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Date: Fall 2024 Semester
Purpose: CSC 170 Final Project

Minesweeper User Manual

A. Description of the application

This application is my attempt at recreating the classic Minesweeper game using Python and the syntax I learned this semester. It has two play modes: text-based and graphical (graphics window).

The game allows the user to choose between the two play modes and then select a difficulty level. In the text-based mode, the user types in letter-number coordinates to open or flag a cell. In the graphical mode, the user can click cells to reveal them or toggle a “flag” button to mark potential mine locations.

The game generates a board with mines randomly placed. To win, the user must open all safe cells without triggering any mines. Safe cells reveal numbers that tell the user how many mines touch the cell. The user can use the number clues to solve the game by opening all of the safe cells. If they reveal a mined cell, it's game over.

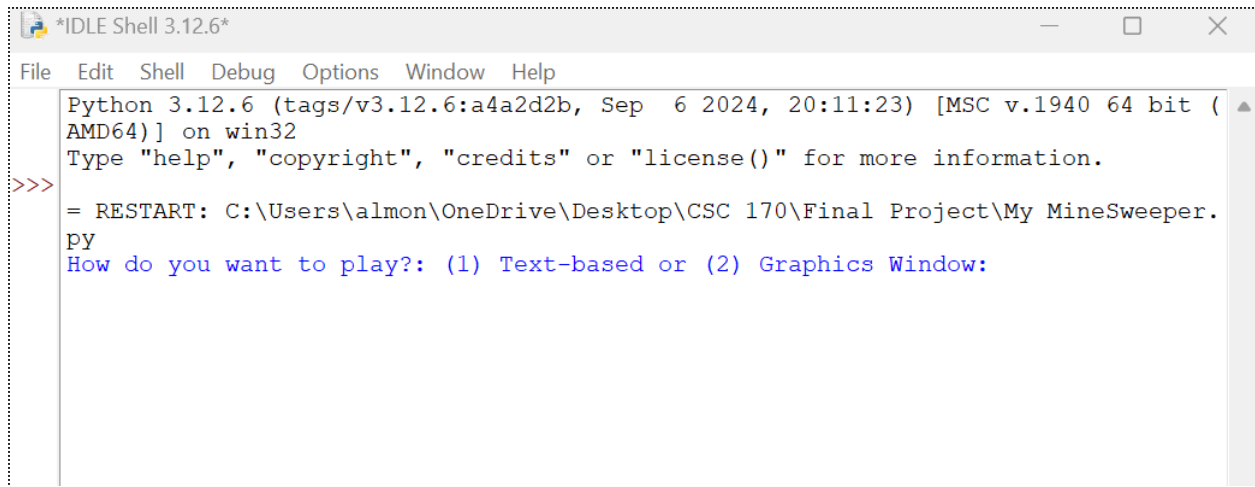
When the user opens a cell that does not touch any mines, it will be empty (or reveal the number '0' in text-based mode). The adjacent cells will automatically open in all directions until reaching cells containing numbers.

Other important features include:

- Multiple difficulty levels (two levels in text-based mode and three levels in graphical mode)
- The first click is always safe
- In text-based mode, the user can choose to save the game into a file with a custom file name to analyze the position (the game state cannot be reloaded)

