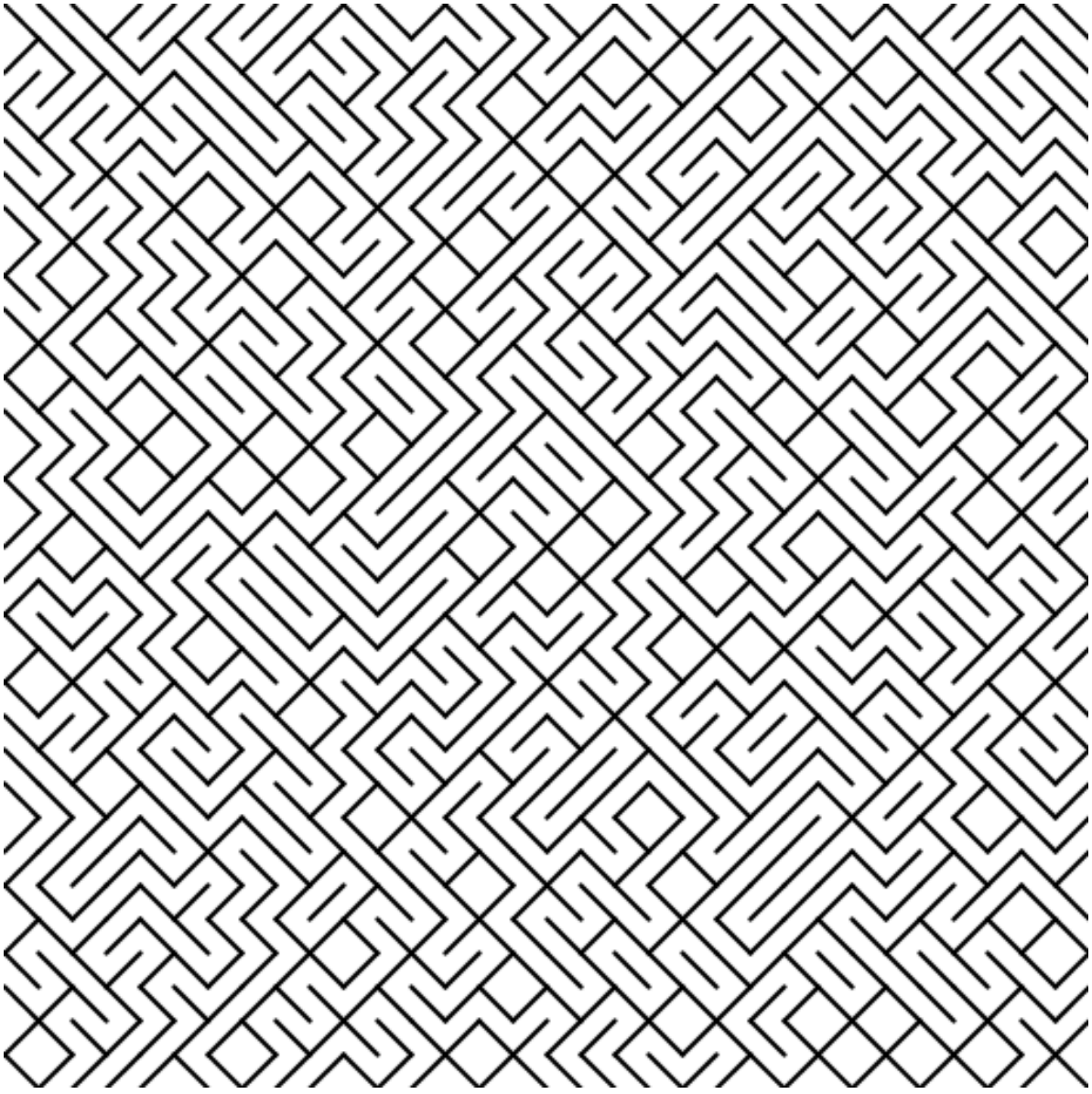
processing.py

- Let's play 5 things

Previously: C64

```
10 PRINT CHR$(205.5+RND(1)); : GOTO 10
```



Our challenge

- Make it happen

Thinking strategically about the problem

- First instinct: do everything at once
- Consequence: analysis paralysis or getting nowhere fast
- Let's think about the problem in terms of subproblems

What are logically separate pieces of the problem?

