

Requirements

Group Name: Group 11

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Group Members:

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Our approach to requirements elicitation consisted of three stages:

- Preliminary list - prior to the stakeholders interview, we brainstormed as a team and came up with a preliminary list of requirements containing most user requirements we could extract from the product brief alone and included any FR and NFR we could think of. These were, of course, rather general and in need of refining, but they helped us come up with questions for our interview with the stakeholders.
- Stakeholder interview - At the stakeholders meeting we presented our initial ideas, seeking feedback and missed requirements. Prior to that, we came up with features which we thought would improve the gameplay which were not included in the product brief, such as allowing the player to complete minigames at each activity to boost their score, obstacles, NPC's and gaining energy. However, we were advised to keep it simple and focus on having a functioning game. Hence, we removed some of our unnecessary requirements. The stakeholders told us that the audience they had in mind were 16-20 year olds, the objective is to give them a glimpse into the daily life of a university student in a fun and interactive way. This tells us that the game needs to be catchy, appealing and family friendly. We also want the game to resemble a popular game which is similar. The stakeholder said that the game could take inspiration from popular 2D platformers such as Stardew Valley and Pokemon. We also asked the stakeholder about including a feature to allow users to choose time to spend on activity, we were told only for things that make sense, hence studying. We asked what activity interaction should feature, we were told only to interact and done for now.
- Requirements refining - following this valuable meeting with the stakeholders, our team was ready to refine our requirements into a more detailed and complete list. We removed all unnecessary features, added any we missed and improved the detail of any vague requirements. We grouped the preliminary listed requirements into user, functional, non-functional and constraint requirements and dug deeper to list down all FR and NFR's. We did this by holding each user requirement one-by-one and researching and brainstorming FR's for each one. then presented everything in a requirements table, recording priorities, fit criterias and relating functional requirements to the user and stakeholders needs . The structured presentation of requirements, including use cases, system operations, class diagrams, attributes, and gameplay rules demonstrates a deep understanding of the game's design needs. Research into industry standards such as UML methodologies, UX design principles, recording requirements ensured that the requirements captured essential features, behaviours, and constraints for successful game development, enhancing player experience and game performance.

USER REQUIREMENTS TABLE

<u>ID</u>	<u>Description</u>	<u>Priority</u>
UR_SEAMLESS_START	User can start game effortlessly	SHALL
UR_GUIDANCE	User receives step-by-step guidance throughout game	SHOULD
UR_MOVEMENT	The user can move around the map	SHOULD
UR_INTERACTION	User can interact with map elements	SHOULD
UR_RESOURCES	Users track/manage time/energy strategically	SHOULD
UR_DAY_COUNT	User experiences and tracks 7 in game days	SHOULD
UR_OBJECTIVES	The user shall have clear objectives with studying being compulsory, and be able to keep track of completed ones.	SHALL
UR_WINNING_CRITERIA	The user wins the game by completing studying objectives daily, while maintaining a healthy lifestyle.	SHOULD
UR_GAME_DURATION	The user should complete game in 5-15 mins.	SHALL
UR_REALISTIC_EXCITING_EXPERIENCE	Users enjoy a realistic and engaging simulation ensuring a catchy start and ending.	SHALL
UR_GAME_OPTIONS	User can pause, restart or exit game.	SHOULD
UR_SATISFACTION	Users experience a smooth and pleasant game.	SHALL
UR_COMPATIBLE_W_EVERYONE	Game is playable by various user types	SHALL

FR REQUIREMENTS TABLE

<u>ID</u>	<u>Description</u>	<u>User requirement(s)</u>
<u>Invariant</u>		
FR_START_PAGE	Start page with game options.	UR_SEAMLESS_START
FR_NEW_GAME	Option to start new game from day 1	UR_SEAMLESS_START
FR_MOVEMENT_CONTROLS	Controls for avatar movement	UR_MOVEMENT
FR_MAP	Map of uni campus + city for exploring	UR_MOVEMENT + UR_INTERACTION
FR_INTERACTION_CONTROLS	Controls for map interactions	UR_INTERACTION
FR_CLOCK	Display in-game time	UR_RESOURCES
FR_ENERGY_BAR	Display energy levels	UR_RESOURCES
FR_TIME	In game time passage rules	UR_RESOURCES + UR_GAME_DURATION
FR_GRADE_TRACKER	Track studying and lifestyle performance and increase score	UR_OBJECTIVES

