The Last Virus

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Team # 27
New Mexico
Supercomputing Challenge
Final Report

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EXECUTIVE SUMMARIES

1. The Statement of the Problem

In every day life we are exposed to bacteria and viruses that could possible make us ill. Once in a while we hear about viruses that actually kill us; sometimes we even hear about people dying. What if there was a virus that could kill people on a global scale? Think of a virus that could possibly kill everyone.

2. Method

We propose to demonstrate the destruction of human life and the possibility of surviving extinction. We will use Net Logo to demonstrate our project. We are using a pandemic virus to calculate the time it will take for annihilation of life. Our project will use turtles instead of humans. The red turtles will be sick or infected. The black turtles will be normal, neither sick nor strong. The green turtles will be strong. The grey turtles will be immune. If a red turtle comes in contact with a black turtle, we postulated a fifty-fifty chance of it becoming sick or immune. By doing this project, we can have a better

visualization of what will happen if this event ever occurs.

3. Results

The results we saw demonstrated that the strong population soared and the sick population declined. The immune population had a steady rate. The unaffected population was low but remained at a stable level.

4. Conclusions

The end results were that our project ultimately showed the resilience of the human race. The green turtles had the largest population. However our infected population stayed at a steady death rate. Therefore, we believe that our program failed at what we wanted it to do.

5. Most Significant Achievement

Our most significant achievement is finishing our first program. We would like to expand on it next year. To continue, we are planning on adding more ways for the turtles to die, which will make it more realistic. In real life humans also encounter accidents so we would like to put an accidental death variable in there. We also would like to include a life span variable on all turtles.

6. References

Zombie Attack Adobe PDF file.
http://www.cdc.gov/H1N1FLU/
http://www.webmd.com/hiv-aids/default.htm
http://www.webmd.com/sexual-conditions/hpv-genital-warts/default.htm
http://en.wikipedia.org/wiki/Pandemic
Dr. Andrea Leathers

7. Appendix

```
A1
breed [devils devil]
turtles-own [energy]

globals
[
  %infected
  %immune
  %healthy
]
to setup
  clear-all
  import-pcolors "map.PNG"
  create-devils population
  [
  ifelse random 100 <= infection-rate
    [
      SET COLOR RED    ; some infected
    ]

    [
      SET COLOR BLACK ; some not
    ]
  if random 100 <= immune ; some are immunue
    [
      SET COLOR GREY
    ]
if random 100 <= strengthen-rate  ; some arlready recovered and immunue
    [
      SET COLOR GREEN
    ]

    setxy random-xcor random-ycor
    set shape "turtle"
```

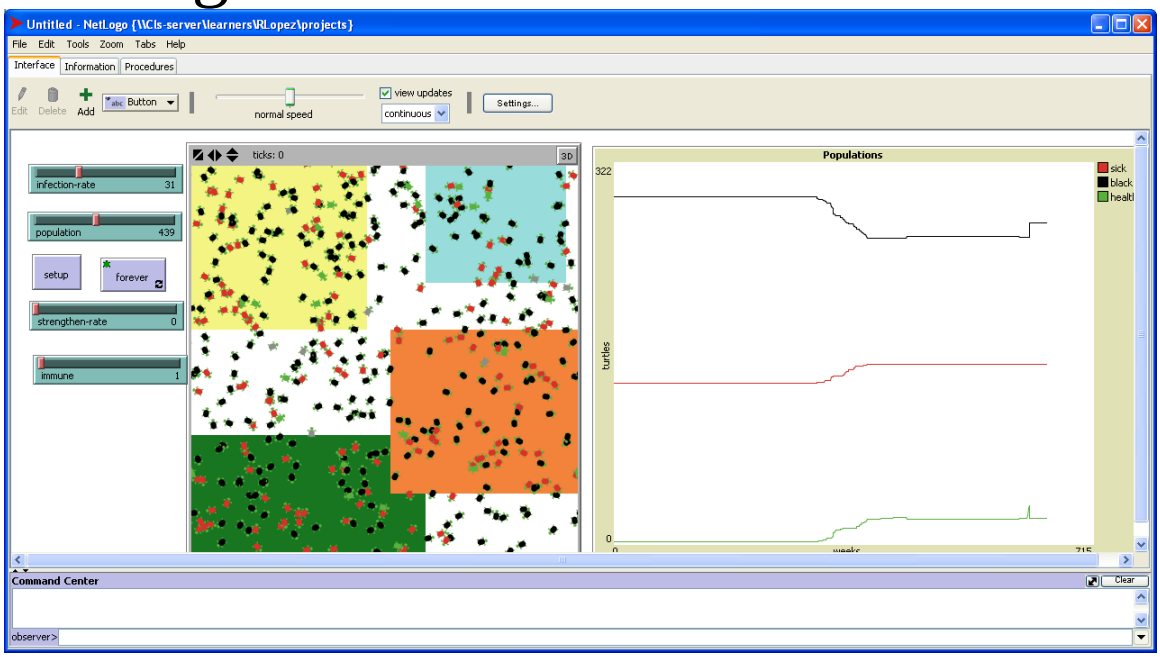
```
    set energy 200
  ]
end

to forever
  move
  weaker
  infect
  strengthen
  update-plot

end

to move
  left random 20
  right random 20
  ifelse pcolor = [pcolor] of patch-ahead 1
  [
  forward 1
  ]
  [
  right 180
  ]
end

to weaker
   if color = red
   [
      set energy energy - random 4
      if energy <= 0
      [
      die
      ]
  ]
end

to infect

if color = red
[
```

```
  if any? other turtles-here
  [
    ask one-of other turtles-here
    [
      if color = black
      [
        ifelse random 100 < 50  ; 50/50 chance of either becoming green or red
        [
          set color green
        ]
        [
          set color red
        ]
      ]
    ]
  ]
]
end



to strengthen
if color = green
[
if any? (devils in-radius sqrt 2) with [color = green]
  [
  set energy energy + random 4
    if energy >= 100
    [
   reproduce
    ]
  ]
]
end

to reproduce

      set energy energy - 50
      hatch 1 [ set energy 50 ]
   set color black
```

