

# Requirements

## Introduction

At our first meeting we read the brief, and with that in mind, we played cluedo to get a feel for a general detective game. This sparked discussion as to what works in a game, and it gave us ideas for how our game should work. We decided the most effective way of thinking about the game was like “guess who”. Using the brief and our new ideas, we produced a list of features we’d like to include in the game, and then prioritised those.

After the initial meeting, we produced a number of user scenarios [1], and used our list of features to help produce a draft of the requirements. From these we identified ambiguous points and produced questions we needed to get answers for. We met multiple times with the customer throughout the design process, to present our requirements and ask questions we had. Using their feedback, we made any necessary changes.

Following the response we got after the Assessment 1 feedback was released, we decided it was best to rewrite our requirements. This led to substantial improvements in the clarity and categorisation of our requirements, and this has benefitted us as it made the requirements easier to test against when it came to implementing the game.

When designing the requirements, we took these points into account:

- The requirements should be categorised as:
  - **Functional** requirements - these define what the system should do
  - **Nonfunctional** requirements - these define the behaviour of the system
- The requirements should be achievable within the time allocated of this project
- The requirements should consider the hardware in which the game should run
- The requirements should meet all points included in the brief
- We produced a survey asking about input methods and accessibility [2]. We got a sample of our target market to respond. From this we found:
  - The preferred way of interaction with the game was keyboard and mouse.
  - There were no results from colourblind people, however we still felt it was important that our game was accessible, so have included accessibility features as a “could” requirement. Colour blindness is a condition apparent in 1 in 12 men and 1 in 200 women [3] so we feel that it is a requirement that some people would benefit from.

The requirements are laid out in tables based on the IEEE standard for system requirements, as we felt this was a good standard to adhere to. The tables are split according to type (functional or non-functional), and category. Some requirements have associated risks, these are referenced in the table below, and are defined in the risks document.

Each requirement is given a unique identifier to make it easy to locate, and for traceability. The identifiers are made up of three numbers, using the following system:

- The first number is category, this represents the functional area of the requirement
- The second number represents how important the requirement is:
  - 1 = **Must** implement
  - 2 = **Should** implement
  - 3 = **Could** implement
- The third number is the position in the list, used to ensure the identifier is unique.

# Functional requirements

## Game

| ID    | Requirement  | Success Criteria   | Alternative                                      | Risk ID |
|-------|--|--|--|---------|
| 1.1.1 | To start the game there must be a main menu                                  | The game has a working clear menu  | The game starts immediately when its opened      | 21-24   |
| 1.1.2 | The game must be fully controlled by a mouse and keyboard                    | The game can be interacted with using only a mouse and keyboard              | The game is controlled by an Xbox controller.    |         |
| 1.1.3 | Game must have different 'plotlines'   | Each gameplay is different in some way                                       | Game only has 2 plot lines.                      | 21-24   |
| 1.2.1 | There should be a way of suspending or pausing the game                      | There is the option to pause the game which opens a pause menu               | The game cannot be paused                        | 21-24   |
| 1.3.1 | Could be controlled by a gamepad   | The game can be interacted with using a gamepad                              | Game is only controllable by keyboard and mouse. |         |
| 1.3.2 | Could have a sound track   | Music will be played when the game is running                                | There is no sound track.                         | 21-24   |
| 1.3.3 | If game has a soundtrack, it must have an option to turn the sound track off | There is a player accessible way to turn the sound track off within the game | The soundtrack would always be on.               |         |

## Player

|       |  |   |  |       |
|-------|--|---|--|-------|
| 2.1.1 | The player must have a personality that is customisable                | The players personality changes in the game   | The player personality does not change.                            | 21-24 |
| 2.1.2 | Must not be able to accuse a NPC unless enough evidence has been found | The player cannot see the option to accuse an NPC unless they have interacted with enough clues | Can accuse an NPC without evidence.                                | 21-24 |
| 2.1.3 | The player must start in a central room at the start of every game     | When the game starts, the player should be in the centre of the "Ron Cooke Hub"                 | Player can start in any room.                                      |       |
| 2.1.4 | The player must be able to navigate between rooms on the map           | The player can move throughout the map and transition to other rooms when desired               | The player progresses through rooms automatically.                 | 21-24 |
| 2.2.1 | The player should be able to see their current personality level       | The game should present the player with an GUI element showing their personality level          | The Player will not be able to see their current personality level | 21-24 |