- Whiteboard time

Translating subproblems into code

- Rule of thumb: one subproblem = one function

In groups of 2

- Pair program the C64 maze
- Modify it to create to make a horizontal maze
- Save a screenshot
- Push it to Github, along with the screenshot

Horizontal maze

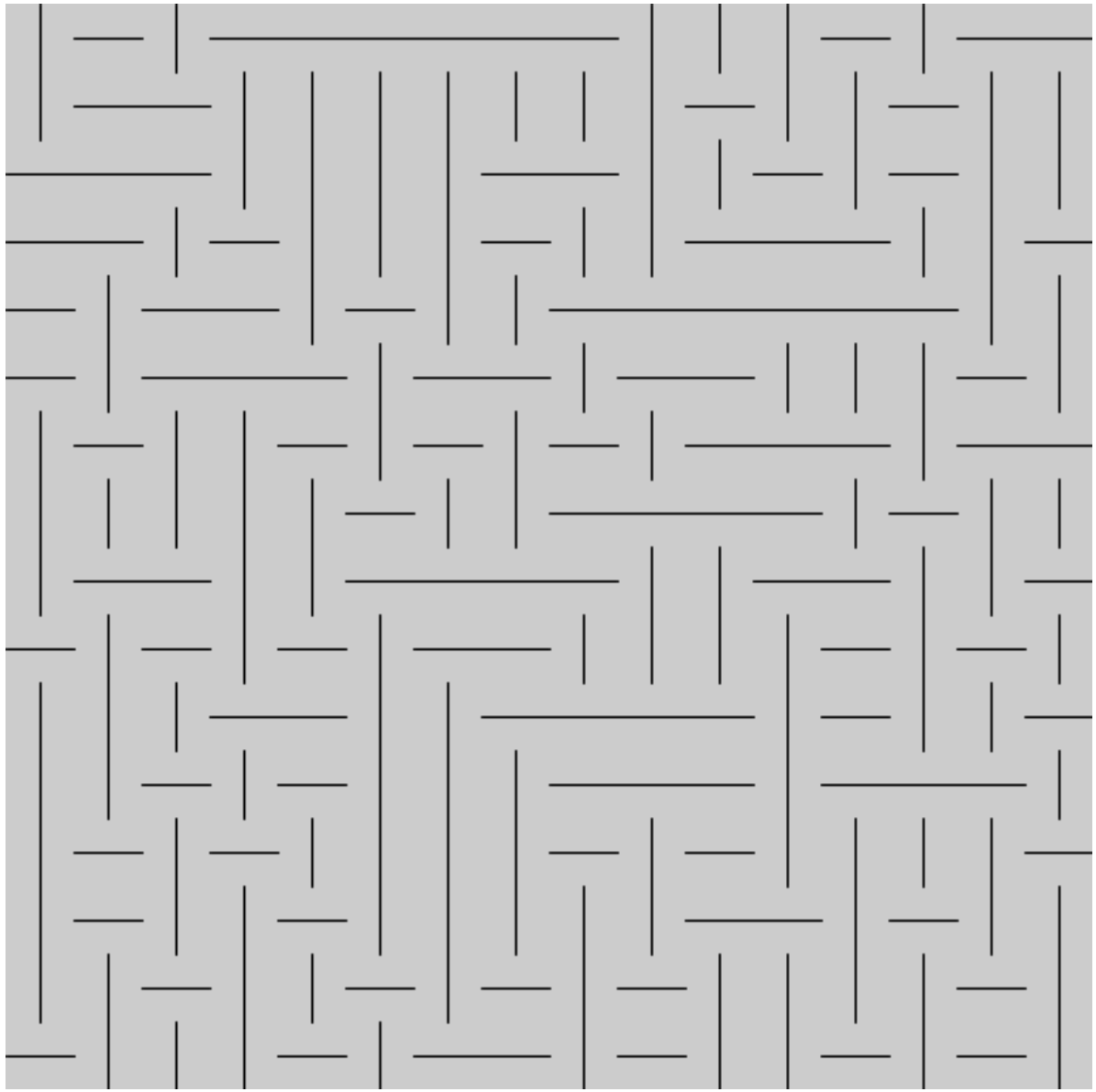


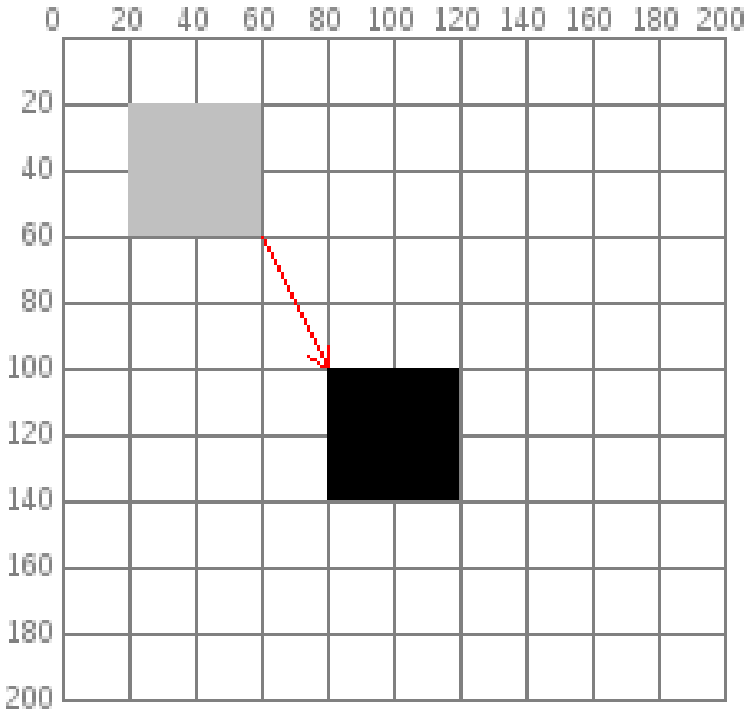
Figure 2: Horizontal maze