B. Walkthrough

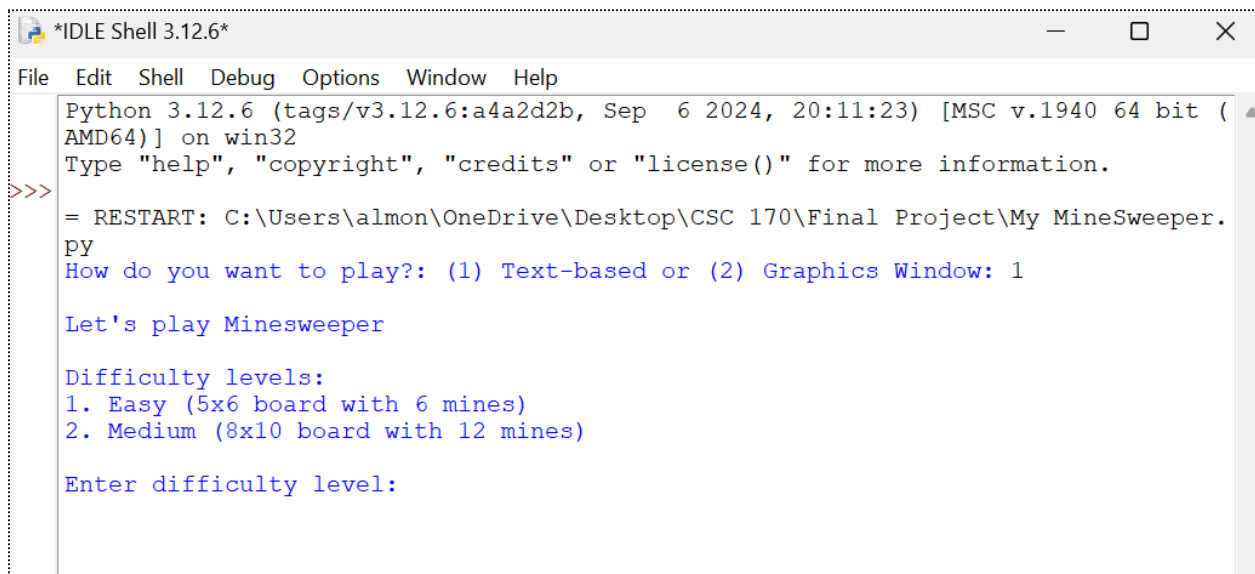
1. Run the Python script and select a game mode (text or graphical).



```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\almon\OneDrive\Desktop\CSC 170\Final Project\My Minesweeper.PY
How do you want to play?: (1) Text-based or (2) Graphics Window:
```

2. Choose Difficulty Level:

- Text-based mode



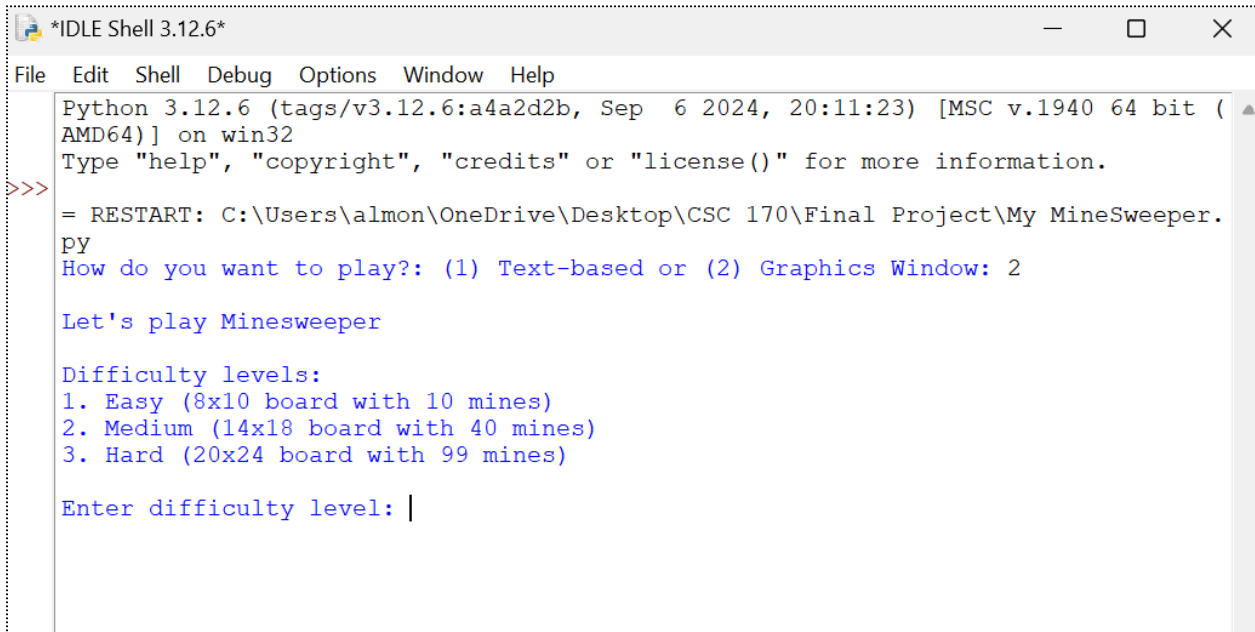
```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\almon\OneDrive\Desktop\CSC 170\Final Project\My Minesweeper.PY
How do you want to play?: (1) Text-based or (2) Graphics Window: 1

Let's play Minesweeper

Difficulty levels:
1. Easy (5x6 board with 6 mines)
2. Medium (8x10 board with 12 mines)

Enter difficulty level:
```

