**Tested before code development**

*Menu Unit Test Case*

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| **Test Case #** | **Test Case Name** | **Test Case Description** | **Value** | **Expected outcome** | **Actual Outcome** |
| 1 | Display menu invalid | To test if the python file would return an error if it fails to load the menu | Launch mazegame.py | Returns “invalid menu” |  |
| 2 | Display menu | Running the python file should display the main menu header, 5 options and prompt the user for his option | Launch mazegame.py | The python script displays 5 options as well as prompt the user for an option. |  |
| 3 | Invalid option | Selecting an option not available in the program. | value: 5 | Returns an error message: invalid option |  |
| 4 | Invalid option alphabets | To test if inputting alphabetical characters will return an error message. | value: abc | Returns an error message: invalid option |  |
| 5 | Invalid option symbols | To test if inputting symbols will return an error message. | value: @ | Returns an error message: invalid option |  |
| 6 | Invalid option with 2 or more numeric inputs | To test if inputting more than 1 character will return an error message | value: 92 | Returns an error message: invalid option |  |
| 7 | Option 1 | To test if inputting 1 will direct the user to the first option | value: 1 | Directs user to the first option |  |
| 8 | Option 2 | To test if inputting 2 will direct the user to the second option | value: 2 | Directs user to the second option |  |
| 9 | Option 3 | To test if inputting 3 will direct the user to the third option | value: 3 | Directs user to the third option |  |
| 10 | Option 4 | To test if inputting 4 will direct the user to the fourth option | value: 4 | Directs user to the fourth option |  |
| 11 | Option 0 | To test if inputting 0 will stop the python script | value: 0 | Returns a message that states |  |

*Option 1 (Read and Load maze from file) Unit Test Case*

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| **Test Case #** | **Test Case Name** | **Test Case Description** | **Value** | **Expected outcome** | **Actual Outcome** |
| 1.0 |  | This is to test if the application will prompt the user for the data file name after selecting option from menu | Option “1” | The application should load option one and prompt the user for the name of the data file.  “Enter the name of the data file : \_\_\_\_” |  |
| 1.1 |  | This is to test if the maze diagram can be read with the right file name input | maze.csv | The code will then run output the number of lines being read and load the maze.csv file. |  |
| 1.2 |  | This is to test if the maze diagram can be read with the right file name input in capital letters | MAZE.CSV | The code will then run output the number of lines being read and load the maze.csv file. |  |
| 2.0 |  | This is to test if the application will not prompt the user for the data file name when the wrong option has been entered | Option 2 | The application will not prompt for the filename. |  |
| 2.1 |  | This is to test if the maze diagram will not run if the filename the incorrect filename has been entered | Mazz.cev  Maz123  aofjb | The application will not be able to read and load any file and shows and error message. |  |

*Option 2 (View maze) Unit Test Case*

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| **Test Case #** | **Test Case Name** | **Test Case Description** | **Value** | **Expected outcome** | **Actual Outcome** |
| 1 | Empty List | To test if the list is empty | emptyList = [] | Returns “List is empty” |  |
| 2 | Occupied List | To test if the list is occupied | notmazeList = ["1","2"] | Returns “List is occupied.” |  |
| 3 | Occupied List 2 | To test if the list is occupied with a different list | mazeList = ["X","O","A","B"] | Returns “List is occupied.” |  |
| 4 | Maze List | To test if the list is a maze | mazeList = ["X","O","A","B"] | Returns “The list is a maze” |  |
| 5 | Not a maze List | To test if the list is not a maze | notmazeList = ["1","2"] | Returns “the list is not a maze.” |  |

