REQUIREMENTS

ENG12020TEAM24

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Requirements

Purpose

This project is to design a game in which the player character plays as Auber, the constable of a spaceship, where the objective of the game is to find and apprehend 8 infiltrators on the ship before they manage to sabotage 15 systems.

Requirements are elicited via thorough analysis of the cohort briefing document and back and forth negotiations of the game requirements during customer meetings.
We have divided our requirements into two sections, user requirements and system requirements[0]. We have included a list of user requirements, each identifiable with a unique id. These are followed with a description of the requirement, written with non-technical language so it is easily understandable by our client[1]. The system requirements are further broken down into functional system requirements and non-functional system requirements[2]. Our functional system requirements table contains three columns, a unique code, a description of the requirements and user requirements column showing which user requirement the functional system requirement links to. The non-functional system requirements table has the same structure but includes a fit criteria column which is the acceptable range for our requirement.

Intended Audience

As stated in the cohort brief for the project, the audience will be prospective University of York students during open days. The product will be used to demonstrate the result of software development and the engineering capabilities of Computer Science. The system should be easy to operate and can be self-running with no interaction when idle.

Direct Stakeholders

- **The Customer** (Dimitris Kolovos) who has given us the design brief and requirements for the project. To whom we must check and negotiate our project requirements with.
- **The University Communications Office** who will display and present our software during open days thus the product must be appropriate to be shown off in presentations to prospective University of York students.
- **Open-day Users and Operators** who will be playing our game thus the project must be designed to be accessible and easy to use

Indirect Stakeholders

- **The University** as the project is to be demonstrated during an official university open day, we are hence representing the university thus are constrained to create appropriate software that can be publicly displayed.

Document Conventions

The document uses the following conventions to split the requirements into logical groups.

UR	User Requirement	What must the system provide to allow the user to operate the software.
FR	Functional System Requirement	An action the system must do, to provide a useful functionality for the user.
NFR	Non-functional System Requirement	Quality the system must have that can have a constraint on functional requirements and critical to the system's success.
CON	Constraint Requirement	A project, process or design constraint/limiter put in place that shape the requirements.

User Requirements

Identified requirements that have been codified that the program must perform for the User. The User being a stakeholder and how they will operate the program and the priority of the implementation of said requirements; in order of highest to lowest: SHALL, SHOULD, MAY.

CODE	DESCRIPTION	PRIORITY
UR_OPERATE	The program shall be simple and easy to use for an open day operator that may or may not understand the technologies used.	SHOULD
UR_GAME	The program must allow the user, a prospective student on open days, to play through the game from start to finish. This was discussed in the cohort brief and first customer meeting.	SHALL
UR_UX	The program will provide a pleasant user experience that is appropriate and fun for an open day player as well as a certain level of quality to show off the capabilities of CS students.	SHOULD
UR_CONTROLS	The controls and usability of the program must be intuitive to learn.	MAY
UR_WEBSITE	The program, along with relevant files will be hosted on a website.	SHALL

Functional System Requirements

Identified requirements that have been codified that represent the various functions the program will have. They have been linked to the relevant user requirement that they are meant to satisfy.

CODE	DESCRIPTION	USER REQUIREMENT
FR_RESPAWN	When the user's health is fully depleted, they respawn at the Infirmary. *This was discussed in the customer meeting to avoid Auber death to satisfy the constraint of CON_PEGI_3.*	UR_GAME
FR_CAMERA	A 2-D game with a top-down camera view. *This was discussed in the customer meeting to satisfy CON_2D.*	UR_UX
FR_SHIP_SYSTEM	The game will have at least 15 systems for the user to protect.	UR_GAME

