Lab 1, Monday, January 19

With your lab partner(s)

Take turns. Do the following exercises. For each exercise, one person should share their screen with NetLogo running. The other person(s) leave open the NetLogo dictionary and communicate ideas.

Exercise 1: Create a game of "tag" with 11 agents. 1 agent (a red turtle) tries to chase and tag each of the other agents (10 blue turtles.) The blue turtles try to avoid being tagged.

1. Create a **<setup>** button that initializes the world with 11 turtles in random locations. 10 turtles should be blue and 1 should be red. Create a **<go>** button that starts the red turtle trying to tag the blue turtles.
2. The red turtle should have a slightly faster speed than the other turtles. **Hint**: create a speed instance variable for each turtle, and at teach time step each turtle should **`fd speed`**. When you run the simulation, you experiment with the speeds of the turtles to make the game easy to view.
3. The red turtle should chase blue turtles. If the red turtle gets close to a blue turtle, it tags it. If the red turtle tags a blue turtle, the blue turtle turns white. Once a turtle is white, the red turtle can ignore it. **Discuss as lab partners:** What are some different ways to define "close" means and how can we implement getting "tagged"? Consider at least two different approaches.
4. Non-red turtles should move randomly (wander) except when red turtle is close, at which point blue turtles should try to avoid the red turtle.
5. When there are no more blue turtles, the red turtle wins.

[SWAP ROLES] Whoever wrote the code for Exercise 1 should send that code to the other person.

Exercise 2: Make the game more interesting by considering the following:

- The red turtle can move 5% faster than blue turtles, but blue turtles have a slightly sharper turning radius.
- What blue turtle strategy makes it difficult for even the faster red turtle to catch the blue turtle?
- Make the game a freeze tag game. White turtles cannot move until another blue turtle tags it. **Experiment**: What strategies work for red and blue? What rules make for a fair and interesting game—possible but not too easy for red to eventually freeze all the blue?

SUBMIT: Name your final freeze tag game as follows: **`Lab1-Name1Name2.nlogo`**. Submit the final freeze tag game to the drop-box before the next class period. Labs are not formally graded, but will be marked for full credit or no credit (or possible partial credit).