Requirements

Cohort 2- Group 1

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Following a series of group and client meetings, we categorised requirements into four key sections: User Requirements, System Requirements, Functional Requirements, and Non-Functional Requirements. This document outlines each category's essential requirements to ensure clarity and focus on delivering an engaging, user-friendly experience.

User Requirements

Based on three primary objectives from the Product Brief, we identified 12 critical user requirements aimed at creating a campus that is functional, intuitive, and enjoyable. To meet this goal, UR_UX and UR_UI were implemented to enhance user experience and interface design. Recognizing the game's 5-minute time constraint, we included UR_PAUSE, giving players control over gameplay speed to help manage tasks and understand game dynamics without feeling rushed. Drawing inspiration from the university simulation game *Model Uni: My First Uni*, we noted that rapid game speed can overwhelm users, impacting student satisfaction. Thus, UR_DISPLAY_TIMER and UR_BUILDING_COUNTER were added to give players a clear view of game progress and campus growth. Additionally, UR_SATISFACTION_METRE was introduced to display student satisfaction as a percentage, enabling players to make choices that optimise happiness levels. To accommodate a diverse user base, accessibility options were also suggested, allowing players to adjust elements of the game, further aligning with our primary objectives.

Functional Requirements

The main objective of the game is to maximise student satisfaction through strategic campus design and building placement. 18 functional requirements were developed to support this, focusing on elements directly tied to user needs. For example, FR_CONSTRUCTION_SATISFACTION_LOSS adds a strategic element by lowering satisfaction during building upgrades, challenging players to weigh the short-term impact against long-term benefits. This feature creates realistic trade-offs, as upgrades may reduce satisfaction temporarily due to term-time needs but improve it significantly once the upgrade is complete. Additionally, a breakdown display (FR_SATISFACTION_BREAK_DOWN) was added to help users monitor and understand specific factors affecting satisfaction, keeping the user aware of the exact occurrences over the 5 minute game

Non-Functional Requirements

To support an enjoyable experience, we established system performance standards. NFR_SYS_RESPONSE_SPEED ensures the game operates smoothly within the 5-minute time limit, critical for maintaining player engagement. NFR_EVENT_COOLDOWN also ensures the user is not handed repeated events during the game cycle. This ensures that a new challenge is always presented to the user. NFR_READABILITY promotes an easy-to-understand interface, preventing the user from potential confusion caused by overloading text and detail. To prevent crashes and maintain system reliability, NFR_MULTIPLE_CONSTRUCTION limits simultaneous upgrades, helping to prevent bugs and ensuring smooth gameplay. This requirement also facilitates future maintenance, making the system accessible to developers for edits and updates.

User Requirements

ID	Description	Priority
UR_UX	The user experience is pleasant	Shall
UR_BUILDINGS	The user can place buildings	Shall
UR_UI	The user interface is clear and pleasant to look at	Shall
UR_DISPLAY_TIMER	The game shall display a visible timer to the user to keep track of time	Shall
UR_BUILDING_COUNTER	The game shall display a counter showing the number of each type of building placed	Shall
UR_PAUSE	The user can pause the game at anytime	Shall
UR_UPGRADE	The user can upgrade buildings	Maybe
UR_SATISFACTION_METRE	The system shall display the student satisfaction, which then has its change broken down.	Shall
UR_ACCESSABLITY_SETTINGS	The user choose from some accessibility settings	Should
UR_EVENTS	The user will get a pop up explaining the current event	Shall
UR_KEYBINDS	The user can use keybinds to quickly perform an action	Maybe

System Requirements
Functional Requirements

ID	Description	User Requirements
FR_SYS_REPONSE	The system responds to user inputs clearly	UR_UI
FR_BUILDING_PLACEMENT	The system allow the user to place buildings in buildable areas only	UR_BUILDINGS
FR_BUILDING_SATISFACTION_GAIN	After a building is built it will increase the satisfaction for a period of time	UR_BUILDINGS
FR_CONSTRUCTION_SATISFACTION_LOSS	Building/upgrading a building during term time will result in satisfaction loss for a period of time	UR_BUILDINGS UR_UPGRADE

FR_TIMER_DISPLAY	The game shall implement a timer counting down from 5 minutes in real time, allowing the user to monitor the time elapsed	UR_DISPLAY_TIMER
FR_BUILDING_COUNTER	The game shall include a counter that updates whenever a building is placed, showing the number of each type	UR_BUILDING_COUNTER
FR_SATISFACTION_BREAK_DOWN	The system shall display what is affecting the student satisfaction, when the satisfaction metre is clicked on	UR_SATISFACTION_METRE
FR_BUILDING_OVERLAP	The system shall not allow a building to be placed if it will overlap with another building	UR_BUILDINGS
FR_BUILDING_CONSTRUCTIONmet	Buildings take time to be constructed before they can have a positive satisfaction gain	UR_BUILDINGS
FR_SATISFACTION_TRACK	The system shall display where the satisfaction will end up over time.	UR_SATISFACTION_METRE
FR_COLOUR_BLIND_MODE	The system shall allow the user to select if they want a colour blind mode on.	UR_ACCESSABILITY_SETTINGS
FR_MOUSE_SENSITIVY_SLIDER	The system shall allow the user to choose a mouse sensitivity	UR_ACCESSABILITY_SETTINGS
FR_RANDOM_EVENT	When there is not an event cooldown, a random event can happen from a set list.	UR_EVENT
FR_SET_EVENT	If the events are not on cooldown, then at a certain time a set event will happen	UR_EVENT
FR_SATISFACTION_PAUSE	When the game is paused, the satisfaction will not change.	UR_PAUSE
FR_TIMER_PAUSE	When the game is paused, the timer will not change	UR_PAUSE
FR_MULTIPLE_BUILDINGS	When there are multiple buildings being built/upgraded at once, there is an increasing multiplier on the satisfaction modifier from the building's construction during term time.	UR_BUILDINGS
FR_UPGRADE_SATISFACTION_GAIN	When a building’s upgrade has finished construction, satisfaction will increase for a period of time.	UR_UPGRADE

Non-Functional Requirements

ID	Description	User Requirements	Constraints
NFR_SYS_REPONSE_SPEED	The system responds to user inputs quickly	UR_UX	In <0.1s from time of input 90% of the time
NFR_COUNTER_VISIBILITY	The building counter shall update in real time whenever a building is placed	UR_BUILDING_COUNTER	Updates within 1 second of placement
NFR_TIMER_VISIBILITY	The timer shall be visible and readable at all time during gameplay	UR_DISPLAY_TIMER	Timer visibility is ensured throughout the play
NFR_SATISFACTION_MULT	Buildings satisfaction gain/loss shall be multiplied depending on vicinity to accommodation	UR_BUILDINGS	
NFR_SATISFACTION_METRE_VISIBILTY	The satisfaction metre shall be visible and readable at all times.	UR_SATISFACTION_METRE	Satisfaction metre is visible 99% of the time
NFR_READABLITILY	All user-facing messages shall be in plain-english and without technical jargon	UR_UX	This should be the case 95% of the time
NFR_EVENT_COOLDOWN	There shall be period where an event can not happen after an event has happened	UR_EVENTS	The cooldown shall be 1 minute.
NFR_MULTIPLE_CONSTRUCTION	There shall be a limit on the amount of buildings that can be built/upgraded at once.	UR_BUILDINGS	The limit of 3 buildings.