

Wednesday, August 24th, 2011 – Playing with NetLogo turtle graphics...

observer> cro 16	Create 16 Ordered Turtles (Note: crt creates random direction turtles)
turtles> fd 16	Forward 16 steps using the fd command: fd n steps fd 10 fd 8 fd 5.5
turtles> bk 8	Backward or backup 8 steps: bk n to backup n steps bk 1 or bk 12 or bk 3.5
turtles> set shape "airplane"	Tools menu, Turtle Shapes editor to see the choices of images for the turtle agent.
turtles> set size 3	Set the size of the turtles
turtles> pd	pd for PEN DOWN, i.e. drag your tail and leave a trail, turtle. Turtle graphics!
turtles> fd 3	Draws a line 3 units long, since the pen is down
turtles> pu	pu is Pen Up. No graphics trails is left from here on. No drawing. Tail is up, no trail.
turtles> fd 3	
turtles> pd	
turtles> repeat 4 [fd 2 rt 90 wait 0.5]	Repetition of the statements within the SQUARE brackets [] – 4 times.
turtles> pu	
turtles> bk 10	
turtles> set size 1	set the size of the turtles back to size 1, the default.
turtles> pd	
turtles> square	Teach the turtle a new word so it knows how to do squares.
turtles> repeat 36 [square rt 10]	Draw a spiral of 36 squares. What is 36 times 10?

observer> ca ca is for clear all. The ca command erases all drawing and deletes all turtles.

observer> cro 16 ← *Note: the observer prompt instead of the turtles prompt! VIP!*

turtles> fd 8	
turtles> pd	
turtles> square	
turtles> repeat 36 [square rt 10]	
turtles> pu	
turtles> fd 4	
turtles> ht	Hide Turtles = ht. Use ht to make the turtles invisible.
turtles> st	Show Turtles with the st command.

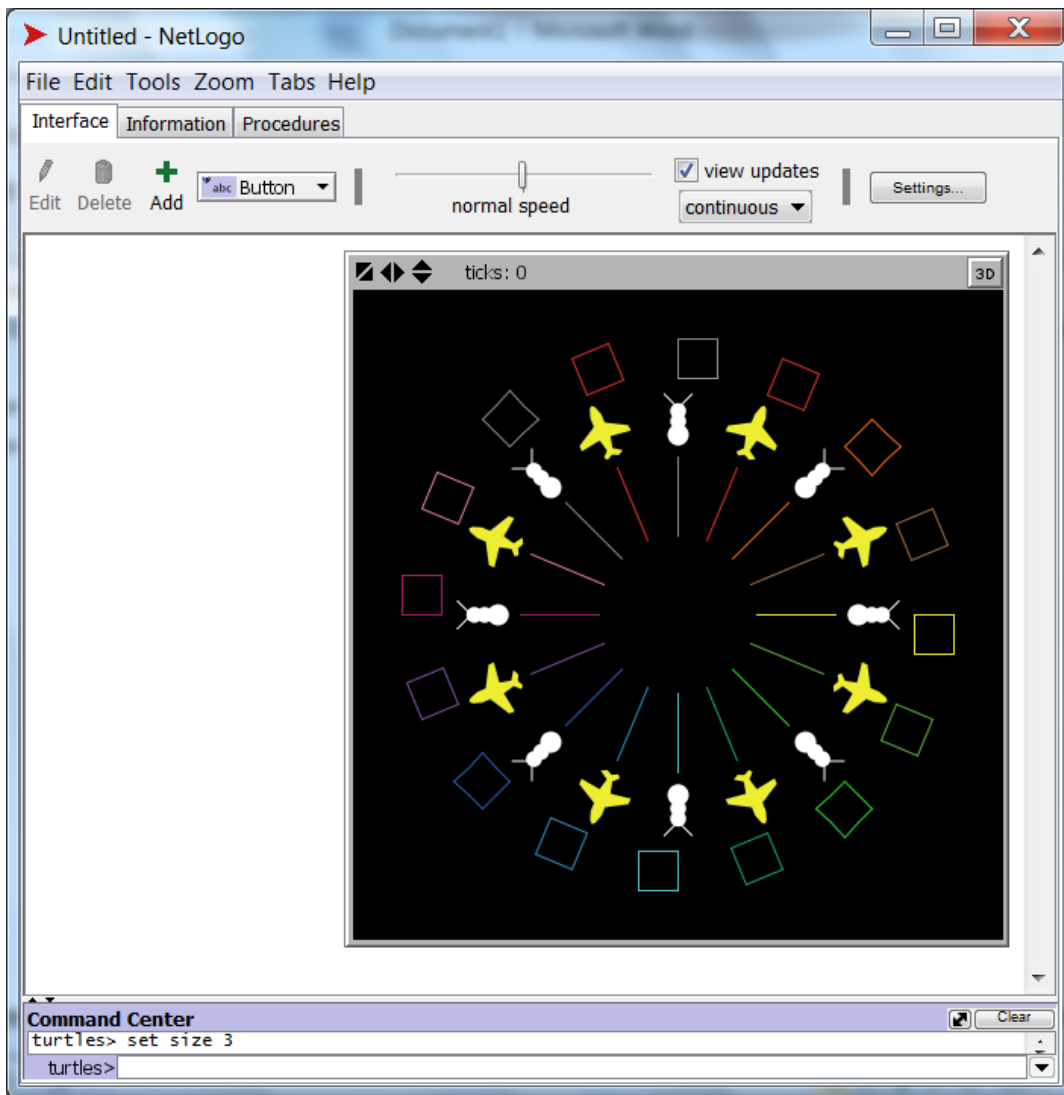
turtles> if xcor > 0 and ycor > 0 [set color white]	← What did this command do?
turtles> if (xcor <= 0) and (ycor <= 0) [set color red]	← What did this one do? Which area of grid got RED turtles?

