

REPORT ON THE PROJECT IN COMPUTER SCIENCE

PROJECT'S TOPIC: DESIGNING MINESWEEPER

Group 10

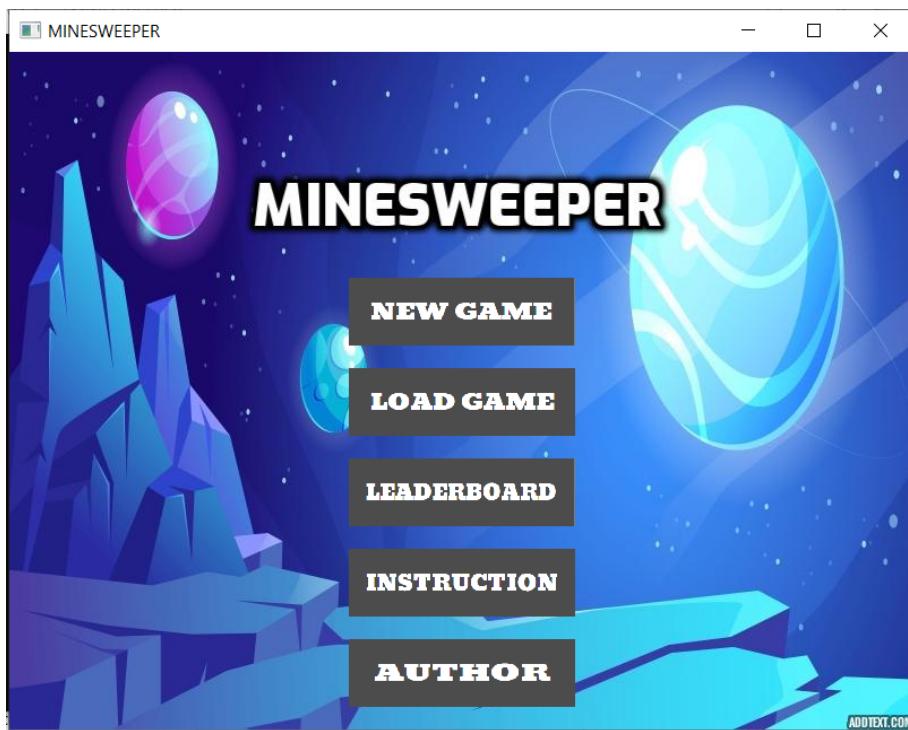
Students: Trần Tuấn Việt
Hoàng Thiên Đức

I. THE GAME'S LORE

The player will role-play as an astronaut who was floating in space, far from the Earth, with his heavily damaged spaceship since it was struck by meteors. You managed to land on an exotic planet and found out that this planet contains a large amount of leftover minerals that can be used to repair your spaceship. There is a big problem on this planet though. Since this planet, basically, is a big, abandoned mine, it also contains many landmines below the surface that can explode any time. Since your food, water and oxygen supplies are slowly running out, you need to take risks to fix your ship as soon as possible. Luckily, there are signs on the ground near the landmines that can help you to indicate them, so the only part left for you is planning a smart strategy to work out the way to those minerals.

