Requirements

Group 19, “Piazza Pitstop Crew”

By: Noah Forryan, Lewis Morgan, Naufal Tun Thamanian, Tom Owen, Dan Manby, José Fernandes

For our meeting with the client, we split the questions into subsections. These were activities, location, scoring, time/scoring and technical. These distinct sections kept our interview focused and organised, so we didn't miss any questions. We each took a subsection to ask about, but all wrote down the responses. We also made an audio recording so that we could go back and remind ourselves of what the client asked for, in case our notes were not adequate. We focused our questions on the game's aesthetics and user experience, leaving technical details to our team's expertise. For example, we asked about what activities the client wanted, not what buttons they would press to interact with them. Our method for creating the questions was to write down any possible questions we could think of onto a shared document. Then once we did that, we organised them into the sections mentioned above and removed redundant or repeated questions. We removed redundant questions by comparing them to the product brief.

Then, after the requirements from the client were collected we could group them into user, functional system and non-functional system requirements. We felt it important to split the 3 types into different tables, as each one provides its benefit. Identifying functional requirements will make our project "become more predictable" and mean that "problems can be identified sooner"[1]. While the non-functional requirements "ensure that the system is maintainable" and "reduce rework"[2]. Finally, knowing the user requirements allows us to " identify [our] requirements for a system"[3].
These types of requirements were allocated into three corresponding tables. In all tables, there are uniquely identifiable IDs and descriptions of the associated requirements. There is a priority column from the user table. As the game is being developed as low-fidelity (per client confirmation), almost all tasks are essential to ensure the core features are built, and the graphical features are 'should' since the game will work just as well with basic graphics. The score feature is also 'should' since it is not essential to the game, but identified as an interesting feature by the client. Each functional and non-functional requirement has associated user requirements. This allows us to track the user's needs into system requirements. The non-functional requirements table has an additional column called "Fit Criteria". This is important as almost by nature NFRs can be vague and high-level. The fit criteria tell us whether or not our product has met the NFR. When it comes to testing, we will be able to verify that the system achieves the requirements set out by the client using the description column and fit criteria for NFRs. We decided on the NFRs by taking the user requirements and then making the NFRs that are associated. Ensuring we achieve what our client wants us to is vital and the below tables will allow us to do so.

User Requirements

ID	Description	Priority
UR_MENU	The system will provide a menu to start the game.	Shall
UR_MOVEMENT	The system will allow the player to move around the map.	Shall
UR_MAP	The map should have some resemblance to Heslington in real life with recognisable landmarks.	Shall
UR_OBJECTS	Throughout the map there Shall be non-playable characters and buildings and other assets for decoration.	Shall
UR_INTERACT	The player can interact with objects/buildings to complete activities.	Shall
UR_ENERGY	The system provides an energy score. It is affected by the user completing activities.	Shall
UR_GAME_END	After sleeping on the 7th day, the user will complete the game. They will be informed as to whether they won or lost.	Shall
UR_TIME	The system should display a time of day using a clock and day of the week as a number from 1-7.	Shall
UR_COMPATABILTY	The game should run on desktop/laptop.	Shall
UR_ANIMATION	The system will have simple animation.	Should
UR_GRAPHICS	The display will be 2d pixel art graphics.	Should
UR_PAUSE	The system will allow the user to pause the game. It will be shown with a large pause symbol displayed over the map.	Should
UR_SCORING	The system should give a score based on their performance in the game.	Should
UR_TUTORIAL	The system should provide instructions on how the player interacts with the game.	Should

Functional System Requirements

ID	Description	User Requirements
FR_MENU_NAVIGATION_CONTROLS	W,A,S,D will be used for navigation: up, left, down and right.	UR_MENU
FR_MENU_SELECT_	Spacebar will be used to select items	UR_MENU

