

# PROGRAMMING SUDOKU GAME

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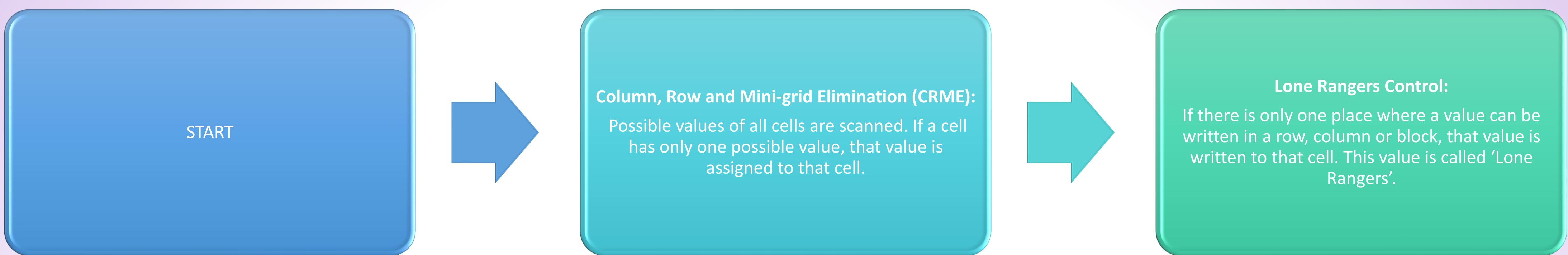
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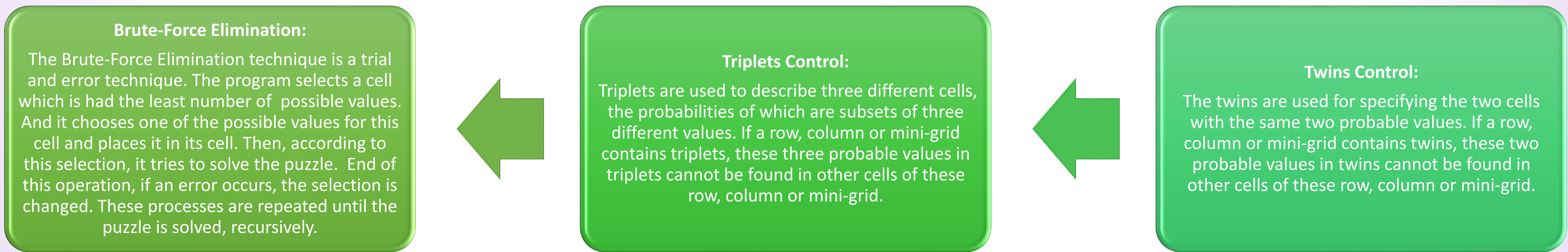
## PROJECT DESCRIPTION

The project is developing a Sudoku game in MATLAB. The program which is developed has some capabilities. These are:

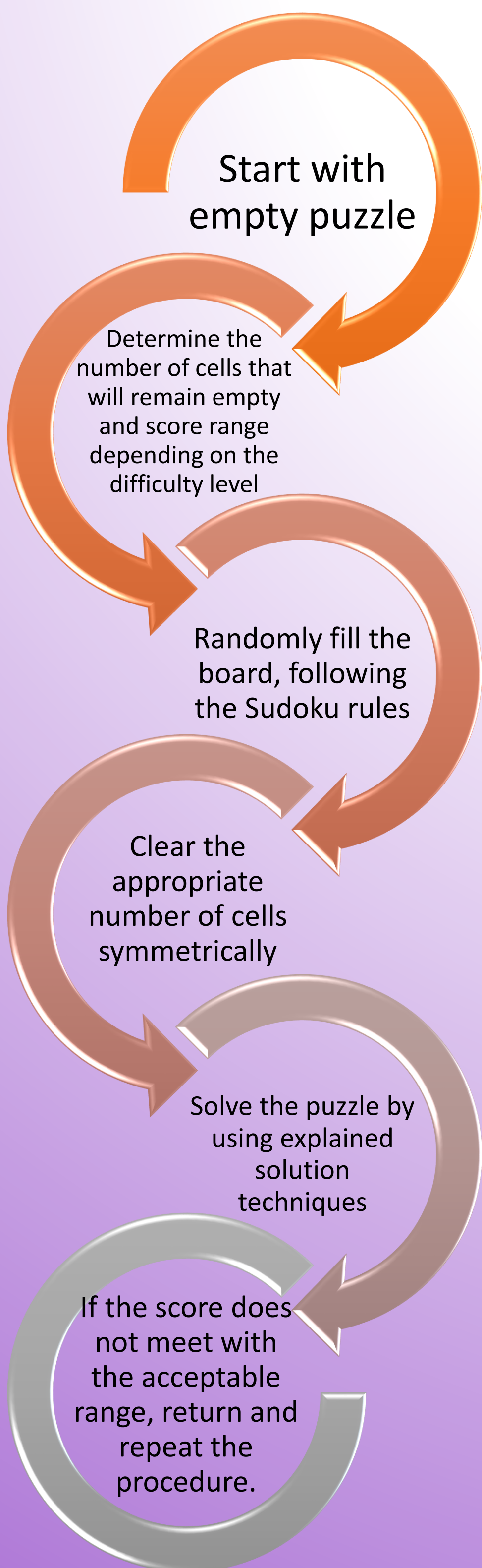
- 1 Generating a puzzle with different difficulty levels
- 2 Loading, saving and deleting the game
- 3 Undoing and redoing the previous moves
- 4 Showing all activities done by the user in activities part
- 5 Showing the solution of the puzzle when the user wants
- 6 Not allowing the placed entry that does not follow the Sudoku rules
- 7 Resetting the puzzle
- 8 Entering the probable values of the cells
- 9 Giving hints when the user wants



