UNIVERSITY OF YORK DEPARTMENT OF COMPUTER SCIENCE

Requirements

Group 14

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Introduction

Requirements were elicited and negotiated through the product brief and an initial client meeting. A product brief document was provided at the start of the project. **These requirements were then amended based upon the extended product brief released for assessment 2**. This set out the story of the game and the interactions that the user must complete. It specified the control scheme of the game and the timescale for the play. Primary objectives for the users were laid out which were used to create user requirements. Items the game must include were set out which created a basis for requirements. How to successfully win the game was also defined which gave an initial idea of player goals which was important as players of the game will be stakeholders. Other stakeholders identified in the document were the customer (the main stakeholder) and the remainder of the cohort **for assessment 1**. This was used as a starting point to prepare a list of questions to take to the client and ask in order to get a better understanding of their aims and preferences for the project. The list of questions asked in the meeting can be found on the project website. Questions were split into topics to allow for in-depth discussion and follow-up questions were asked as they were thought of in the meeting. The client meeting crucially gave an insight into who the project was targeted towards and what the aim of the project was. It also allowed for features to be assigned priorities and made clear exactly what was and wasn't wanted within the project. The final question asked for any additional requirements that hadn't been discussed already to ensure that nothing had been missed.

This allowed a single statement of need to be formed: "The system shall enable users to play a game based on the life of a university student in which they have interactions that influence their score". User requirements and functional and non-functional requirements are discussed later in this document. They are presented through three tables - user requirements, functional system requirements and non-functional system requirements. Requirements were specified and presented by adapting the guidance given in IEEE 29148-2018 [1]. First, the stakeholder needs and goals as established in the customer meeting were refined to create user requirements. Following this, functional and non-functional requirements were established. To ensure they were well-formed requirements each functional requirement was a requirement that shall be met or possessed by the system to solve the problem and each non-functional requirement is possible to qualify by specific measurable conditions. Wording used followed the conventions specified. A referencing system was used to maintain traceability of all types of requirements. Requirements did not include design decisions or implementation ideas or suggestions.

In addition to these requirements, there were also a few constraint requirements. One was the project constraint of the timeline with the deadline for the first part of this project being non-negotiable and due by 21st March. **This requirement is the same with the second part of the assessment, due by 23rd May. The last constraint** was the design constraint of the game needing to run on Windows Desktop PCs.

User Requirements

ID	Description	Priority
UR-DEVICE	The game shall be playable on a desktop/laptop.	Shall
UR-MENU	The game shall provide the user a main menu which they can use to navigate to different features of the application.	Shall
UR-WORLD	The user shall move their character around a 2D map, appropriately representative of Heslington - The user shall recognise that the map represents Heslington.	Shall
UR-INTERACT	The user's character shall interact with objects/buildings within the world to complete tasks.	Shall
UR-TIMED	The game shall be timed so that the user plays through a sped up version of a week's worth of university life of the in-game student character. The game shall inform the user of the current in-game time.	Shall
UR-INFO	The user shall be informed of their character's energy levels	Shall
UR-SETTINGS	The user shall access certain settings.	Shall
UR-SLEEP	The user shall replenish their character's energy levels by sleeping.	Shall
UR-ACCESSIBLE	The game shall cater to users that are colour blind.	Shall
UR-DESIGN	The game shall have a happy/positive aesthetic and vibe.	Shall
UR-MEMORY	**The game shall store the names of their previous players and their scores.**	**Shall**
UR-STREAK	**'Streaks' for the user to achieve when completing one of the same activity multiple times**	**Should**
UR-CUSTOMISE	The user should be able to personalise their in game character.	Should
UR-SOUND	The game may have music and sound effects.	May

Functional System Requirements

ID	Description	User Requirement
FR-VIEW	The system shall always use a top-down view point in the third-person	UR-WORLD
FR-START	Starting the game shall allow the user to choose from a range of avatars	UR-CUSTOMISE
FR-INTERACT1	When a player interacts with a building, they shall stay outside the building	UR-INTERACT

