USER MANUAL

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I. General Statement

For our CSCI205 Final Project, we decided to design a game Nonogram, which is a popular logic puzzle game that involves filling in a grid with colored cells based on numerical clues. The goal is to reveal a hidden picture by determining which squares should be filled and which should be left blank, using the clues provided at the top and left sides of the grid.

II. Motivation

When brainstorming which project we would like to work on, we all agreed to design a brain game. However, as life is getting hustled, we want to design a game that could entertain the players without making them spend too much time. However, users should also be able to practice their logic and deduction skills. After considering many options, Nonogram was the game that grabbed our attention as it is challenging but simple to understand. By developing the game, we hope it will be a satisfying mental challenge for players as it requires them to think critically to solve a puzzle.

To ensure that the project will be done in the given timeframe, we decided only to implement the essential features to have a functional demo of the game. Given the time limitation, this approach will allow us to focus more on a high-quality product that can be developed more in the future. Although there are many different puzzles and difficulty levels in the original game, to reduce the complexity of the project to a more manageable level, we will be only implementing a game with one difficulty level containing only small puzzles of 5x5 dimensions.

III. Introduction and Background

Before playing the game, Nonogram requires players to understand the basic rules of the game. Specifically, players need to understand the following:

1. Clues: Nonogram provides clues in the form of numbers on the rows and columns of the grid. These numbers indicate the length and position of consecutive blocks of filled-in squares.
2. The logic of the game: Players need to use logic and deductive reasoning to fill in the squares of the puzzle based on the clues given. For example, if a row has the clue “2 2”, it means there are two consecutive filled-in squares followed by at least one blank square and then two more filled-in squares.
3. Hints: Players also need to understand how to use hints effectively, as they have only three hints each round.

4. How to avoid making mistakes: Nonogram is a challenging game so it is easy to make mistakes so players need to consider carefully before selecting a square.

IV. Structure and Instructions

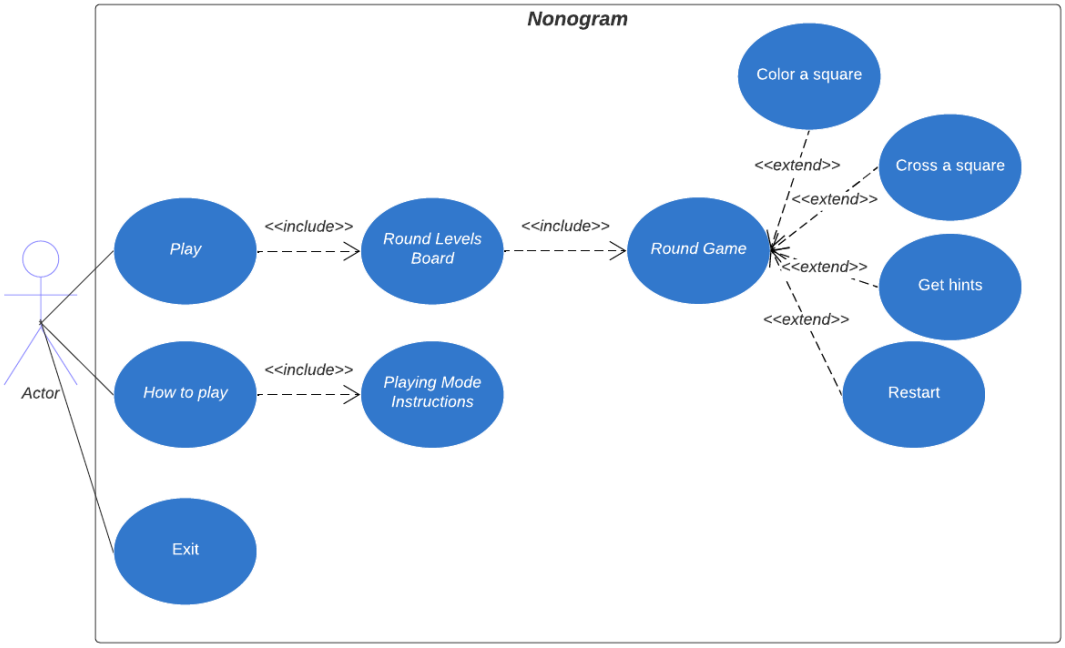

Figure 1: Nonogram use case diagram

Figure 1 illustrates the structure of our complete game where the actor is the player. Our Nonogram version consists of three main scenes: The main menu, the Round Levels board, and the in-game puzzle (Round Game).

