CSCI 141
Scott Wehrwein
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.
Your task:
Draw this.

Sounds simple, right?

No.
This pseudocode draws that crazy triangle thing.

Do you believe me?

(demo)
# 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
Demo - approach:

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

```python
# 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
```