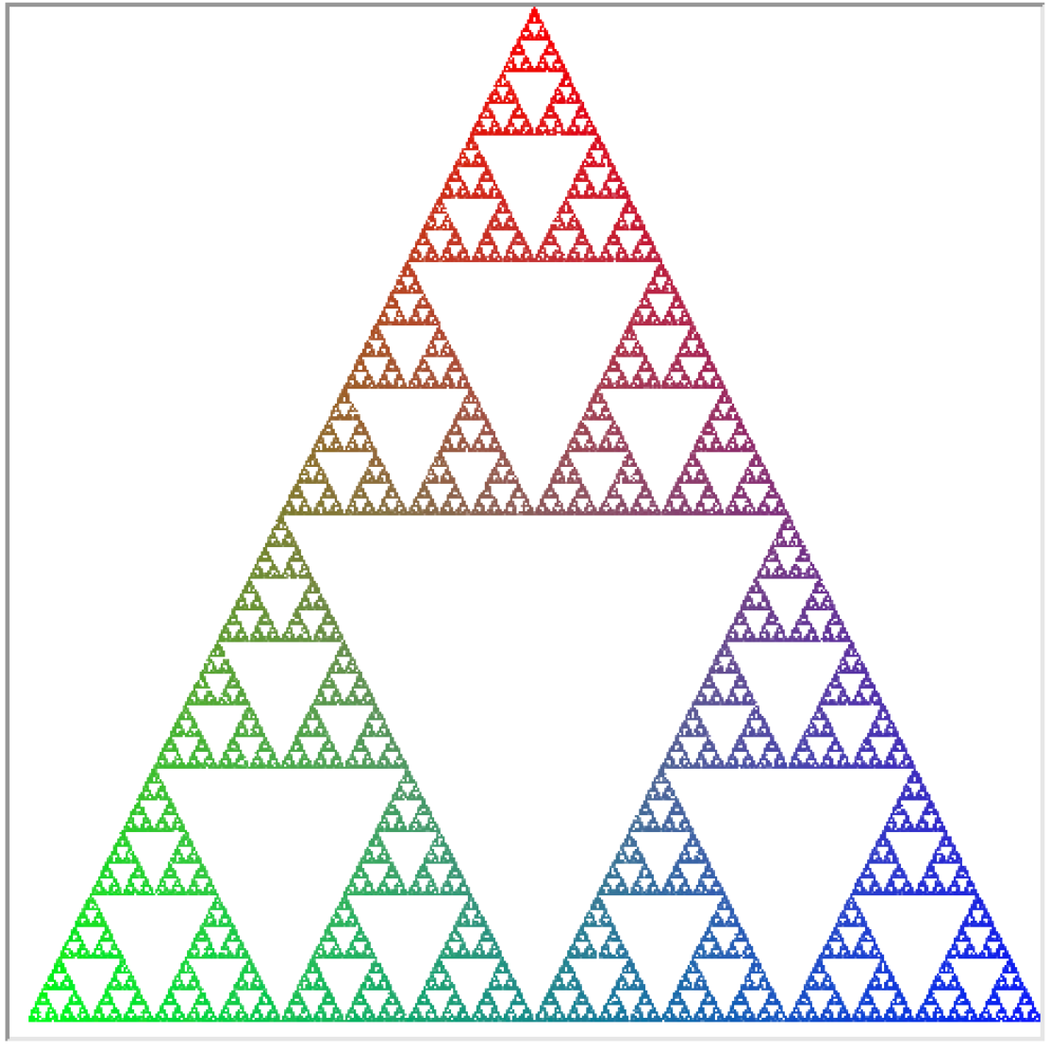

CSCI 141

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Managing Complexity with Functions

Goals

- Understand the task assigned in A4 and how to approach it.
- Be able to break a large problem into smaller subproblems, solve each subproblem using a function, and compose the functions together into a solution to the original, larger problem.

Why are functions great?

