MineSweeper Java Application

Overview

This is a console-based Minesweeper game implemented in Java. The game supports both square and rectangular boards, and allows the player to uncover cells until they either reveal all safe spots or hit a mine.

🎯 Main Features

- Board Types:
  - `S` — Square board (N × N)
  - `R` — Rectangular board (Rows × Columns)
- Randomized Mines: Mines are placed randomly at the beginning of the game.
- Adjacency Logic: Each cell stores the count of adjacent mines.
- Game Loop: User selects cells until they win or hit a mine.
- Automatic Reveal: Zero-adjacent-mine cells reveal recursively.
- Board Display: Clearly shows revealed and unrevealed cells. Mines are shown upon game end.

🧱 Design and Assumptions

📦 Classes

- `Game`: Main entry point. Manages input, board creation, and game loop.
- `Board`: Represents the Minesweeper board. Handles mines, cell logic, and printing.
- `Cell`: Represents a single cell — mine status, reveal state, and adjacent mine count.

📌 Assumptions

- Max number of mines = 35% of total cells.

- Inputs are validated with prompts for invalid entries.
- Cell selection uses row letters and column numbers (e.g., A1, C3).
- Diagonal neighbors are considered for adjacency.
- Both square and rectangular board shapes are supported.

⌨️ Input Pattern

- Board Type: S or R
- Board Size:
  - S → Single integer `N`
  - R → Two integers `rows,cols` (e.g., `4,6`)
- Number of Mines: Integer ≤ 35% of total cells
- Cell Clicks: Format like `A1`, `C3`, etc.

📁 Project Structure

MineSweeperGame/

├── libs.zip # External JAR libraries

├── src/

│ └── com/

│ └── game/

│ ├── Board.java

│ ├── Cell.java

│ └── Game.java

└── test/ # Test files for each of above class

💻 How to Compile and Run

✅ Environment

- Java Development Kit (JDK) 8 or above
- Works on Windows / macOS / Linux
- Terminal or command prompt access

🧪 Compilation Instructions

1. Open a terminal and navigate to the project root:

cd MineSweeperGame

Create the output directory (if not already present):

mkdir -p bin

Compile the code (with libraries if needed):

javac -cp "libs/*" -d bin src/com/game/*.java

For the sake of simplicty have bundled all the needed jars in libs.zip folder. I have not included pom.xml intentioanlly for sake of simplicity.

libs.zip contains any required .jar libraries(Java and Junit 5.8.1)

Compiled .class files go to the bin/ folder.

▶️ Run the Game

java -cp "bin:libs/*" com.game.Game # macOS/Linux

java -cp "bin;libs/*" com.game.Game # Windows

📦 External Libraries

✅ *All required libraries are located in the libs.zip folder. No external downloads are necessary — just extarct the folder and include them via the -cp "libs/*" option during*

compile and run. We need java version 8 or above and Junit 5.8.1. Please include them in class path from lips.zip folder in the project.

##Example Session

Square or rectangular board? (S/R): S

Enter size for square board: 5

Enter number of mines (max 8): 6

1 2 3 4 5

A _ _ _ _ _

B _ _ _ _ _

C _ _ _ _ _

D _ _ _ _ _

E _ _ _ _ _

Click a cell (e.g., A1): B2 ...

Congratulations You won! All safe cells revealed!