115. Sudoku Solver

PROGRAM:-

```
def solve_sudoku(board):
    def is_valid_move(board, row, col, num):
        for i in range(9):
            if board[row][i] == num or board[i][col] == num or board[3 * (row // 3) + i // 3][3 * (col // 3) + i
% 3] == num:
                return False
        return True
    def solve(board):
        for i in range(9):
            for j in range(9):
                if board[i][j] == '.':
                    for num in map(str, range(1, 10)):
                        if is_valid_move(board, i, j, num):
                            board[i][j] = num
                            if solve(board):
                                return True
                            board[i][j] = '.'
                    return False
        return True
    solve(board)
board = [
    ["5","3",".",".","7",".",".",".",".","."],
    ["6",".",".","1","9","5",".",".",".","."],
    [".","9","8",".",".",".",".",".","6","."],
    ["8",".",".",".",".","6",".",".",".","3"],
    ["4",".",".","8",".","3",".",".",".","1"],
    ["7",".",".",".",".","2",".",".",".","6"],
    [".","6",".",".",".",".",".","2","8","."],
    [".",".",".",".","4","1","9",".",".","5"],
    [".",".",".",".",".","8",".",".","7","9"]
]

solve_sudoku(board)
print(board)
```

OUTPUT:-

```
[['5', '3', '4', '6', '7', '8', '9', '1', '2'], ['6', '7', '2', '1', '9', '5',
    '3', '4', '8'], ['1', '9', '8', '3', '4', '2', '5', '6', '7'], ['8', '5', '9'
    , '7', '6', '1', '4', '2', '3'], ['4', '2', '6', '8', '5', '3', '7', '9',
    '1'], ['7', '1', '3', '9', '2', '4', '8', '5', '6'], ['9', '6', '1', '5', '3'
    , '7', '2', '8', '4'], ['2', '8', '7', '4', '1', '9', '6', '3', '5'], ['3',
    '4', '5', '2', '8', '6', '1', '7', '9']]

=== Code Execution Successful ===
```

TIME COMPLEXITY:-O(N*M)