Assessment 2: Brownfield Development

Requirements

Cohort 3 Group 9

Oliver Barden

Connor Burns

Sam Goff

Milap Keshwala

Lewis Mitchell

Jeevan Singh Kang

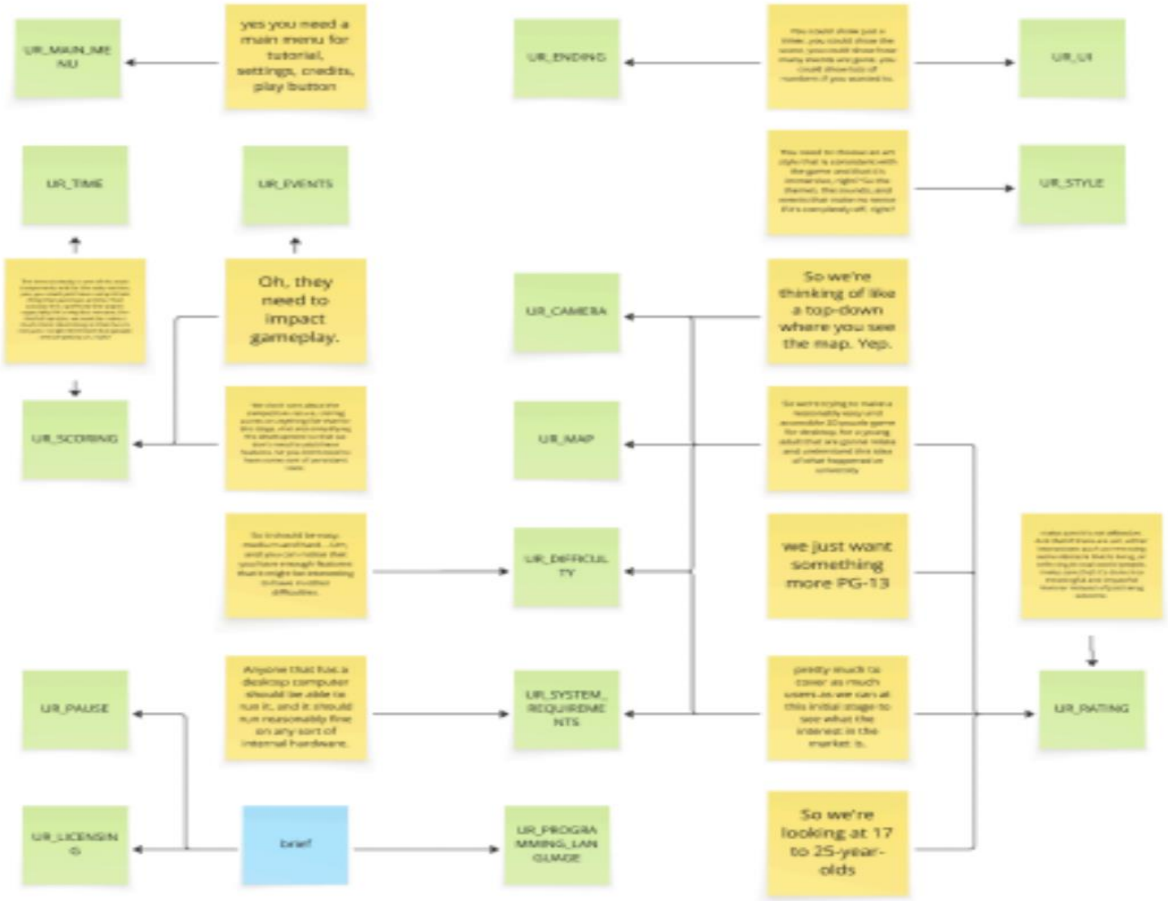
Harry Thomas

Titas Vaidila

The requirements were gathered through a structured process that drew out information based on the product brief and client meetings. We first analysed the initial brief presented to us to