When first started the game, the player enters the Main Menu, where the player can choose to start the game (go to the Round Levels board), read the game instructions on playing mode, or exit the game.

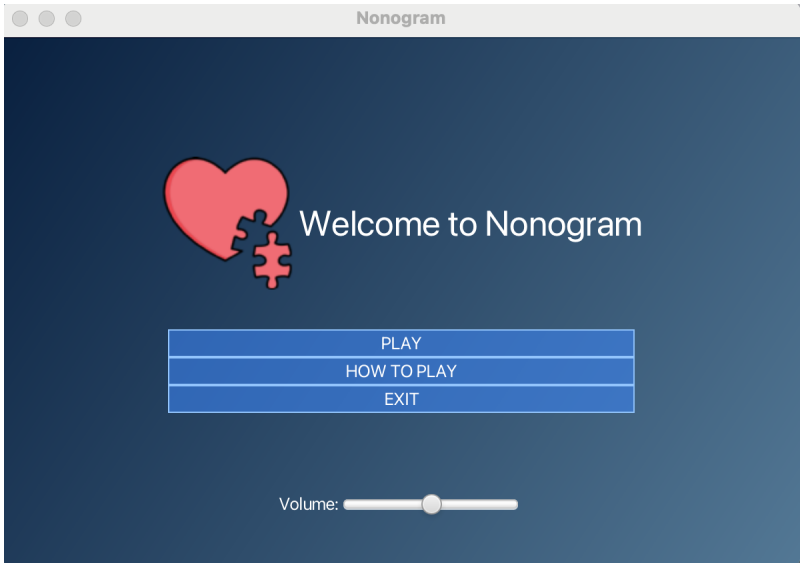

Image 1. Nonogram Main Menu

When clicking on the PLAY option, players will be moved to the Round Levels board and can choose the round they want to play. After selecting the round, the game begins.

