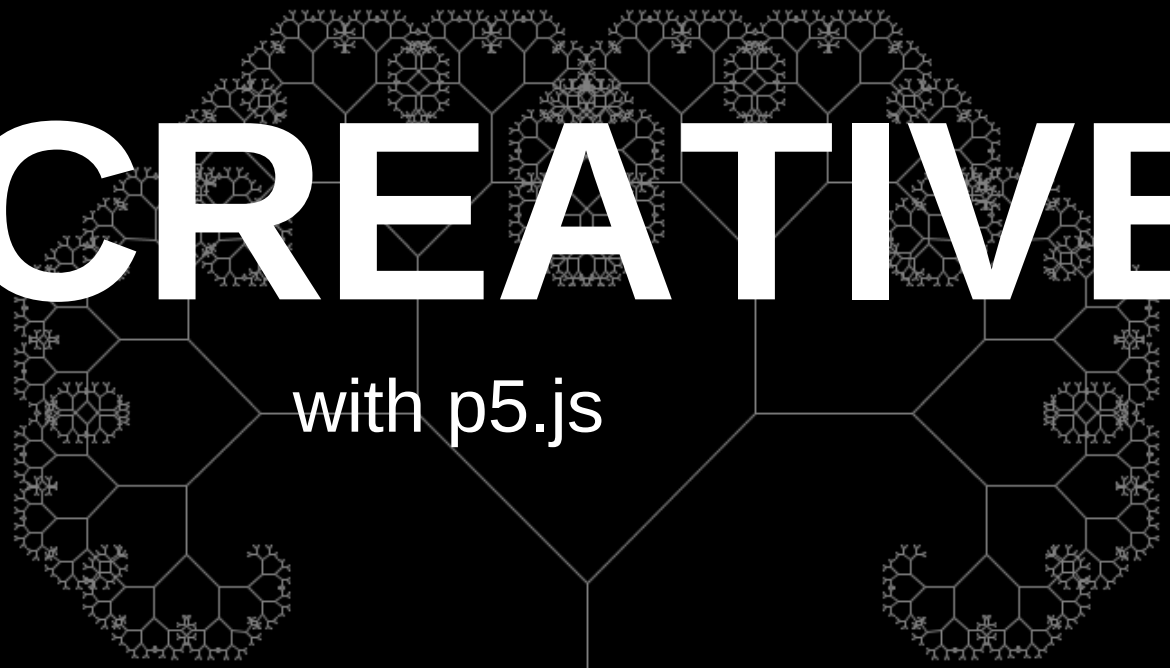
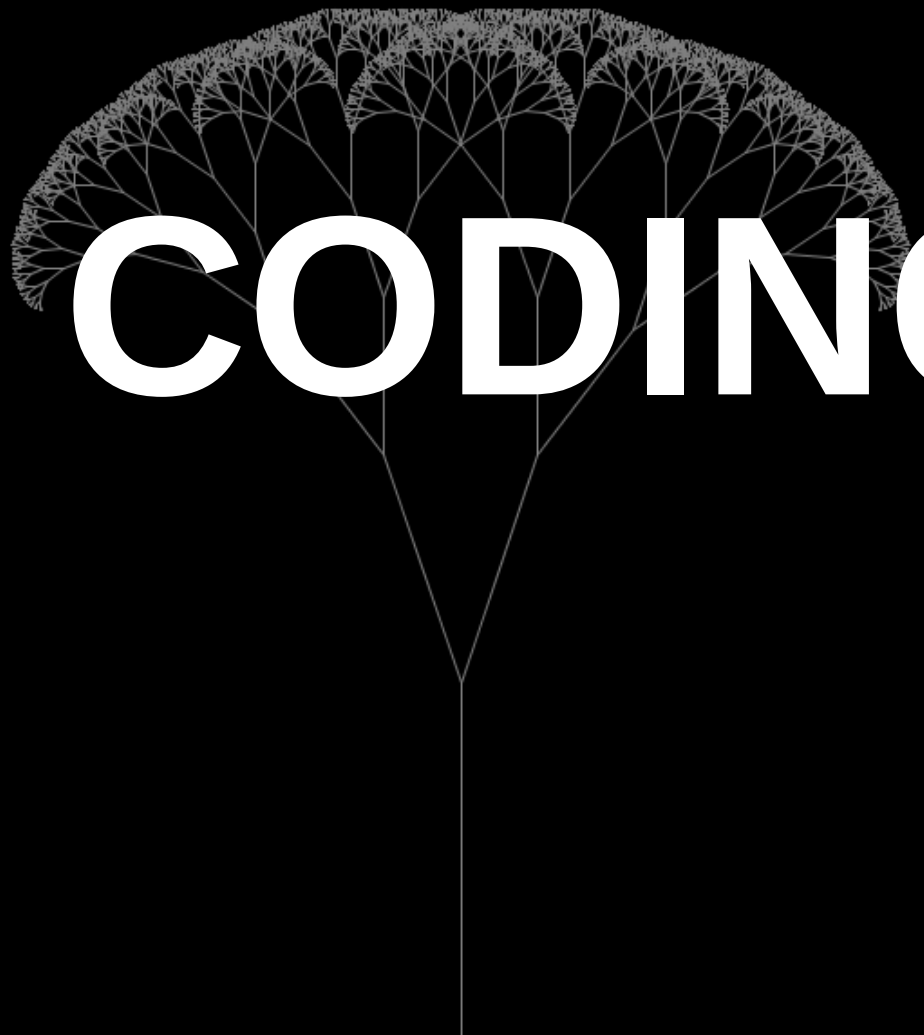