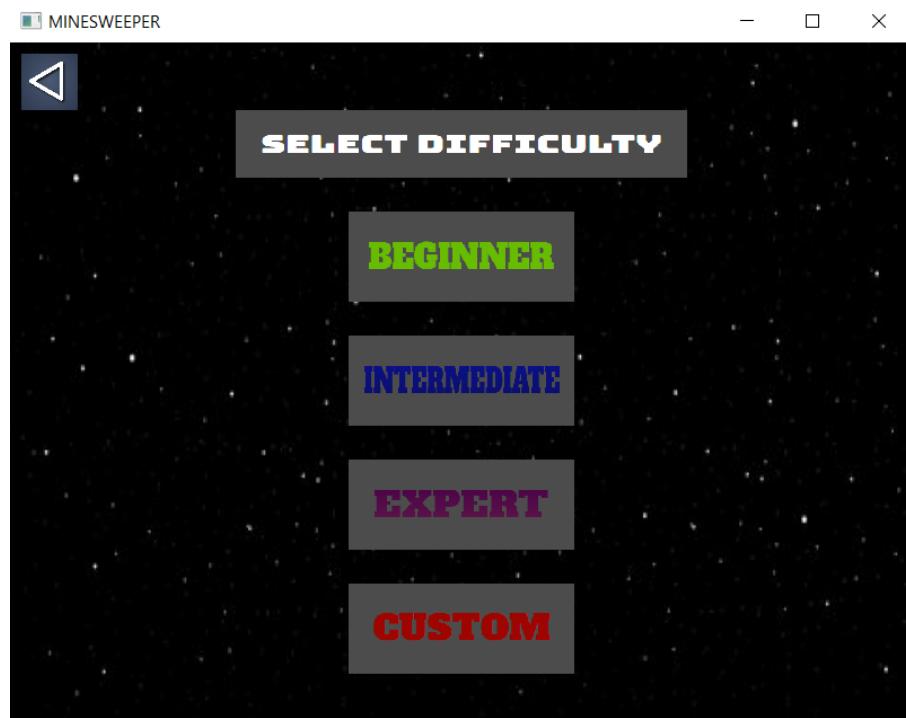
II. THE GAME FUNCTIONS

_ The very first thing we will encounter after running the game is the Main Menu screen:



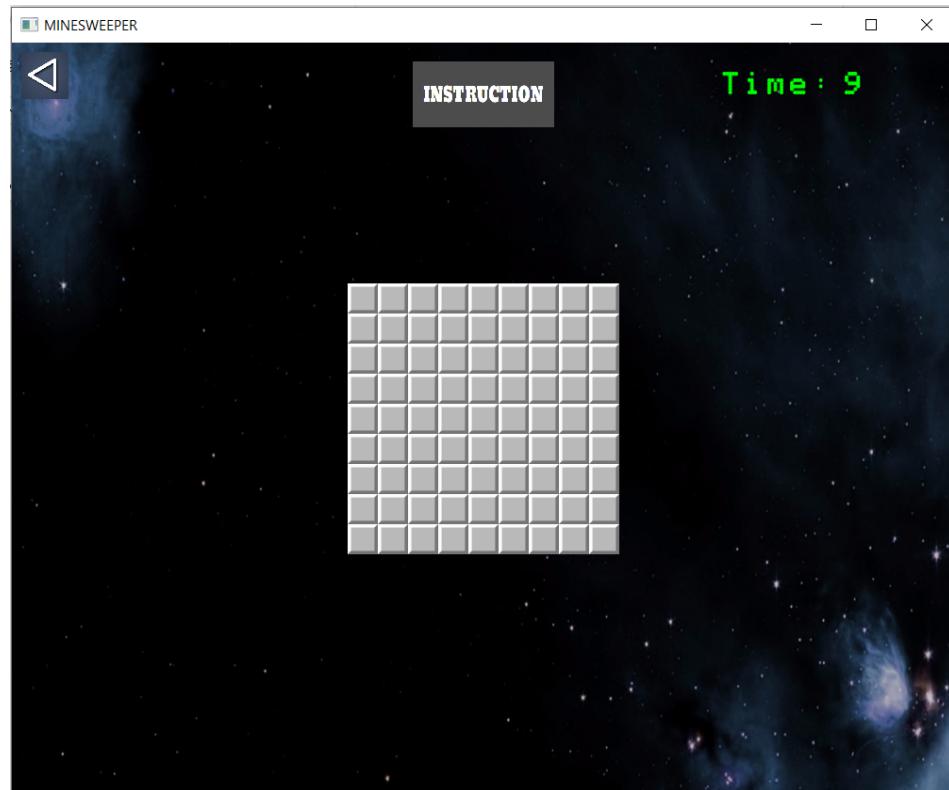
_ There are 5 buttons that we can interact with:

+ The “NEW GAME” button allows the player to create a new game and play.

