Requirements

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Requirements Elicitation

Requirements for this project were elicited through a structured, research-informed interview with the customer. Guided by the pre-established engineering requirements, the team developed a set of open-ended, targeted interview questions to identify the customer's objectives, desired system features and constraints. The interview was recorded to later systematically analyse responses.

During customer response analysis, the team extracted explicit requirements directly mentioned by the customer and determined implicit requirements where design or implementation decisions were left to the team's discretion. To organise these findings clearly and ensure traceability, the team documented all requirements in structured tables. Each requirement was assigned a unique identifier (ID) allowing for clear referencing between related requirements and helping simplify later validation and testing processes.

To ensure accuracy and completeness, the team validated the derived requirements by cross-checking them against the customer's goals and the engineering specification. Each user requirement was then prioritised based on its importance to core functionality and user experience, forming the foundation for subsequent design and development decisions.

User Requirements Table

ID	Description	Priority
UR_TUTORIAL	The system will provide a tutorial to teach the player the basics of the game.	Shall
UR_START_GAME	The system shall load onto a start screen.	Shall
UR_UX	The system shall offer a pleasant, family friendly experience.	Shall
UR_SETTINGS	The system shall include a pause game/settings menu with options to adjust volume, restart or exit.	Shall
UR_OFFLINE	The system should be fully operational without a network connection available.	Shall
UR_USER_TIME	The user should be able to see how long they have been playing for.	Should
UR_GAME_COMPLETION	The game should take the user about 5 minutes to complete.	Shall
UR_END_SCORE	The user shall find out their final score at the end of the game.	Should
UR_ACCESSIBILITY	The system shall provide accessibility options in the settings menu with features such as subtitles and a colourblind mode.	Should
UR_PROTAGONIST	The system shall make the main character a student at the University Of York.	May
UR_MOVEMENT	The system shall let the user move their character around the maze.	Should

UR_EVENTS	The system should have exactly one each of a positive/negative/hidden event, alongside a counter showing how many of each event the user has encountered.	Should
UR_ANTAGONIST	The system shall have an antagonist that follows the player around the maze	Shall
UR_RESTART	The system shall allow the user to restart the game at any point	Shall

UR_LEADERBOARD	The system shall display a leaderboard showing the top 5 scores and the user's final score.	Shall
UR_LEADERBOARD_NAV	The user shall be able to return to the main menu from the leaderboard screen.	Shall
UR_ACHIEVEMENTS	The user should be notified when an achievement is unlocked.	Should
UR_BOOK_EVENT	The system should include an interactable book event which takes the player to a quiz.	Shall
UR_QUIZ_EVENT	The system shall present the player with a quiz screen with multiple choice questions.	Shall
UR_BUS_EVENT	The user shall be able to find and collect a bus ticket in order to complete the game.	Shall
UR_REPELLENT_EVENT	The user shall be able to collect an item which temporarily stops the dean from catching them.	Shall
UR_LOCKER_EVENT	The user shall be able to interact with a locker which gives the player a temporary speed boost.	Shall
UR_NPC_EVENT	The user shall be able to interact with an NPC and see dialogue.	Shall
UR_BIRDSEEDS	The user shall be able to obtain birdseeds and see an on screen indicator.	Shall
UR_GOOSE	The system shall include a goose which follows the player until fed.	Shall
UR_SAFE_EVENT	The user shall be able to interact with a safe and open it with a code.	Shall
UR_CODEPAGE	The user should be able to view a code page to obtain part of safe code.	Should

System Requirements

Functional Requirements Table

ID	Description	User Requirements
FR_USER_TIMER	The system shall display a timer to the user which displays how long they have been playing for	UR_USER_TIME

