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| **Functional requirements** | | |
| **Reference** | **Description** | **Mandatory / Desirable** |
| F1 | The game shall be playable for a minimum of 2 players and a maximum for 6 players | Mandatory |
| F2 | There must be a visual representation of the board, using identifiers (such as “bathroom”) and a grid format, allowing users to be able to see the entire board. This should be completed above any other requirement so that other elements are considered with the board in mind. | Mandatory |
| F3 | Each player will control one of the 6 playing pieces which shall be able to walk across the board in increments according to the number received from the same player's dice roll. no diagonal movements allowed. | Mandatory |
| F4 | The player shall be able to accuse another player of the murder only once. The accusation must include the murderer, murder weapon and room of the crime. | Mandatory |
| F5 | There shall be the possibility for the players to play amongst an AI character - Non-player character. This AI shall be able to play as one of the characters as if played by a human player. The use of the AI does not circumvent the 6player maximum | Mandatory |
| F6 | All players shall start the game located on one of the assigned starting locations on the board | Mandatory |
| F7 | Each weapon is represented by a graphical token and shall be placed in a separate room in the board. | Mandatory |
| F8 | The first person to correctly assume the weapon, room and character shall win the game | Mandatory |
| F9 | 6 cards representing each person, 6 cards representing each weapon and 9 cards representing each room in the house. All cards will be added to the deck | Mandatory |
| F10 | The board should be of a sufficient size as to fit the 9 rooms described in the spec | Mandatory |
| F11 | The player shall be able to roll dice on their turn in order to determine the distance their character can travel on the board. There shall be two 6 sided dice for the player to ‘roll’ together | Mandatory |
| F12 | Upon winning the game, the gameplay shall be terminated and the system shall give appropriate visual and/or auditory feedback to convey that a player has won | Mandatory |
| F13 | A single game should be able to be played over multiple devices | Desirable |
| F14 | Players shall be able to choose the in game character they wish to play before the game starts | Mandatory |
| F15 | The player shall be able to move his/her character across the board via the keyboard | Mandatory |
| F16 | There should be a pair of dice with an animation when rolled, this would happen when the dice roll is triggered. | Desirable |
| F17 | The AI should have varying levels of difficulty for the human players to play against. These levels will determine how ‘well’ the AI shall play during the game. THe human players can choose their preferred difficulty before the game starts | Desirable |
| F18 | the “murder envelope” contains the cards of the killer, room where the crime happened and the weapon used. These 3 cards are decided by random. the murder envelope is then placed on the spot x marked on the bored. | Mandatory |
| F19 | when a suggestion is made the player that made the suggestion will be shown one of the other players cards if the card is one from the suggestion. (if there are no cards to be shown then the players suggestion will be the cards that are in the murder envelope) | Mandatory |
| F20 | The board graphics shall contain an “X” - the murder envelope shall be located on this and only this area of the board | Mandatory |
| F21 | Once a player has made an incorrect accusation, said player shall have no more actions in the game apart from the ability to contradict accusations made by active players. | Mandatory |
| F22 | Players shall only be allowed to move in straight lines only i.e. forwards and crosswise, but never diagonally. | Mandatory |
| F23 | Players may enter rooms by their doors only, but cannot enter and leave a room in the same move. Entering a room ends the move count. | Mandatory |
| F24 | No two pieces may occupy the same square. A room however may be occupied by any number of pieces and weapons. | Mandatory |
| F25 | A player may choose to remain stationary during any number of turns in play. | Mandatory |
| F26 | A player may make a suggestion only when their playing piece is in the room mentioned in the suggestion. | Mandatory |
| F27 | Playing pieces and weapons transferred to any room as a result of a suggestion are not returned to their original positions afterwards. Players must continue playing their pieces from their new locations. | Mandatory |
| F28 | after making a suggestion the player can also make an assumption | Mandatory |
| F29 | A notification will pop up when a player makes an incorrect accusation to inform them that they are out of the game | Desirable |
| F30 | If not all player pieces are being played by a player or ai they should be moved into a room before the game starts. | Mandatory |
| F31 | The board shall be customisable to enhance the users experience | Mandatory |
| F32 | the customised map must not violate any structural rules of the map | Mandatory |
| F33 | The player will be represented by a graphical token on the board GUI | Mandatory |
| F34 | After F18 is completed, the remaining cards will be dealt to all players including the dealer. It does not matter is some players end up with more cards | Mandatory |

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| **Non-Functional requirements** | | |
| **Reference** | **Description** | **Mandatory / Desirable** |
| NF1 | The software shall be written in Python to ensure maximum portability across platforms | Mandatory |
| NF2 | The software should have a mean time between faults of no less than 3 complete run throughs | Desirable |
| NF3 | The software shall be secure and unable for unauthorised persons to access the game while in play | Mandatory |
| NF4 | The software design shall accommodate future updates or maintenance through well designed code | Mandatory |
| NF5 | The user interface shall be intuitive for persons of ages 8+ | Mandatory |
| NF6 | Images can be implemented into the board to increase the visual aspect of the game. This is not necessary for the game to run but would assist the game's visuals. | Desirable |
| NF7 | The software will implement an appropriate GUI for the user that represents that of a board game | Mandatory |
| NF8 | The software will have to read data from an external file to start the game | Mandatory |
| NF9 | The board shall have 9 rooms | Mandatory |
| NF10 | The board should have an adequate number of squares to mean that it does not take long for players to get between rooms but also does not give the player the choice of multiple rooms from one dice roll | Mandatory |
| NF11 | There should be a menu screen offering the players options on how they would like to start the game | Mandatory |
| NF12 | There should be an option for one of the players to leave the game | Desirable |
| NF13 | On the event of a player leaving the game, the player who has left the game should be replaced by an AI character | Desirable |
| NF14 | The checklist for a player finding out information can be shown with the discovered cards on the right hand side of the screen | Desirable |

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| **Domain requirements** | | |
| **Reference** | **Description** | **Action needed** |
| D1 | The board should be aesthetically pleasing and accurately represent the house of Dr. Phlox | Get feedback from people within the demographic for the system |
| D2 | The user interface must be simple and intuitive enough for an 8yr old to use | Talk to UI and educational specialists |
| D3 | The characters must be aesthetically pleasing and not be obviously offending to cultural groups. The character tokens also uniquely identify a character | Get feedback on the character models from a diverse range of cultural groups |
| D4 | The weapon models should not offend any underage participants | Talk to educational and parental experts |
| D4 | The graphics for the board does not offend any cultural group | Get feedback on the character models from a diverse range of cultural groups |