**Test Cases for Feature : Display Main Menu**

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| **Test Scenario** | **Test Description** | **Test Values** | **Expected**  **Outcome** | **Actual**  **Outcome** | **Justification** |
| 1 | Display Main menu | Run MainMenu.py | Display:  Main Menu  =========  [1] Read and load maze from file  [2] View Maze  [3] Play maze game  [4] Configure current maze  [0] Exit Maze  Enter your input: | Display:  Main Menu  =========  [1] Read and load maze from file  [2] View Maze  [3] Play maze game  [4] Configure current maze  [0] Exit Maze  Enter your input: |  |
| 2 | Test the program on input option 1 | Enter your input: “1”. | “Option [1] Read and load maze from file”  “Enter the name of the data file:” | “Option [1] Read and load maze from file”  “Enter the name of the data file:”  1-5.” |  |
| 3 | Test the program on input option 2 | Enter your input: “2”. | ['X', 'X', 'X', 'X', 'X', 'X', 'X', 'X']  ['X', 'O', 'O', 'O', 'X', 'O', 'A', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'X', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'X', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'O', 'O', 'X', 'X']  ['X', 'B', 'X', 'X', 'X', 'X', 'X', 'X']  Enter your input: | ['X', 'X', 'X', 'X', 'X', 'X', 'X', 'X']  ['X', 'O', 'O', 'O', 'X', 'O', 'A', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'X', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'X', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'O', 'O', 'X', 'X']  ['X', 'B', 'X', 'X', 'X', 'X', 'X', 'X']  Enter your input: |  |
| 4 | Test the program on input option 3 | Enter your input: “3”. | Enter your input:3  ========================================  ['X', 'X', 'X', 'X', 'X', 'X', 'X', 'X']  ['X', 'O', 'O', 'O', 'X', 'O', 'A', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'X', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'X', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'O', 'O', 'X', 'X']  ['X', 'B', 'X', 'X', 'X', 'X', 'X', 'X']  Location of Start (A) = (Row 1, Column 6)  Location of End (B) = (Row 7, Column 1)  Press 'W' for UP, 'A' for LEFT, 'S' for DOWN, 'D' for RIGHT, 'M' for MAIN MENU:. | Enter your input:3  ========================================  ['X', 'X', 'X', 'X', 'X', 'X', 'X', 'X']  ['X', 'O', 'O', 'O', 'X', 'O', 'A', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'X', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'X', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'O', 'O', 'X', 'X']  ['X', 'B', 'X', 'X', 'X', 'X', 'X', 'X']  Location of Start (A) = (Row 1, Column 6)  Location of End (B) = (Row 7, Column 1)  Press 'W' for UP, 'A' for LEFT, 'S' for DOWN, 'D' for RIGHT, 'M' for MAIN MENU:. |  |
| 5 | Test the program on input option 4. | Enters “4”. | Invalid choice. Enter 1-5 | **Error message shown**:  “Invalid Choice.Enter 1-5. | Option 4 has popup an error message because our option 4 haven’t started coded yet. |
| 6 | Test the program on input option 0. | Enter your input: “0”  Enter “Yes” on the “Kill app” pop-up message | A popup message “Exit” will be shown and the program will close. | A popup message “Exit” will be shown and the program will close. |  |

**Test Cases for Feature #2: Unit Tests for Read and load files**

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| **Test Scenario** | **Test Description** | **Test Values** | **Expected Outcome** | **Actual Outcome** | **Justification** |
| 1 | Test option 2 on “Enter the name of the data file” with input. | Enter the name of the data file: maze.csv | Number of lines read: 8  Enter anything to return to Main menu | Number of lines read: 8  Enter anything to return to Main menu |  |
| 2 | Test option 2 on “Enter the name of the data file” with no input. | Enter the name of the data file: | “Error: please key in the name of the data file:”  Enter anything to return to Main Menu | “Error: please key in the name of the data file:”  Enter anything to return to Main Menu | There is no input on the file name  So the error message will appear to tell the user to type in name |

**Test Cases for Feature #3: Unit Tests for View maze stored in memory**

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| **Test Scenario** | **Test Description** | **Test Values** | **Expected Outcome** | **Actual Outcome** | **Justification** |
| 1 | Test for displaying maze when list is loaded. | Enter your input: 2 | Display:  ['X', 'X', 'X', 'X', 'X', 'X', 'X', 'X']  ['X', 'O', 'O', 'O', 'X', 'O', 'A', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'X', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'X', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'O', 'O', 'X', 'X']  ['X', 'B', 'X', 'X', 'X', 'X', 'X', 'X'] | Display:  ['X', 'X', 'X', 'X', 'X', 'X', 'X', 'X']  ['X', 'O', 'O', 'O', 'X', 'O', 'A', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'X', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'X', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'O', 'O', 'X', 'X']  ['X', 'B', 'X', 'X', 'X', 'X', 'X', 'X'] |  |
| 2 | Test for displaying maze when the storage list is empty. | Enter your input: 2 | Display:  Enter your input | Display:  Enter your input | This error occurs because the user hasn’t input the maze.csv file on read and load functions first. Instead the user goes to option 2 straight to view maze while the memory storage list is still empty. Therefore, the view maze will display nothing except it prompt “enter your input” to tell the user to choose other options. |

**Test Cases for Feature #4: Play Maze**

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| **Test Scenario** | **Test Description** | **Test Values** | **Expected Outcome** | **Actual Outcome** | **Justification** |
| 1 | Test option 3 on displaying the maze after option 1 have run the maze.csv fie. | Enter your input:3 | Display:  Enter your input:3  ========================================  ['X', 'X', 'X', 'X', 'X', 'X', 'X', 'X']  ['X', 'O', 'O', 'O', 'X', 'O', 'A', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'X', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'X', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'O', 'O', 'X', 'X']  ['X', 'B', 'X', 'X', 'X', 'X', 'X', 'X']  Location of Start (A) = (Row 1, Column 6)  Location of End (B) = (Row 7, Column 1)  Press 'W' for UP, 'A' for LEFT, 'S' for DOWN, 'D' for RIGHT, 'M' for MAIN MENU: | Display:  Enter your input:3  ========================================  ['X', 'X', 'X', 'X', 'X', 'X', 'X', 'X']  ['X', 'O', 'O', 'O', 'X', 'O', 'A', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'X', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'X', 'O', 'X']  ['X', 'O', 'X', 'O', 'X', 'O', 'O', 'X']  ['X', 'O', 'X', 'O', 'O', 'O', 'X', 'X']  ['X', 'B', 'X', 'X', 'X', 'X', 'X', 'X']  Location of Start (A) = (Row 1, Column 6)  Location of End (B) = (Row 7, Column 1)  Press 'W' for UP, 'A' for LEFT, 'S' for DOWN, 'D' for RIGHT, 'M' for MAIN MENU: |  |
| 2 | Test play maze on A(left) function | Press 'W' for UP, 'A' for LEFT, 'S' for DOWN, 'D' for RIGHT, 'M' for MAIN MENU: A |  | “Error: please key in the name of the data file:”  Enter anything to return to Main Menu | There is no input on the file name  So the error message will appear to tell the user to type in name |