identify the project's scope, constraints and any areas we needed clarification on. We then held client meetings, which we used to identify what the user wants and expects from the game, and to what degree each requirement is necessary so we could outline clear priorities. We validated our interpretations with the client, however, for many requested features, only the broad framework and theme were specified, leaving us with a lot of freedom but also meaning some design decisions could not be made more specific at this stage. To begin, we converted the answers we attained from the meeting to user requirements, which we then refined into several functional and non-functional requirements designed to be more targeted and provide a clearer description of what functionality and qualities the game must adhere to. Each functional and non-functional requirement is derived from and linked back to at least one user requirement to maintain traceability across the documentation. Further review of the brief was conducted later on and throughout the project, such as when the new requirements were added, and questions for the client were drafted with a focus on narrowing down any ambiguity we were left with.

The following requirements are presented in four sections: user requirements (user needs and tasks the user should be able to carry out), functional requirements (behaviours the system must satisfy), non-functional requirements (quality characteristics such as performance and usability), and constraint requirements (external limitations such as licensing obligations and mandatory technology). Each requirement is labeled with a unique ID so it can be referenced in other deliverables. The format for the ids is as follows: UR_XXXX is a user requirement, FR_XXXX is a functional requirement, NFR_XXXX is a non functional requirement and CR_XXXX is a constraint requirement, where XXXX is a descriptive identifier of said requirement. It is formatted in this way to help with traceability to other deliverables, as the identifiers clearly state what the requirement is and are unique so as to avoid confusion when being used. We aimed for the requirements to be as unambiguous, verifiable and to be able to outline the criteria fitting where possible so we could define how each requirement would be tested and passed.



User Requirements

ID	Description	Priority

UR_EVENTS	The game shall include at least 5 hindering events, 3 beneficial events and 3 hidden events that provide fun interactions which only appear when triggered.	Shall
UR_SCORE	The user shall receive a score for each playthrough based on how quickly they escape and any score modifiers from events and achievements, the score should be displayed on the end screen.	Shall
UR_MAP	The game shall provide at least one maze map, containing obstacles (e.g. walls) that restrict movement and at least one exit.	Shall
UR_TIME	The game shall have a 5 minute visible timer for the player, this will be able to be paused and resumed at any time.	Shall
UR_UI	The game should have a UI showing the time remaining and the player's current event count.	Should
UR_MAIN_MENU	The game shall open with a main menu with buttons to start a new game, open settings, view the leaderboard and exit. The game should provide navigation here after playthrough.	Shall
UR_ACHIEVEMENTS	The game must contain achievements that can be earned during the game and may modify the final score at the end.	Shall
UR_WIN_LOSE	The player shall be able to win by escaping the maze before the timer runs out and lose if the time expires.	Shall
UR_MOVEMENT	The player shall be able control the character's movement during the playthrough.	Shall
UR_TUTORIAL	The user will be able to view an introductory screen demonstrating the controls.	Shall
UR_LEADERBOARD	The player shall be able to view a leaderboard which displays the top 5 scorers name and score.	Shall
UR_STYLE	The game should represent a university escape scenario and have a consistent, immersive style and auditory experience.	Should
UR_RATING	The game shall be family-friendly and appropriate for a broad audience, avoiding offensive content.	Should
UR_SYSTEM_REQUIREMENTS	The game shall be playable on a standard desktop PC without any added hardware, launch reliably, run offline and not collect personal data.	Shall

Functional Requirements

ID	Description	User Requirements
FR_START	When a game commences the player shall be initialised to a default spawn point and timer must start decrementing from 5 minutes.	UR_TIME
FR_MAP_DISPLAY	On starting a game, the game will load a pre-made maze map with boundaries, obstacles, locations for event triggers and an exit.	UR_MAP