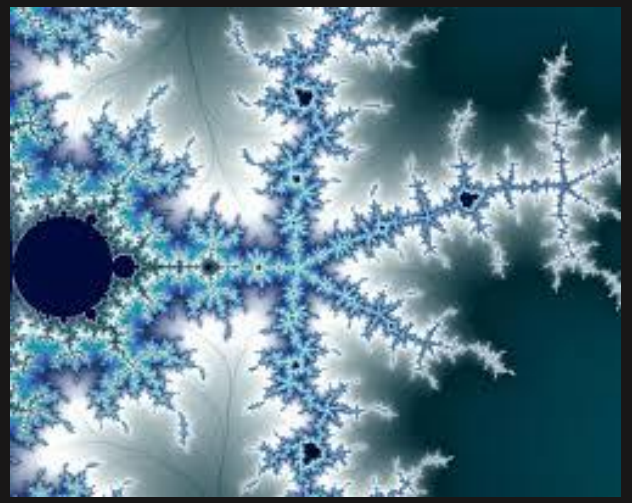
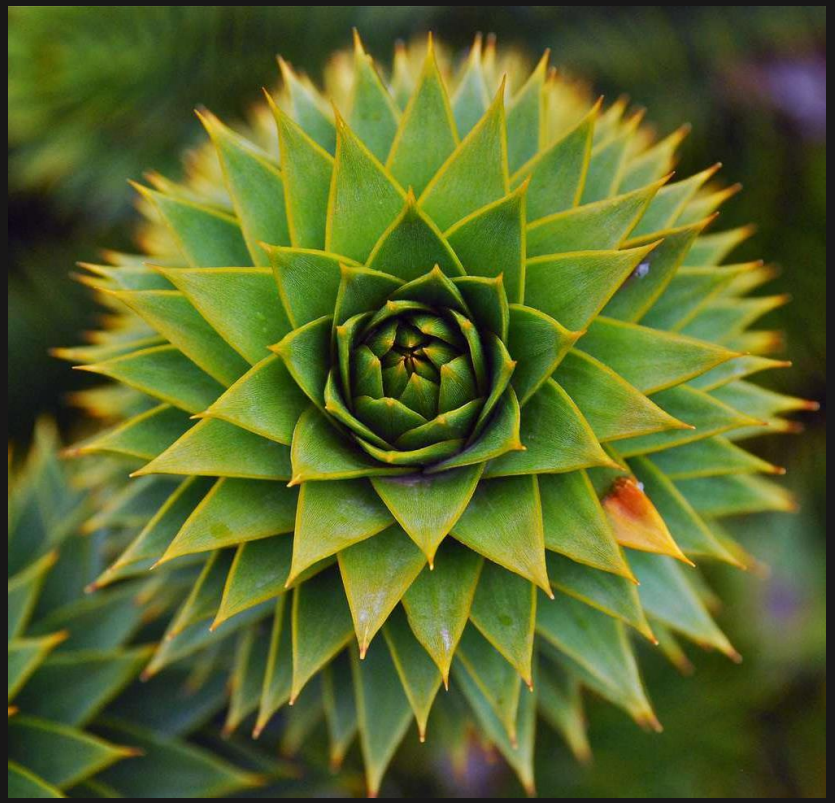


