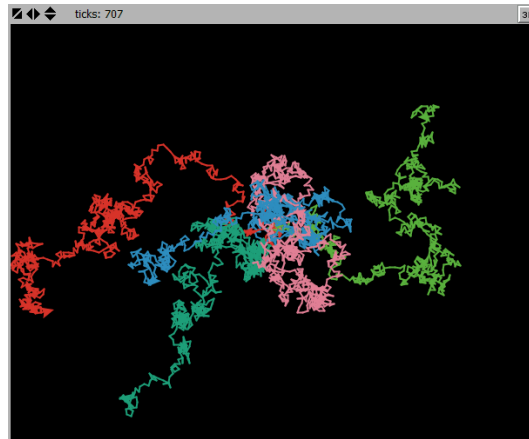


## Lab 2: NetLogo Experiments in the Random Walk and Wiggle Motion



There are two NetLogo video lectures this week:

- 1) NetLogo and the Random Walk
- 2) NetLogo and Wiggle Motion

The "NetLogo and the Random Walk" fully develops the code you will be entering, running and using in your first experiment. You will also be adding an additional slider to the Brownian motion simulation developed in the "NetLogo and Wiggle Motion" video.

Even though the Random Walk code is fully developed in the video, it remains part of this assignment for each student to type that code and get it to run. This simple exercise, other than encouraging you to actually watch the video, will provide practice in helping you to get used to parts of a NetLogo program that NetLogo is very picky about: for example, a missing space between an = and an identifier will cause the whole program not to work.

Enter the Wiggle Motion code as developed in the video. The version developed has one slider that sets the limit of both the left and right turn angle. Your task is to add a second slider so that the left turn maximum angle and right turn maximum angle can be controlled separately.

### Grading Rubric [20 points total]:

**[2 points]:** Attached two files in Blackboard Learn with the file names:

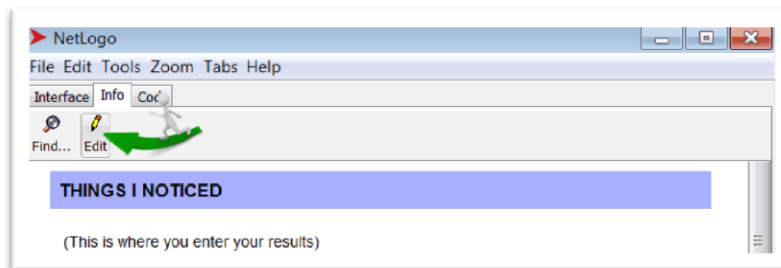
- 1) **RandomWalk** .*firstname.lastname* .nlogo
- 2) **Wiggle** .*firstname.lastname* .nlogo

**Note:** DO NOT copy and paste your source code into Blackboard Learn. You must *attach* the NetLogo source file.

\*\*\*\*\* After attaching, you MUST CLICK **SUBMIT** \*\*\*\*\*

**[2 points]:** The "info" section of each your programs includes your name, the date and a description of what the program does.

**[6 points]:** The Run your random walk code with three different values for the distance test. For each of the three values, let the program run until the turtle reaches the edge at least 25 times. The number of ticks for each of these 25 times is displayed in the "Command Center". For each of the three distance values, calculate the average number of ticks displayed in "Command Center". Note: You can calculate the average by entering the values into a calculator or by copy/paste into a spreadsheet program.



In the "info" tab of your `RandomWalk.firstname.lastname.nlogo` file, change the heading "THINGS TO NOTICE" to "THINGS I NOTICED". Then, under this new heading, enter a summary of your results and answer the following questions: What generalizations can you make from this data? Do you think 25 data points at each distance was enough? Why or why not? What patterns can you notice in the results?

**[4 points]:** Your version of `Wiggle.firstname.lastname.nlogo` must include sliders that independently control the random range of turn left and turn right.

**[6 points]:** Within the "info" tab of your program, report the design and results of experiments you conducted with the goal of answering the following questions:

- a) What patterns develop when the random range of the left turn left is not equal to that of the right turn?
- b) How different do these limits need to be before they are manifest in the random wiggle shapes? Are there any thresholds (points of sudden change) to these patterns or do they seem more of a continuum?