

## Basic Patch Interactions

1. Ask patch 0 0 to set its patch color to red.
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#ask>
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#set>
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#pcolor>
2. Ask all patches to turn white.
3. Ask a random patch to turn red.
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#one-of>
4. How many patches are there?
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#count>

## Further Patch Interactions

5. Ask all patches to the left of the origin to turn red.
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#with>
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#pxcor>
6. Give patches a new attribute, wealth.
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#patches-own>
7. Set the wealth of each patch to a random integer between 0 and 100 (inclusive).
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#random>
8. What is their total wealth?
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#sum>
9. Make a list of all patches, in random order.
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#self>
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#of>
10. Make a list of all patch wealths, in the same order as your list of patches.
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#map>

## Basic Turtle Interactions

11. Enter the clear-all command to start from scratch.
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#clear-all>
12. Create 18 turtles. (Where are they?)
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#create-turtles>
13. Ask your turtles to move forward by 4.
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#jump>
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#forward>
14. Create 18 ordered turtles. Ask your turtles to move forward by 4.
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#create-ordered-turtles>
15. Ask all your turtles to make a 70 degree right turn around their center.
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#right>
16. Change the shape of your turtles to "square 2".
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#shape>

## Basic Turtle Interactions

17. Give turtles a new attribute, wealth.
  - <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#turtles-own>
18. Write an observer procedure named setup that does the following:

- Calls clear-all. <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#clear-all>
  - Asks each patch to sprout one turtle. <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#sprout>
  - Asks each turtle to turn a random color, either red, white, or blue. <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#one-of>
  - Sets the wealth of each turtle to a random floating-point between 0 and 100. <http://ccl.northwestern.edu/netlogo/docs/dictionary.html#random-float>
19. Write an observer procedure named go that does the following:
- Chooses a single random number between 0.8 and 1.2 and stores it in a local variable. (As a convention, let the names of all local variables begin with a percent sign (%). The mnemonic is that this looks vaguely like a script L, for “local”.)  
<http://ccl.northwestern.edu/netlogo/docs/dictionary.html#let>  
<http://ccl.northwestern.edu/netlogo/docs/dictionary.html#random-float>
  - Multiplies each turtle’s wealth by this randomly chosen number.
  - Asks each turtle with a wealth less than 50 to die.  
<http://ccl.northwestern.edu/netlogo/docs/dictionary.html#with>  
<http://ccl.northwestern.edu/netlogo/docs/dictionary.html#die>
20. From the Command Center, call setup, and then call go 50 times. (Try this a few times.)
- How many turtles are left?  
<http://ccl.northwestern.edu/netlogo/docs/dictionary.html#count>
  - What is their total wealth?  
<http://ccl.northwestern.edu/netlogo/docs/dictionary.html#sum>
  - Ask each turtle to turn a shade of red that represents its wealth.  
<http://ccl.northwestern.edu/netlogo/docs/dictionary.html#scale-color>

## Galavanting Students Exercise

In **galavanting-students.nlogo** you can find a really simple implementation of a (not-so-funny) game (it is my creation, do not judge!!).

In this game we have: one university, a number of students and a number of professors.

The students are already split in two categories: **studying** and **galavanting**.

The studying students, as the name suggests, are diligent and go to the university.  
 The galavanting students go outside the school losing their precious time.

The professors have the objective to convince all the galavanting students to study.

If you run the game, you can notice that some aspects are already implemented, you have to complete the body of all empty functions (search TO-DO inside the text).

### PS: Take care of distractions!

If you click on the environment a distraction will be generated and all galavanting students will go there to have a party! This information could be useful in the development of smart students and professors. Just for clarity, professors do not like parties! ;-)