- Graphical mode



```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> = RESTART: C:\Users\almon\OneDrive\Desktop\CSC 170\Final Project\My Minesweeper.PY
How do you want to play?: (1) Text-based or (2) Graphics Window: 2

Let's play Minesweeper

Difficulty levels:
1. Easy (8x10 board with 10 mines)
2. Medium (14x18 board with 40 mines)
3. Hard (20x24 board with 99 mines)

Enter difficulty level: |
```

3. Game Display:

- Text-based mode:

After selecting the difficulty level, you will be prompted to save the game. Enter 'y' to save the game. If yes, provide a filename to save your progress.

Then, the game board displays with the columns labeled with numbers (1, 2, 3...) and the rows labeled with letters (A, B, C...). Unopened cells are marked with '-', and flagged cells are marked with '?'

To make a move, type in using the format: Action Row Column
Actions: O to Open a cell, F to Flag/Unflag a cell

Examples:

O A 3 opens cell in row A, column 3

F B 4 flags cell in row B, column 4

```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
>>> = RESTART: C:\Users\almon\OneDrive\Desktop\CSC 170\Final Project\My Minesweeper.py
How do you want to play?: (1) Text-based or (2) Graphics Window: 1

Let's play Minesweeper

Difficulty levels:
1. Easy (5x6 board with 6 mines)
2. Medium (8x10 board with 12 mines)

Enter difficulty level: 2

Do you want to save game? (y/n) (case-sensitive): y
Enter filename to save the game: customfilename
Game will be saved

Mines remaining: 10

  1 2 3 4 5 6 7 8 9 10
A - - - - - - - - -
B - - - - - - - - -
C - - - - - - - - -
D - - - - - - - - -
E - - - - - - - - -
F - - - - - - - - -
G - - - - - - - - -
H - - - - - - - - -

Enter action (O for Open, F for Flag) and position (row col) (case-sensitive): O A 1

Mines remaining: 10

  1 2 3 4 5 6 7 8 9 10
A 0 0 0 0 0 0 1 - - -
B 0 1 1 2 1 1 1 - - -
C 1 3 - - - - - - -
D - - - - - - - - -
E - - - - - - - - -
F - - - - - - - - -
G - - - - - - - - -
H - - - - - - - - -

Enter action (O for Open, F for Flag) and position (row col) (case-sensitive):
```

