Minesweeper

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Introduction and problem statement

This is a single-player game which is played on a rectangular board that has clickable squares with hidden bombs. The objective is to clear the board without clicking on any bombs. If a player clicks on a bomb, the game ends. A number between 0 (displayed as a blank) to 8 is displayed that identifies the total number of bombs in the 8 neighboring squares. A player can mark a square as a flag which implies the square is suspected of containing a bomb.

Solution Design and Implementation

The whole program is console based and is done on one class called ‘Square’ which contains attributes mines, side, countedMines, fieldCounter, table, and isVisited and methods Square, ~Square, printMenu, createTable, assignNeighbours, printSquare, createUserBoard, move, showNeighboursForZero, writeOriginalToFile, writeUserBoardToFile, readOriginalFromFile, and readUserboardFromFile. Implementations of every function is written in the source code as comments.

Dynamic memory allocation, exception handling and file handling is included in the project.

External Solutions and Deviations

To implement the method ‘showNeighboursForZero’ I have used chatGPT. I also mentioned it as a comment in the source code.

Testing and Verification

The application has all the features that a regular minesweeper game should have and all these features function properly as tested by manual check of input and expected output. Entering invalid input – catching exception and prompting the user to enter values again until the input is valid.

Results, Discussion, and Future Enhancements

Using graphics would be an excellent enhancement.

Conclusion and References

While implementing the game I have learnt many thing about object-oriented approach. References: The function named ‘showNeighboursForZero’ is written by chatGPT.