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# ECT Pencil Code Program: Chaos Game

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## At a glance...

**Core subject(s)** Mathematics; Computer Science

**Subject area(s)** Arithmetic; Programming  
Fundamentals

**Suggested age** 8 to 18 years old

## Overview

Use this program to run the "chaos game", randomly moving the turtle to create a pattern (for more information on this game, search "chaos game"). Have students analyze or fill in or change parts of the program. This program could be used to further your understanding of how you could use Pencil Code in the classroom, as a demonstration or discussion with your students, or as a way to introduce various **CT concepts**, such as pattern recognition or abstraction, to your students by inviting them to extend the existing functionality of the program.

## Pencil Code Program

Copy/Paste the following program into a 'Blank Editor' on the Pencil Code website ([new.pencilcode.net](http://new.pencilcode.net))

```
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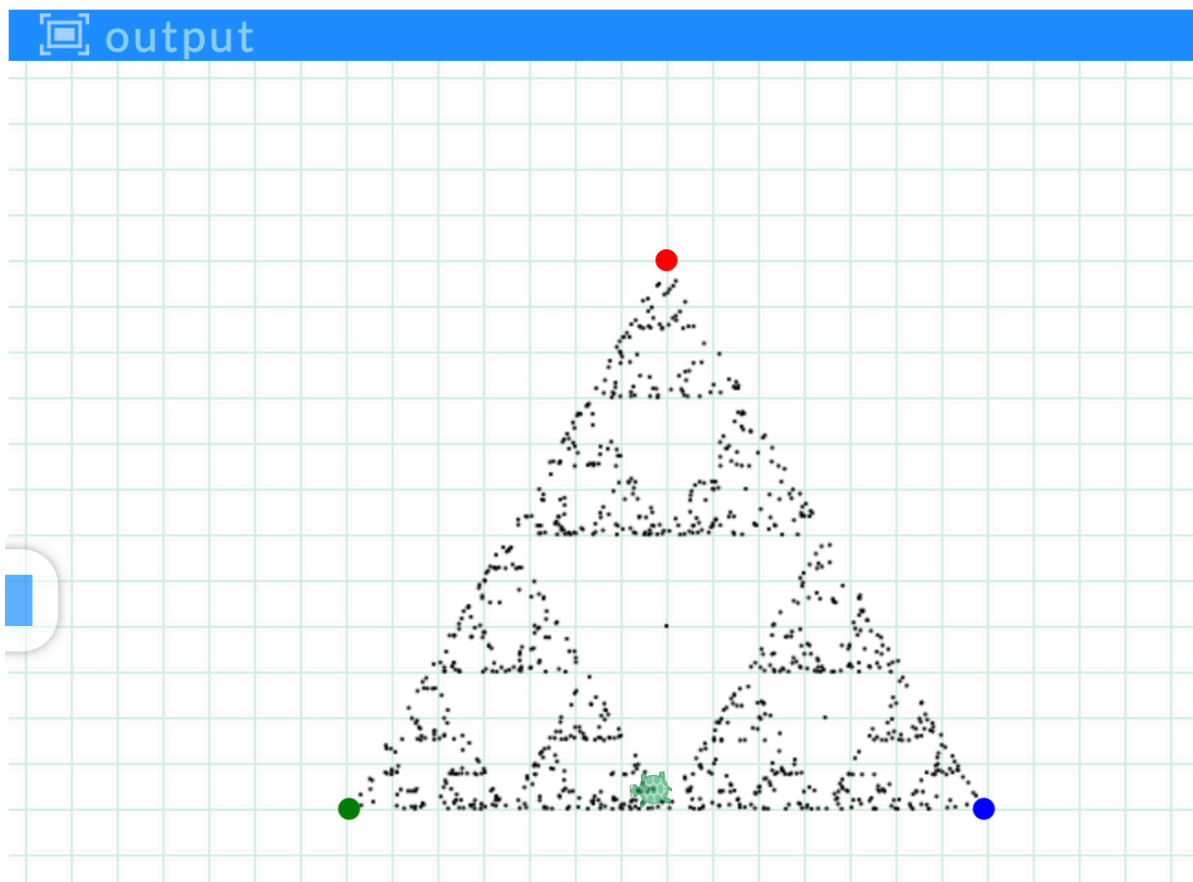
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# limitations under the License.

v = [
  new Sprite('red dot').fd(200)
  new Sprite('blue dot').rt(120).fd(200)
  new Sprite('green dot').lt(120).fd(200)
]

speed 1000
for [1..2000]
  p = random v
  turnto p
  fd distance(p) * 0.5
  dot black, 2
  await done defer()
```

## Sample Output



## Additional Information and Resources

### Computational Thinking Concepts\*

Concept	Definition
<b>Abstraction</b>	Identifying and extracting relevant information to define main idea(s)
<b>Pattern Recognition</b>	Observing patterns, trends, and regularities in data

\* Explore the [Computational Thinking Concepts Guide](#) for a list of the CT concepts noted on ECT, including tips for implementing each concept in your classroom

### Additional Resource Links

- Visit <http://pencilcode.net/> to explore the Pencil Code development environment
- See [Pencil Code: A Programming Primer](#) for more than 100 example programs written in [CoffeeScript](#)

### Administrative Details

**Contact info** For more info about Exploring Computational Thinking (ECT), visit the ECT website ([g.co/exploringCT](http://g.co/exploringCT))

**Credits** Developed by the Exploring Computational Thinking team at Google and reviewed by K-12 educators from around the world.

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