Requirements

Team name: Endeavour (Team 28)

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2a: Introduction

In our first meetings we read through the assessment briefing and discussed what our stakeholder's needs might be. We then had our first customer meeting where we discussed their requirements for the game and we asked our user what they required from the game. We then negotiated what we would implement and what extra features we could add that the user may not have originally asked for.

We represented our requirements using a Functional, Nonfunctional and User Requirement table. This allowed us to clearly group our requirements and relate them to one another. Our User requirements table has a column for priority which allows us to focus on the things the user thinks is essential before moving on to less essential requirements. Our Functional and Nonfunctional requirement tables have a column for their related user requirement.

A System Requirement is description of how the system will deliver on the needs of the users, detailed descriptions of functionality, services and constraints.
The Functional Requirements are the things that a system must do and an action that the system has to take if it is to provide useful functionality for its user.

Functional requirements can be grouped into:

- Transformation:
    - Required response to a condition/event
    - For example FR_MOVEMENT and FR_ARREST
- Invariant:
    - Properties that must always hold
    - For example FR_SPECIAL_ABILITIES and FR_UNIQUE_ROOMS
- Failures:
    - Forbidden/permissible transformations
    - For example FR_GAME_OVER because you cannot win or lose until you arrest 3 infiltrators or the infiltrators destroy 15 systems.

For the Non-functional Requirement, there are 13 attribute which are Security, Reliability/Availability, Timing, Precision, Constraint, Maintainability, Documentation, Resilience, Integrability, Scalability, Operability, Auditability, Accessibility, Usability. For example 'The system is highly responsive to user keyboard inputs' from NFR_MOVEMENT_RESPONSE is a precision constraint.

<u>SSON</u>
A single-player game, in which the user tries to arrest the infiltrators before they destroy a critical number of key systems of the station.

2b: Statement of requirements

User Requirements

ID	Name	Description	Priority
1	UR_FOUR_ROOMS	There must be at least 4 types of rooms in the station	Shall
2	UR_TELEPORTATION	Auber can teleport between teleportation pads in the station, each room has a teleportation pad	Shall
3	UR_SPECIAL_ABILITIES	There must be at least 3 distinct special abilities within the group of infiltrators	Shall
4	UR_HEAL	Auber can heal when and only when in the infirmary	Shall
5	UR_REAL_TIME	The game must be real-time (not turn-based)	Shall
6	UR_KEYBOARD	User can move Auber using the arrow keys and/or the WASD keys	Shall
7	UR_VIOLENCE	No graphic violence	Should
8	UR_SOUND	Minimal sound in terms of music and necessity to have sound on	Should
9	UR_JAVA	Written in Java only	Shall
10	UR_ARREST	Auber can arrest infiltrator	Shall
11	UR_FAIL	If user lets the infiltrators destroy the systems, they must lose	Shall
12	UR_SUCCEED	User can win the game by arresting infiltrators	Shall
13	UR_INFILTRATORS	There must be 8 infiltrators	Shall
14	UR_CITIZENS	There must be non-hostile characters in the game	May
15	UR_SYSTEMS	The systems can be destroyed by the infiltrators	Shall
16	UR_ACCESSIBILITY	The game must be accessible and easy to play	Shall

Functional Requirements

	ID	Description	User Requirements
1	FR_MOVEMENT	When user presses movement key Auber moves in appropriate direction (WASD and arrow keys)	UR_KEYBOARD
2	FR_ARREST	Auber can arrest enemies by holding down the space button.	UR_ARREST
3	FR_TELEPORT_PADS	Auber can only teleport on teleport pad to any other room	UR_TELEPORTATION
4	FR_SPECIAL_ABILITIES	Infiltrators have powers and cannot repeat their power till a cooldown period has ended	UR_SPECIAL_ABILITIES
4a	FR_INVISIBILITY	The infiltrator can go invisible	UR_SPECIAL_ABILITIES
4b	FR_HALLUCINATIONS	The infiltrator can cause Auber to have hallucinations until they enter the infirmary	UR_SPECIAL_ABILITIES
4c	FR_SHAPESHIFTING	The infiltrator can shapeshift into a civilian	UR_SPECIAL_ABILITIES
4d	FR_SPEED_BOOST	The infiltrator can move at an increased speed	UR_SPECIAL_ABILITIES
5	FR_UNIQUE_ROOMS	System has 6 unique rooms: Command room, infirmary, laboratory, crew cabin, engine room and the brig.	UR_FOUR_ROOMS
6	FR_SABOTAGE	Infiltrator can sabotage system when next to it	UR_SABOTAGE
7	FR_INFIRMARY	When auber is in infirmary they heal and the hallucination effect wears off	UR_HEAL
8	FR_GAME_OVER	System generates “Game Over” message when you lose	UR_FAIL
9	FR_INFILTRATORS_AI	Infiltrators must be able to utilise an AI to move on the screen and destroy systems	UR_INFILTRATORS
10	FR_SYSTEMS_DESTROYED	The player can see how many systems have been destroyed	UR_SYSTEMS

Non Functional Requirements

	ID	Description	User Requirements	Fit Criteria
1	NFR_MOVEMENT_RESPONSE	The system is highly responsive to user keyboard inputs	UR_KEYBOARD	<0.05 seconds
2	NFR_OFFLINE_SECURITY	The game can be run when the user does not have internet connection	UR_ACCESSIBILITY	No internet
3	NFR_HEARING	The game can be played by someone who is deaf	UR_SOUND	N/A
4	NFR_ENGLISH	All messages shown to the user must be in one language and minimal jargon	UR_ACCESSIBILITY	All in the English language
5	NFR_OPERATING_SYSTEM	The system must be able to run on specified operating systems	UR_ACCESSIBILITY	Linux, MacOS, Windows
6	NFR_OPERABILITY	Any user with any gaming skill level can learn to play the game	UR_ACCESSIBILITY	Within the first game session

We can assume that the user has high enough computer specifications to run our game as well as a means to input data such as a keyboard and mouse. We also assume that the screen resolution is 2560x1440 (however we will still implement resize).
An associated risk was assuming that the user had previous gaming skill level and would understand the base of any video game. Although this is a small risk we still mitigated it with the addition of a tutorial.
An associated risk involves the Infiltrators AI. As the AI could get trapped on areas making it impossible for the player to finish the game. This is a large risk when making an AI as stopping the player from playing is the worst scenario. However it can be mitigated we can give specific nodes so that the AI does not go off track and moves to an area they would get stuck.

References

Unknown Author, 2014, Software Requirements Specification, http://graduatestudents.ucmerced.edu/tshea2/files/SoftwareRequirementsSpecification_0.pdf