## NPC

|       |   |  |                                  |       |
|-------|---|--|----------------------------------|-------|
| 3.1.1 | Each killer must have a motive            | The killers all have motives   | All killer have the same motive. | 21-24 |
| 3.1.2 | There must be 10 non playable characters. | The player should be able to locate 10 NPCs in rooms during the game | There are less than 10 NPC's.    | 21-24 |

## Map

|       |   |   |                                  |       |
|-------|---|---|----------------------------------|-------|
| 4.1.1 | The game must have a map containing 10 separate rooms | The player should be able to visit 10 different rooms in the game | The game has less than 10 rooms. | 21-24 |
|-------|---|---|----------------------------------|-------|

## Clue

|       |   |  |  |       |
|-------|---|--|--|-------|
| 5.1.1 | There must be at least one clue in each room of the map | The player can navigate to every room and be able to locate a clue | Some rooms may have no clues, some may have multiple | 21-24 |
|-------|---|--|--|-------|

| ID    | Requirement   | Success Criteria   | Alternative   | Risk ID |
|-------|---|--|---|---------|
| 5.1.2 | The player must be able to interact with a clue   | The player should be able to interact with a clue once it has been located           | The player gets the clue without interaction.                           | 21-24   |
| 5.2.1 | There should be an inventory where clues can be placed by a player for future reference | The player can see an inventory in the GUI that allows visibility of collected clues | Clues are stored internally but the player will not be able to see them | 21-24   |

## Score

|       |   |   |  |       |
|-------|---|---|--|-------|
| 6.1.1 | There must be a score shown to players in the game      | The player must see a score displayed in the GUI                              | There will be no scoring.                                | 21-24 |
| 6.2.1 | There could be an online scoreboard to keep high scores | There could be a scoreboard in the GUI that presents the all time high scores | There will be a local list of high scores, or no scoring | 21-24 |

## Dialogue

|       |   |   |  |       |
|-------|---|---|--|-------|
| 7.1.1 | The player must be able to interact with an NPC   | A player can go up to an NPC and talk to them   | The player cannot interact with NPC's. | 21-24 |
| 7.1.2 | The player must have the option of questioning an NPC   | When a player talks to an NPC, they should have the option to question them   | The player cannot question an NPC.     | 21-24 |
| 7.1.3 | The player must have the option of ignoring an NPC  | When a player talks to an NPC, they should have the option to ignore them   | The player cannot ignore an NPC.       | 21-24 |
| 7.1.4 | The player must have the option of accusing an NPC  | When a player talks to an NPC, they should have the option to accuse them if they have found enough clues to accuse the NPC                           | The player cannot accuse an NPC.       | 21-24 |
| 7.1.5 | The player must choose from a set of questions when interacting with an NPC that reflects different personalities                 | When a player talks to an NPC, and chooses to question them, they can choose from multiple speeches with different personality levels. Eg. Aggressive | The player only has one                | 21-24 |
| 7.1.6 | Each NPC must respond differently to questions from a Player depending on both NPC's and Player's personality and characteristics | When an NPC responds to a player after being questioned, their response must be determined by their characteristics and the player's personality      | All NPC's respond in the same way.     | 21-24 |

