

Implementation 2

Cohort 4 Group 6
Javengers

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Blue highlight means changed for part 2, no highlight is unchanged.

D2a - Introduction

Elicitation

Requirements were created and organised according to the requirements of the customer during the customer meeting. We organised a meeting with our customer and planned a series of questions ( Planning & Notes) to ask so we could clarify what the user wanted from our game and gauge an idea of what was most important to them.

Presentation

All the requirements were given a priority according to the importance discussed with the customer whose priority took precedence over negotiation between the assigned team members. We decided to display the requirements using a table for each group of requirements to aid readability and make it accessible to the whole group.

We split requirements into 4 groups, *user*, *functional*, *non-functional* and *constraint requirements*.

Each is given an ID and description. Giving the requirements a unique ID allows us to reference them efficiently throughout the project so we can ensure that as many of the requirements as possible are met. User requirements are displayed with their respective priority:

- *Shall* - The game must include this,
- *Should* - The requirement is encouraged, or
- *May* - The requirement is desirable.

Functional requirements are displayed with their respective preceding user requirement. Non-functional requirements are displayed with their preceding user requirement and also a criteria for success according to their description. constraint requirements, due to their nature are displayed with their ID and description alone, they are implied as mandatory requirements. We chose to display the tasks in this tabular manner so we could easily see all the requirements and for ease of editing in concurrent customer meetings.

Research

All members of our group watched the video on requirements engineering on the VLE and the members of the requirements team read the chapter about requirements from the Software Engineering textbook by Ian Sommerville [1] to further understand the types of requirements and how to present them most effectively. We took the layout of the table from the video lecture about requirements engineering that we all watched on the VLE as we all thought that that would be the most efficient way to display all of the information needed surrounding the requirements. We also referred to the IEEE Guide to Software Requirements Specification [2] for further clarification about what is to be included.

For the following part of the project, our research was mainly gained from playtesting that was conducted by volunteers. The volunteers played the game and produced a set of data as listed on the [evaluation document](#), this was directly used to aid in our addition of new requirements. As a group, we would brainstorm solutions to the problems raised by playtesters, and then smaller subsections of the group would refine these ideas resulting in a more developed set of requirements, more tailored to the intended user group (a category which our playtesters fell into).

D2b - Statement of Requirements

Single Statement of Need (SSON)

The game should be a single player maze-style game game to simulate escaping university with hidden and visible events found along the way that trigger events.

Requirements

| User Requirements | | |
|----------------------------|--|----------|
| ID | Description | Priority |
| UR_LOADING | Load the game on Windows, Mac and Linux easily | Shall |
| UR_CHARACTER_CUSTOMISATION | Players can customise some parts of their character | May |
| UR_MAP | Player moves through various area on a hidden map | Shall |
| UR_EVENTS | Events are triggered when the player hits some visible and hidden checkpoints | Shall |
| UR_EVENTS_LOCATION | Hidden and visible events to be in random positions each time the game is played | Should |
| UR_ENERGY | Energy or health levels for the player that change due to events | May |
| UR_EVENTS_LINKED | Visible and hidden events to be linked and dependent on each other | May |
| UR_MUSIC | Background music that can be controlled (eg muted) | Shall |
| UR_SOUND_EFFECTS | Sound effects triggered by special events | Should |
| UR_INSTRUCTION | One page instruction screen | Shall |
| UR_TIMER | Timer counting down while playing | Shall |
| UR_TIME_LIMIT | Game should be played to completion in under 5 mins | Shall |
| UR_DISPLAY | Suitable to be displayed on a large monitor while playing | Shall |

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| UR_COLOURS | Game accessible for people who are colourblind | Shall |
| UR_CONTROLS | Player can use the mouse or keyboard to move the character | Shall |
| UR_CAMERA | The camera remains stationary and the character will move around the screen | Should |
| UR_MENU | There is a menu system for the user to operate and navigate the game using. | Shall |
| UR_UI | There should be a pleasing UI for the user to interact with, it should be easy for User to navigate the system | Shall |

| Functional Requirements | | |
|----------------------------|--|----------------------------|
| ID | Description | User Requirement |
| FR_TITLE_SCREEN | The system will display the title screen when the game loads. | UR_LOADING |
| FR_CHARACTER_CUSTOMISATION | The character chosen has elements that can be changed and customised. | UR_CHARACTER_CUSTOMISATION |
| FR_CUSTOMISATION_MENU | The game needs a selection menu for picking the character customisations. | UR_CHARACTER_CUSTOMISATION |
| FR_MAP | The game has a series of hidden areas that the character can move through and between. The player must be able to distinguish between these tiles. | UR_MAP |
| FR_LIMITS | The character has a clear limit of where they can go in the game. | UR_MAP |
| FR_GOOSE_PIECES | The player can locate pieces of the stolen goose statue in order to complete the game. | UR_EVENTS |
| FR_POSITIVE_EVENTS | When the user moves to a certain location then it will trigger a positive effect that benefits the character (x3) | UR_EVENTS |
| FR_DRINK_POSITIVE | The player can drink something from a vending machine that gives them a temporary buff. | UR_EVENTS |
| FR_SCORE_BONUS | The player can collect items around the map that directly increase their score. | UR_EVENTS |
| FR_MAP_ACCESS | The player can gain access to a one time map that allows them to see where they need to go. | UR_EVENTS |
| FR_NEGATIVE_EVENTS | When the user moves to a designated area on the map, it will cause a negative event to happen that hindrances the gameplay (x5) | UR_EVENTS |