## SOLUTION TECHNIQUES



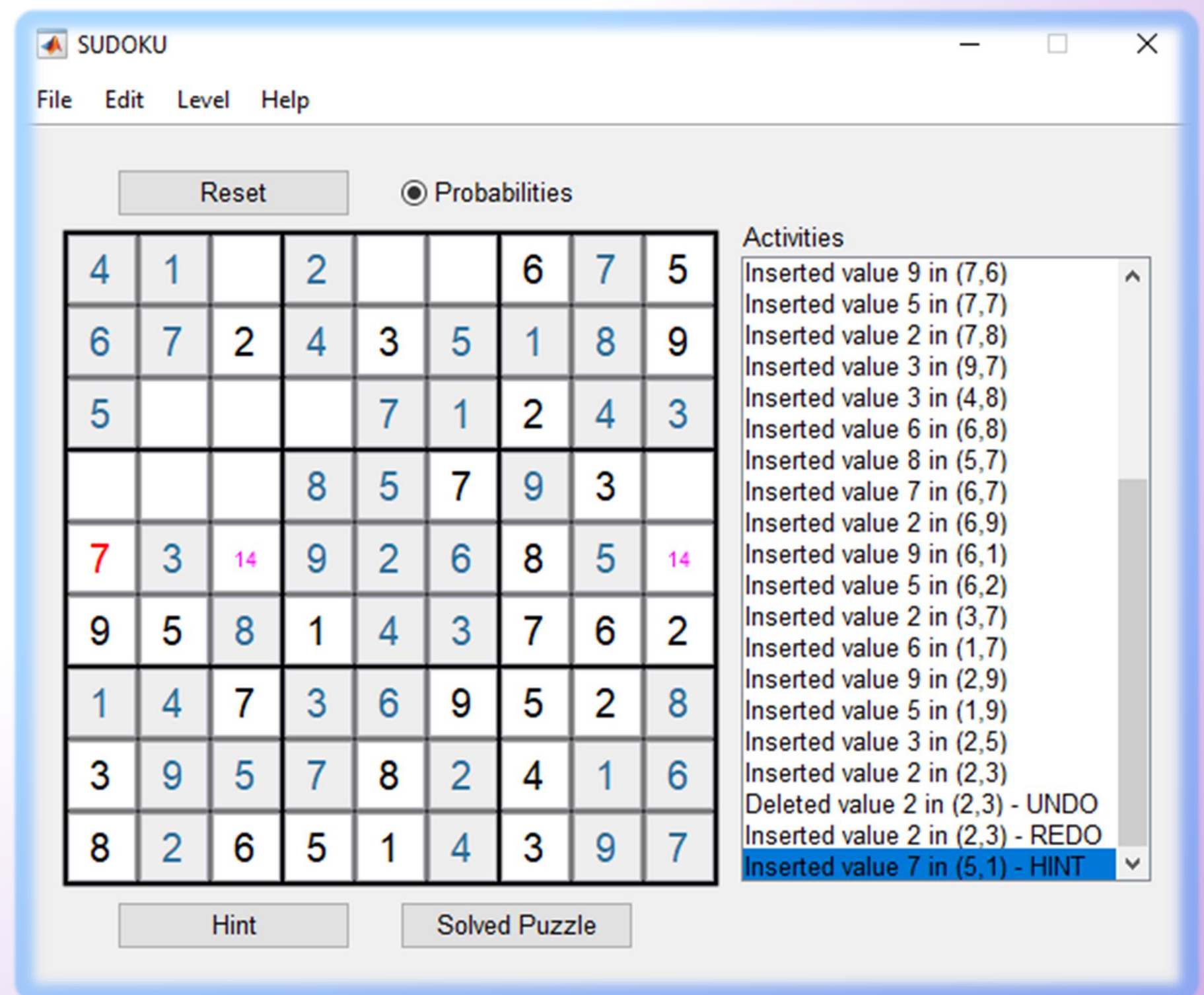
## PUZZLE GENERATION METHODOLOGY



| DIFFICULTY LEVELS   | NUMBER OF EMPTY CELLS | ACCEPTABLE RANGE FOR SCORE |
|---------------------|-----------------------|----------------------------|
| EASY                | 40-45                 | 42-46                      |
| MEDIUM              | 46-49                 | 49-53                      |
| DIFFICULT           | 50-53                 | 56-60                      |
| EXTREMELY DIFFICULT | 54-58                 | 112-116                    |

| SCORES ADDED FOR EACH TECHNIQUES                  |       |
|---------------------------------------------------|-------|
| TECHNIQUE                                         | SCORE |
| CRME                                              | 1     |
| Lone rangers control in row, column and mini-grid | 2/2/2 |
| Twins control in row, column and mini-grid        | 3/3/3 |
| Triplets control in row, column and mini-grid     | 4/4/4 |
| Brute-Force Elimination                           | 5     |

## USER INTERFACE DISPLAY



- The hints are shown in red.
- When 'Probabilities' button is selected, for empty cells, previously user entered probable values (multiple values) are shown in pink or new probable values for future use can be entered.
- All activities shown in activities part (undo, redo, hint, etc.).
- When the user clicks 'Solved Puzzle' button, the program returns the solution of the puzzle.

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