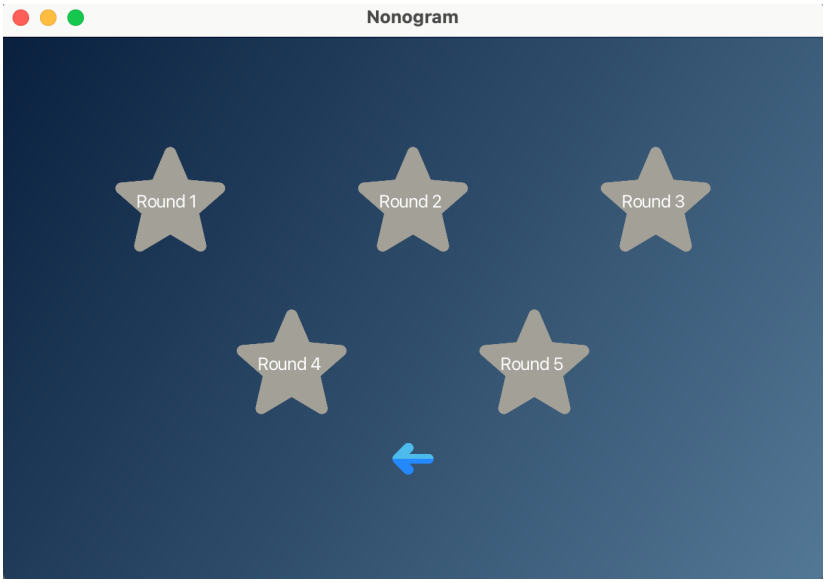

Image 2. Nonogram Round Level board

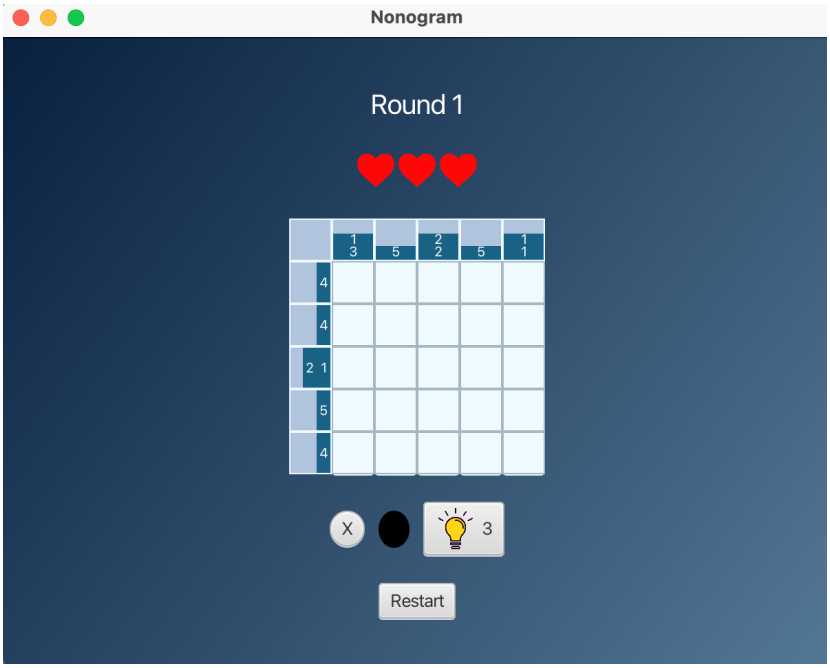

Image 3. Nonogram Round Game

In the round game, players will be given a blank grid with the top columns and left rows being the clues for filled-in squares and the three hearts on top being the number of incorrect guesses that players can have for the round. Before selecting each square, players need to choose a playing mode, which includes:

- Crossing a square (i.e., remove a square that is not filled): 
- Choosing a square to be filled in: 
- Getting hint: 

Once the player chooses the playing mode, the player can start clicking on the square they want to cross/color/get hints and can switch among these playing modes in the game until they fill in all the squares that should be colored. The player will lose the game if they run out of the number of incorrect guesses (i.e., There are no hearts displayed left). After the player completes a round, the round that has been finished will be lightened up in the Round Levels board.

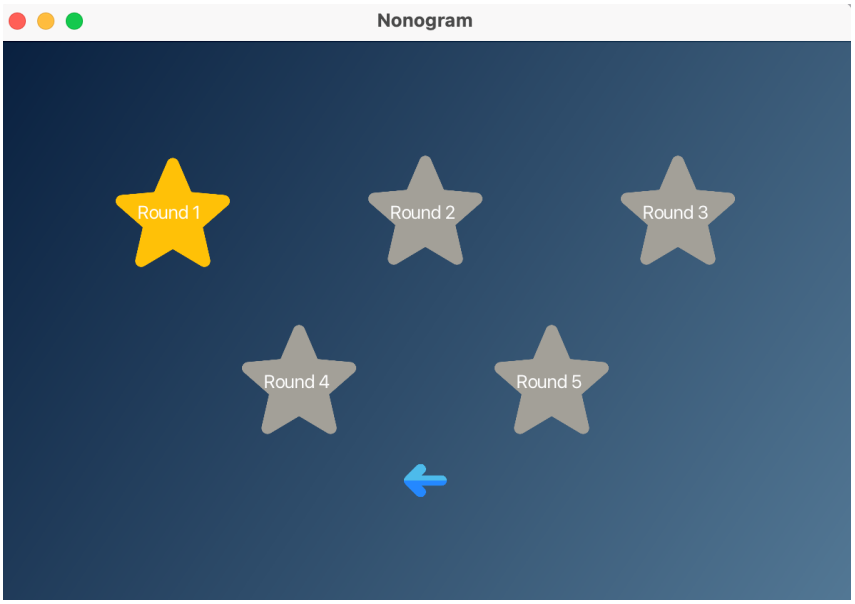

Image 4. Nonogram Round Levels board after completing a round