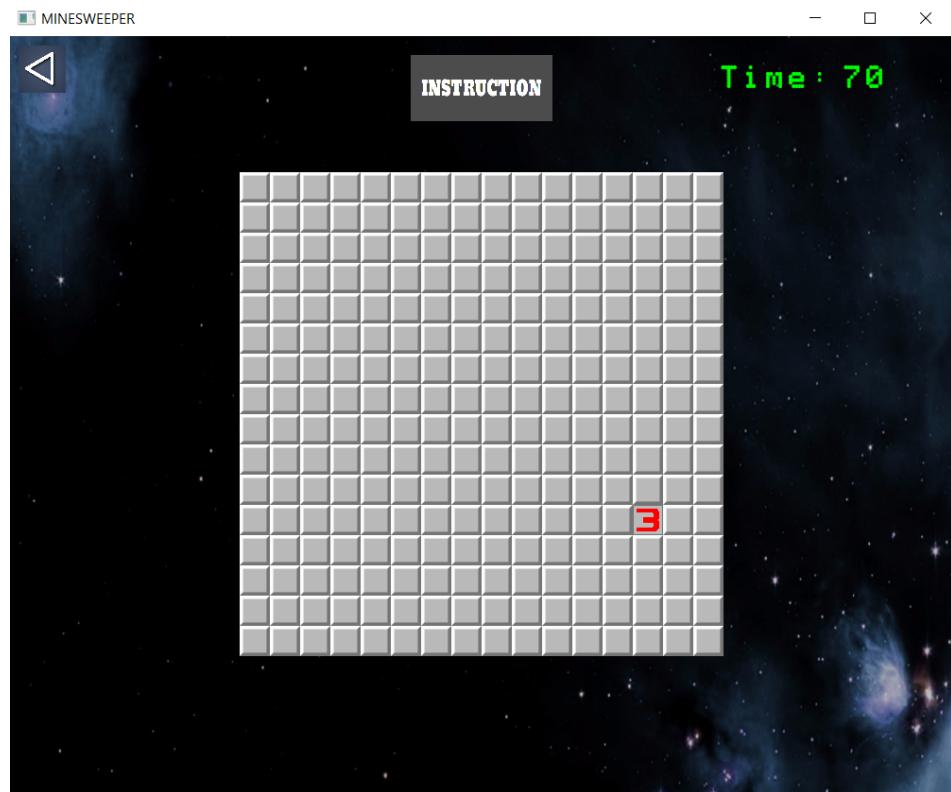


We can choose 1 out of 4 levels to play:

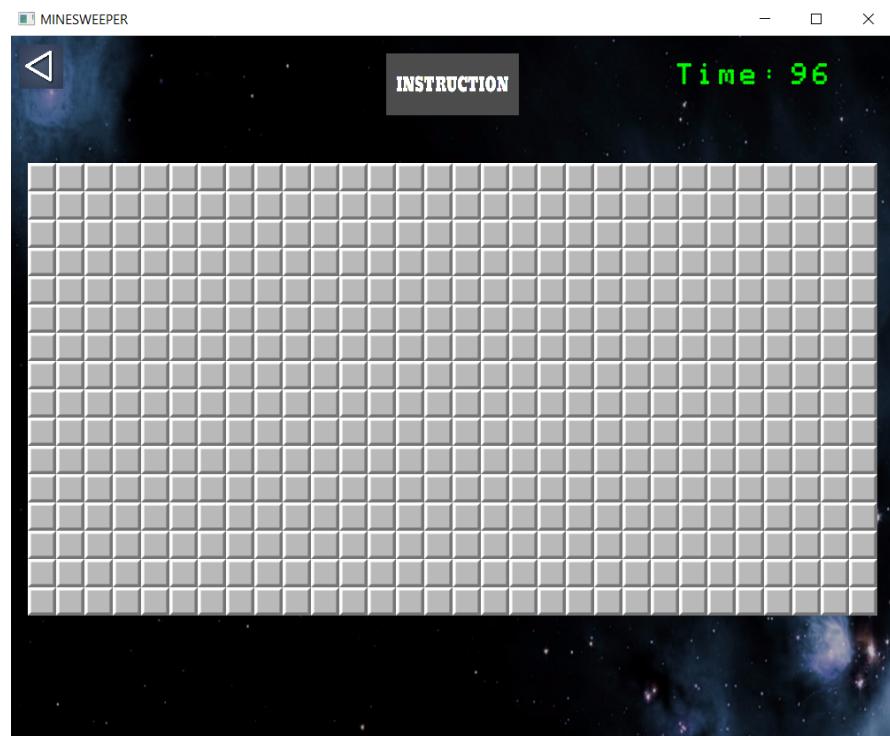
- “BEGINNER” level: Create a 9 x 9 board, with 10 mines