	The systems cannot be repaired. *Implied from Brief: “more than 15 systems”. The meeting discussed “can not be repaired.”*	
FR_INFILTRATORS	The program will have 8 CPU infiltrators, with at least three groups of distinct abilities that will sabotage the ship systems and attack Auber. *Brief: “All eight infiltrators”*	UR_GAME
FR_MAP	The program’s map must consist of a minimum of 4 different types of room (including an Infirmary) for the systems to be present in. *Brief: “There must be at least 4 types of rooms in the station”.*	UR_GAME
FR_LOSS	The user loses the game when 15 or more systems are destroyed. *Brief: “The game is lost when infiltrators have successfully destroyed more than 15 systems.”*	UR_GAME
FR_WIN	The user wins the game when all 8 infiltrators are arrested. *Brief: The game is won when all eight infiltrators have been arrested.”*	UR_GAME
FR_IDLE	The program should have an idle screen when not in use. *Discussed in interview the game should have an idle state where the game plays itself or has a video of it being played.*	UR_OPERATE
FR_NPC	Neutral non-player characters that do not interfere with the main objective of the game. *Implied from the brief and validated in meeting to implement neutral characters in the game.*	UR_GAME
FR_AUBER	The player character named Auber, the player must be able to use a ‘beam’ to teleport infiltrators to the brig. *Brief: “... and beam (teleport) them to the brig.*	UR_GAME
FR_INFIRMARY	A special room in which the Auber can heal themselves. *Brief: “Auber can teleport to the infirmary to heal.”*	UR_GAME
FR_TELEPORTER	Teleportation pads which only the Auber can use to teleport to the infirmary and other areas of the ship. *Brief: “...Auber (but not infiltrators) can teleport to any other teleportation pad.”*	UR_GAME
FR_SFX	The game will have sound effects played, background music and other noises. *Not mentioned in brief but confirmed to be allowed in the customer meeting.*	UR_UX

Non-Functional System Requirements

Non-functional requirements that are not part of the program or a function in the program that are required and linked to their respective user requirement.

CODE	**DESCRIPTION**	**USER REQUIREMENT**	**FIT CRITERIA**
NFR_INPUTLATENCY	Latency of key press to user action should be minimal.	UR_CONTROL	<100 millisecond delay

Constraint Requirements

Identified requirement for the program that should limit our choices so that we successfully deliver a product satisfactory to the client.

CODE	DESCRIPTION	USER REQUIREMENT
CON_OS	The implementation of the game should not use libraries limited to a single OS, use universal libraries. *As discussed in the customer meeting.*	UR_OPERATE
CON_SCREEN	The screen resolution and ratio of the game should be scalable. *As discussed in the customer meeting.*	UR_OPERATE
CON_2D	The implementation should be a 2D game so only use 2D game frameworks and libraries. This will make implementation easier for the scope of the project. *As discussed in the customer meeting.*	UR_UX
CON_PEGI_3	The game should not contain any blood, death or graphic scenes (explosions, flames …). Should comply with PEGI 3. *As discussed in the customer meeting and implied from cohort brief.*	UR_UX
CON_PLAYTIME	Game should be short (~5-10 minutes). *As discussed in the customer meeting.*	UR_UX

Possible Risks of Requirements:

Environmental Assumption: Working speakers

Associated Risk: FR_SFX - If the laptop speakers do not work or are not loud enough, game audio will not be heard on the open day.

Possible Alternative to Requirement: Ensure that sound is not an essential component for playing the game.

Non-Environmental Risks:

CON_PEGI_3: By having the game adhere to PEGI 3 regulations, the game might become less desirable to older players

Possible Alternative to Requirement: Ensure that the game appears fun and hope that that is enough to make it desirable by older players.

Requirement Log

Initial requirement research:

- 15/10/2020 Customer meeting with Dimitris to ask about the Cohort 1 ENG1 briefing document. This gave rise to our constraint requirements and clarification of certain game mechanics.

Requirements Validation:

- 05/11/2020 Second Customer meeting with the following changes to the requirements:
    - NFR_PlAYTIME changed to CON_PLAYTIME as it is not a NFR that is part of the game.
    - NFR_DOCUMENTATION and NFR_WEBSITE removed as they are not part of the game but just the assessment thus does not have any user requirement links.
    - Link the Requirements to the cohort brief/interviews and how they were formed.
    - FR_MAP is clarified to contain 4 distinct types of rooms within the ship. Number of maps on the ship are planned for implementation.

Bibliography:

[0] Ian Sommerville, Software Engineering, 9th Edition, page. 83
[1] Ian Sommerville, Software Engineering, 9th Edition, page. 84
[2] Ian Sommerville, Software Engineering, 9th Edition, page. 85