FR-INTERACT2	When a player starts to interact with a building, there shall be a pop-up with text and choices	UR-INTERACT
FR-MENU1	Going to the main menu shall give the user the choice of credits, start game, exit game and audio settings	UR-MENU
FR-MENU2	Games shall not be saved	UR-MENU
FR-MENU3	Pressing esc shall pause the game and navigate to a pop-up menu with options to resume, navigate to settings or exit	UR-MENU
FR-NAVIGATE	The user using the arrow keys shall cause the player to navigate around the map	UR-WORLD
FR-SLEEP1	Reaching the end of the day (16 hours) shall lock all other activities other than sleeping	UR-INTERACT
FR-ENERGY1	A player completing an interaction shall deplete their energy by a set amount	UR-INTERACT
FR-ENERGY2	The game shall never allow players to continue with activities other than sleeping once they have no energy left	UR-INTERACT
FR-WEEK	The game shall end after a week	UR-TIMED
FR-TIME	A player completing an interaction shall jump the time along by a set amount	UR-TIMED
FR-DEVICE	An attempt to play the game on a system other than a Windows Desktop PC or laptop shall result in an error and the game being unavailable to play	UR-DEVICE
FR-GAME-PLAY1	The player shall interact with one sleep location	UR-INTERACT
FR-GAME-PLAY2	The player shall interact with **at least one** study location and make choices at this location	UR-INTERACT
FR-GAME-PLAY3	The player shall interact with **at least one** eating location and make choices at this location	UR-INTERACT
FR-GAME-PLAY4	The player shall interact with **at least three** leisure locations and make choices at these location	UR-INTERACT
FR-SLEEP2	The player shall be locked out of all activities other than sleeping if they run out of energy	UR-INTERACT
FR-MENU4	The menu shall provide the player with a list of options	UR-MENU
FR-COUNTER	The amount of each activity performed shall be counted	UR-INFO
FR-LEADERBOARD	**A leaderboard of the top 10 players who have completed the game and their score shall be displayed.**	**UR-MEMORY**
FR-STREAK-VISIBILITY	**Streaks should be visible on the game over screen as a hidden achievement**	**UR_STREAK**
FR-SCORE	**A score based on the combination of studying and recreational activities.**	**UR_MEMORY**
FR-STREAK	**The amount of times a player completes a certain activity**	**UR_STREAK**

Non-Functional System Requirements

ID	Description	User requirements	Fit criteria
NFR-DOCUMENTATION1	The game shall be accompanied by detailed architecture documentation		6 pages of architecture documentation containing diagrammatic representations and justifications shall be produced
NFR-DOCUMENTATION2	The game code shall be commented and documented		>95% of code should either be self-explanatory or well-documented
NFR-RESILIENCE1	A problem with one map location shall not impact other map locations	UR-INTERACT	In >95% of game plays that experience an issue with one location, all others will not be affected
NFR-SCALABILITY	The game shall support a single player at a time	UR-INTERACT	No more than 1 person will play in 1 game
NFR-OPERABILITY1	The game shall be playable by users with no prior experience of it	UR-INTERACT	>95% of users will find the game easy to understand even if they previously played for 0 hours
NFR-OPERABILITY2	Users shall set up the game without needing training	UR-INTERACT	>95% of users will find the set up easy despite having 0 hours of training
NFR-ACCESSIBILITY1	All game items shall always be distinguishable by shape as well as colour	UR-ACCESSIBLE	>95% of colour-blind users will be able to access the game
NFR-USABILITY1	Any technical error messages shall be hidden from the user and a user-friendly, plain English message shall be presented instead	UR-DESIGN	<1% of users will see a technical error message when playing the game
NFR-RESILIENCE2	The game shall be reliable and start as expected without being unavailable	UR-WORLD	>98% of game starts will be successful
NFR-USABILITY2	All game instructions shall be provided in plain English and avoid technical and university jargon	UR-DESIGN	100% of game instructions will be in plain English with no jargon
NFR-ACCESSIBILITY2	No elements or instructions of the game shall only be indicated by sound	UR-ACCESSIBLE	100% of sounds and music will be supplemental and not necessary

NFR-OPERABILITY3	The game shall be playable by users who have had no experience of the game features in real life	UR-WORLD	>95% of players shall report that they found it easy to play the game even with 0 hours of university experience
NFR-TIMING1	After 16 game hours, the player shall be unable to do anything other than sleep	UR-SLEEP	After 16 hours of game time, players must be forced to sleep in 100% of cases
NFR-TIMING2	The game shall last between 5-10 minutes for an average player	UR-TIMED	>90% of players will play for a minimum of 5 minutes and a maximum of 10 minutes
NFR-MAINTENABILITY1	Team members not involved in implementation shall understand what is happening in the code		All team members will be able to understand the code within 1 hour
NFR-MAINTENABILITY2	A new team shall be understand and change the code		>90% of comments and code documentation must be understandable to new teams immediately on reading
NFR-USABILITY3	The game shall be appealing and present the university in a happy and positive way	UR-DESIGN	>90% of users should report that the design of the game was appealing

References

[1] IEEE Systems and software engineering - Life cycle processes - Requirements engineering, IEEE Standard 29148 Second edition, 2018