Project Proposal

Team Snickerdoodle :: Sudoku

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Application Design Using Java

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Tuesdays, Fridays @ 8:00AM - 10:05AM

Overview

Our project will be implementing the classic game Sudoku, built using Java and JavaFx. Our version of Sudoku will be hosted on an intuitive JavaFX UI window that includes buttons used for editing the Sudoku board, offering a seamless and engaging user experience.

Objectives

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1. Sudoku Game: Develop an interactive Sudoku game that users can play on their desktop
2. Sudoku Generator: Implement a system that generates Sudoku puzzles with varying levels of difficulty (easy, medium, hard)
3. Sudoku Solver: Provide a solver that can solve any valid Sudoku puzzle, which can be used for hint generation and puzzle validation
4. User Interface: Create an intuitive and visually appealing interface using JavaFX
    a. Main Menu : Include options for New Game, Resume Game, Settings, and Quit
    b. Settings Menu: Allow users to switch between Light/Dark Mode, and enable/disable real-time Puzzle Validation Option (the game will check whether or not an inputted number is wrong in real-time)
    c. New Game Menu: Offer Difficulty Selection and Timer Options
    d. Status Bar: Display Timer and Difficulty level
    e. Game Board: Highlighting Selected Cell, Input Validation, Highlighting Number Locations, Highlighting Erroneous Cells
    f. Digit Input Row: Provide a Horizontal 9-Digit Row of Numbers, with Dynamic Grey-out
5. User Feature: Include features like hints, puzzle validation, and progress saving/resuming functionalities

Key Technologies and Frameworks

- Programming Language: Java, for the core logic and backend of the application
- User Interface: JavaFx, for building the graphical user interface
- Testing Frameworks: JUnit, for unit testing the application

Schedule

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1. **Project Setup and Planning [Current]**
    - Set up project repositories
    - Define project scope, schedule, and proposal
    - Assign roles and tasks among team members
2. **User Interface Development [7/15/2024 - 7/22/2024]**
    - Design wireframes and mockups for the game interface
    - Implement UI components using JavaFx.
3. **Logic/Algorithm Development [7/22/2024 - 7/29/2024]**
    - Implement the Sudoku puzzle generator with different difficulty levels
    - Develop the Sudoku solver algorithm
4. **User Feature Development [7/22/2024 - 7/29/2024]**
    - Implement features such as hints, erasing the board, saving and resuming a current game, etc.
    - Add input validation, the ability to choose light/dark mode for the app, etc.
5. **Testing and Debugging [7/29/2024 - 8/5/2024]**
    - Perform unit testing on preset Sudoku boards using JUnit to test for specific errors

6. **Documentation [7/29/2024 - 8/5/2024]**
    - Prepare user manual, testing manual, readme, and technical documentation.
    - Ensure comprehensive coverage of all features and functionalities
7. **Presentation/ Demo [8/5/2024 - 8/23/2024]**
    - Preparing slides and demonstration material
    - Practice for presentation and live demo

Work Partition

Sophie Liu: Responsible for creating the Sudoku algorithms and implementing user features

Yu Qing Peng: Responsible for creating the Sudoku algorithms and implementing user features

Annabel Zhang: Responsible for creating the UI via JavaFX, and working to combine the UI with the game code.