Double Sudoku

You are given a completely filled 9×9 grid of digits (1−9). Determine whether the grid is:
A grid is a Double Sudoku if:

1. A valid Sudoku,

2. A valid Double Sudoku (special Sudoku with extra rule),

3. Or invalid altogether.

Definitions

A grid is a Sudoku if:

Every row contains all digits 1−9 exactly once.
Every column contains all digits 1−9 exactly once.
Every 3×3 subgrid contains all digits 1−9 exactly once.

A grid is a Double Sudoku if:

It is a valid Sudoku.

Additionally, the center cells of the 3×3 subgrids (9 of them) form a permutation of 1−9 (i.e., they are all distinct and cover all digits 1 through 9).

Input:
9 lines, each containing exactly 9 digits (characters '1'..'9') without spaces: these are the rows of the grid.

Output:
Print a single line:

- **DOUBLE (if the input grid is a Double Sudoku)**
- **SUDOKU (if the grid is a valid Sudoku but not a Double Sudoku.)**
- **INVALID (otherwise)**

Center coordinates (1-indexed) are:
(2,2) (2,5) (2,8)
(5,2) (5,5) (5,8)
(8,2) (8,5) (8,8)

Notes:
- You do not need to solve or fill the Sudoku; input is always 9x9 filled digits, but it may violate Sudoku rules.
- Your program must check both conditions strictly.

Input Format

9 lines, each containing exactly 9 digits (characters '1'..'9') without spaces: these are the rows of the grid.

Constraints

- Input is exactly 9 lines.

- Each line contains exactly 9 characters.

- Characters are digits '1'–'9' only.

- No spaces or extra characters allowed.

Output Format

Print a single line:
- DOUBLE (if the input grid is a Double Sudoku)
- SUDOKU (if the grid is a valid Sudoku but not a Double Sudoku.)
- INVALID (otherwise)

Sample Input 0

```
875369421
194285376
326714589
231648957
967523148
548197263
```

```
689451732
752936814
413872695
```

Sample Output 0

```
DOUBLE
```