CONTROLS	in the menu.	
FR_START	When the spacebar is pressed and the start button is selected, the screen changes to display the map and sprite.	UR_MENU
FR_MOVEMENT_CONTROLS	W,A,S,D will be used for movement: up, left, down and right.	UR_MOVEMENT
FR_READ_BOOK	The user can interact with a given bench and read a book on that bench.	UR_INTERACT
FR_PLAY_SPORT	The user can interact with the gym to workout.	UR_INTERACT
FR_FEED_DUCKS	The user can interact with the lakes to feed the ducks.	UR_INTERACT
FR_STUDY	The user can study in the Computer Science Building and the Ron Cooke Hub.	UR_INTERACT
FR_EAT	The user can eat in the Piazza.	UR_INTERACT
FR_SLEEP	The user can sleep in their room, ending the day.	UR_INTERACT
FR_ACTIVITY_ENERGY	When the user performs any other action, other than eat and sleep, energy is reduced by 25%.	UR_BOOK UR_SPORT UR_DUCK UR_STUDY UR_ENERGY
FR_ACTIVITY_ENERGY_REQ	The system will not allow the user to perform an activity when the resultant energy is < 0%	UR_BOOK UR_SPORT UR_DUCK UR_STUDY UR_EAT UR_ENERGY
FR_FAILURE	If the number of studies or number of meals < 7, a failure screen will display.	UR_STUDY UR_EAT UR_GAME_END
FR_SUCCESS	If the number of studies and number of meals >= 7, a success screen will display.	UR_STUDY UR_EAT UR_GAME_END
FR_PAUSE	When the game pauses, a large pause symbol is displayed over the map	UR_PAUSE
FR_PAUSE_CONTROLS	P is used to initiate and end the pause.	UR_PAUSE
FR_PAUSE_FREEZE	When the pause is initiated, no other buttons can be pressed.	UR_PAUSE UR_MOVEMENT
FR_TIME_LIMIT	When the time of day is ‘n	UR_SLEEP UR_BOOK

	ight', the player cannot complete activities other than sleep.	UR_SPORT UR_DUCK UR_STUDY UR_EAT UR_TIME
FR_ANIMATION	The system will use 2 frame animation.	UR_ANIMATION
FR_START_CONDITION	The system will give a clear, easy to understand error message if the user doesn't select a start button.	UR_MENU
FR_SCOR_CALC	The system should provide a display of the score from the game based on the number of studies, meals and recreational activities.	UR_SCORE

Non-functional System Requirements

ID	Description	User Requirements	Fit Criteria
NFR_RESPONSE	The resultant action is performed within 0.16 seconds after the user input.	UR_MOVEMENT	The rate at which the system checks for inputs is greater than 0.16 seconds. This will check for inputs every frame, with a frame rate set to 60. Use stress tests to measure this with large volumes of inputs.
NFR_COMPATABILTY	The game should be compatible with desktop computers supporting good response times and few errors.	UR_COMPATABILTY	The response times are less than 0.1 seconds while running on a desktop computer.
NFR_USABILITY	The user should understand how to interact with our game.	UR_TUTORIAL	When the user presses P in the game, a tutorial will be displayed, explaining how to use the game. Furthermore, when they start the game, a tutorial will be displayed.

References

[1] Nuclino. *A Guide to Functional Requirements (with Examples)*. www.nuclino.com [Online]. Available at: https://www.nuclino.com/articles/functional-requirements [Accessed: 17th of March, 2024].

[2] Geeks For Geeks. (2024, Jan, 17th). *Non-functional Requirements in Software Engineering*. geeksforgeeks.org [Online]. Available at: https://www.geeksforgeeks.org/non-functional-requirements-in-software-engineering [Accessed: 17th of March, 2024].

[3] Indeed Editorial Team (2022, Dec, 19th). *What is a user requirements specification? (Plus elements)*. uk.indeed.com. [Online]. Available at: https://uk.indeed.com/career-advice/career-development/user-requirements-specification [Accessed: 17th of March, 2024].