LBYCPA2– EQ8

Term 3 A.Y. 2022-2023

MineSweeper
Project Proposal

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I. INTRODUCTION

1. Overview/Scope
    - Minesweeper is a classic game that was released back in 1989 and is still relatively famous today.
    - Minesweeper is a logic puzzle video game genre generally played on personal computers. The game features a grid of clickable tiles, with hidden "mines" scattered throughout the board.
    - The goal of Minesweeper is to uncover all the squares on a grid that do not contain mines without being "blown up" by clicking on a square with a mine underneath.
    - Rules: “Minesweeper rules are very simple. The board is divided into cells, with mines randomly distributed. To win, you need to open all the cells. The number on a cell shows the number of mines adjacent to it. Using this information, you can determine cells that are safe, and cells that contain mines. Cells suspected of being mines can be marked with a flag using the right mouse button.” -Minesweeper Online
2. Goals/Objectives
    - The objective of this project is to be able to create a functional and working game.
    - Get as close to the original functionality and gameplay as much as possible.
    - Minimize inaccuracies.
    - Smooth Gameplay
    - Clean Interface and Proper Calculating.
3. Features and Functionalities
    - 3 Different Difficulties: Easy, Medium, Hard.
    - A grid of clickable tiles, with hidden "mines" (different size each per difficulty).
    - “Flag” feature to mark potential “mines.”

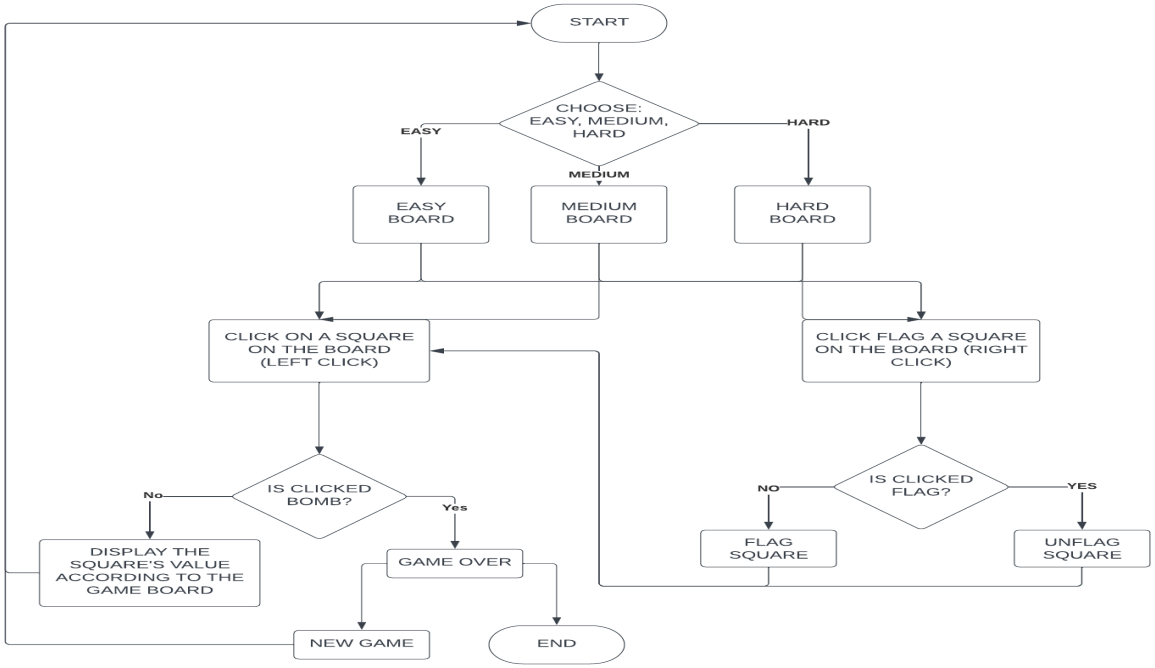
II. METHODOLOGY

In implementing the MineSweeper project, we will follow a structured approach that consists of several major phases and milestones. We shall design and develop the game using the Java programming language, ensuring the incorporation of key elements and features.

