# University of Ontario Institute of Technology
# Department of Electrical, Computer, and Software Engineering
# Faculty of Engineering and Applied Science


## SOFE 2720U: Principles of Software and Requirements

## Deliverable 3:
## Iteration 1 - Software Testing Methods

## Group 2

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**Github Link: https://github.com/sm131/Sudoku**

**Test Cases:**

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3. Enter Values in Sudoku Board
4. Random Number Generator
5. Difficulty Selection
6. Icon Changes

**Unit Testing: White Box Method**

*Table 1: Basis Path Testing*

| Test Case Number | Test Case User Story | Test Case Method | Test Case Result | Test Case Validity |
|---|---|---|---|---|
| 1 | To be able to save user's score. | Click "Ok" after score is displayed and enter user's name for record keeping. | Game score is saved along with the user's name as shown in the text file. | Pass |
| 2 | To be able to load scores from previous games. | Select "Click to reveal scores" to display previous game results of all users. | Previous game results are shown in a numbered list along with all the users and their scores. | Pass |
| 3 | To be able to enter a value from 1-9 in Sudoku space | Select a unit and press a key to enter any number from 1 to 9. | Numbers can be inputted using the keyboard numpad but not through the user interface's numpad.. | Fail |
| 4 | To be able to generate a random number from 1-9 on the whole grid. | Open the jar file and observe the board for differences. | Each time the file is opened, the Sudoku board is filled with a different variation of numbers. | Pass |
| 5 | To be able to select a | Select one of the | If beginner is | Pass |

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|---|---|---|---|---|
| | level of difficulty, differing in the number of squares filled in the Sudoku board | three difficulty levels and observe number of squares filled in. | selected, about 70% of the squares are filled in. If intermediate is selected, about 50% of the boxes are filled in. If expert is selected, about 30% of the boxes are filled in. | |
| 6 | To be able to click an icon and visualize when it's toggled | Click an icon (such as the "hint" icon) | Icon design toggles between an on and off state after each click. | Pass |

**Integration Testing : White Box Method**

*Table 2: Basis Path Testing*

| Order of Integration | Test Case Number | Test Case User Story | Test Data | Test Result | Test Case Validity |
|---|---|---|---|---|---|
| 1 | 6 | To be able to click an icon and visualize when it's toggled | Click an icon (such as the "hint" icon) | Icon design toggles between an on and off state after each click. | Pass |
| 2 | 5 | To be able to select a level of difficulty, differing in the number of squares filled in the Sudoku board | Select one of the three difficulty levels and observe number of squares filled in. | If beginner is selected, about 70% of the squares are filled in. If intermediate is selected, about 50% of the boxes are filled in. If expert is selected, about 30% of the boxes are filled in. | Pass |
| 3 | 4 | To be able to generate a random | Open the jar file and observe the board for | Each time the file is opened, the Sudoku board is | Pass |

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| | | number from 1-9 on the whole grid. | differences. | filled with a different variation of numbers. | |
| 4 | 3 | To be able to enter a value from 1-9 in Sudoku space | Select a unit and press a key to enter any number from 1 to 9. | Any number from 1 to 9 can be inputted in any empty unit. If the value is correct, the unit turns green, otherwise, it turns red. | Fail |
| 5 | 1 | To be able to save user's score once game is completed. | Click "Ok" after score is displayed and enter user's name for record keeping. | Game score is saved along with the user's name as shown in the text file. | Pass |
| 6 | 2 | To be able to load scores from previous games. | Select "Click to reveal scores" to display previous game results of all users. | Previous game results are shown in a numbered list along with all the users and their scores. | Pass |

**Acceptance Testing: Black Box Method**

***Table 3: Function Testing***

*User Perspective - Test Case Result*

*Developer - Comments*

| Test Case Number | Test Case Name | Test Case Requirement(s) | Test Case Result | Comments |
|---|---|---|---|---|
| 1 | Save to Save File | To be able to save user's score. | The user's previous scores will be saved to a file where the user can maintain a record of their high scores. | The highscore feature is only available as a separate file and will be integrated for the next iteration.. |

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|---|---|---|---|---|
| 2 | Load from Save File | To be able to load scores from previous games. | The user's previous scores can be accessed and viewed through this. | The load feature is in a separate test case file. It will be implemented for the final prototype. |
| 3 | Enter Values in Sudoku Board | To be able to enter a value from 1-9 in Sudoku space | The user can view their inputted value in the squares of the Sudoku board. | The first iteration was planned to have the keyboard numpad give input for numbers while the second iteration is planned to have the UI's numpad give input for numbers. |
| 4 | Random Number Generator | To be able to generate a random number from 1-9 on the whole grid. | The user can view a different variation of numbers filled in the Sudoku board each time they load the game. | The number generator is programmed to ensure that there is only one of each number for each 3x3 subgrid as well as each row or column that it appears on. |
| 5 | Difficulty Selection | To be able to select a level of difficulty, differing in the number of squares filled in the Sudoku board | The user can view a lower amount of boxes filled in every time they change the difficulty of the game, progressively having a lower amount as the difficulty increases. | Currently, the game prompts the user to choose a difficulty before a game begins. However, a plan to have a set difficulty chosen by the user may be implemented for the next iteration. |
| 6 | Icon Changes | To be able to click an icon and visualize when it's toggled | The user can view the icon being toggled when it is clicked, where the icons action is fulfilled. | The bug will be fixed for the next iteration. |

***Table 4: Non-Function Testing***

*User Perspective - Test Case Result*

*Developer - Comments*

| Test Case Number | Test Case Name | Test Case Requirement(s) | Test Case Result | Comments |
|---|---|---|---|---|
| 1 | Save to Save File | To be able to save user's score. | The scores can be saved. However, the previous scores can only be seen after finishing a game. There is no feature solely for viewing previous user scores. | The highscore feature is only available as a separate file and will be integrated for the next iteration.. |
| 2 | Load from Save File | To be able to load scores from previous games. | The load feature is not available so quitting will lose all game progress. | The load feature is in a separate test case file. It will be implemented for the final prototype. |
| 3 | Enter Values in Sudoku Board | To be able to enter a value from 1-9 in Sudoku space | It is possible to enter values, however, it is not possible to use the cursor to enter a value by clicking on the game's numpad. | The first iteration was planned to have the keyboard numpad give input for numbers while the second iteration is planned to have the UI's numpad give input for numbers. |
| 4 | Random Number Generator | To be able to generate a random number from 1-9 on the whole grid. | The number generator does create different values on the grid while following the rules of the game. | The number generator is programmed to ensure that there is only one of each number for each 3x3 subgrid as well as each row or column that it appears on. |
| 5 | Difficulty Selection | To be able to select a level of difficulty, differing in the number of squares filled in the Sudoku | A difficulty is chosen before every game starts. Choosing a difficulty in the "Options" section also starts a game. | Currently, the game prompts the user to choose a difficulty before a game begins. However, a plan to have a set difficulty chosen by the user may be |

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| | | board | | implemented for the next iteration. |
| 6 | Icon Changes | To be able to click an icon and visualize when it's toggled | The icons are changeable and work properly. However, the sound icon has to be clicked twice to turn off music after a is started. | The bug will be fixed for the next iteration. |