CREATIVE CODING

with p5.js



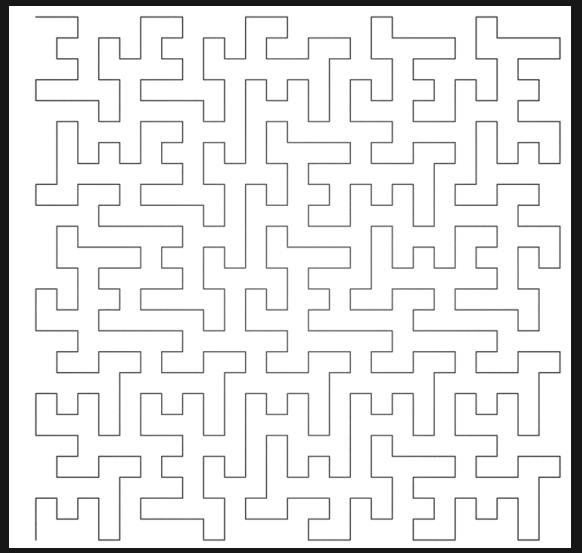
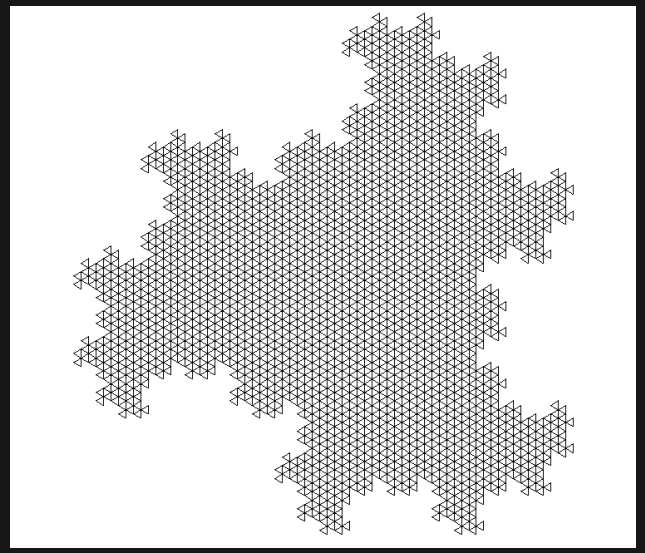
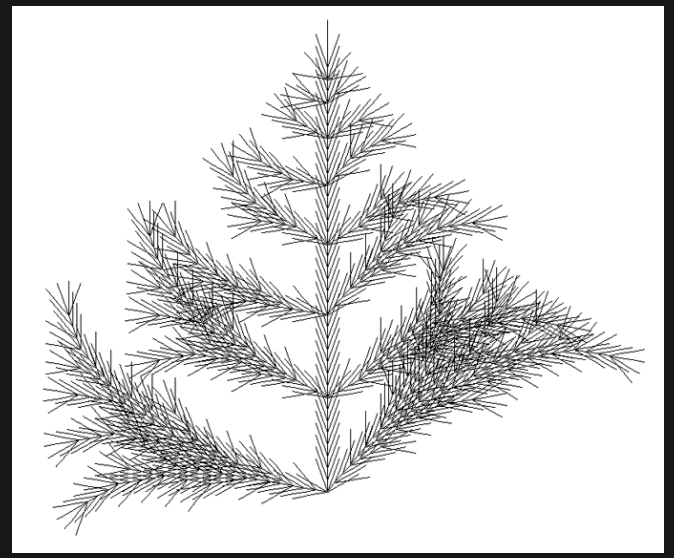
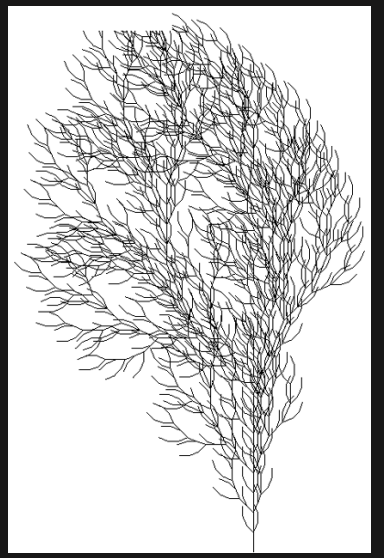