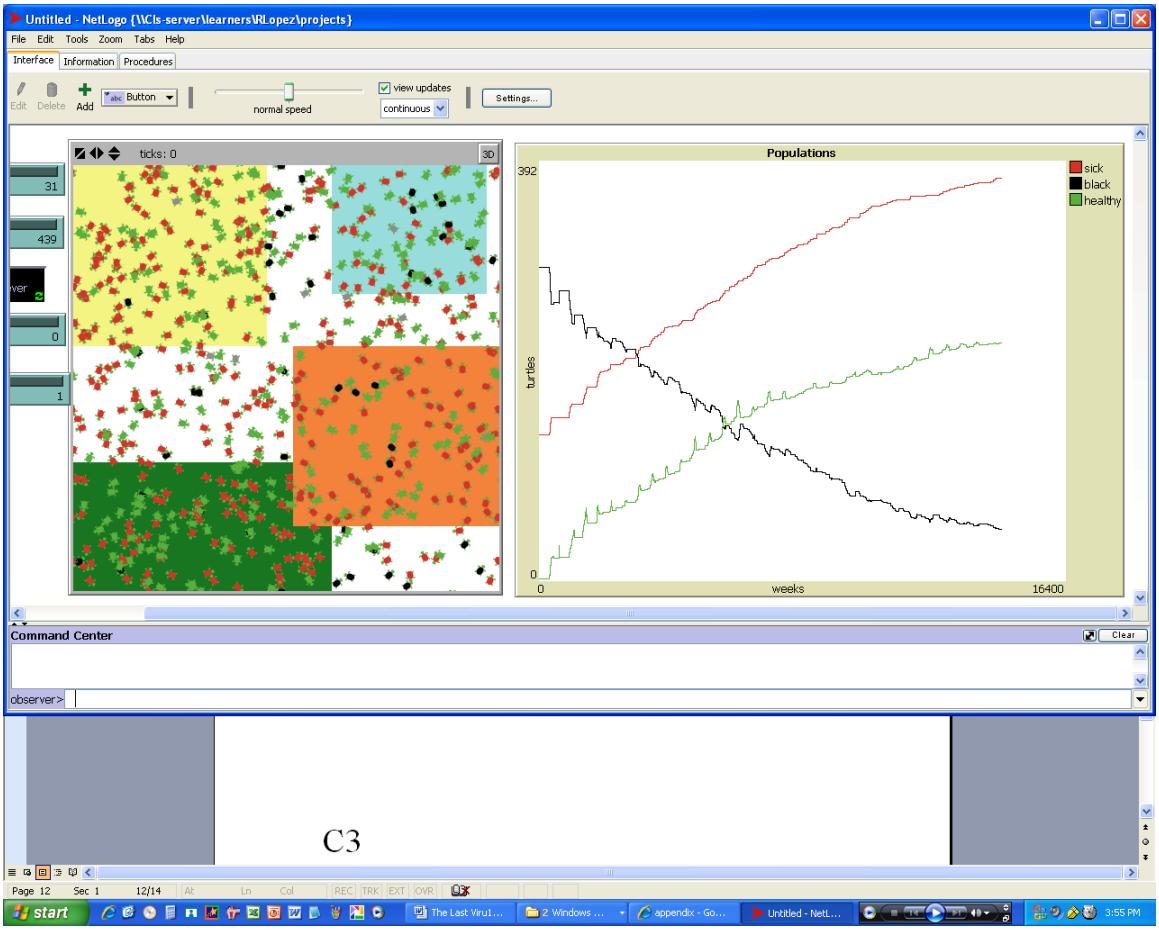
```
end

to update-plot
  set-current-plot "Populations"
  set-current-plot-pen "sick"
  plot count turtles with [color = red]
  set-current-plot-pen "black"
  plot count turtles with [color = black]
  set-current-plot-pen "healthy"
  plot count turtles with [color = green]
  ;;set-current-plot-pen "total"
  ;;plot count turtles
end
```

