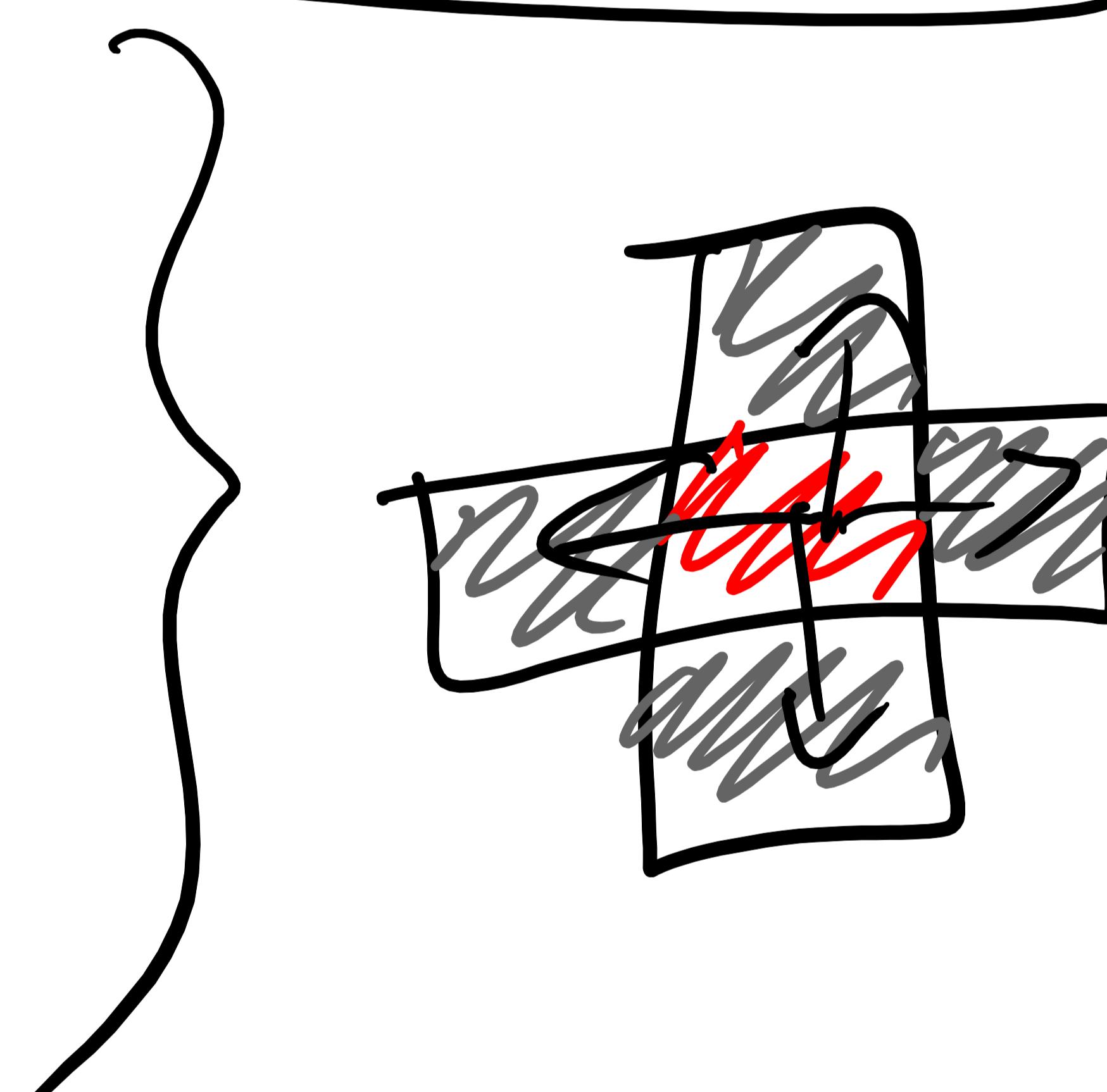