https://www.wired.com/2010/09/fractal-patterns-in-nature/
https://www.treehugger.com/amazing-fractals-found-in-nature-4868776
https://cosmosmagazine.com/science/mathematics/fractals-in-nature/

Lindenmayer system (L-Systems)

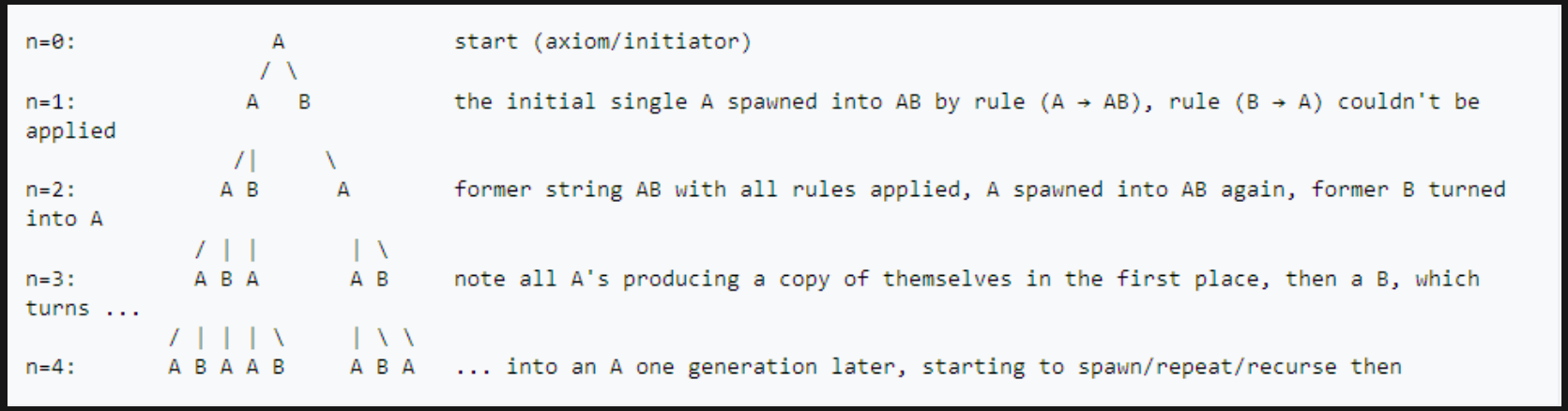
- Developed by Aristid Lindenmayer in 1968
- Used L-Systems to model growth process of plant development
- Can be used to generate fractals which are self-similar

http://paulbourke.net/fractals/lsys/

Modelling growth of algae

- Axiom
  - This is the starting point
  - ‘A’
- Symbols, variables, alphabet
  - ‘A B’
- Rules, Ruleset
  - A = AB
  - B = A