B

starting



Beginning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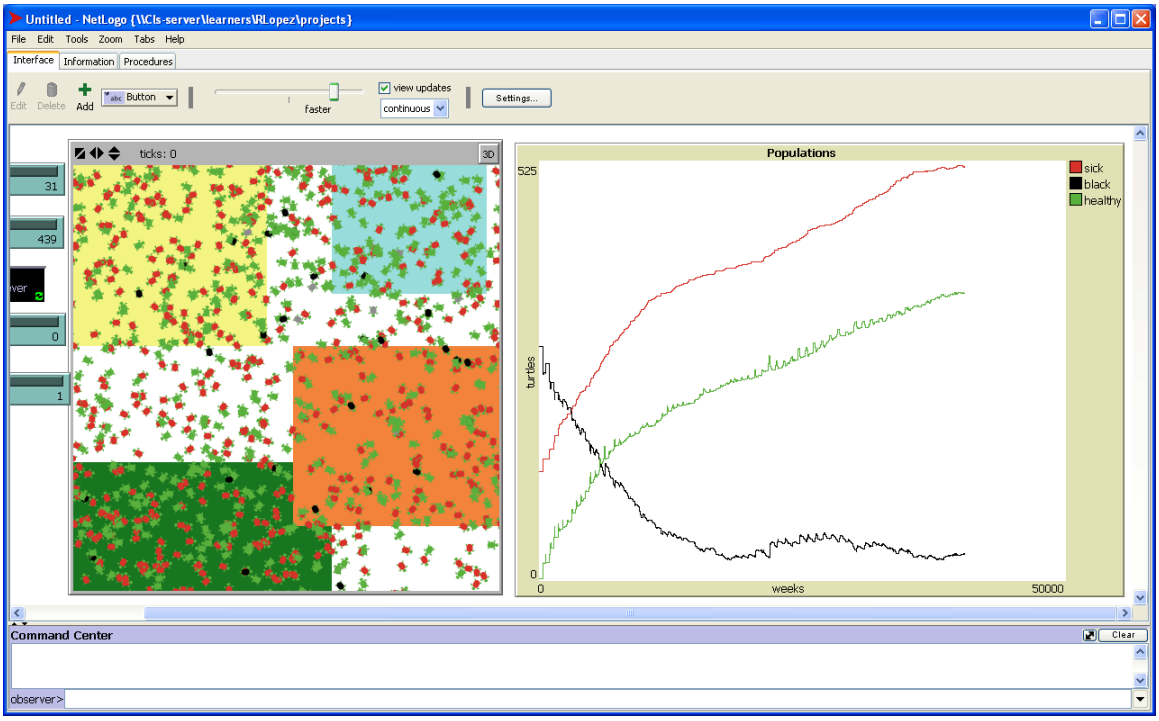
File Edit Tools Zoom Tabs Help
Interface Information Procedures
Edit Delete Add Button
normal speed
view updates
continuous
Settings...
ticks: 0
3D
Populations
392
0
turtles
0
weeks
16400
sick
black
healthy
Command Center
Clear
observer>
C3
Page 12 Sec 1 12/14
start
3:55 PM