- Flagged cells are marked with '?'. The “mines remaining” provides a count of flags placed and does not indicate whether or not a flag was placed correctly.

```
Enter action (O for Open, F for Flag) and position (row col) (case-sensitive): F C 7

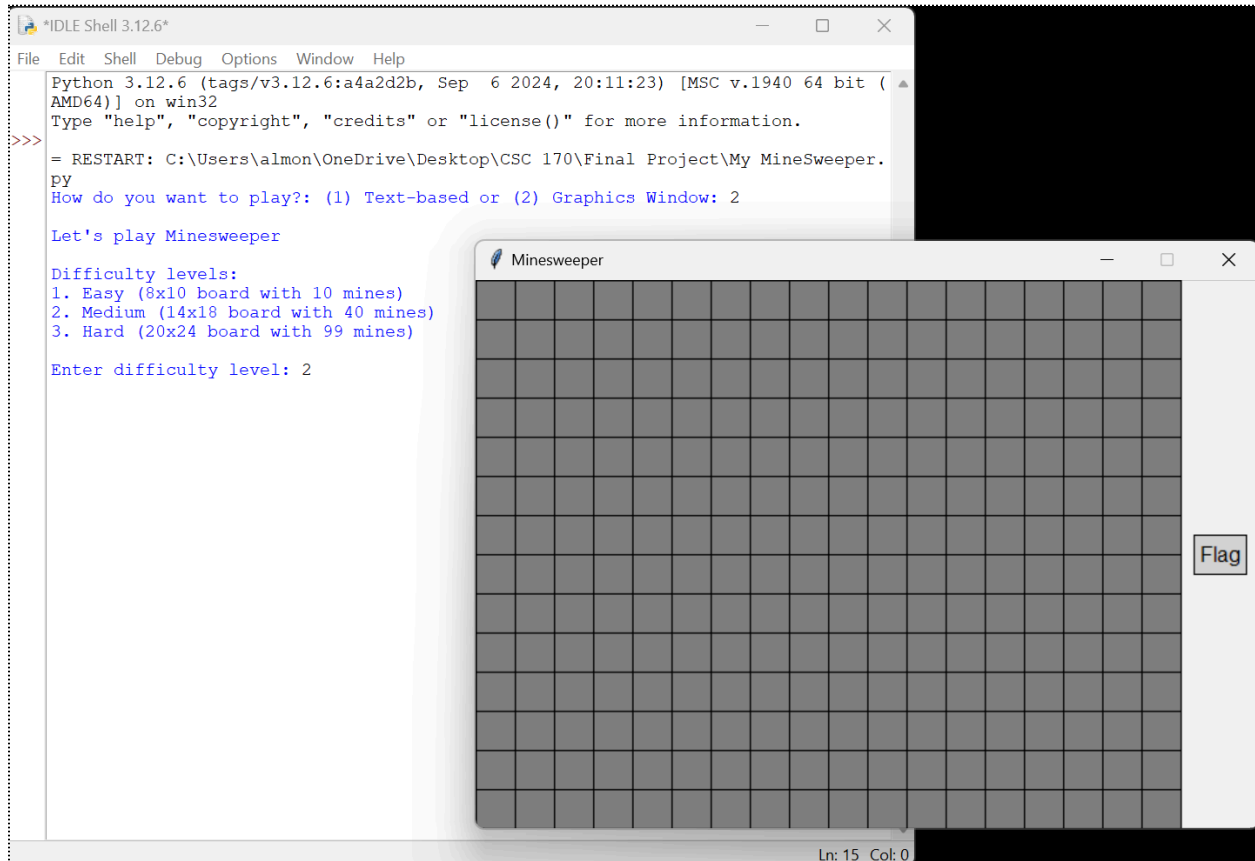
Mines remaining: 9

  1 2 3 4 5 6 7 8 9 10
A 0 0 0 0 0 0 0 0 0 0
B 0 0 0 0 0 1 1 1 0 0
C 0 0 0 0 0 2 ? 2 1 1
D 0 0 0 0 0 2 - - - -
E 1 2 1 1 0 1 - - - -
F - - - 1 1 2 - - - -
G - - - - - - - - -
H - - - - - - - - -
```