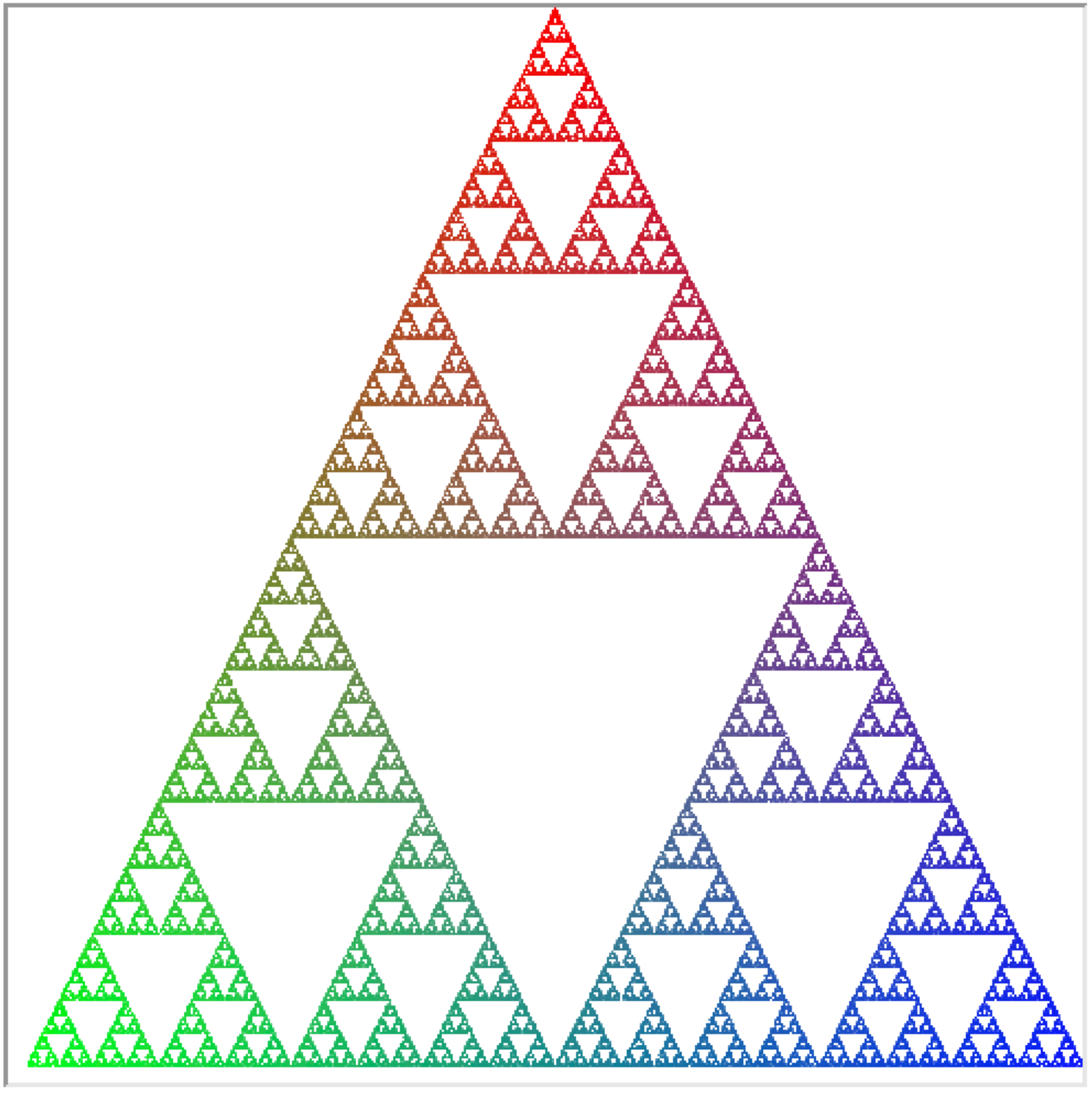
- **Concise** - wrap something complicated in an easy-to-use package:
    - define a function once then easily call it anywhere
- **Customizable** - make the easy-to-use package do different things:
    - customize the task your function performs based on its arguments
- **Composable** - use the result of one computation as input to (or as one step in) another.

A4

Your task:
Draw this.

Sounds simple, right?

No.



A4: Pseudocode

```
# Let p be a random corner of the triangle
# loop 10000 times:
#     c = a random corner of the triangle
#     m = the midpoint between p and c
#     choose a color for m
#     color the pixel at m
#     p=m
```

This pseudocode draws that crazy triangle thing.

Do you believe me?

(demo)

A4: Demo

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A4: Demo

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```

Demo - approach:

- invent functions to perform each step
- implement and test all the functions
- use the functions to implement the pseudocode