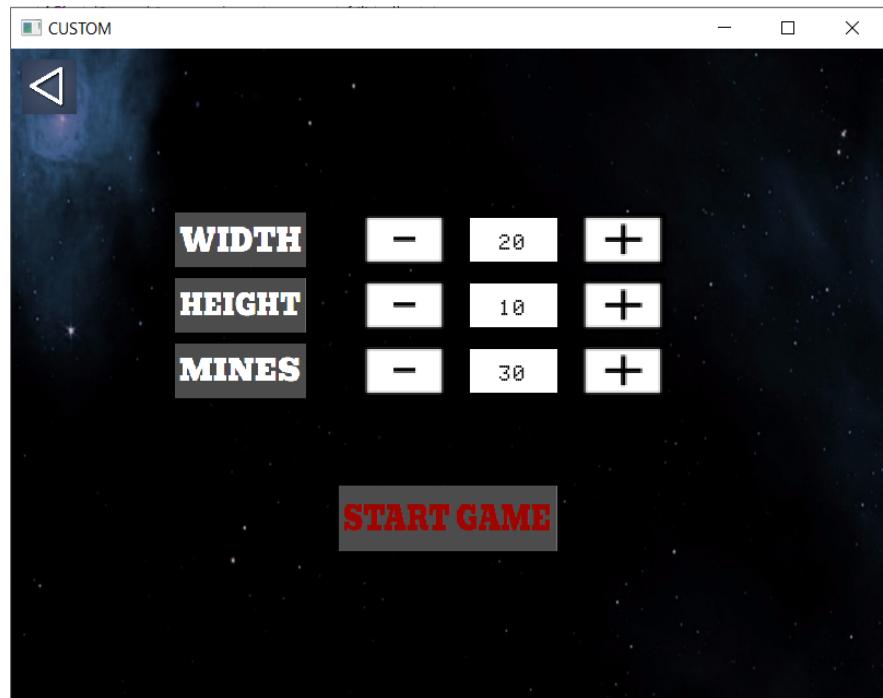
- “INTERMEDIATE” level: Create a 16 x 16 board, with 40 mines



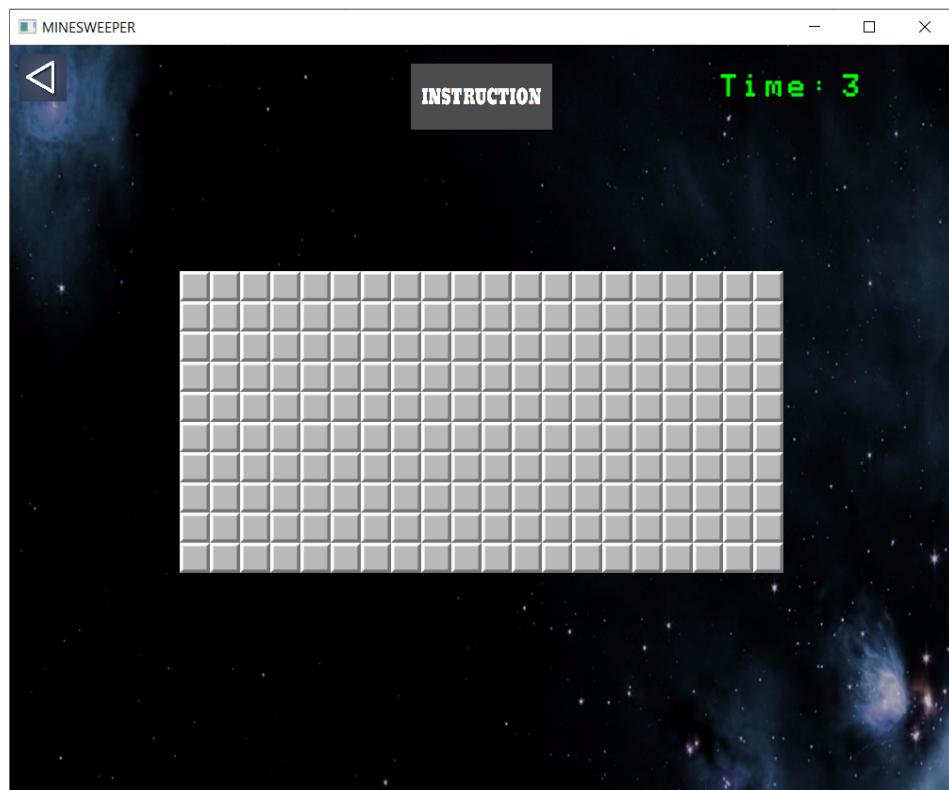
- “EXPERT” level: Create a 30 x 16 board, with 99 mines



- “CUSTOM” level: Let the player freely choose the number of rows, columns and mines for the board



- They can click on the plus sign to add or the minus sign to diminish.
- Another function going along with it is they can use the left mouse click to change 1 unit at a time, or right mouse click to change 5 unit at a time.
- The maximum number of rows, columns and mines are 16, 30 and 99, respectively.
- When they have done choosing, they can click “START GAME” button and play normally.