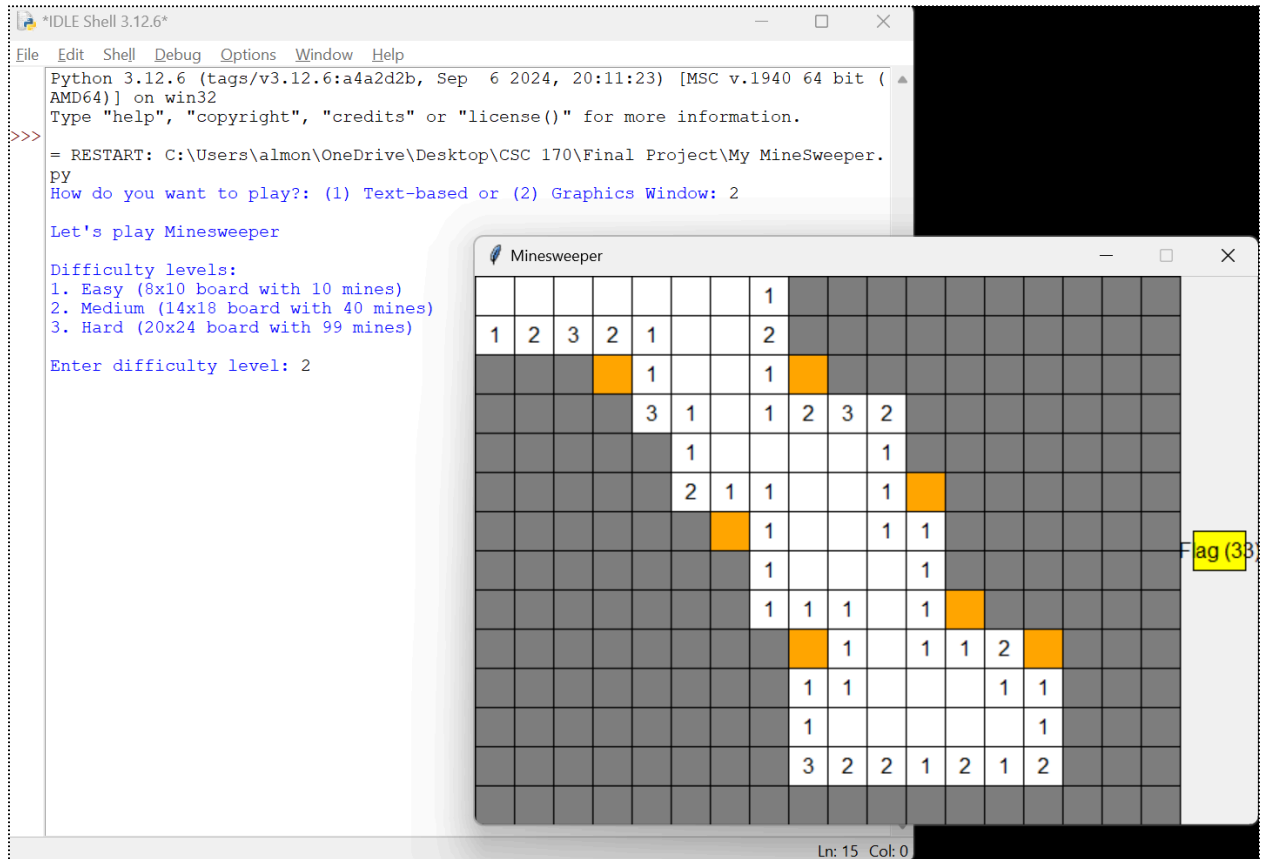
- Graphical mode:

After selecting the difficulty level, the game board is displayed in a separate window. Gray squares represent unopened cells.

Click on the cells to open them. To flag a cell, ensure the flag button is toggled on.



- When toggled on, the flag button turns yellow and displays a flag count (note: this does not indicate whether or not a flag was placed correctly).
- Flagged cells are indicated by turning orange.