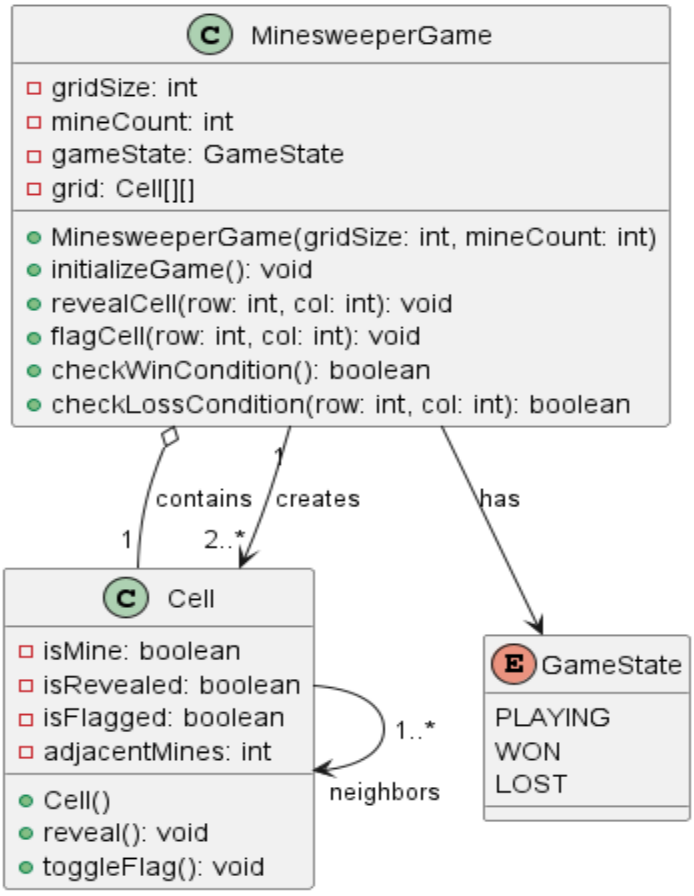
Phases/Milestones:

1. *Project Planning and Requirements*
    - Define the scope and objectives of the project.
    - Gather the requirements and specifications in making the project
    - Identify possible constraints or problems that may interfere with progress.
2. *Design and Architecture*
    - Create the initial game design and include the basic graphical user interface.
    - Defining the logic of the game and its rules.
    - Plan ahead the structure of the code and its mechanisms.
3. *Implementation*
    - Developing the core game mechanics inside of Java
    - Create GUI
    - Incorporate and implement difficulty settings and algorithms.
    - Include basic Minesweeper features.
4. *Testing and Quality Assurance*
    - Test the game and its functionalities
    - Make sure the game runs smoothly without any hitches or bugs
    - Address any found errors in the logic of the game
5. *Documentation & User Guide*
    - Create a comprehensive documentation of the project
    - Prepare a user guide explaining how to play MineSweeper
6. *Maintenance and Further Updates*
    - Provide further maintenance and possible updates
    - Ensure the finished product is of good quality.

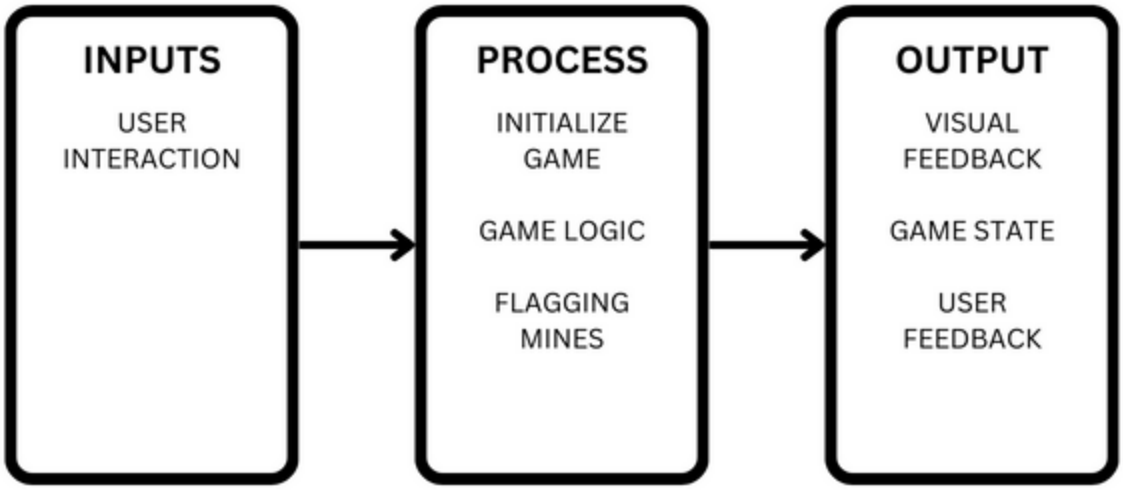
FLOWCHART:



