 - There is a set area where no zombies or bosses can spawn. | Pass | No zombies spawn on the Library level. |
| | | F12.2 - There is a set area where no zombies or bosses may harm the player. | Pass | There are no zombies or bosses present on the Library level so are therefore incapable of harming the player. |
| | | F12.3 - Once, the player enters the safe area, 1000 points are obtained. | Pass | The player gains a number of points upon playing the Library level for the first time. |
| F13 | The player must be able to turn into a zombie | F13.1 – The player will turn into a zombie after reaching 0 health points | Pass | The level ends and the player is set to being a zombie when they reach 0 health |
| | | F13.2 - The Level Select screen must change its storyline once the player turns into a zombie. | Pass | The text on the buttons and the story text all change to reflect the zombie story when the player has become a zombie |
| | | F13.3 - Upon the player turning into a zombie, all enemies must be human. | Pass | When playing levels while the player is a zombie, the enemies will have human graphics as opposed to zombie graphics. |
| F14 | A secret item, a 'cure' must exist in the game. | F14.1 - There must be an additional power-up, a cure. | Pass | A cure power-up can now randomly appear as one of the power-ups in the game. |
| | | F14.2 - The player, upon finding the cure, becomes human if in a zombified state. | Pass | The player's graphic will change into a human graphic if the player obtains a cure while zombified. |

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| | | F14.3 - If the player finds the cure, any enemy zombies in that level also become human. | Pass | The cure turns the graphics of enemy zombies into human graphics, and the humans cease to fight the player. |
| N1 | The game must be easy to learn to play. | N1.1 - There is a controls option in the user manual. | Pass | N/A |
| | | N1.2 - The game starts with a tutorial mission. | Fail | There is no tutorial mission but the game in its current state is very simple. |
| N2 | The user must clear all stages and bosses in order to complete the game. | N2.1 - Once a stage is completed the next stage is available to play. | Pass | 9.1 and 9.3 |
| | | N2.2 - Once the final stage is completed the game is completed. | Pass | 9.2 |
| N3 | The different zombie types and player sprites should all be distinguishable from each other. | N3.1 - All sprites are different in design. They have different colours and features. | Pass | There is not test for this but the sprites are distinguishable. |
| N4 | The game should guide the user through the story. | N4.1 - There are text prompts to give the user story information. | Pass | 7.4, 7.5, 7.6 |
| N6 | The game could have an 8-bit aesthetic. | | Pass | N/A |

The table above is based on the Updated Requirements Document in Assessment 4 [1] and Shaun of the Devs' Requirement Testing Update Document from Assessment 3 [2].

# References

[1] Abstract Delete, "*Updated Requirements*" [Online] Available:
https://docs.google.com/document/d/1bB9-HhtplVPX4M1YmaOx8aPoXltyb-QEmtDfvGoMhYc/edit

[Accessed 27-Apr-2019]

[2] Shaun of the Dev's,"*Requirement Testing*" [Online] Available: https://lloydbanner.github.io/SEPR-Team-7/Req3.pdf
[Accessed 27-Mar-2019]