turtles> if remainder who 2 = 0 [set shape "bug"]	← What did this command do?
turtles> if remainder who 2 = 0 [set shape "bug" set color blue]	

<http://www.cs.uni.edu/~jacobson/logo/applets/Mod3turtlesREMAINDER3.html> ← Try out my if remainder example.

What is the “who number” for a turtle? What are the results when you divide by 3 instead of 2? 0 or 1 or 2 for the remainder. How did we find out a specific who number for a turtle when working in NetLogo?

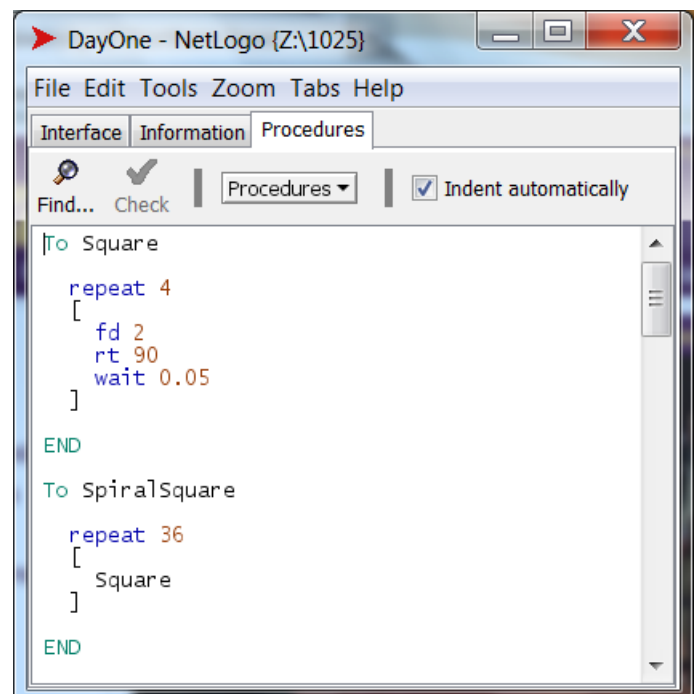
See <http://www.cs.uni.edu/~jacobson/logo/applets/FlyFishing.html> again for another example of using who numbers in combination with if or with ifelse and the remainder operation. Click the Flying and Fishing button to see Airplanes flying and Fish swimming. Click the See All Shapes button to see most of the different turtle shapes that are available.



Here is a 12 minute long video review of using NetLogo from August 29th, 2010.

<http://www.cs.uni.edu/~jacobson/025/f10/v1/LOGOAug29th.html>

Also an email note review: <http://www.cs.uni.edu/~jacobson/025/dayOne025.txt>



If a turtle was facing due NORTH on the grid and at center square, i.e. its position was (0,0), and we told it to move forward 5 units, with fd 5 command, where would it be?

(0, 5) would be the location of the turtle.

Note: WE DID NOT COVER POSITION YET BUT WILL DURING CLASS #4 on MONDAY.

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If a turtle was facing to the left, i.e. to due west on the grid, and at (0, 0) or the default start location for all turtles, and we said:

fd 14

the turtles

location would now be (-14, 0)

bk n	examples	bk 3	tell to turtle to move or walk backwards or back
		bk 14	- - - -
		bk 5	3 or 14 or 5 or 12 steps.
		bk 12	

7. rt n turn right n degrees rt = RightT examples rt 45 rt 90 rt 10

lt n turn left n degrees lt = LeftT examples lt 120 lt 180 lt 14 lt 5

Note: The following two commands would result in exactly the same heading for any turtle, i.e. are two ways of a turtle obeying an about face command:

rt 180 and lt 180

It just depends on whether you want the turtles to turn clockwise
or to turn counterclockwise.

In any case, every computer would do this SO FAST, you would not be able to tell which way the turtle turned!

8. repeat n [what statements you want repeated n times]

repeat 4 [fd 10 rt 90] draws a square with side length 10 units,
if the PD pen is down with pd.

You don't see the square that the turtle traced
if the pu pen was up with pu instead of pd.

So don't forget to put the pen down with PD when
you want to DRAW some graphics with the turtles!