*Option 3 (Play maze game) Unit Test Case*

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| **Test Case #** | **Test Case Name** | **Test Case Description** | **Value** | **Expected outcome** | **Actual Outcome** |
| 1 | Error input test | Entering input that is not requested | Test value1: “1”  Test value2: “z”  Test value3: “@”  Test value4: “12as%^” | Output 1: “Invalid input”  Output 2: “Invalid input”  Output 3: “Invalid input”  Output 4: “Invalid input” |  |
| 2 | Test upward movement | To test if the position can move accordingly | Test value: “W” | Output: “Successfully move upwards” |  |
| 3 | Test downward movement | To test if the position can move accordingly | Test value: “S” | Output: “Successfully move downwards” |  |
| 4 | Test left movement | To test if the position can move accordingly | Test value: “A” | Output: “Successfully move left” |  |
| 5 | Test right movement | To test if the position can move accordingly | Test value: “D” | Output: “Successfully move right” |  |
| 6 | Test wall blockage | To Test if the wall is able to restrict movement | Test value: “A” Change accordingly to start location | Output: “Invalid movement” |  |
| 7 | Test exit to menu | To test if user can return to menu page after playing | Test value: “M” | Output: False |  |
| 8 | Test wall existing | To test if wall exist in moving direction | Test value: “X” | Output: “Wall” |  |
| 9 | Test free space | To test if wall exist in moving direction | Test value: “O” | Output: “Space” |  |
| 9.1 | Test end point in maze | To test if it can detect end point when moving to it | Test value: “O” | Output: “End” |  |
|  |  |  |  |  |  |
| 10 | Test finding current location | To test if it can locate current location | Test value: [X,O,O,A,O,O,X] | Output: Row1, Column3 |  |
| 11 | Test finding ending location | To test if it can locate the ending location | Test value: [X,B,O,A,O,O,X] | Output: "Row0, Column1" |  |
| 12 | Test case sensitive | To test if correct input is case sensitive | Test Value: “a” | Output: “Moved upwards” |  |
| 13 | Test maze boundaries | To test if it can move outside the maze | Test Value: A  Test Value: D | Output: "Invalid Movement. Please try again." |  |
| 14 | Test return to menu | To test if it can return to menu after exiting from game | Test Value: “M” | Output: False |  |

*Option 4 (Configure current maze) Unit Test Case*

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| **Test Case #** | **Test Case Name** | **Test Case Description** | **Value** | **Expected outcome** | **Actual Outcome** |
| 1 | Display  Configuration Menu | To test the displaying of the configuration menu. | Option: 4 | Configuration Menu is displayed |  |
| 2 | No Maze Loaded | To test when no maze is loaded | Maze = []  Option: 4  ConfigOption:  1 | Error message about no maze loaded appears |  |
| 3 | Create Wall | To test the creation of a wall | Option: 4  ConfigOption:1  Coordinate:  1, 1 | Item at 1, 1 is now ‘X’ |  |
| 4 | Create  Passageway | To test the creation of a passageway | Option: 4  ConfigOption: 2  Coordinate:  2, 2 | Item at 2, 2 is now ‘O’ |  |
| 5 | Create Start Point | To test the creation of a start point | Option 4:  ConfigOption: 3  Coordinate:  2, 3 | Item at 2, 3 is now ‘A’ |  |
| 6 | Create End Point | To test the creation of an end point | Option: 4  ConfigOption:4  Coordinate:  5, 6 | Item at 5, 6 is now ‘B’ |  |
| 7 | Exit to Main Menu | To test what happens when the user decides to main menu | Option: 4  ConfigOption:0 | Main Menu is displayed |  |
| 8 | User input out of maze range | To test when the user inputs a coordinate out of the maze range. | Option: 4  ConfigOption: 1  Coordinate:  -1, -1 | Error message about coordinates out of range is shown. |  |
| 9 | Return to configuration menu | To test when the user inputs to return to configuration menu | Option: 4  ConfigOption:  1  Coordinate:  B | Configuration Menu is displayed |  |
| 10 | Exit to main menu from configuration option | To test when the user inputs to return to main menu from the configuration option | Option=2  ConfigOption:  1  Coordinate:  M | Main Menu is displayed |  |

*Option 0 (Exit Maze) Unit Test Case*

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| **Test Case #** | **Test Case Name** | **Test Case Description** | **Value** | **Expected outcome** | **Actual Outcome** |
| 1 |  |  |  |  |  |
| 2 |  |  |  |  |  |
| 3 |  |  |  |  |  |

Screenshot of the pytest result in terminal: