UML Diagram for Assignment 2
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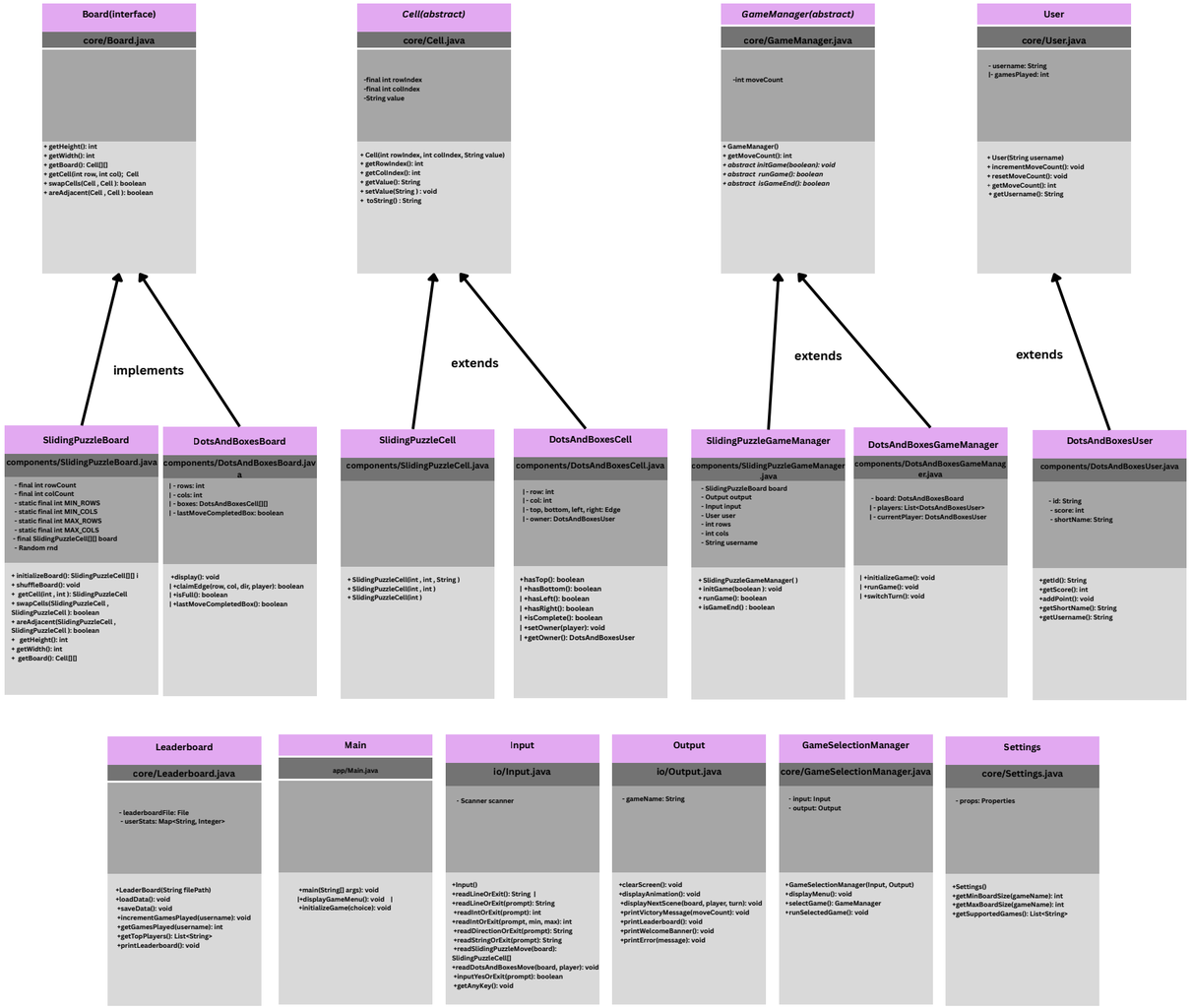

This project is built for both extensibility and scalability. We use a modular architecture centered around five core abstractions: Board, Cell, GameManager, LeaderBoard, and User. These classes are designed to support future game modules with minimal changes.
Every board-based game must contain a board composed of cells and requires a GameManager to control the flow. The User and LeaderBoard classes help track player data and maintain statistics across sessions.
The two games: Sliding Puzzle and Dots and Boxes. Both reuse the shared architecture:

1. SlidingPuzzleBoard and DotsAndBoxesBoard implement the Board interface
2. SlidingPuzzleCell and DotsAndBoxesCell extend the abstract Cell class
3. SlidingPuzzleGameManager and DotsAndBoxesGameManager extend GameManager
4. DotsAndBoxesUser extends User with additional fields like score and player ID

This modular setup allows each game to define its own rules and visuals while sharing core logic. For example, Dots and Boxes adds edge claiming, box ownership, and color-coded output—all built on top of the same board-cell-manager structure.
To support scalability, board sizes are limited between 2×2 and 10×10 for usability. The output system dynamically adjusts cell width for multi-digit numbers to maintain alignment. Input validation is enforced across both games to prevent crashes and guide users clearly.
Compared to my prior submission, this version includes several key improvements:

1. Introduced GameSelectionManager to handle game choice dynamically
2. Refactored the folder structure to group game-specific components under games/
3. Implemented a Settings class to load configurable parameters from config.properties
4. Enhanced visual output with ANSI color codes and animations
5. Strengthened input validation and error handling across all modules

These changes make the project easier to extend, maintain, and scale. It can easily add new games or improve user experience.

The reason that we have limited the users to minimum 2x2 boards is that if the board is 1x1 the winner is always determined, and if the board is 2x1 or 1x2 then the game is becoming too easy so we decided to limit it by 2x2
Apart from that we have an upper bound of 10x10 since we think that it is too hard to play with a bigger board.