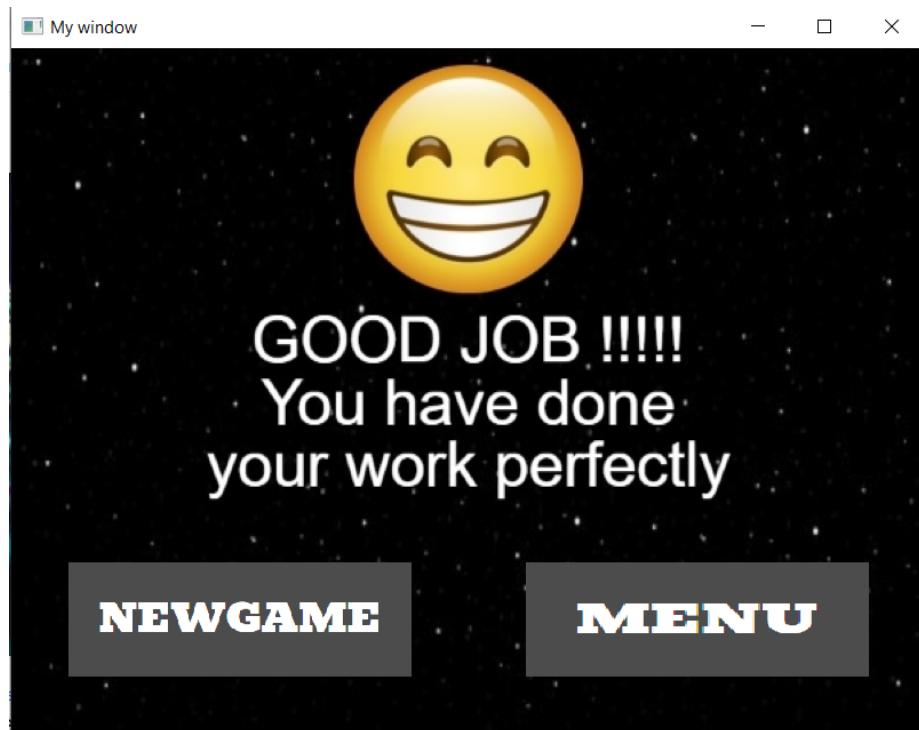
When playing, beside the board, there are 3 things that always appear on the top of the screen:

- The back button (◀): Let the player come back to the Main Menu screen and automatically save the unfinished game.
- The “INSTRUCTION” button: This button also appears on the Main Menu screen, and we decided to add it to the in-game screen so everyone can take a quick look at it if they forget the rules while playing.
- The timer: It will start counting from 0 as soon as the player finishes creating the board and start to play, and once they successfully sweep through the board, if the timer is small enough, it will be recorded in the leaderboard.

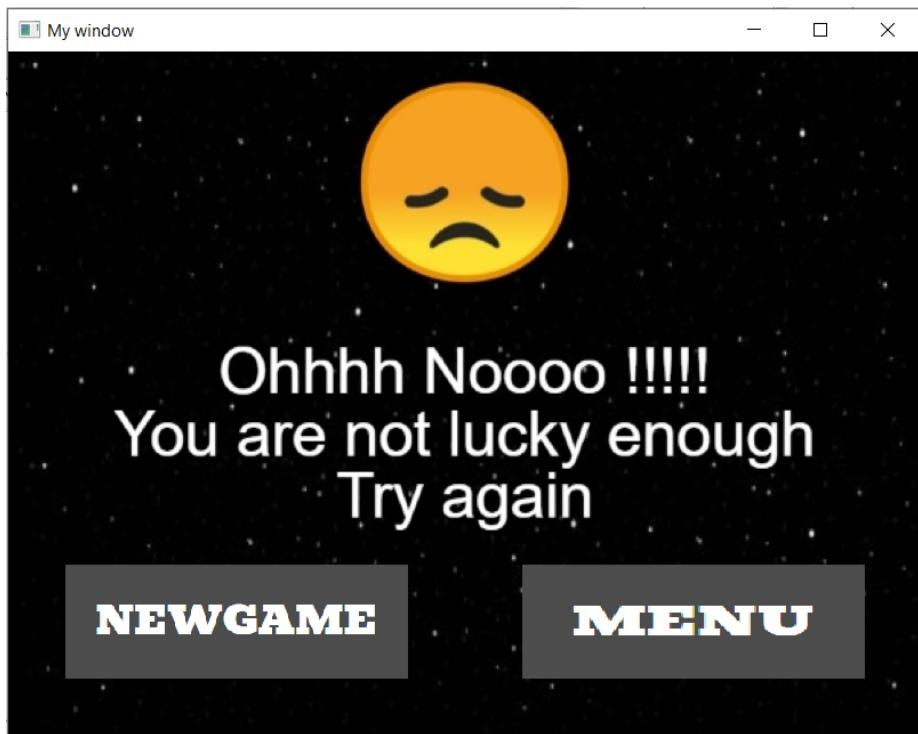
Board-related functions:

- The player can use the left mouse click on an unopened cell to open it. If the cell is already opened, and the number of flags around it is equal to the number in the cell, they can click on the cell again to open all the unflagged cells around it.
- They can use the right mouse click on an unopened cell to flag it if it is suspected to be having a mine. The flagged cell can't be opened until they unflag it by right clicking the cell again.
- If the opened cell has no mines around it, the game will automatically open all the cells around it.