FR_USER_TIME_FINAL	The system shall display the user's final time once they have completed the game	UR_USER_TIME
FR_EXIT_GAME	The system shall allow the user to exit the game at any time of their choosing	UR_SETTINGS UR_RESTART
FR_END_SCORE_TOTAL	System shall display the user's total final score on an ending screen	UR_END_SCORE
FR_END_SCORE_BREAKDOWN	System shall display a breakdown of the user's points (e.g. quick completion bonus +2 points)	UR_END_SCORE
FR_PLAYABILITY_INCLUSIVITY	The system shall accommodate for diverse users by having subtitles and features distinguishable by not just colours	UR_ACCESSIBILITY
FR_DEFAULT_CHARACTER	The system shall display a default character as a sprite which the user has control over	UR_PROTAGONIST
FR_MOVEMENT	The system shall allow keyboard inputs to allow the user to have control over the sprite and interact with the maze	UR_MOVEMENT
FR_UX_MUSIC	The system shall use appropriate music and sound effects that contain no lyrics	UR_UX
FR_UX_DESIGN	The maze map shall contain family friendly themes only	UR_UX
FR_UX_PLAYABILITY	The game's difficulty will be kept to a lower level to maintain a pleasant experience and welcome users with limited gaming experience	UR_UX UR_ACCESSIBILITY
FR_OFFLINE	The system and all its features shall not require any connection to a network	UR_OFFLINE
FR_SETTINGS_OPTION	The system shall include a settings option for the user where they can pause the game and adjust sound controls. The setting shall also present the user the options to exit the game alongside restarting the game. The user can also select the tutorial too.	UR_SETTINGS
FR_END_SCORE	The system shall display the user's end score when they complete the game or fail the game	UR_END_SCORE UR_SETTINGS
FR_POSITIVE_EVENT	The system shall present a positive event in which the player finds a locker, opens it and gains a speed boost advantage	UR_EVENTS
FR_NEGATIVE_EVENT	The system shall present a negative event of the Dean chasing the player around the maze, when caught the player is sent back to the beginning of the maze	UR_EVENTS

FR_HIDDEN_EVENT	The system shall contain a hidden event of the player's bus pass being hidden in a bush which, until triggered, the bus pass will remain uncovered to the user	UR_EVENTS
FR_ANTAGONIST	The system shall include an antagonist, the dean, who follows the player round the map and if they catch the player the player must start again	1. UR_ANTAGONIST

FR_LEADERBOARD	The system shall record a final score to a local leaderboard, load the top 5 entries, and display them. It should then allow the user to return to the menu.	UR_LEADERBOARD UR_LEADERBOARD_NAV
FR_ACHIEVEMENT_DISPLAY	The system displays an achievement notification which can be dismissed	UR_ACHIEVEMENTS
FR_BOOK_INTERACT	The system shall allow the player to interact with a book when within range by pressing the interaction key, taking them to a quiz screen.	UR_BOOK_EVENT
FR_QUIZ_DISPLAY	The system shall display a quiz question with four answers which can be selected with the mouse input.	UR_QUIZ_EVENT
FR_QUIZ_RETURN	The system shall return the user to the game after an answer is selected.	UR_QUIZ_EVENT
FR_TICKET_COLLECT	The system shall allow the player to collect a bus ticket once they have found it.	UR_BUS_EVENT
FR_TICKET_UI	The system shall display a bus ticket icon once it is collected.	UR_BUS_EVENT
FR_DEAN_REPEL	The system shall allow the player to collect an item when nearby which will alter the dean's behaviour.	UR_REPELLENT_EVENT
FR_REPEL_RENDER	The system shall remove the repellent from the game once it has been collected.	UR_REPELLENT_EVENT
FR_SPEED_BOOST	The system shall allow the player to interact with a locker when nearby and apply a temporary speed boost.	UR_LOCKER_EVENT
FR_LOCKER_MESSAGE	The system shall display a message when the locker is searched.	UR_LOCKER_EVENT
FR_NPC_INTERACT	The system shall allow the player to interact with an npc when nearby which displays text for dialogue.	UR_NPC_EVENT
FR_NPC_HIDE	The system shall hide the npc's dialogue when the player moves away.	UR_NPC_DIALOGUE
FR_BIRDSEEDS_UI	The system shall display a birdseeds icon when seeds have been obtained.	UR_BIRDSEEDS
FR_GOOSE_FOLLOW	The system shall update the goose position so that it	UR_GOOSE

	follows the player while it is not fed.	
FR_GOOSE_STOP	The goose shall stop following the player once it has been fed or once the player is far enough away.	UR_GOOSE
FR_SAFE_INTERACTION	The system shall allow to interact with a safe, enter a code, and receive feedback based on the result.	UR_SAFE_EVENT
FR_CODEPAGE_VIEW	The system shall allow the user with a codepage to view the text.	UR_CODEPAGE