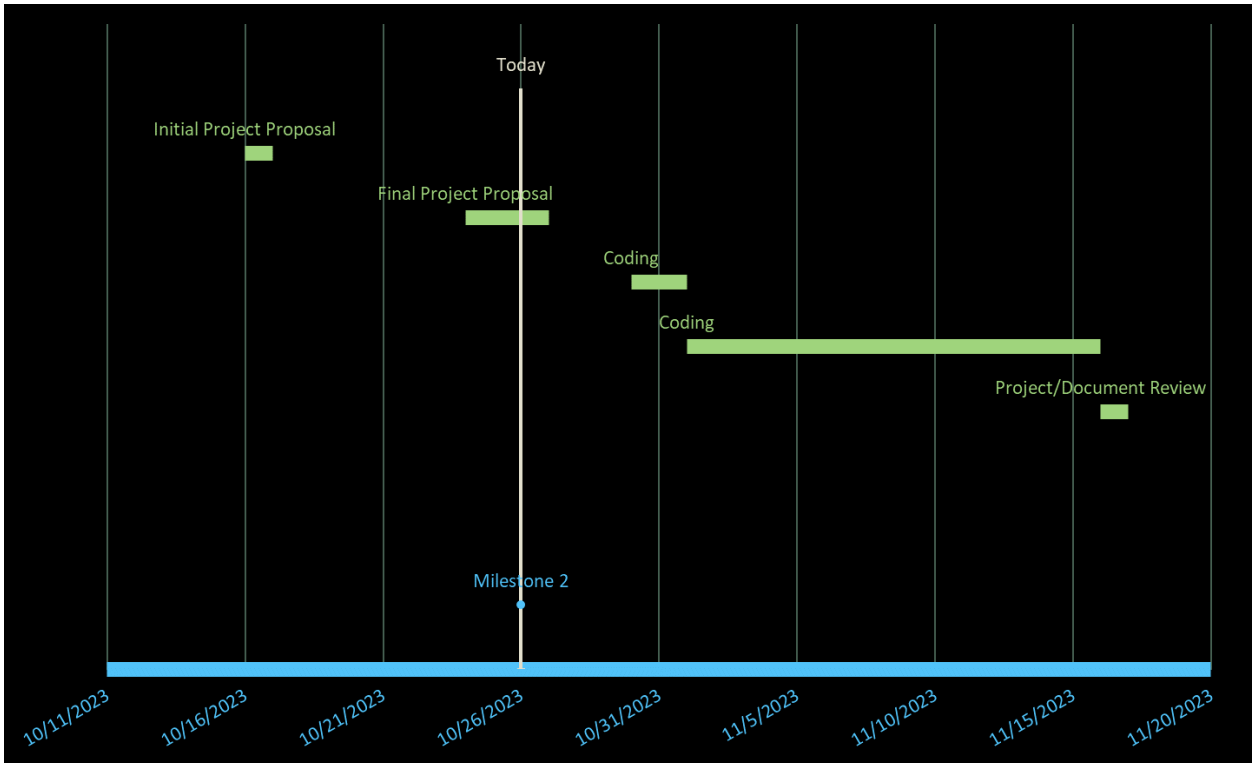
UML Diagram:



IPO Diagram:



III. DELIVERABLES



No.	Start Date	End Date	Task
1	10/16/2023	10/16/2023	Initial Project Proposal
2	10/24/2023	10/26/2023	Final Project Proposal
3	10/30/2023	11/15/2023	Coding
4	11/1/2023	11/15/2023	Coding
5	11/16/2023	11/16/2023	Project/Document Review

IV. EVALUATION

1. Functionality:
    - The core game logic is the most critical aspect of a Minesweeper game. It should function correctly, including mine placement, flagging, revealing, and winning/losing conditions. This is the foundation of the game.
2. User Experience:
    - User interface design and usability are crucial. A well-designed and user-friendly interface is essential for players to enjoy the game and easily understand how to interact with it.
3. Code Quality and Maintainability:
    - Code quality, modularity, and maintainability are important for the long-term success of the project.
    - A well-structured and maintainable codebase makes it easier to fix bugs, add new features, and collaborate with others on the project. It also helps prevent technical debt from accumulating over time.

V. CONCLUSION

In conclusion, the “MineSweeper” project aims to bring the classic game to the Java programming language through a new modernized user-friendly implementation. By offering the player a new gaming experience with difficulty levels and randomized gameplay. The project aims to entertain and enhance the logical thinking and problem-solving skills of the player. By developing key Minesweeper features and an intuitive GUI, this project has the capacity to include multiple structures and algorithms that enhances the game’s complexity and smoothness.

VI. REFERENCES

1. game description @ https://minesweeper.online
2. Holliday, M. (1994) Incremental Game Development in an introductory Programming Course. Department of Mathematics and Computer Science Western Carolina University. https://minesweepergame.com/research/incremental-game-development-in-an-introductory-programming-course-1994.pdf