Requirements

Cohort 3 Group 6 - Carbon Goose

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To ensure a good standard of quality and clarity in the requirements, we researched different software requirements specifications. We decided on IEEE's latest guidance, and utilised their ideology to influence our elicitation and presentation of requirements. Generally speaking, IEEE 29148-2018 promotes clarity, consistency, and traceability in requirement specification, helping to align requirements with the stakeholder (user) needs.

Link to IEEE v2018: https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8559686

In order to elicit requirements for the game we followed a structured approach which stemmed from reviewing the product brief, followed by iterative customer meetings. This provided us with frequent feedback on the requirements we set in order to align their expectations and meet the needs of the user base, which aligns with IEEE's standard of precise encapsulation of the stakeholders' requirements.

A fundamental part of the elicitation was breaking the requirements gathered into user requirements and system requirements, as promoted and defined in IEEE 29148 which states that such breakdowns provide better traceability. User requirements specify what players should be able to do in the game and are usually written using non-technical language. System requirements on the other hand describe how the game will fulfil those user requirements, detailing the underlying functionality. Furthermore, system requirements can be broken down into functional and nonfunctional requirements. Functional requirements outline the actions the system must carry out in order to provide the desired functionality, whereas nonfunctional requirements define the constraints on functional requirements and address the qualities the system must have.

To record the requirements, we used three tables denoting: user requirements, functional system requirements, and non-functional system requirements. Each requirement has a unique ID prefixed with FR/NFR to indicate functional/non-functional requirements, which is helpful when referring to them in a different context. The NFRs table also includes a 'fit criteria' column, this measures the stakeholder's intention set out in the description of each requirement. These parameters help maintain the quality and traceability of our requirements as recommended by IEEE, upholding the project's integrity whilst aligning the customer's expectations.

User Requirements

ID	Description	Priority
UR_BUILDING_ BUILD	Can spend currency to build buildings	Shall
UR_CUSTOMER_ SATISFACTION	See customer satisfaction	Shall
UR_DIFF_SYSTEMS	Game can be played on a large variety of systems	Should
UR_SCREEN_SIZE	Compatible with varied screen sizes	Should
UR_TUTORIAL	Easy to play with a tutorial to explain	Should
UR_ASSESSIBLE	Accessible to a large user group (ie colour blind)	May
UR_EVENTS	Events that cause a positive/negative effect on satisfaction	Shall
UR_EVENT_ RESPONSE	Player can respond to specific events that require action	Should
UR_CURRENCY	Currency system easily shown	Shall
UR_BUILDING_ UPGRADE	Can upgrade buildings	Should
UR_BUILDING_ REMOVE	Can remove buildings	Should
UR_COMPATIBLE_OS	Player can launch the game on Windows, macOS, and Linux	Shall
UR_TIMER	A counter to display how long is remaining in the game	Shall
UR_PAUSE	A button to pause the progression of time	Shall
UR_PLAY	A button to resume the progression of time	Shall

System Requirements

Functional Requirements

ID	Descriptions	User Requirements
FR_PLACE_BUILDING	User can place buildings if they have the required currency	UR_BUILDING_BUILD
FR_GRID_EMPTY	User can only place a building on grid locations that are valid	UR_BUILDING_BUILD
FR_GRID_UPDATE	When a user places or deletes a building the valid locations must be updated	UR_BUILDING_BUILD UR_BUILDING_REMOVE
FR_CONSTRUCTION	Progression through the construction process for buildings can only occur whilst the game isn't paused	UR_BUILDING_BUILD
FR_SATISFACTION_ UPDATE	Customer satisfaction is updated every when a new building is placed or changed	UR_CUSTOMER_ SATISFACTION
FR_SATISFACTION_ DISPLAY	Customer satisfaction is displayed on the screen and changed when the value is altered	UR_CUSTOMER_ SATISFACTION
FR_PAUSE_CHEAT	User can't bypass the pause without unpausing	UR_PAUSE
FR_UI_SCALE	UI is able to scale with different window sizes	UR_SCREEN_SIZE
FR_TUTORIAL	Optional tutorial to run through the basics of the game	UR_TUTORIAL
FR_COLOURBLIND	Game will have a colourblind mode	UR_ASSESSIBLE
FR_EVENTS_TIMING	Events shall be triggered at random	UR_EVENTS
FR_EVENTS_ SATISFACTION	Events shall have an impact on the customer satisfaction	UR_EVENTS
FR_EVENT_ACTIONS	Certain events trigger a player response option	UR_EVENT_RESPONSE
FR_CURRENCY_ UPDATED	Currency will be updated when it's spent and increased	UR_CURRENCY
FR_CURRENCY_ ZERO	Currency can't go below 0	UR_CURRENCY
FR_BUILDING_ UPGRADES	Buildings can have their stats altered by upgrades	UR_BUILDING_UPGRAD E
FR_BUILDING_	Buildings can be removed from the	UR_BUILDING_REMOVE

REMOVED	game	
FR_COMPATIBILITY_OS	Player can launch the game on Windows, macOS, and Linux	UR_COMPATIBLE_OS
FR_TIMER	Every second that the game isn't paused the timer shall be updated to reduce the time remaining	UR_TIMER
FR_PAUSE	When the pause button is pressed the game's progression through time will stop	UR_TIMER
FR_PLAY	When the play button is pressed the game's progression through time will be resumed	UR_TIMER

Non-Functional Requirements

ID	Description	User Requirements	Fit Criteria
NFR_BUILDINGS	Buildings should take time to construct	UR_BUILDING_BUILD	Eg .Buildings should take 5 seconds to build
NFR_SYSTEMS	Game is able to run on multiple systems	UR_DIFF_SYSTEMS	Game can run on the window and macos
NFR_SCREEN_SIZE	Game can be played on a variety of window sizes	UR_SCREEN_SIZE	Game is able to scale to work on laptops and larger whiteboards
NFR_EVENTS	There should be events throughout the course of the game	UR_EVENTS	There should be at least 3 events over the course of the game
NFR_TUTORIAL	Simple quick tutorial	UR_TUTORIAL	90% of people should have a good understanding of the game within a minute of first playing