MINESWEEPER

*Introduction*

Embark on a thrilling journey of strategy and logic in Minefield Master, the classic game of Minesweeper brought to life with modern twists and challenges. Test your skills as you navigate through a treacherous minefield, avoiding hidden explosives while uncovering safe paths to victory.

In Minefield Master, your objective is simple: clear the minefield without detonating any mines. With each click, you reveal a square on the grid, but beware – lurking beneath some squares are deadly mines waiting to explode. Use your deductive reasoning to flag potential mine locations, but tread carefully – one wrong move could end your missio

*Game Description*

Objective:

• The objective of Minefield Master is to clear the entire minefield without detonating any mines.

Gameplay:

The game is played on a grid of squares, each of which may contain either a mine or an empty space.

• Clicking on a square reveals its content:

• If the square contains a mine, it detonates, and the game ends.

• If the square is empty, it reveals the number of neighboring squares containing mines.

• Using the numbers revealed, players deduce the locations of mines and use flags to mark them.

• Right-clicking on a square places a flag, indicating that the player suspects a mine is located there. Right-clicking again removes the flag.

Winning:

• The player wins the game by successfully revealing all squares that do not contain mines. This clears the entire minefield.

Losing:

• The game is lost if the player reveals a square containing a mine. In this case, all mines on the

field are revealed, and the game ends.

• Difficulty Levels:

• Minefield Master offers multiple difficulty levels, each with different grid sizes and mine densities, ranging from beginner to expert.

• Beginner levels typically have smaller grids with fewer mines, making them ideal for newcomers.

• Expert levels feature larger grids with higher mine densities, providing a challenge for experienced players.

Strategy:

• Players must use deductive reasoning and logic to uncover safe squares while avoiding mines.

• Analyzing the numbers revealed on uncovered squares helps players deduce the locations of mines and plan their moves accordingly.

• Strategic flagging of potential mine locations is crucial to progress safely through the minefield.

***Code Description -***

• All the images used in the program have been converted into pixel grids using a script written in Java

• For the controls , push buttons and the Switches have been used

• Push Buttons – Left, Up, Down, Right

• Switches -

◦ S0 : To Start the Game (Also restart the game when the current game ends)

◦ S1 : To select a Box

◦ S2 : To put or remove a Flag on a Box

• Function have written for the movement of the cursor – ***move\_right,move\_up,move\_down,move\_left***

• Function ***generate\_bombs*** is used to generate the mines grid in the background

• This function is using srand to generate random grids each time the game is started

• Function update is used to open a box. There are 3 possible cases here :

* + - * + If the box a number in it , it reveals only that box
        + If the box no number in it , a ***DFS*** function is called which keeps revealing boxes until it finds boxes with numbers or bombs/mines
        + If the box has a bomb/mine, the game ends
* The time taken is displayed on the HEX0-3 segments of the 7-segment display
* The number of flags used is displayed on HEX4-5 segments of the 7-segment display