The goal of these notes is to help you understand the stochastic L-systems that are supplied as part of Lab 9.

Symbols in drawString

To make sysTree2.txt and sysTree3.txt work, we need the following symbols supported by Interpreter .drawString.

- F and f must both mean “forward by the (modified) distance”
- L must draw a leaf whose size can be scaled by a modifier.
- ! must handle the width. If there is no modifier, then it should decrease the width by 1 (being careful not to reduce it below 1). If there is a modifier, then it should set the width to the value of the modifier.

To draw these trees, a good value for distance is 1.
Understanding sysTree3.txt

Here is the first example L-system:

base (50) F
rule F (50) f ![30) −F<g(5)L> ![40) +F<g(5)L> !F
rule (x)f (1.5±x)f (1.25±x)f (1.7±x)f
rule (x)− (x*1.2)− (x*0.8)− (x*1.05)− (x*1.0)− (x*0.95)− (x*0.87)− (x*1.12)−
rule (x)+ (x*1.2)+ (x*0.8)+ (x*1.05)+ (x*1.0)+ (x*0.95)+ (x*0.87)+ (x*1.12)+

And the observations we made about it:

- Turns, forwards, and leaf-sizes are modified by modifiers.
- The structure of the tree is deterministic (we always move forward and make two branches (or subtrees) to the left and right, and the grown the branch (or subtree) up.
- Distances and angles are stochastic
- The scales in front of F and f should be of comparable sizes.

Understanding sysTree2.txt

Here is the second example L-system:

base (5)!(100) F
rule (x)F (x)F ![+(2* x /3)F<g(5)L> ![−(2* x /3)F<g(5)L> (x)F ![−(2* x /3)F<g(5)L> !F(1* x /2)

And the observations we made about it:

- Turns, forwards, leaf-sizes, and widths are modified by modifiers.
- The structure of the tree is stochastic (we branch forward and left, or forward and right, or left and right).
- Distances are decreased as we branch.