2.5 Requirements Specification

**We have abbreviated Ron Cooke Hub to "RCH";*
**We have abbreviated Non-Player Character to "NPC";*
**We have abbreviated the SEPR 2016-17 Scenario 2 Brief [2] to "SB".*
**All interview questions we refer to can be found on our website [4].*
Requirements removed for Assessment 4 are presented in red.
Requirements implemented in Assessment 4 are presented in green.

No.	User Requirement	Associated System Requirements	Environmental Assumptions, Risks & Alternatives	Justification
1	Each playthrough should be different in some way to the user.	a. The system should be able to randomly generate new stories alternating murderers, motives, clue locations and methods.	Risk: There is a small chance that the user may play the same game again due to random error.	This feature is a requirement because without it, our game would have no replay value as the users would only have one story to play through. It is also explicitly written into the SB.
2	The player should be given options at the start of the game including Play, Leaderboard etc.	a. The system should present a menu with buttons to begin the game, display the leaderboard and tutorials. b. The system should allow the user to go from the leaderboard and tutorials, back to the menu.	Assumption: The user has an input device to navigate the menus.	Having a menu will allow the users to choose when they would like to start their game & score timer. Our research revealed no games that did not have a main menu, so it should be a familiar concept with our users.
3	The user must be able to learn how to play the game from within the software.	a. The system should provide simple tutorials/tooltips to the user to help them to start playing the game quickly.	Assumption: The user gains enough understanding to play the game from the tutorial. Risk: The user does not understand the game after playing the tutorial.	All similar games we researched had built quick-start tutorials so the user should not have to resort to reading the user manual if they would like to quickly play the game.
4	The user must be able to customize the personality of their character.	a. The system should allow the selection of personalities	Assumption: The user has an input device to allow them to make the selections.	The SB describes this functionality, although the traits could be selected from a list of presets (i.e. choose which detective to play as), selecting traits to include/ exclude (i.e. using radio buttons), or by using user defined rankings (eg sliders)
5	The user must be able to navigate to all rooms in the RCH.	a. The game must include at least 8 rooms in the RCH. b. The system should present the user with a Graphical User Interface. c. The system should provide a way to navigate through different rooms of the RCH.	Assumption: The user has means of moving the mouse cursor and input.	The SB says we should "divide the Hub into at least eight rooms", and based on game research, the player should travel through graphical representations of each of the rooms to discover clues.
6	The user should be able to find and collect clues within the Ron Cooke Hub.	a. The game should hide discoverable clues throughout the building based on the story. b. There must be at least one clue in each of the rooms in the RCH. c. Clues should be removed from the environment and saved in the player's inventory once collected.	Risk: The user might struggle to find the clues. Alternative: The user has already found all clues.	The SB specifies this in detail. These clues are collected by the user and are the fundamental concept for winning the game. Research into murder mystery and detective stories revealed the "20 Rules For Writing Detective Stories" [5] which states that all clues must be "plainly stated and described" (rule 1)
7	The user should be able to review the evidence that they have already found	a. The system should provide a place where the clues the user has already found can be looked at and reviewed	Alternative: the user has no evidence to view, and the system should display a warning message.	The game is not one based on memory, thus there must be a way of viewing previously collected clues. The SB states that not all clues must point to the murderer, some may act as red herrings.
8	The user should be able to see and interact with other game characters and objects to help them in their quest for evidence.	a. The game must contain at least 10 NPCs, each with distinct personalities. b. The system should provide a way for the user to interact with NPCs/ objects, and they will respond dynamically. c.The game should hide clues that can be found by interacting with the NPCs.	Assumption: The character/ object is relevant to the story and isn't part of the background.	The SB describes this interaction in depth. If the player could not interact with objects or NPCs they would have a very linear experience, so this interaction should help keep the players involved with the game.