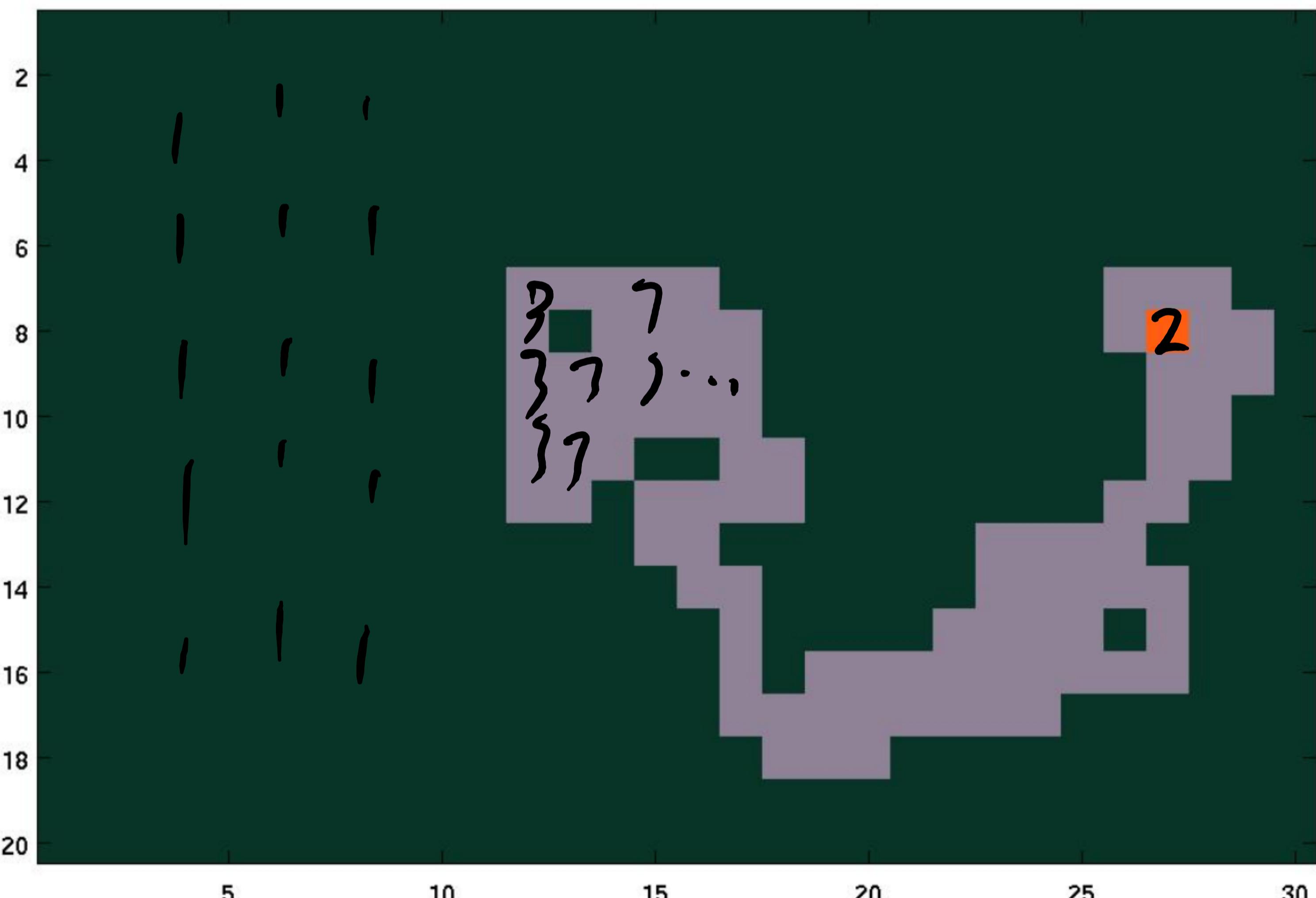
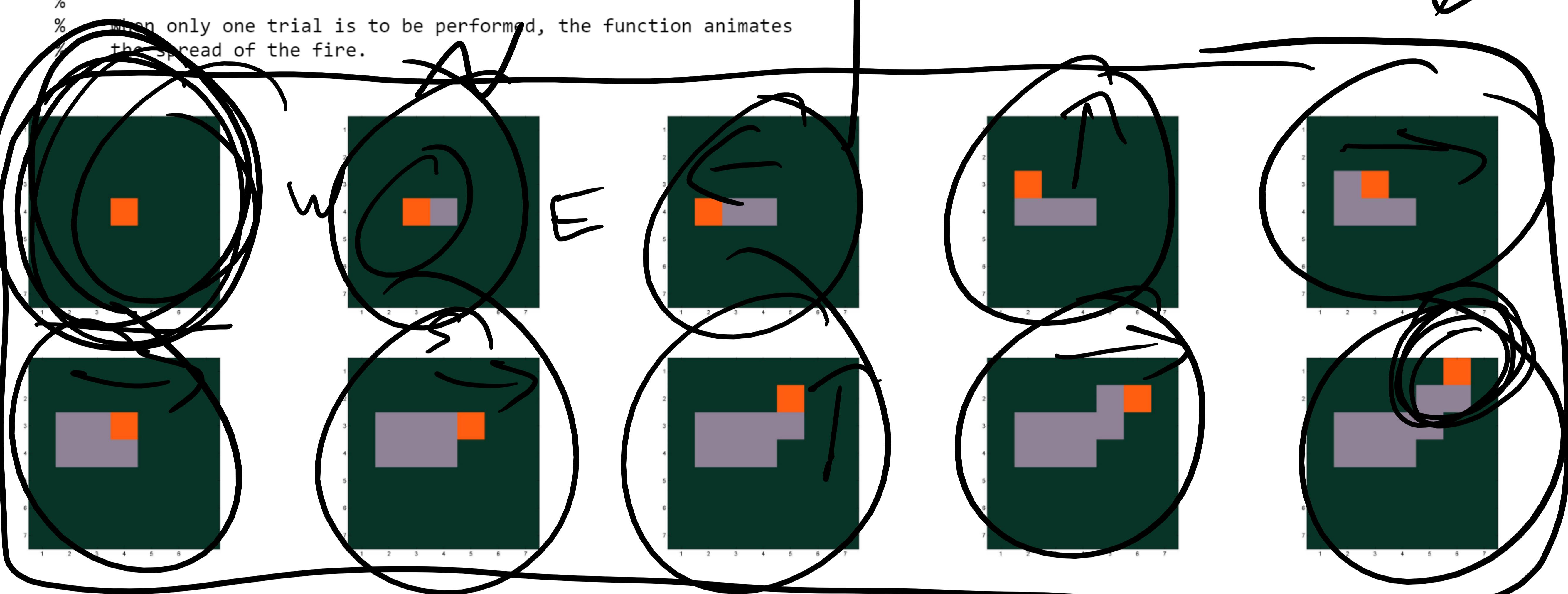