FR_PASSING_GRADE	Winning conditions based on score	UR_OBJECTIVES
FR_PAUSE	Game pause feature	UR_GAME_OPTIONS
FR_DAY_NUMBER	Display current in-game day	UR_DAY_COUNT
FR_RESTART	Option to restart game	UR_GAME_OPTIONS
FR_DAYLIGHT	Simulate realistic time changes	UR_REALISTIC_EXCITING_EXPERIENCE
FR_OBJECTIVES_SHOWCASING	Display + track objectives, ensure its made clear studying is compulsory	UR_OBJECTIVES
FR_SKIP_A_DAY	Option to skip studying for a day	UR_REALISTIC_EXCITING_EXPERIENCE
FR_LOADING_PAGE	Loading screens between stages	UR_SEAMLESS_START
FR_STARTING_PAGE	Eye catching start page with clear options	UR_SEAMLESS_START + UR_REALISTIC_EXCITING_EXPERIENCE + UR_GUIDANCE
FR_END_PAGE	Display end game info	UR_REALISTIC_EXCITING_EXPERIENCE + UR_GUIDANCE
FR_POP_UPS	In- game instructional pop ups	UR_GUIDANCE
Transformational		
FR_NEW_GAME	Start new game from day 1 with 0 score	UR_SEAMLESS_START
FR_SLEEP	Interaction with accommodation starts new day at 7 am	UR_DAY_COUNT + UR_WINNING_CRITERIA + UR_REALISTIC_EXCITING_EXPERIENCE
FR_STUDY	Interaction with CS and piazza prompts choices for study hours .	UR_WINNING_CRITERIA
FR_WORK_OUT	Interaction w/ sports village, work out	UR_WINNING_CRITERIA + UR_REALISTIC_EXCITING_EXPERIENCE
FR_RECREATIONAL_ACTIVITY_1	Interaction w/ lake feeds ducks	UR_REALISTIC_EXCITING_EXPERIENCE + UR_WINNING_CRITERIA
FR_RECREATIONAL_ACTIVITY_2	Interaction w/ theme park, user gets on a ride	UR_REALISTIC_EXCITING_EXPERIENCE + UR_WINNING_CRITERIA
FR_EAT	Interaction w/ piazza prompts eat/study	UR_REALISTIC_EXCITING_EXPERIENCE + UR_WINNING_CRITERIA
FR_STUDY_TIME	Study hours pass based on user input	UR_RESOURCES + UR_GAME_DURATION
FR_WORK_OUT_TIME	Work out= 2 hours	UR_RESOURCES + UR_GAME_DURATION
FR_RECR_ACTIVITY_1_TIME	Feeding duck = 1 hour	UR_RESOURCES + UR_GAME_DURATION
FR_RECR_ACTIVITY_2_TIME	Ride = 1 hour	UR_RESOURCES + UR_GAME_DURATION
FR_EATING_TIME	Eating = 30 mins	UR_RESOURCES + UR_GAME_DURATION
FR_WORK_OUT_ENERGY	Work out = -2 energy	UR_RESOURCES
FR_ACTIVITY_1_ENERGY	Feeding duck = -1 energy	UR_RESOURCES
FR_SLEEP_ENERGY	Sleeping refills energy, late sleep reduces next day energy	UR_RESOURCES
FR_STUDY_POINTS	1 hour study = 5 points	UR_WINNING_CRITERIA
FR_EATING_BONUSES	Eat 3x = 1.5x points for day	UR_WINNING_CRITERIA
FR_STUDY_BONUSES	Study >3 hrs = 2x points	UR_WINNING_CRITERIA

FR_OVERSTUDYING	Lose 10 pts/hr after 5 hours study	UR_WINNING_CRITERIA
FR_WORKOUT_BONUS	Work out = 1.5x points for day	UR_WINNING_CRITERIA
FR_RECREATIONAL_ACTIVITY_BONUS	2 activities/day = 1.5x points	UR_WINNING_CRITERIA
Permissible Transformations		
FR_DEPLETED_ENERGY	Prompt error when interacting with no energy, except eat+sleep	UR_RESOURCES
FR_DOUBLE_STUDY	Study twice only if skip day option used prior	UR_RESOURCES
FR_EARLY_SLEEP	No sleep before 11 pm	UR_RESOURCES
FR_MOVEMENT_RESTRICTIONS	No movement through obstacles	UR_MOVEMENT
FR_MAP_BOUNDARY	Cannot cross map boundary	UR_MOVEMENT
FR_COMPULSORY_STUDYING	study daily to sleep, 1 day exception	UR_OBJECTIVES

NFR REQUIREMENTS TABLE

<u>ID</u>	<u>DESCRIPTION</u>	<u>USER REQUIREMENTS</u>	<u>FIT CRITERIA</u>
NFR_SECURITY	Ensure user data and progress security	UR_SATISFACTION	99% of users should not face any data leaks
NFR_QUICK_START	Fast game launch	UR_SEAMLESS_START	<5 sec, 80% of the time
NFR_PRECISE_SCORE_COUNT	Accurate score calculation	UR_OBJECTIVES	< 1% error
NFR_CLEAR_INSTRUCTIONS	Clear game instructions, playable without training	UR_GUIDANCE + UR_COMPATIBLE_W_EVERYONE	Accompanied by manual so 99% of users can confidently play
NFR_DISABILITY_FRIENDLY	Game shall be accessible to players with disabilities.	COMPATIBLE_W_EVERYONE	Compatible for 50% of disabled players
NFR_COMPATIBLE_DEVICES	Game shall be accessible through desktop computers.	COMPATIBLE_W_EVERYONE	90% of people with any computers shall be able to access the game.
NFR_AGE_COMPATIBILITY	Game shall be playable by anyone over the age of 12.	COMPATIBLE_W_EVERYONE	99% of people aged 12 or over should be able to operate the game.
NFR_AVAILABILITY	Game shall be accessible most of the time	UR_SATISFACTION	Users should be able to access the game 99% of the time
NFR_PRECISE_TIME	Clock and time passing shall be highly accurate to ensure fairness and consistency	UR_RESOURCES	Time passing by and activity duration shall occur with an error margin of <2%
NFR_RESPONSE_TIME	System shall ensure fast responses to user input	UR_SATISFACTION	Game shall respond to user input with a precision of less than 1 second to ensure an immersive experience
NFR_CHARACTER_ANIMATIONS	System shall ensure visual continuity for users	UR_SATISFACTION + UR_REALISTIC_EXCITING_EXPERIENCE	Character animations shall transition smoothly between states with a precision of 0.5 seconds
NFR_NPC_REGULARITY	System shall ensure statistically uniform distribution of NPC's.	UR_REALISTIC_EXCITING_EXPERIENCE	NPC's shall be generated with precision such that no more than 3 appear at the same time.
NFR_GRAPHICS	Game shall ensure visually appealing graphics.	UR_REALISTIC_EXCITING_EXPERIENCE	Game shall render graphics with at least 40 FPS