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| FR_LIGHTS_NEGATIVE | The player may lose their vision for a short period of time due to the lights failing. | UR_EVENTS |
| FR_SECURITY_NEGATIVE | The player may be apprehended by campus security who are trying to frame you for the stolen goose. | UR_EVENTS |
| FR_COFFEE_NEGATIVE | The player slips in coffee, slowing them down. | UR_EVENTS |
| FR_FROG_NEGATIVE | The player can interact with a frog that will slow down the player. | UR_EVENTS |
| FR_DRINK_NEGATIVE | The player can drink too much and have a sugar crash. | UR_EVENTS |
| FR_HIDDEN_EVENTS | When the user collides with an inthe map it will trigger for a surprise event to happen (x3) | UR_EVENTS |
| FR_WIND_HIDDEN | The user can activate a “windy” effect for the main path - speeding them up one way and slowing them down another. | UR_EVENTS |
| FR_VANITY_HIDDEN | The player can gain vanity items during the game that do not affect gameplay. | UR_EVENTS |
| FR_PROFESSOR_HIDDEN | The player can interact with a professor who provides no assistance. | UR_EVENTS |
| FR_EVENTS_LOCATION | Each time the game is played, the events are randomised in some way through a set of pre-chosen locations | UR_EVENTS_LOCATION |
| FR_ENERGY | There is an energy system for the player that is used to allow the player to sprint. | UR_ENERGY |
| FR_EVENTS_LINKED | Some events may require a different event to be triggered before they can be triggered. | UR_EVENTS_LINKED |
| FR_MUSIC | If the game is being played then background music needs to be playing. | UR_MUSIC |
| FR_MUSIC_VOLUME | The volume of the background music can be changed and muted by the user. | UR_MUSIC |
| FR_SOUND_EFFECTS | Some events may trigger a sound effect that will be heard over the top of the background music. | UR_SOUND_EFFECTS |
| FR_INSTRUCTION | From the instruction screen, the user can read the game controls | UR_INSTRUCTION |
| FR_BUTTON | The user should be able to click on buttons to get from one screen to another. This includes a | UR_UI |

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| | “return” button or a way to return to the previous screen easily. | |
| FR_MAIN_MENU | there should be a menu from which the player can navigate to all other areas of the game including a new instance of the game. | UR_MENU |
| FR_PAUSE | A pause button can be clicked while playing that will temporarily stop the timer and pause the game. | UR_MENU |
| FR_LEADERBOARD | There should be a leaderboard menu that is accessible through the menu system that displays players achievements/highscores | UR_MENU |
| FR_TIMER | Timer will be counting down on the screen while the game is being played | UR_TIMER |
| FR_TIMER_END | Once the timer reaches 0 then the game is over | UR_TIMER |
| FR_CONTROLS | The player can use the mouse or keys appropriately to move the character on screen | UR_CONTROLS |
| FR_CAMERA | As the player moves around the screen, the camera will be stationary until the player moves to the next room | UR_CAMERA |

| Non-Functional Requirements | | | |
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| ID | Description | User Requirement | Fit Criteria |
| NFR_LOADING | Game loads quickly on the different operating systems | UR_LOADING | The game loads in less than 5 seconds. |
| NFR_TIME_LIMIT | Game can be played to completion in under 5 mins | UR_TIME_LIMIT | The player should either escape or the timer run out (or be caught by the dean) in under 5 mins. |
| NFR_SHAPES | Shapes to be used as well as colours to distinguish objects in the game | UR_COLOURS | Someone who is colourblind should have the same understanding for the game as shapes are used alongside colours. |
| NFR_INSTRUCTION_SCREEN | The instruction screen must be simple and easy to understand | UR_INSTRUCTION | The aim and controls of the game can be understood in max of 20 words and all on one screen |

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| NFR_INSTRUCTION_LOAD | Once the game loads, the user is taken to an instruction screen | UR_INSTRUCTION | Taken to the instruction screen in less than 1 second |
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| Constraint Requirements | |
|-------------------------|---|
| ID | Description |
| CR_JAVA | Implemented in Java 17 |
| CR_DEADLINE | 3 events implemented by 10.11.2025 in first version of the game |
| CR_OPERATING_SYSTEMS | Run on computers with Windows, Mac and Linux |

References

- [1] I. Sommerville, *Software Engineering*, ed. 10 Essex, United Kingdom: Pearson Education, 2015
- [2] IEE Computer Society, "IEEE Guide to Software Requirements Specifications" February. 1984. [Online]. Available:<https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=278253>