Symmetric matrix

Submission deadline:	**2022-11-21 11:59:59**	1386021.146 sec
Late submission with malus:	**2022-12-31 23:59:59** (Late submission malus: 100.0000 %)	
Evaluation:	**0.0000**	
Max. assessment:	**3.0000** (Without bonus points)	
Submissions:	0 / 20 Free retries + 10 Penalized retries (-10 % penalty each retry)	
Advices:	0 / 2 Advices for free + 2 Advices with a penalty (-10 % penalty each advice)	

The problem is to develop a program to read and analyze a matrix.

The input of the program is a matrix of integers. The numbers are entered in a pre-formatted form, each input line forms a row of the matrix, the number of rows corresponds to the number of input lines. The numbers on a line are separated by spaces/tabs, each number represent one matrix element.

The output of the program is a simple decision on the symmetry of the input matrix. The three symmetries are checked: horizontal, vertical, and the symmetry by the center point. The output format is clear from the example runs.

The program must detect invalid input. The following is considered an error:

- invalid integer numbers in the input,
- the matrix is not of a rectangular/square shape (e.g., the number of columns are not the same on all input lines),
- the input is empty (0 rows or 0 columns),
- more than 100 rows/columns.

Example program output:

```
Matrix:
1 2 3
4 5 4
3 2 1
Horizontal symmetry: no
Vertical symmetry: no
Center symmetry: yes
```

```
Matrix:
1 2 3 4
5 6 7 8
5 6 7 8
1 2 3 4
Horizontal symmetry: yes
Vertical symmetry: no
Center symmetry: no
```

```
Matrix:
1 2 3 2 1
5 6 7 6 5
1 2 1 2 1
-3 2 0 2 -3
Horizontal symmetry: no
Vertical symmetry: yes
Center symmetry: no
```

```
Matrix:
2 7 9
1 3 1
9 8 2
Horizontal symmetry: no
Vertical symmetry: no
Center symmetry: no
```

```
Matrix:
1 2 3
1 2
Invalid input.
```

```
Matrix:
2 2
1 3
4 ads
Invalid input.
```

Advice:

- The sample runs above list both the output of your program (boldface font) and user input (regular font). The bold/regular formatting is included here, in the problem statement page, to increase readability of the listing. Your program must output the text without any additional markup.
- Do not forget the newline (\n) after the last output line.
- The input processing must distinguish whitespace characters (spaces and tabs for column separators, newlines for row separators). Function `scanf` alone may not be enough for the task. We recommend to combine `scanf` with functions `getchar` and `ungetc`.

Sample data: Download

Submit: Choose File Submit

Reference