Department of City and Regional Planning CPLN 675

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**Netlogo Module Packet**

Land Use & Env. Modeling

Spring, 2022

**Netlogo demo code**

observer> ask patches [set pcolor red]

observer> ask patches [set pcolor one-of [blue red green]]

observer> ask patch -6 4 [set pcolor white]

observer> ca

observer> ask patches [set pcolor one-of [blue red green]]

observer> clear-all

patches> set pcolor red

observer> ca

patches> set pcolor red

observer> ca

observer> crt 1

turtles> set size 5

observer> ask turtles [set size 1]

observer> ask turtles [set size 5]

observer> ask turtles [set shape "turtle"]

turtles> fd 1

turtles> rt 90

turtles> move-to patch 10 5

turtles> move-to patch 0 0

turtles> pd fd 5

observer> clear-drawing

observer> ask turtles [pd repeat 20 [fd 1 rt 2]]

observer> clear-drawing

observer> ask turtles [pd repeat 20 [fd 1 rt 22]]

observer> ask turtles [repeat 20 [move-to one-of patches pd repeat 20 [fd 1 rt 22] pu]]

observer> clear-drawing

observer> ask turtles [repeat 20 [set color random color move-to one-of patches pd repeat 20 [fd 1 rt 22] pu]]

observer> ask turtles [repeat 20 [set color random color move-to one-of patches pd repeat 20 [fd 1 rt 22] pu]]

observer> ask turtles [repeat 20 [set color random color move-to one-of patches pd repeat 20 [fd 1 rt 22] pu]]

observer> clear-drawing

observer> ask turtles [repeat 20 [set color one-of [red blue green magenta]pd repeat 20 [fd 1 rt one-of [22 -22 15 -15]] pu]]

observer> clear-drawing

observer> ask turtles [repeat 200 [set color one-of [red blue green magenta]pd repeat 20 [fd 1 rt one-of [22 -22 15 -15]] pu]]

observer> clear-drawing

observer> ca

observer> ask patches [set pcolor one-of [red blue green magenta]]

**observer> print "now I want to put white turtles on top of all green patches without having any extra turtles"**

now I want to put white turtles on top of all green patches without having any extra turtles

observer> print count patches with [pcolor = green]

261

observer> crt 261

observer> ask turtles [set color white]

observer> move-to one-of patches with [pcolor = green]

observer> ask turtles [move-to one-of patches with [pcolor = green]]

create a “clear all” button

**observer> print "lets ask some questions about turtle counts on patches"**

lets ask some questions about turtle counts on patches

observer> ask patch 0 0 [print patches with [count turtles-here > 1]]

ask patches with [count turtles-here > 1] [set pcolor black]

**observer> print "now how do I actually get just one turtle on one green patch?"**

observer> ask turtles [move-to one-of patches with [pcolor = green and count turtles-here = 0]]

observer> ask turtles [face patch 0 0]

observer> ask turtles [set heading 180]

observer> ask turtles [set heading 90]

observer> ask turtles [face patch 0 0]

observer> ask turtles [set heading heading + 180]

observer> ask turtles [set heading random 360]

observer> **print "now I want to ask turtles who are in the top half of the board to move to a blue space"**

observer> let y turtles with [pycor >= 0] print y

(agentset, 133 turtles)

observer> let y turtles with [pycor >= 0] ask y [move-to one-of patches with [pcolor = blue]]

observer> ask turtles [move-to one-of patches with [pcolor = green and count turtles-here = 0]]

observer> let y turtles with [pycor >= 0] print y

(agentset, 133 turtles)

observer> let y turtles with [pycor >= 0] ask y [move-to one-of patches with [pcolor = blue and pycor >= 0]]

**Zombies model – some hints**

Follow the below instructions when building your model. Any word in bold is an actual netlogo command. I’ve italicized words to indicate that I’m being coy and asking you to think about how to solve this aspect of the simulation. Don’t forget to refer often to the Netlogo help.

-You need to start by specifying the two **breed**s in the model, ‘humans’ and ‘zombies’.

-Our first routine is `**to setup**`, where you will first need to clear the board and **create** 200 humans.

-Then **ask**humans **set** their **color** white and move to (**move-to)**an empty patch.

-Then create 1 zombie, set their color red and also move to an empty patch

-The last part of the setup routine is to call a program we will define below called “Setup Plot” (you can save this for the end).

-Don’t forget you need an **end** statement at the end of the setup routine.

-Now create a new routine called “go”

-the first thing you need to do here is to include a line of code that tells the simulation to **stop** when all the humans are dead. This will say ‘**if** the **count** of humans is 0, **stop** the simulation’.

-now we’re going to ask the zombies using the **ifelse** command, ‘**if** the count of humans in my *vicinity*is greater than 0, **face** **one-of** those humans, move toward it (**fd** 1), and if eventually you find a human on your patch, ask that human to convert their breed to zombie and turn the color red.  **Else** (the English here is really ‘otherwise’) turn in a **random** direction and go forward 1 space (zombie is going to have to look somewhere else for a human).

-Now we have to tell the humans to get away from the zombies (within the same ‘go’ routine)

-**If** there are any zombies in my *vicinity*, face the zombie, set your **heading**, heading + 180 degrees (ie turn around), then go forward 2 (twice as fast as the zombies can move).  **Else,**turn in a random direction and go forward 1.

-Insert a line to call the routine ‘update-plot’

-insert the word **tick** – this keeps tracks of the number of turns in the simulation.

-Finally, to understand what is going on with the two plotting routines.  I’m not going to say much beyond the following.

-to create a plot in your model, go to the ‘Interface’ tab, right click on some white space and click on ‘Plot’

-Read about plotting in the NetLogo help tutorial.

-Open up a new NetLogo window (from the start menu), go to File -> Models Library -> Code Examples -> choose ‘Plotting Example’.  You can almost copy all this code.

-The last thing you will have to do is to create two buttons in the Interface tab.  One button will be called ‘Setup” and the other “go”.