When the player successfully cleared the level, a victory screen will appear:

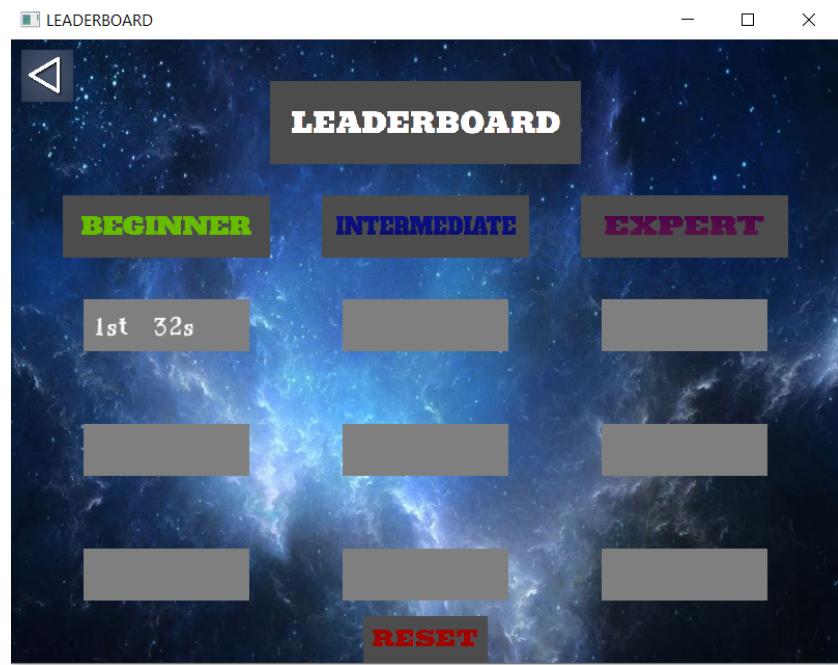


And if they are not lucky enough, a defeat screen will appear instead:

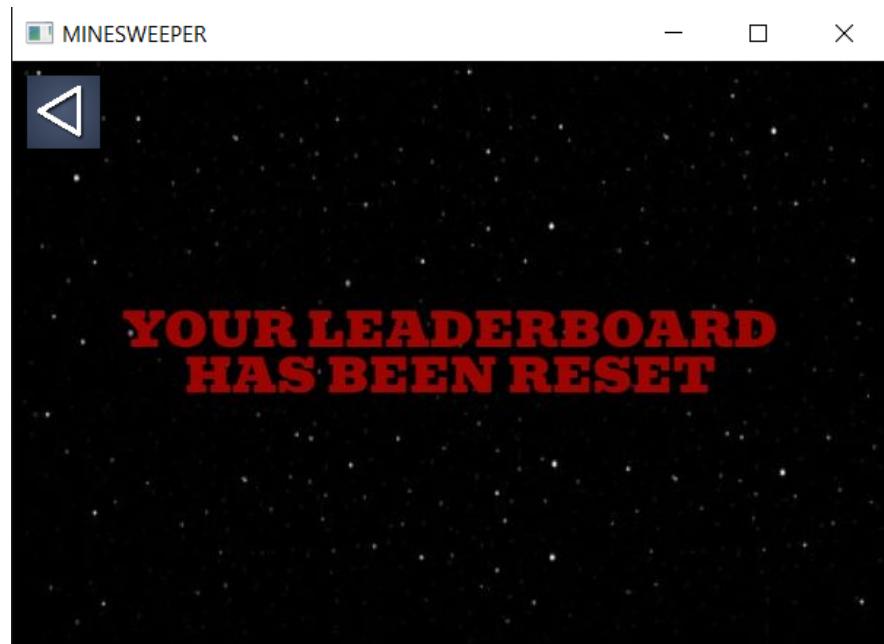


On both screens from above, a player can either choose to go back to the main menu by clicking the “MENU” button or continue playing the same level that you have chosen before by clicking the “NEWGAME” button.