Non-functional Requirements Table

ID	Description	User Requirements	Fit Criteria
NFR_GAME_COMPLETION	The game should not last too long	UR_GAME_COMPLETION	90% of users complete the game within 5 minutes
NFR_RESTART_GAME	The system shall allow the user to restart the game at any time by taking them back to the tutorial page to start over	UR_SETTINGS	Game should restart in < 6 seconds
NFR_PLAYABILITY_DIFFICULTY	The system shall not require any prior gaming experience to interact with	UR_SETTINGS	70% of users achieve a high total score
NFR_STABILITY	The system shall work reliably for those on supported setups / OSes.	UR_UX UR_OFFLINE	95% of users should not experience any crashes on supported hardware when playing the game for at least half an hour.
NFR_ACCURATE_INPUT	The system should have inputs work as intended, with minimal lag.	UR_MOVEMENT UR_SETTINGS UR_UX	The player should respond to any valid input on the keyboard within 3 frames.
NFR_PAUSING	The system shall allow the user to pause at any time	UR_SETTINGS	The system should respond to a user pausing within 3 seconds
NFR_MUSIC_CONTROL	The system shall respond to the user muting the music as well as adjusting the volume of the music	UR_SETTINGS	The system shall respond in < 4 seconds

NFR_SOUND_EFFECTS_CONTROL	The system shall respond to the user muting as well as adjusting the volume of the sound effects	UR_SETTINGS	The system shall respond in < 4 seconds
NFR_EXIT_GAME	The system shall allow the user to exit the game at any time	UR_SETTINGS	The system shall take < 6 seconds to close
NFR_EXIT_GAME_SCREEN	The system shall display an exit game screen to the user which displays their current statistics and a farewell message	UR_SETTINGS	The system shall display the exit game screen for 15-20 seconds before the game closes
NFR_RESTART_GAME	If the user selects to restart the game in setting the system shall allow the user to start the game over again from scratch	UR_SETTINGS	The system shall take < 6 seconds to restart
NFR_RESTART_GAME_SCREEN	The system shall display an exit game screen to the user which displays their current statistics	UR_SETTINGS	The system shall display the restart game screen for 12-20 seconds before restarting the game in < 6 seconds
NFR_START_GAME	The system shall open up onto a start screen.	UR_START_GAME	The system should load the screen in < 6 seconds

NFR_SCORE_RECOVER	Scores saved should not be lost due to crashes or other unexpected interruptions.		UR_SCORE_SAVE
NFR_UI_CONSISTENCY	The UI for the leaderboard and visuals for achievements should match the game and its existing screens in style and layout.		UR_LEADERBOARD UR_ACHIEVEMENTS
NFR_LOAD_TIME	Leaderboard should load and be exited without much delay.		UR_LEADERBOARD UR_RETURN_LEADER
NFR_STORAGE	Leaderboard and achievement data should be stored with minimal storage.		UR_LEADERBOARD UR_ACHIEVEMENTS

Constraints Requirements Table

Project Constraints	Development Process Constraints	Design & Technical Constraints
Game Scope Constraint: - The game should be designed as a ‘one-shot’ experience without implementing account systems or local data saving.	**Asset & Legal Constraint:** - All third party assets utilised in the game’s development must be appropriately licensed, or self-developed to respect IP rights.	**Technology Constraint:** - The game shall be built to run on a standard computer/desktop.
Financial and Resource Constraint: - The project should be developed with a £0 budget, by utilising already licensed tools, software engines and assets.	**Gameplay Constraint:** - The game shall not exceed a single player game-play format.	**Gameplay Constraint:** - The game shall not implement more than one positive, negative and hidden event, respectively.
Game Scope Constraint: - The game shall be limited to a single, finite maze. No infinite runners or selectable maze levels should be implemented.	**Gameplay Constraint:** - The game’s progression must be static, player decisions should not deviate from the game’s narrative nor alter the core maze layout during gameplay.	**Gameplay Constraint:** - The user’s game session must have a maximum real world duration of five minutes tracked by an in-game timer.
	Development Life Cycle Methodology: - Git shall be solely used to manage all source code and design documents to document changes and enable collaboration.	**Gameplay Constraint:** - The game should be designed with a single, standard difficulty level to make the game accessible to a wider audience of players.
	Development Life Cycle Methodology: - The game shall be built using an incremental development process (scrum/agile-based sprints) to facilitate regular testing and refinement of code.	**Event Constraint:** - The game shall be a functional prototype including at least one type of event. - The game must include a counter to track how many of each event type the user has interacted with.

	Coding Standards: - The code must be written with clear naming conventions and sufficient comments to ensure it is fit for cross-collabration. - Core game design decisions (event list, scoring mechanisms) must be collated in a single documentation prior to implementation.	**Accessibility Constraint:** - The game must provide an option to mute/disable all music and sound effects. **User-interface Constraint:** - The game must provide a pause/exit option allowing the user to quit or restart their session.