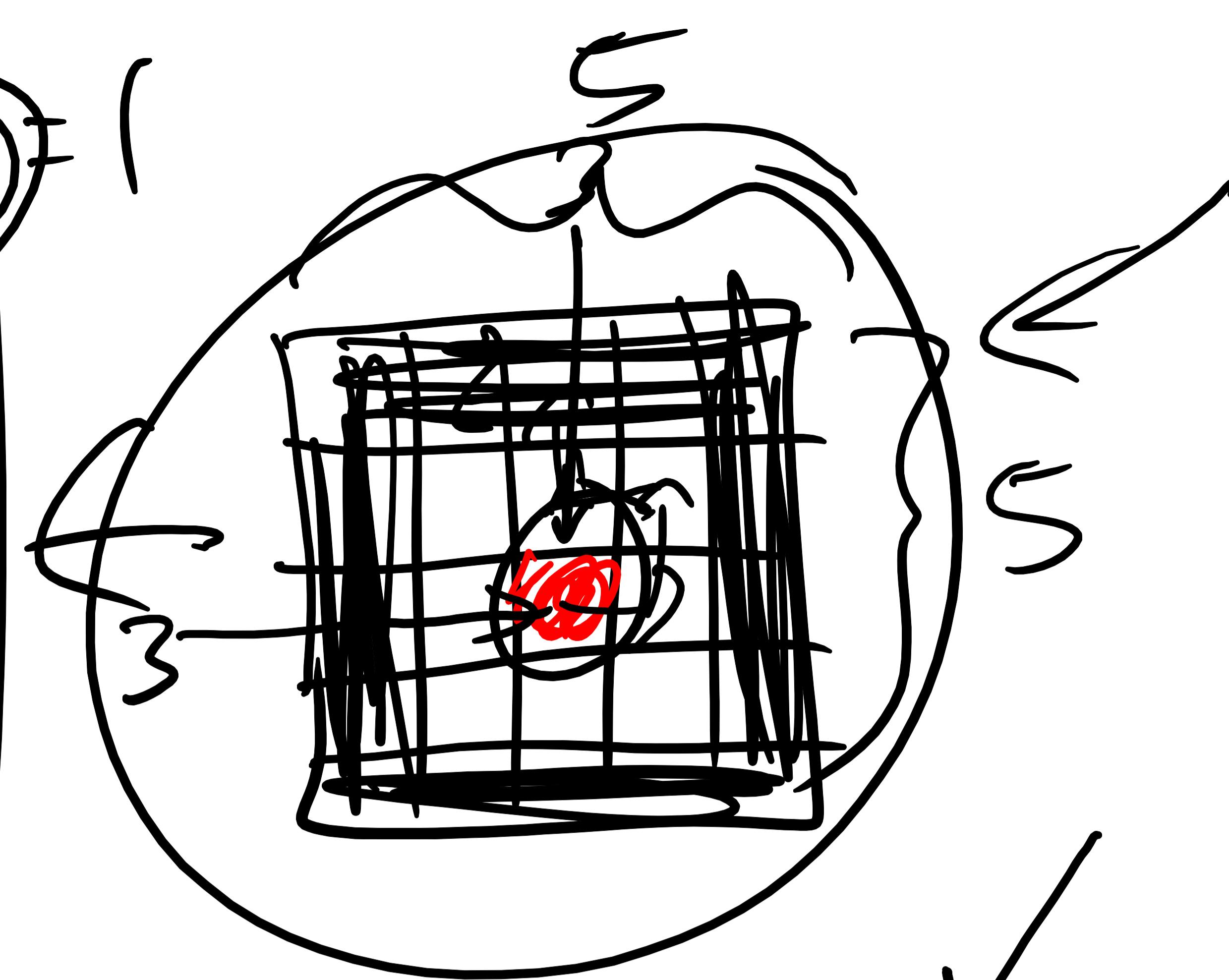