9	The user should be able to question NPCs in different ways, and will receive varying amounts of help from them, depending on their question choice.	a. The game needs a system for conversations between the detective and NPCs. b. There needs to be a way of ending a conversation. c. The game should allow for different methods of questioning with the same NPC depending on the personality of the detective. d. The NPCs should react differently to one method of interrogation than another.	Risk: If they have accused the NPC, they will be unable to gain the required evidence to continue. Alternative: The NPC has already given the player all information.	The SB describes this action in depth too. Our research into other similarly styled games and their dialogue methods revealed most employ the selection of some sort of vague conversation topic to begin the interrogation, and subsequent replies are kept short. Often the selection screens offer replies in a different tense than what the detective says (eg. 'Accuse jane' is chosen, and the detective says 'I accuse you').
10	The user should be able accuse NPCs of being the murderer, with a motive clue and a weapon.	a. The game should provide a method of accusing suspect NPCs of being the murderer. b. The game should reward the player for correct accusations, and penalize for incorrect accusations.	Assumption: If the user is unable to question a particular NPC for whatever reason, the NPC should make this clear to the player.	The SB specifies that correctly accusing suspects is the way the player can win the game, so a system to control this is necessary for the game. An interview with the client revealed that when the weapon has been collected, the user should know, and they shouldn't be left to figure it out which clue was the weapon.
11	The user can accuse any suspect, but if they are wrong, or have not found enough evidence, they cannot question the player until new evidence is found.	a. The system must keep track of accusations, and stop players being questioned after being accused, but it should not be possible to lock the game so there is no possible completion.	Risk: The user might accuse all NPCs, stopping them from questioning them and rendering them unable to collect the required evidence to continue.	The SB states that 'If they haven't gathered enough evidence, or the accusation is false, the player cannot question that character again for the rest of the game.'. We along with the stakeholders have decided this is too harsh so changed it to this requirement.
12	The user should 'win' the game when they have successfully accused the correct suspect with correct motive clue and weapon.	a. The game should end when the correct suspect has been accused. b. The user must collect at least the motive clue and a number of other clues to successfully accuse.	Alternative: The game should end if there arises a situation from which the player cannot progress.	Like in the classic board game Cluedo, even if the suspect has been selected correctly, they player has not won without correctly deducing the other clues.
13	The player should receive a score based on their performance.	a. The system should provide a score based on many factors including missteps and time taken. b. The system should allow the user to enter their name. c. The game should save this score & name for viewing again in the leaderboard. d. They should be saved in a way that will preserve the data when the game is closed and started again. e. The user should be able to view their score while playing the game.	Risk: The user leaves the game and forgets to pause. Penalty points keep getting added to their score, even though they are not present. Risk: If the user makes multiple mistakes or takes too long to complete the game, the counter could count too high. This could cause an overflow, which could crash the game if not handled correctly.	Other than being described in the SB, the score is an important aspect to any arcade-style game as it allows players to compete with others and themselves on successive attempts. Other games that we researched used scores so that
14	The player should be able to view previous scores.	a. Previously saved scores must be read by the system and form a simple leaderboard table. b. The system allows the user to clear the leaderboard by resetting the scores.	Risk: There may not be any scores that have been previously saved. Assumption:If there are many with the same score then the list should be sorted in a reasonable order.	As above. If a user wants to try to beat their last score they'll need a device to store and recall this information; leaderboards are the most common way of representing this information since the invention of video games.
15	The player should be able to take a break without their score continually decreasing.	a. The game should provide a method of pausing the game	Risk: The player forgets to pause the game.	Every video game we researched featured some method of pausing the game to halt time and
16	It should be obvious to the player when the game is currently paused.	a. The game should display a new screen when it is paused b. There should be options to allow the user to resume the game, but also to exit to the menu.	Risk: The pause screen could look too similar to the play screen.	If it is not obvious when the game is paused, the player could become frustrated and confused as to why it is not working the way they expect.

17	The user should be able to accuse every character of committing the murder. They are also not allowed to re accuse a character after a false accusation. They will lose the game after an incorrect accusation.	a. Upon accusing the incorrect character, the game will end immediately and the user will be presented with a 'Lose' screen.		
18	The user should be able to play the game by themselves or against someone else.	a. The menu will give the user the option to choose between 'Single player' and 'Multiplayer' options. b. The system will display the scores of both players whilst the game is running. c. The system will allow each user to select their own detective with their respective personalities. d. The game will operate on a turn-based system, providing users with 'action points' which are decreased when they perform an action.	Risk: The user wants to play the game against more than one person. Assumption: Both users are in the same room and have access to the same computer.	This will make the game more fun and interactive, and opens the game up to a wider audience. This is also explicitly specified in the Requirement Changes brief provided to us by the client.
19	In multiplayer mode, the user who has the most points when the murderer has been successfully accused will win the game.	a. The system will award the users with points for finding clues and successfully accusing the murderer. Points will be removed for time taken to find clues, and for incorrect accusations.	Risk: Both users have the same number of points and there is no clear winner.	This will make the game more fun by providing an element of competition. It will provide both players with a goal, thereby giving them more incentive to complete the game.
20	The user must solve a puzzle to allow them to access one of them rooms.	a. The system will 'lock' one of the rooms, preventing the player(s) from accessing it until they have successfully completed a puzzle.	Risk: The user is unable to successfully solve the puzzle, and therefore cannot access the room to retrieve the clue.	This will make the game more challenging, and therefore more enjoyable. This is also explicitly stated in the Requirement Changes brief provided to us by the client.

2.6 Other System Requirements

No.	System Requirement	Environmental Assumptions, Risks & Alternatives	Justification
21	The system should clear the player's inventory when the game is restarted.	Assumption: The player's inventory isn't already empty to start with.	Different clues will be needed to accuse each game so having them remain would be unnecessary and their presence would compromise the story and clutter the inventory.
22	The system should randomly distribute the clues when the game is restarted.	Risk: Due to the nature of randomness, clues may appear in the same place they were previously found. Some clues should only be discoverable in a relevant location (eg. crime scene or specific room).	The clues should be in different places to make the game more challenging, and to make each playthrough unique.
23	The system should randomly select a murder weapon, and characters to be the murderer and victim when the game is restarted.	Risk: Due to the nature of randomness, these factors may not change from the previous playthrough.	Each factor should be randomised as stated in the SB. This allows each playthrough to be different, and varying stories can be generated by the engine, forming the dynamic content of the game.
24	The game must run on the computers found in the software lab.		One of the statements in the SB suggests that the University's Communications Office may use our software for Open Days and similar events. For this reason, our game should be compatible with University equipment, and should not be over demanding of processing/ graphics power.

2.7 Non-Functional Requirements

No.	Non-Functional Requirement	Justification	Assumptions
25	The game should be interesting and fun to play.	SB states the game should be enjoyable.	
26	The game should not include any swearing, racism, sexism, ageism, or any other kind of discrimination or offensive language or images.	Risk: Cultural differences may mean that something innocent to one person is offensive to somebody with a different background.	Intentionally including any offensive material is morally wrong and could cause distress to our users. The SB also asserts that the University's Communications Office may use our software for UCAS and Open Days, and including anything offensive would result in bad publicity for the university, and an inaccurate portrayal of the Computer Science Department.
27	The game should be aimed towards university students	SB states the game should be playable by our SEPR cohort.	