- **Previous Lecture:**
  - Conditional statement
  - `for` loop, `while` loop

- **Today's Lecture:**
  - Random walk—vector version, plotting graphs
  - User-defined functions
  - 2-d array—matrix

- **Reading:** MATLAB Essentials, Part III (handout)

Local minimum in a neighborhood

- Write a function minInNeighborhood
- Input parameters:
    - m: matrix of numeric values
    - loc: location of the middle of the neibhborhood
      loc(1) and loc(2) are row, column numbers
- Output parameter: minValue
    The minimum value of the neighborhood

Local minimum in a neighborhood

2	-1	.5	0	1
3	8	6	7	7
5	-3	8.5	9	10
52	81	.5	7	2

Cell (2,3)

Neighborhood of cell (2,3)

Local minimum in a neighborhood
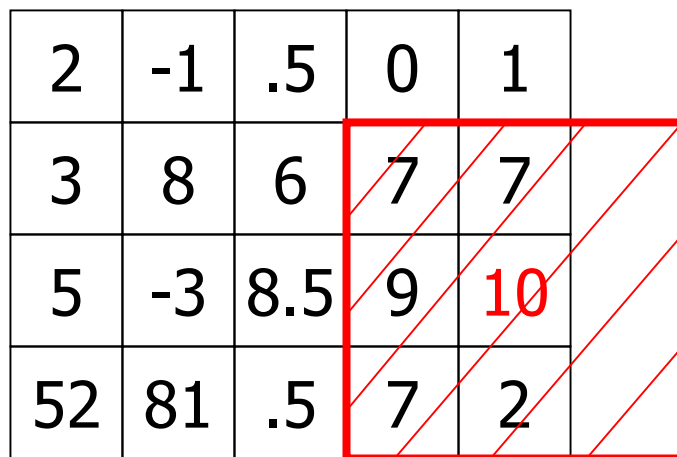
2	-1	.5	0	1
3	8	6	7	7
5	-3	8.5	9	10
52	81	.5	7	2

Cell (3,5)

Neighborhood of cell (3,5)

Develop an algorithm!

- Can you find the min of a (sub)matrix?

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- Given the indices r, c (representing cell m(r,c)), is it easy to define the neighborhood?

- Can we get rid of the border cases?

Local minimum in a neighborhood

2	-1	.5	0	1
3	8	6	7	7
5	-3	8.5	9	10
52	81	.5	7	2

Want to be able to use the general case,
`m(r-1:r+1,c-1:c+1)`