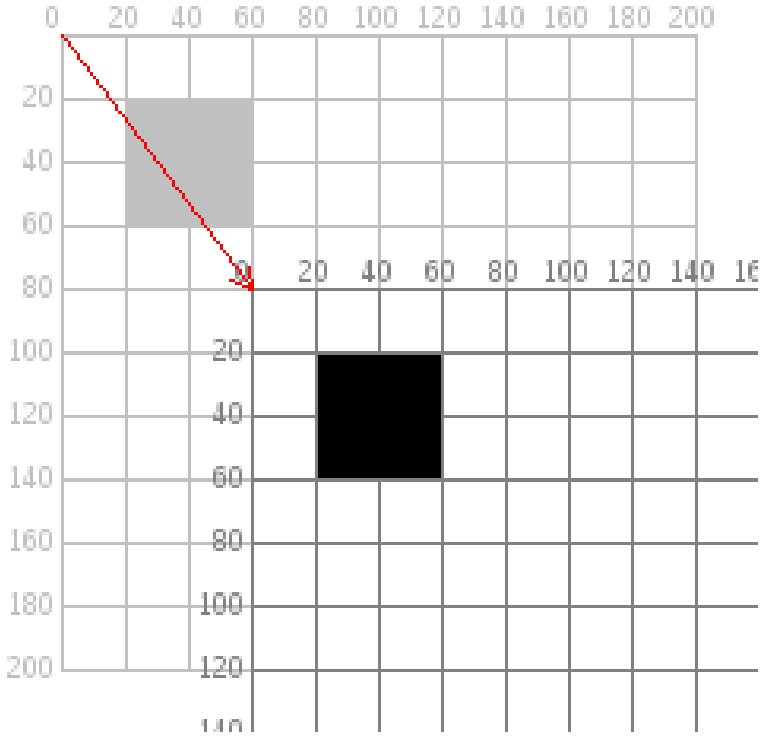
How did it go?

- Use `save` to save a screenshot
- You can start a git repo locally rather than clone it using `git init`

Transformations

- We can move things, or we can move coordinate systems





Equivalent output

- Direct method:

```
rect(x, y, w, h)
```

- Indirect method:

```
pushMatrix()
translate(x, y)
rect(0, 0, w, h)
popMatrix()
```

Is this useful?