FR_HIDDEN_EVENT S	The game will provide at least 3 hidden events providing fun interactions which remain hidden until triggered.	UR_EVENTS
FR_POSITIVE_EVENTS	The game will provide at least 3 beneficial events that when triggered provide benefits such as a score or speed boost.	UR_EVENTS
FR_NEGATIVE_EVENTS	The game will provide at least 5 hindering events that when triggered impede progress in ways such as a score or speed decrease.	UR_EVENTS
FR_GAME_END	If the player escapes before the time expires they shall be awarded a win, and if it expires before they escape they lose. A clear win/loss screen will display buttons to play again or go to the main menu.	UR_WIN_LOSE
FR_EVENT_TRACING_UI	The game will track and display how many of each type of event have been interacted with.	UR_UI
FR_MAIN_MENU	The game shall launch with a main menu that provides buttons to start the game, tutorial screen, view leaderboard, view achievements, open settings and exit the game.	UR_MAIN_MENU
FR_SCORING	The game will compute a score which gives a better score to quicker escapes and applies any score modifiers from events and achievements.	UR_SCORE
FR_LEADERBOARD_SCREEN	The game should have a leaderboard screen that displays the leaderboard that displays the name and score for the top 5 entries.	UR_LEADERBOARD
FR_ACHIEVEMENT_DISPLAY	The game shall include achievements which can be earned during any playthrough and affect the score; a notification will alert the player upon completion.	UR_ACHIEVEMENTS
FR_BOUNDARIES	Players will not be able to move through walls/boundaries and be unable to move through them constraining them to a path.	UR_MAP
FR_CONTROLS	The game shall allow the player to move using WASD and arrow keys.	UR_MOVEMENT
FR_TUTORIAL_SCREEN	A tutorial button in the main menu will display the controls.	UR_TUTORIAL
FR_SETTINGS_UI	The settings button will have controls to adjust volume.	
FR_TIMER_UI	A visible timer will start each new game and pausing will halt the gameplay and timer.	UR_TIME
FR_SOUNDS	Whenever an appropriate event or item has been interacted with, an audio cue should be played.	UR_STYLE

Non-Functional Requirements

ID	Description	User Requirements	Fit criteria
NFR_OFFLINE_PLAY	The game will be fully playable offline with no internet access.	UR_SYSTEM_REQUIREMENT	Runs with a disabled network and core functionality still runs

NFR_PERFORMANCE	From launching the game shall reach the main menu within 10 seconds.	UR_UI	Average of 10 launches <10s recorded
NFR_RELIABILITY	The game should not crash or freeze during a normal playthrough.	UR_SYSTEM_REQUIREMENTS	10 consecutive playthroughs without crashing/freezing and a 30 minute consecutive session.
NFR_ACCESSIBILITY	The UI text and elements shall be clearly readable and distinguishable.	UR_UI	Meets the web content accessibility guidelines.
NFR_DATA	The game will not collect or share any personal data, any data such as leaderboard scoring is local.	UR_SYSTEM_REQUIREMENTS	Pass code inspection and no network calls at runtime.
NFR_IMMERSIVE	The game will maintain consistency with the university escape theme with rational visuals/audio.	UR_STYLE	In user evaluation, >85% of participants agree the theme is consistent and comprehensible.
NFR_USABILITY	The average player will be able to understand the controls and aim of the game quickly.	UR_TUTORIAL	In user evaluation >80% of participants can start the game, understand the controls and identify how to win.

Constraint Requirements

ID	Description	Fit criterion
CR_INTELLECTUAL_PROPERTY	There is a constraint on the assets and ideas we use	Most media and assets online can be used for educational purposes, however we need to check whether use is prohibited and reference when necessary. Copying a game too similarly could discredit the originality of our design
CR_JAVA	The system must be implemented using Java 17	All libraries used are compatible with Java 17 and the project compiles and runs in Java 17
CR_BUDGET	The system will not require any paid tools, services or assets to build or run.	A fresh machine can build and run the game using only free tools and included assets.
CR_EXECUTABLE_JAR	The game must be delivered as an executable JAR file.	The game launches on a fresh machine with Java 17 installed.
CR_LICENSING	Third party assets and libraries must have permitting use, redistribution and attribution where needed.	A list of assets and libraries exist with third party items and license information, to be reviewed by someone.

ID	Description	Fit criterion
CR_TIME_LIMIT	A playthrough will be limited to max 5 minutes excluding time in menus and paused.	Timer enforces 5:00 of in-game playthrough and ends at escape or 0:00.