

Minesweeper Program

Language chosen

The language chosen to write the program was C#. This is the language that I am most comfortable with and know the best.

Problem approach

The way I approached the problem was to first think of the tasks that I wanted to complete and design a top level algorithm with the sequence of events. For this task my top level algorithm was only 3 tasks.

1. Create Grid
2. Randomly populate mines
3. Place Clues

I then refined task down into smaller subtasks, then into pseudo code and then into C#. An example would be as follows:

Top level- randomly lay mines

Subtask-generate random coordinates, lay mine at that coordinate.

Pseudo code- if random x coordinate and random y coordinate are the same as current grid coordinates then lay a mine here.

Next, I would incrementally implement sections of code C# and test as I go in order to better solve any problems that may arise during implementation.

Algorithm

My algorithm is as follows

1. Generate a 2D array based on the row and column numbers provided
2. Generate 2 random numbers that will serve as the array coordinates. The random number generator has an upper limit of the previously provided # of rows and columns
3. Keep iterating through the coordinates in the array until the randomly generated coordinates match the current coordinates. Place a mine at the coordinates of the match if no mine is already there.
4. Subtract from total number of mines and keep iterating until all mines are placed.
5. Begin iterating through the grid once more. At each cell, check the surrounding 8 cells for mines.
6. If the assigned cell to check is in the bounds of the array and has mine present, increment a mine counter
7. Place a clue based on the mine counter either a number if there were mines present or a space if there were no mines.
8. Now display the array.

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