REQUIREMENTS

User Requirements

ID	Description	Priority
UR_CAMPUS_CREATION	The user shall be able to create their own university on a provided map which includes obstacles where buildings cannot be built.	Shall
UR_BUILDING_VARIETY	The user shall have a number of different building types to choose from. The variety of buildings should include at least: one place to sleep, one place to learn, one place to eat, and one for recreational activities.	Shall
UR_EVENTS	The user shall be able to interact and react to events that occur during the course of the game	May
UR_STUDENT_SATISFACTION	The user can increase or decrease the satisfaction levels of the students in a variety of ways, for example reacting to events appropriately.	May
UR_GAME_PROGRESS	The game should simulate a time of around 3 years within a time frame of 5 minutes. And have a counter on the screen that displays how much time is left. When the timer stops the game should end.	Shall
UR_IMMERSION	The game should be immersive for the player. Meaning that sounds and graphics should match the theme of the game.	Should
UR_TARGET_MARKET	The game should be suitable to be played by 16-20 year old students, or people who want to be students.	Should
UR_UX	Users should have a pleasant user experience.	Shall
UR_INTUITION	Users should find the game intuitive to play, even for those with no gaming experience.	Should
UR_BUILDING_COUNTER	The game shall have a counter denoting how many of each type of building have been placed so far.	Shall
UR_MAINTAINABILITY	The game should be easily modified and maintained by future developers	Shall
UR_LEADERBOARD	User should be able to input a username in order to be placed on a leaderboard	Shall
UR_ACHIEVEMENTS	User must be able to receive achievements based on their interaction with the game	Shall

System Requirements

Functional Requirements

ID	Description	User Requirements
FR_TIME_LIMIT	When the time left on the game timer is less than or equal to 0 seconds the game must end, stopping the user from doing any more actions and displaying their student satisfaction score.	UR_GAME_PROGRESS
FR_MAP	The game shall provide a visual campus map for the user.	UR_CAMPUS_CREATION
FR_BUILDING	The game shall allow users to place/build buildings on the campus map.	UR_CAMPUS_CREATION UR_DIFFICULTY_SETTINGS UR_BUILDING_VARIETY
FR_BUILDING_TYPES	The game shall have at least one building of every type namely: Educational, Recreational, Residential, Eatery and Health.	UR_BUILDING_VARIETY
FR_SATISFACTION_BUILDINGS	The number of each building shall increase satisfaction. The closer each building is to another building should also increase satisfaction.	UR_STUDENT_SATISFACTION
FR_OBSTACLES	The map shall have preplaced obstacles that block the user from building on top of them.	UR_CAMPUS_CREATION
FR_EVENTS	Events should occur throughout the game - these should cover a wide variety of events The game has 5 different events and they're all negative	UR_EVENTS
FR_TIMER	The game should have a timer that is displayed at all times during gameplay, showing the remaining time from the original 5 minutes.	UR_GAME_PROGRESS
FR_BUILDING_COUNTER	The game should display a counter at all times during gameplay that shows how many of each building type have been placed in the world.	UR_BUILDING_COUNTER
FR_USER_INTERFACE	The UI should display only important information to the user so that it is not overly complex and overwhelming.	UR_INTUITION
FR_INTERACTIVE_ELEMENTS	Interactive elements should react when clicked or moved (for example when a button is pressed its colour changes or a sound is made).	UR_INTUITION
FR_SCORE	System must record the user score in the game.	UR_LEADERBOARD
FR_ACHIEVEMENTS	System must be able to read user behaviour and give awards based on gameplay	UR_AWARDS
FR_LEADERBOARD	System must show the user the leaderboard showing score and the game over scene	UR_LEADERBOARD

Non-functional Requirements

ID	Description	User Requirements	Fit Criteria
NFR_ERROR_MESSAGES	Any errors or warnings generated by the game should be easy to understand and not overly technical	UR_MAINTAINABILITY	The error messages should be understood by users who have no knowledge of the code.
NFR_PERFORMANCE	The game should run smoothly, at a framerate around 60, without hitches at any point during gameplay. This should apply on minimum spec machines.	UR_PERFORMANCE	The 60-second average frame-rate should exceed 58. The lowest 1% of frame times should also be above 50.
NFR_INTERACTIVE_ELEMENTS_REACTION	Interactive elements (for example buttons) should react quickly to user use. Preferably with some signal to the user like a sound or colour change.	UR_INTUITION	Interactive elements must react within <1 second
NFR_OPERABILITY	The game should be easily playable and navigable by new players.	UR_INTUITION	A new player shall be comfortable with the game after around 2 minutes of use.
NFR_DOCUMENTATION	The game should come with clear documentation that explains what each part of the code does and how to modify it.	UR_MAINTAINABILITY	The documentation should be understood by users who have no prior knowledge of the code.
NFR_END_OF_GAME	The game should immediately end after the timer has expired.	UR_GAME_PROGRESS	The game should end and block any further user actions within <1 after the timer stops.
NFR_IMMERSION	The game should have sounds and graphics that fit the theme of the game.	UR_IMMERSION	Sounds and graphics shall fit the tone of the game and not take away from the immersion of the user or stick out against the rest of the game.
NFR_THEME	The theme of the game should appeal to a 16-20 year old student audience.	UR_TARGET_MARKET	The theme should be something a 16-20 year old will relate to and be interested in.
NFR_CODE_MODULARITY	The code should be modular and easily extendable, without making the program difficult to follow.	UR_MAINTAINABILITY	Classes should hold references to necessary related objects and no more.

Constraint Requirements

ID	Description
CR_SYSTEM_COMPATIBILITY	The game must successfully build for Windows, macOS and Linux.
CR_MINIMUM_SPEC	The game shall run on 64-bit desktop computers with a minimum of 2GB RAM and a dual core CPU.