4. Winning/Losing:

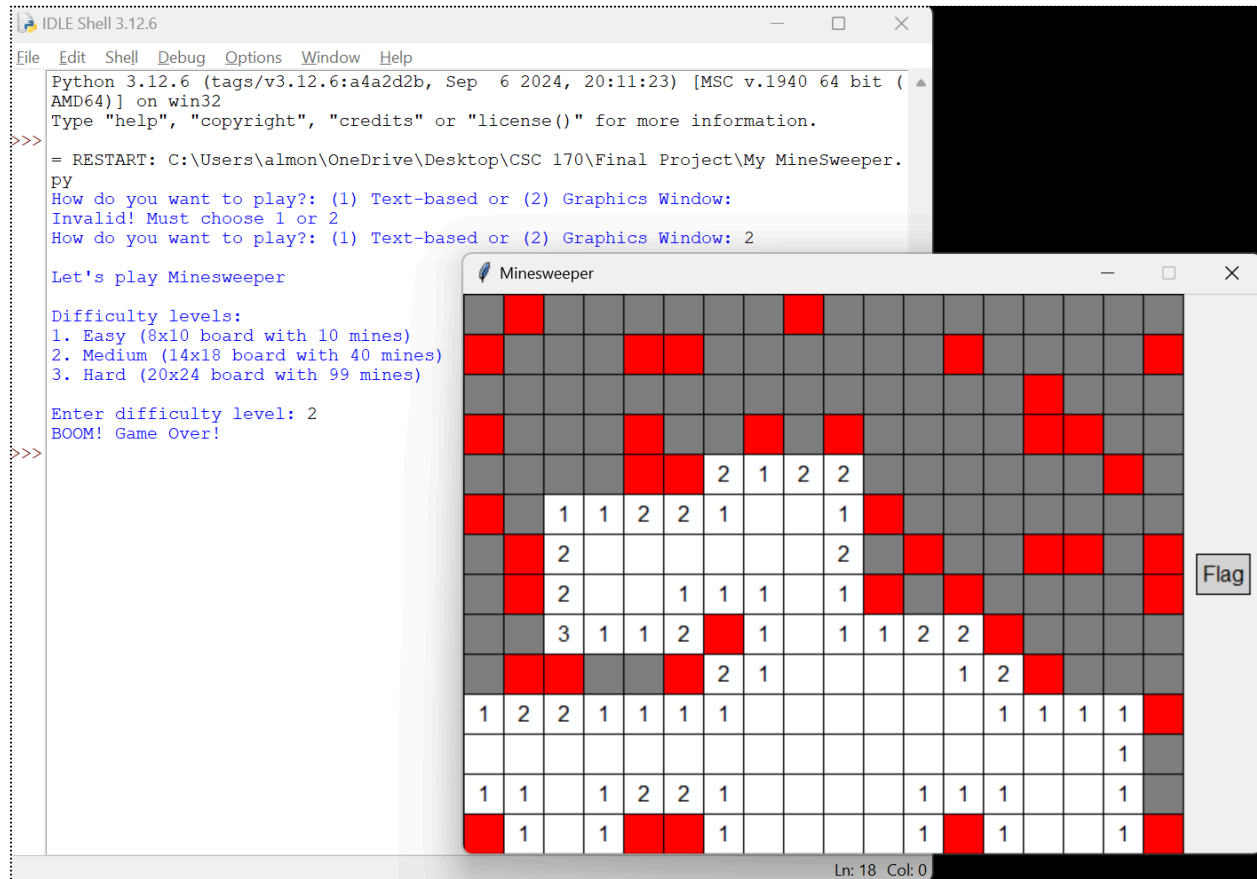
- Win Condition: Open all cells without opening mined cells
- Lose Condition: Open a cell containing a mine
- Example if lose condition met:

```
Mines remaining:  10

  1 2 3 4 5 6 7 8 9 10
A 0 0 0 0 0 0 0 0 0 0
B 0 0 0 0 0 1 1 1 0 0
C 0 0 0 0 0 2 - 2 1 1
D 0 0 0 0 0 2 - - -
E 1 2 1 1 0 1 - - -
F - - - 1 1 2 - - -
G - - - - - - - -
H - - - - - - - -

Enter action (O for Open, F for Flag) and position (row col) (case-sensitive): O C 7
BOOM! Game Over!
```

- In the graphical mode, all mine cells will be revealed (in red) when either the win or lose condition is met:



C.

The program works as intended.