Create a file fire.m implementing a function with the following specifications.

```
function outcomes = fire(numRows, numCols, startRow, startCol, trials)
% Simulate the spread of a fire.
% USAGE: outcomes = fire numRows, numCols, startRow, startCol, trials
% The simulation will be performed on a grid with
% specified number of rows and columns, assumed to be numbered
% starting at (1,1) at the top-left. The fire begins at location
% (startRow, startCol) within that grid.
%
% An individual trial will have one of five outcomes:
% 1) it reaches the right edge of the grid
% 2) it reaches the bottom edge of the grid
% 3) it reaches the left edge of the grid
% 4) it reaches the top edge of the grid
% 5) it burns out within the grid
% The returned outcome will be a row-vector of length five
% designating the percentage of trials that resulted in
% such outcomes. For example, the value outcomes(5) is the
% percentage of trials that burned out.
%
% input argument trials specifies the number of independent
% trials. If not specified, one trial will be performed.
%
% When only one trial is to be performed, the function animates
% the spread of the fire.
```



Creating Images in Matlab

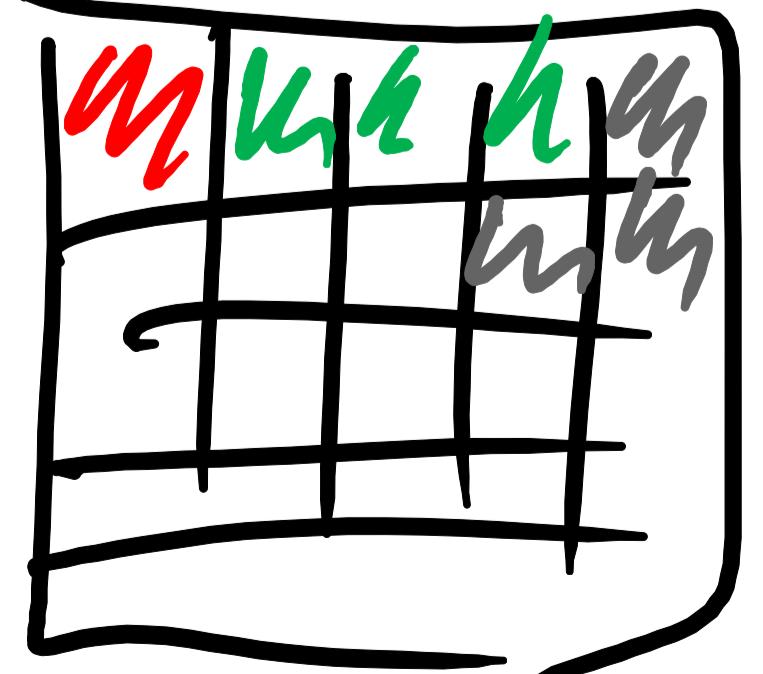
Given a matrix of integers, you can plot an image based on the use of those integers as indices into a prescribed colormap. The syntax is `image(A)` where A is the matrix of numbers.