If we've created a function like this:

```
def house():
  triangle(15, 0, 0, 15, 30, 15)
  rect(0, 15, 30, 30)
  rect(12, 30, 10, 15)
```

We can move the house around with:

```
pushMatrix()
translate(x, y)
house()
popMatrix()
```

Transformations

- `translate(x, y)`
- `rotate(radians)`: note 180 degrees = `PI` radians
- `size(scalex, scaley)`: also scales lines

Let's make a tree!

- Our tree is going to be thin at the top, wide at the bottom
- It's going to have diamond shaped decorations
- Some decorations are going to be bigger than others
- A diamond is a rectangle rotated 45 degrees
- Use `translate`, `rotate` and `scale`
- Stretch: add sparkles to your tree

My tree

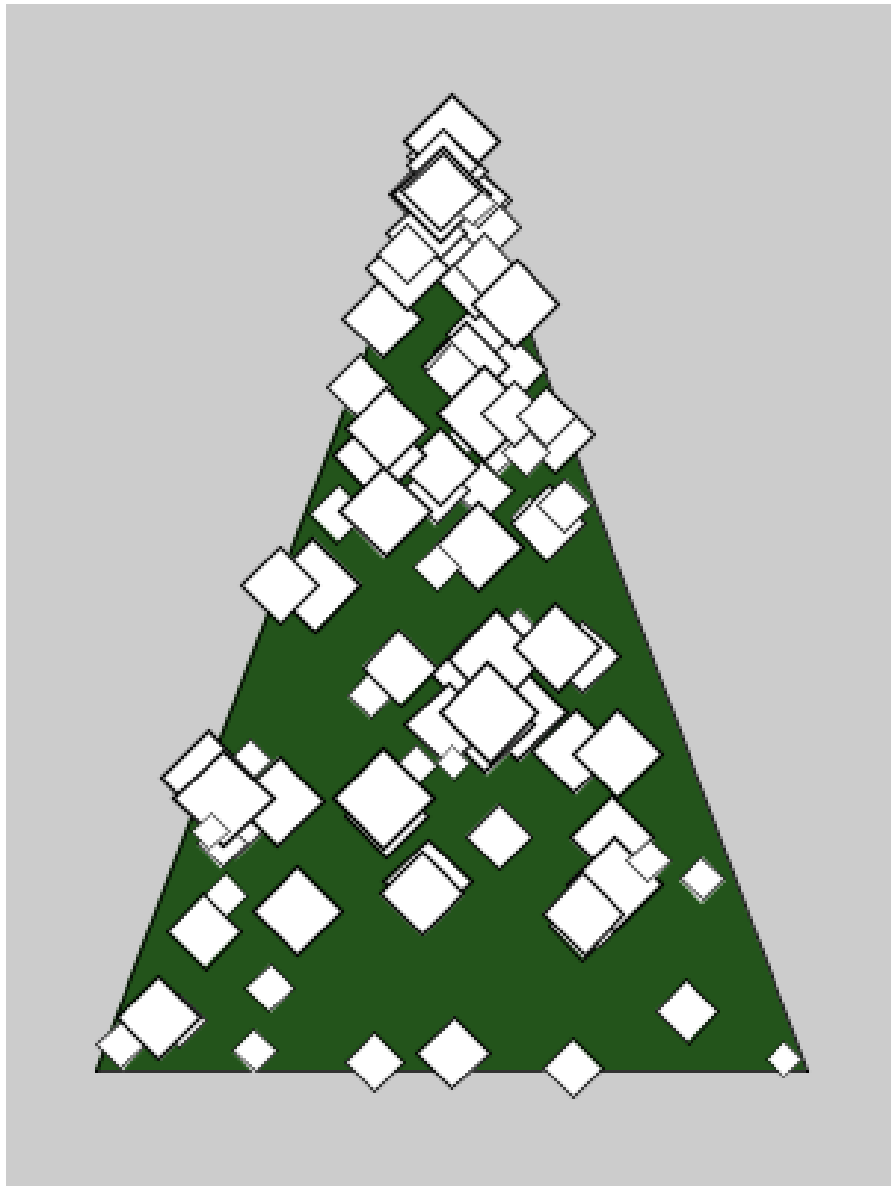


Figure 3: Tree