- + The “LOAD GAME” button allows the player to play the saved game. If there is no saved game, they won’t be able to click it.
- + The “LEADERBOARD” button allows the player to review the best personal high scores for each level, except the “CUSTOM” level, maximum 3 high scores for each level:

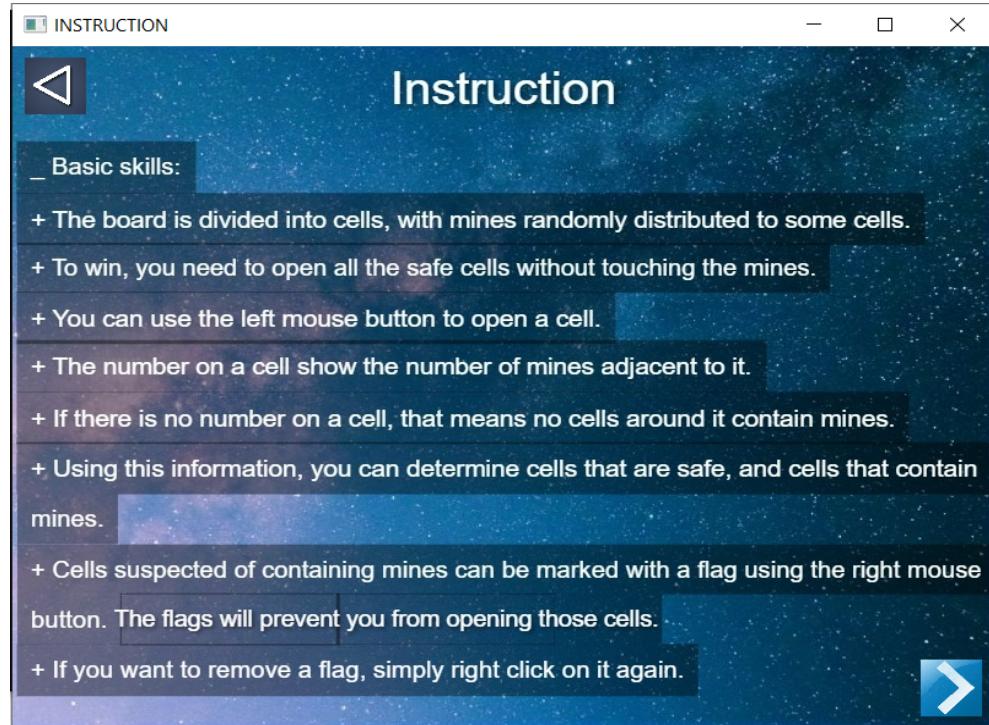


The player can click the “RESET” button to delete all the saved personal high scores, regardless of the level:

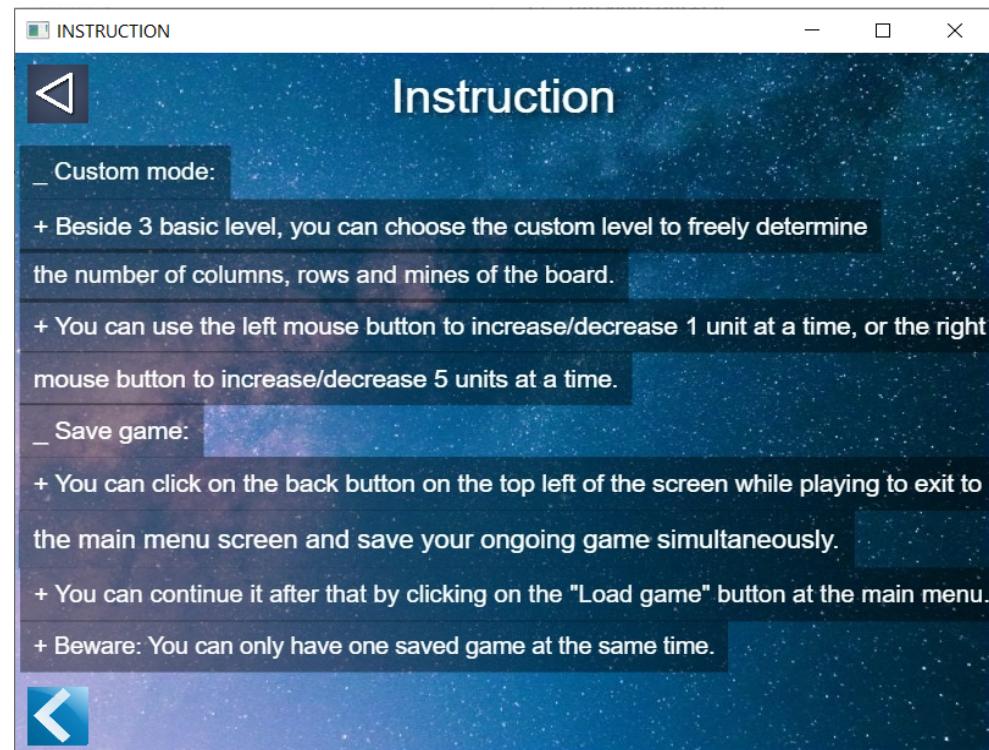


+ The “INSTRUCTION” button will lead the player to 2 pages of instruction:

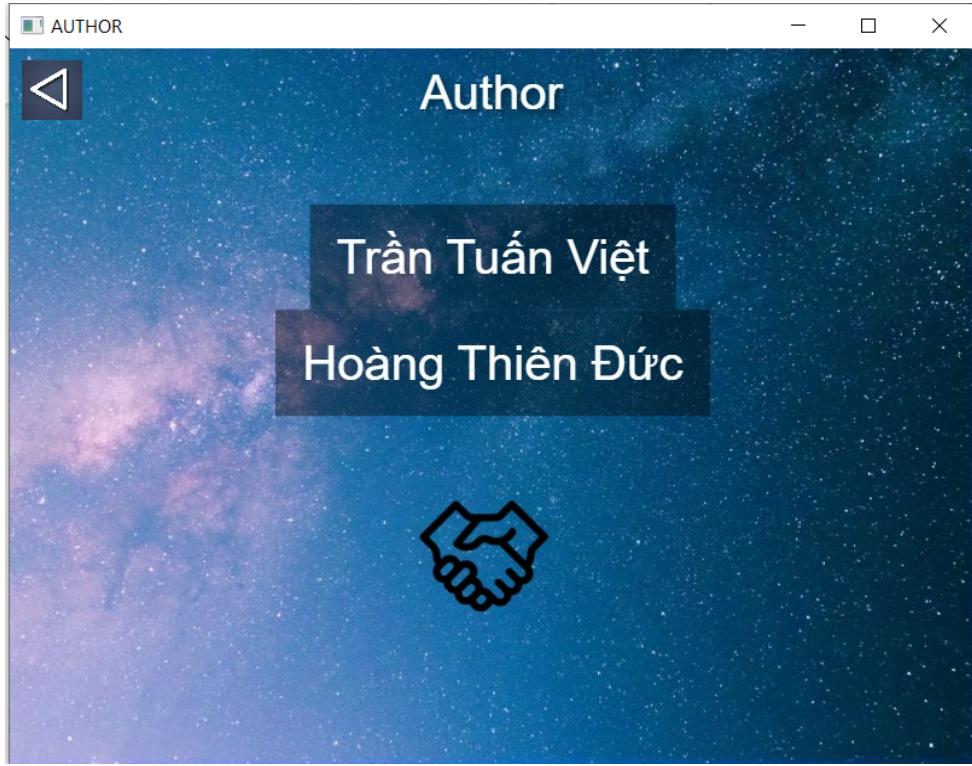
The first page contains the basic skill needed for the game:



The second page contains guidelines for custom mode and how to save game:



+ Lastly, the "AUTHOR" button shows the name of the designers:



III. TASK LIST OF MY TEAM MEMBERS

1. Trần Tuấn Việt

- _ Make Button Class for accessing the Button.
- _ Make the New Game button, Load Game button, LeaderBoard button, Instruction Button, Author button in the Main Menu Screen.
- _ Make the Beginner button, Intermediate button, Expert button, Custom button in Select Difficulty Screen.
- _ Design the main Game:
 - + Create the Game's Board which displays the Matrix.
 - + Design the Algorithm for this Game.
 - + Design Game Operation: Open a cell, Capture the Flag, Check win, Check Lose.
- _ Design the Winning Screen.
- _ Design the Losing Screen.
- _ Design the LeaderBoard Screen: display the top players of each Difficulty and create algorithms to sort the players's time in the LeaderBoard.
- _ Make the Custom Difficulty Screen: make the Button for the player to choose Difficulty Level.

2. Hoàng Thiên Đức

- _ Design the Background for the Main Menu Screen.
- _ Design the Background for the Select Difficulty Screen.
- _ Solve the Save Game Operation and Load Game Operation.
- _ Create Instruction Button, Back Button and Time for Ingame Screen.
- _ Set Position of the Board in the middle of the Screen.
- _ Find Bugs of the Game.
- _ Support to check if a game is win or lose.
- _ Design the Reset Button to clear the current Score.
- _ Design the Reset Screen: to notificate the LeaderBoard has been reset.
- _ Design the Instruction Screen: How to play Game, Back Button, Next Button and Background.
- _ Design the Author Screen including the Name of Game's Designers and Background.
- _ Design the Background for Custom Screen.