

Lab 3, Thursday, January 21

Use the sample code Lab3-edgetest.nlogo to create pairs of linked vertices different distances apart with the red vertex on the left, and the blue vertex on the right. (**Note** that wrapping is turned off in the world. *Do you know why this is important? Try turning wrapping on, and hit setup a few times and observe what happens. Then be sure to turn wrapping off.*)

Now add to the links a weight instance variable, and assign to each link a random positive integer weight from 1..100. So the links have both Euclidean lengths and weights which are not in general the same.

Write three different procedures, each of which starts one turtle (called a traverser) on each red vertex, and moves all the traverser simultaneously to the linked blue vertex. The turtles should end exactly at the blue vertex, and then die. At the start of the movement, the links should be red and thin. When the turtle arrives, the link should get thicker and blue to show it has been traversed. The three procedures are described below. Take turns sharing code and then swapping roles. Do not use the speed slider to control the perceived speed of the turtles. Use instead the distance that each turtles moves at each time step.

- **Same-speed.** The turtles should all move at the same speed, going forward .01 at each time step except possibly the last time step. The turtle should end exactly at the blue vertex so the final step may have to be shorter. How do you accomplish that? How do you move the traversers without moving the vertices?

SWAP ROLES

- **Same-time.** Move the turtles so that they all end up at their blue vertex on the same time step regardless of the distance from red to blue vertex. They should move in small enough increments that it looks like they are all moving at the same time. They should all end up exactly on the blue vertex at the same time step (even with roundoff error of floating point arithmetic.)
- **Weight-based-time:** Move the turtles so that the time (number of steps) it takes to travel from the red to blue vertex is proportional to weight of the edge (not the Euclidean length of the edge.) So that a turtle traveling an edge of weight 8 should take exactly twice as many steps as a turtle traveling an edge of weight 4. Turtles should arrive exactly at their destination on the final step and then die.

You do not need to submit Lab 3. But you need to submit the HW below. You will use what you learn in Lab 3 for HW1. See next page for HW1.