For our images, we simply use three colors, with color 1 being the forest green, color 2 being the fiery orange, and color 3 being the burnt-out gray. We set that colormap with the following command.

```
colormap([.035 .200 .153; 1.00 .367 .063; .561 .510 .592]) % rgb values for green, orange, gray
```

For example, try copy-pasting these three lines into a script. Then, change the map matrix to modify the image.

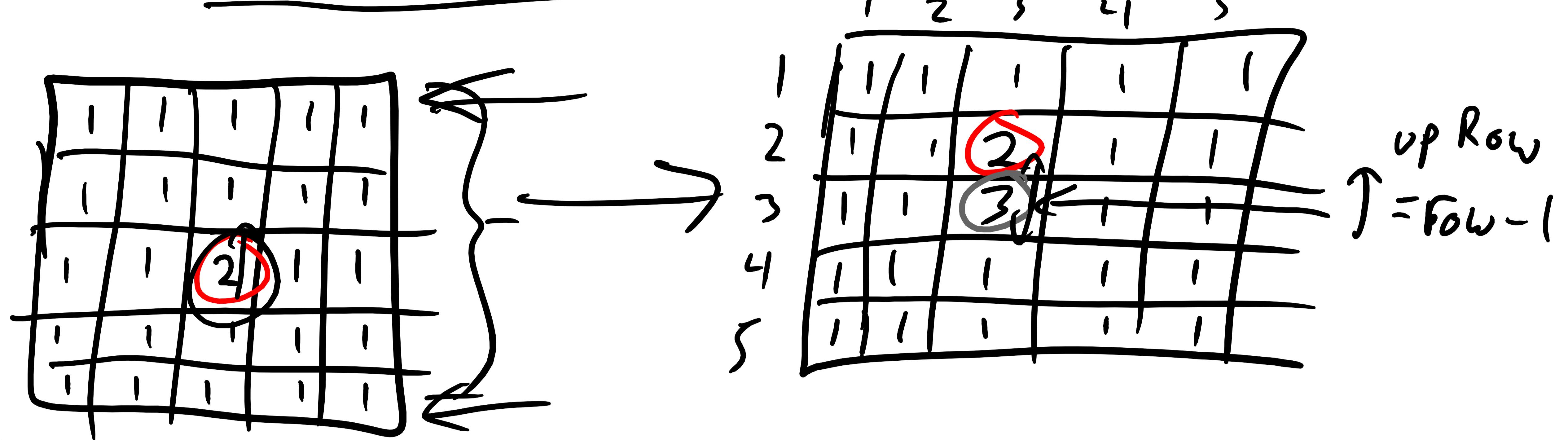
```
colormap([.035 .200 .153; 1.00 .367 .063; .561 .510 .592]) % rgb values for green, orange, gray
map = [1 1 1 1; 3 3 3 1; 2 2 3 1];
image(map);
```



trials = 100
North = 25

outcomes [~ ~ ~ .25 ~]
R B L C

forest = ones (numRows, numCols)



$$\text{fireRow} = \text{startRow} + \text{Row}$$

$$\text{fireCol} = \text{startCol} + \text{Col}$$

$$\text{forest}(\text{startRow}, \text{startCol}) = 2;$$

→ while (fire_burns == true)

valid = directions;

valid = {'N', 'W'}
pick one of these
9 + random

① what if valid is empty?

Random if length(valid) == 0

Direction break; ← outcome
end

② How do we pick a random element of valid?

randomPick = rand(length(valid));

randDir = valid(randomPick);
= 'N'

→ forest(fireRow, fireCol) = 3; % burn +

randDir = 'N'

if randDir == 'N'
fireRow = fireRow - 1;

else if RD == 'E'
fireCol = fireCol + 1;
 'S'
 'W'

end

→ Forest(fireRow, fireCol) = 2 % fire

if xdir \ s == 1
colornap(...)
image(Forest
pause(0.5);
end

end % while