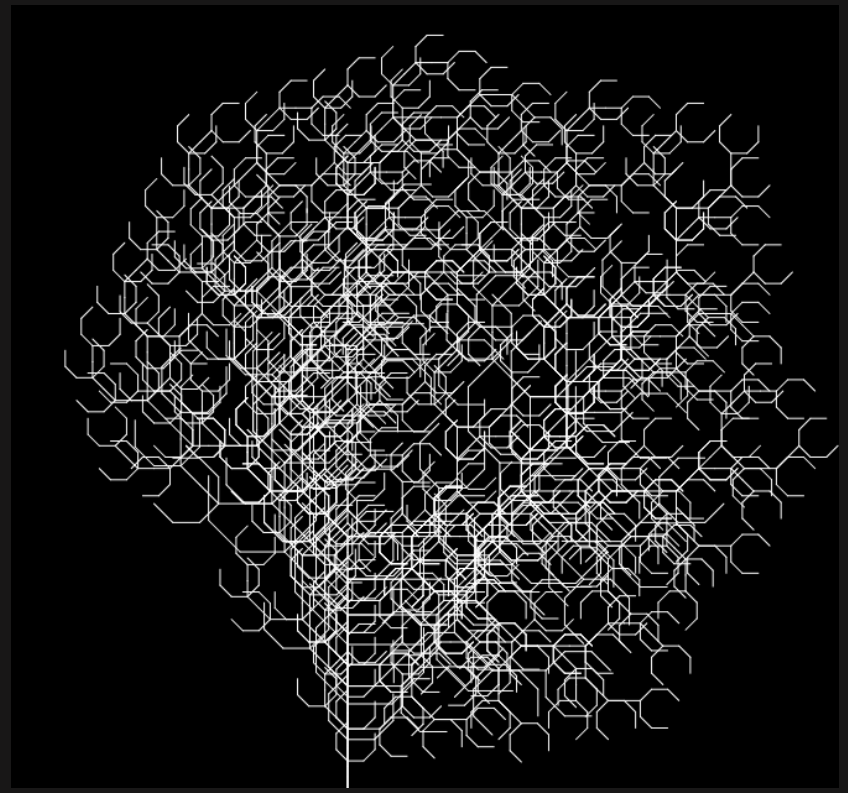


https://en.wikipedia.org/wiki/L-system

L-System

- Axiom
  - This is the starting point
  - ‘F’
- Symbols, variables, alphabet
  - "FF+[+F-F-F]-[-F+F+F]’
- Rules, ruleset
  - F = Move forward by line length drawing a line
  - + = Turn left by turning angle
  - - = Turn right by turning angle
  - [= Push current drawing state onto stack
  -] = Pop current drawing state from the stack
  - And many more!

http://paulbourke.net/fractals/lsys/



Hints

- Stop the program at some point or iterations.
- Instead of draw(), implement the logic first in setup() and run it by the mousePressed()-event.
- Check from and where to you draw lines. You might need to adjust the coordinate system each iteration with translate.

References

- Explanation and implementation by Daniel Shiffman
  - https://www.youtube.com/watch?v=E1B4UoSQMFw
- Ruleset and lots of L-Systems
  - http://paulbourke.net/fractals/lsys/
- Push, (pop):
  - https://p5js.org/reference/p5/push/
- Translate
  - https://p5js.org/reference/p5/translate/

Tasks

Develop a L-System:

- Define the ruleset according to http://paulbourke.net/fractals/lsys/
  - You don’t have to implement all the rules, but atleast the rules for ‘F’, ‘f’, ‘+’, ‘-’, ‘[‘ and ’]’
- Implement at least four different fractals, like
  - Crystal
  - Sierpinski Arrowhead
  - Etc.
- Create or modify atleast two L-Systems, where you experiment with two of the following (one for each system or more):
  - Colors
  - StrokeWeight
  - Interactivity
  - Randomness
  - Other ideas?