# Nonfunctional requirements

## Game

|       |                                      |   |   |       |
|-------|--------------------------------------|---|---|-------|
| 1.1.4 | Must run on the university computers | An executable is provided the runs on the computers                         | The game will not run on university computers.      | 7     |
| 1.1.5 | Must run on Windows 10               | An executable is provided that runs on windows 10                           | The game will not run on windows 10.                | 7     |
| 1.2.2 | Should run on MacOS                  | An executable is provided that runs on MacOS                                | There will not be an executable that runs on MacOS  | 7     |
| 1.3.4 | Could run on a mobile platform       | An executable is provided to run on mobile platforms                        | The game will only run on desktop operating systems |       |
| 1.3.5 | Could have a colour blind mode       | The colours in the game can be configured by the user to be more accessible | There will not be a colour blind mode               | 21-24 |

## NPC

| ID    | Requirement  | Success Criteria   | Alternative                                   | Risk ID |
|-------|--|--|---|---------|
| 3.1.5 | Each NPC must have a personality that affects and is affected by game play.  | The NPC will respond best to different types of question. For example, an aggressive NPC will respond best when questioned nicely. | All NPC's have the same personality.          | 21-24   |
| 3.1.6 | The killer and victim must be randomly selected each time the game begins from two sub-lists of killers and victims. | When the game starts, the victim and the killer has been selected at random.   | The killer and victim is the same every time. | 21-24   |
| 3.1.7 | Each NPC must be randomly assigned to a room at the start of the game  | All NPCs should be situated within a different room at the start of the game.  | Each NPC is always in the same room.          | 21-24   |

## Map

|       |   |   |                                     |       |
|-------|---|---|-------------------------------------|-------|
| 4.1.3 | The room where the murder occurred must be randomly selected at the start of every game | One random room should be the selected murder location at the start of every game | The murder room is always the same. | 21-24 |
|-------|---|---|-------------------------------------|-------|

## Clues

|       |   |  |  |       |
|-------|---|--|--|-------|
| 5.1.3 | The murder weapon clue must be found before the player can accuse any NPCs        | The player cannot accuse an NPC until they've located the murder weapon clue             | Can accuse without the murder weapon.                              | 21-24 |
| 5.1.4 | Most clues should help with identifying the killer                                | A clue will narrow down the number of suspects left to be the killer                     | All clues help identify the killer                                 | 21-24 |
| 5.1.5 | At the start of the game, clues must be randomly assigned to each room in the map | There must be at least one clue in every room of the map at the start of the game        | Clues always in same location.                                     | 21-24 |
| 5.2.2 | Clues could be picked up by a player and placed in an inventory                   | The player can interact with a clue and place it in their inventory for future reference | Clues will be stored internally, but may not be seen by the player | 21-24 |

## Score

|       |   |   |                           |       |
|-------|---|---|---------------------------|-------|
| 6.1.2 | The player's score must take into account the time taken                  | The score must change depending on how long the game has lasted                 | There will be no scoring. | 21-24 |
| 6.1.3 | The player's score must take into account the number of wrong accusations | The score must change depending on how many accusations the player has made     | There will be no scoring. | 21-24 |
| 6.1.4 | The player's score must take into account the number of questions asked   | The score must change depending on how many questions the player has asked      | There will be no scoring. | 21-24 |
| 6.1.5 | The player's score must take into account the number of clues found       | The score must change depending on how many clues have been found by the player | There will be no scoring. | 21-24 |

## Dialogue

|       |   |  |  |       |
|-------|---|--|--|-------|
| 7.1.7 | The type of question asked to an NPC by a player must determine the player's personality                | When a player chooses a speech to say to an NPC, their personality level is affected by their choice | The type of question asked affects nothing.  | 21-24 |
| 7.1.8 | If an NPC is accused and isn't the killer then the NPC must refuse to interact for the rest of the game | When a player interacts with a previously accused NPC they shouldn't get a response                  | The NPC does not mind being falsely accused. | 21-24 |

## Bibliography:

- [1] Appendix A [online] docs.lihq.me/en/latest/AppendixA [Created 22/11/16]
- [2] Appendix C [online] docs.lihq.me/en/latest/AppendixC [Created 21/11/16]
- [3] Colour Blind awareness [online] <http://www.colourblindawareness.org/colour-blindness/>,  
[Accessed 3/11/16]