Middle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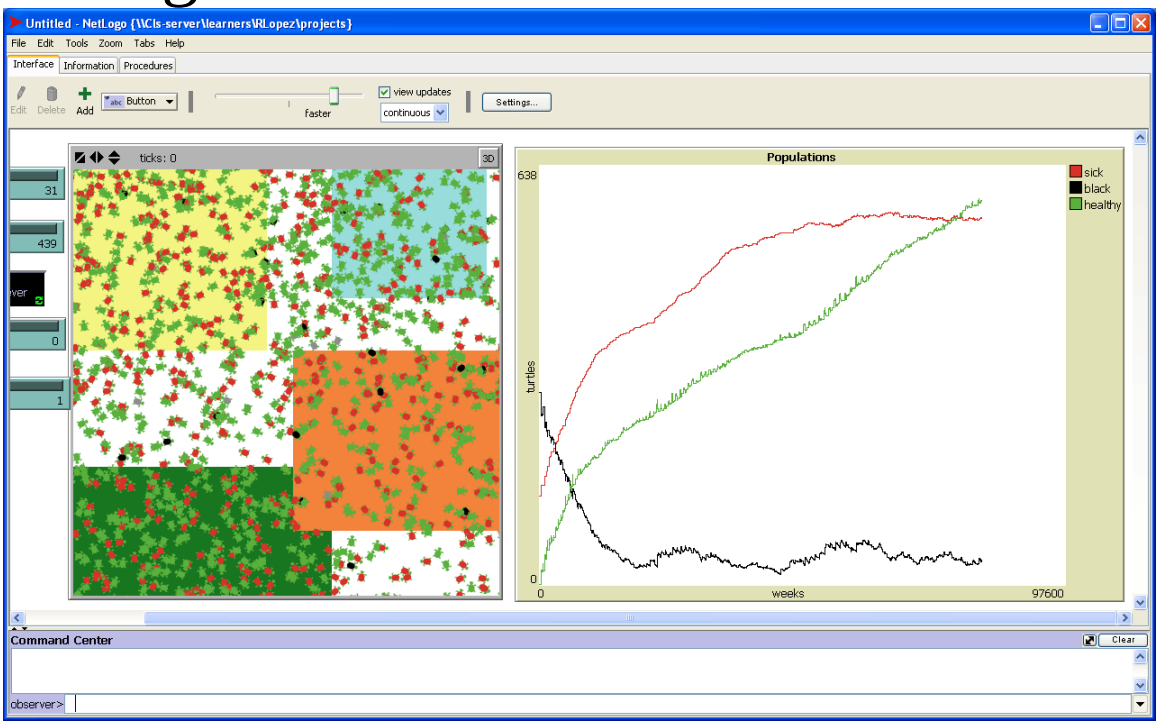
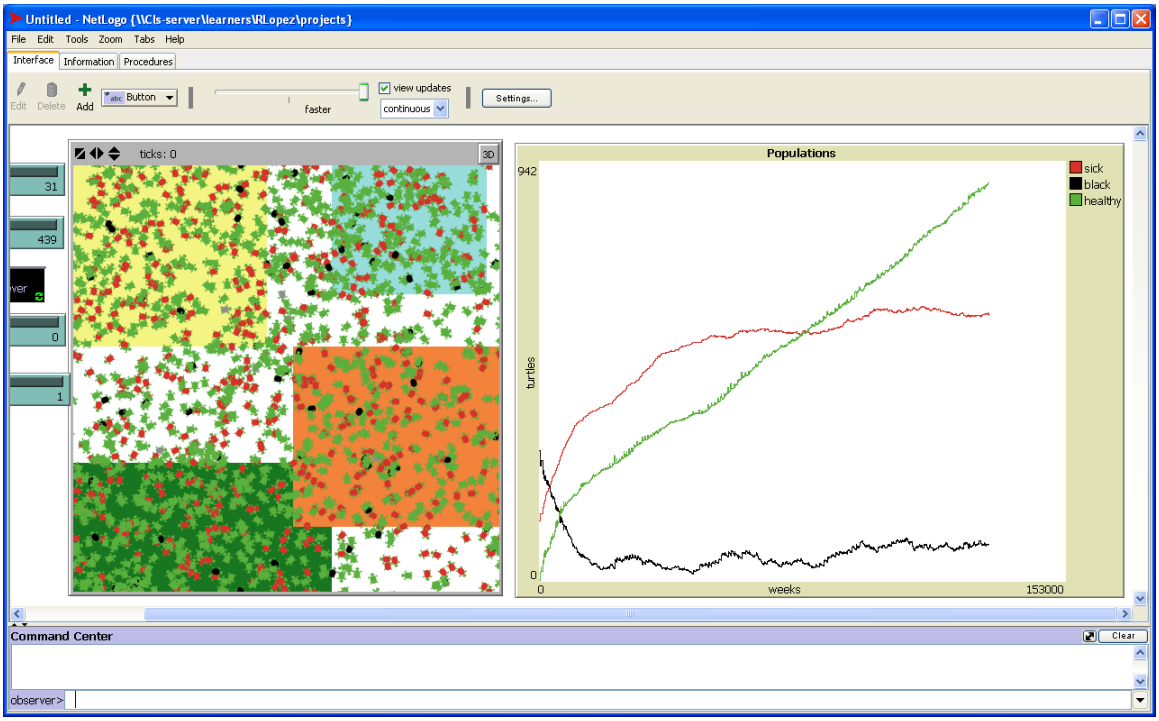
continuous
Settings...
ticks: 0
3D
Populations
525
0
turtles
0
weeks
50000
sick
black
healthy
Command Center
Clear
observer>

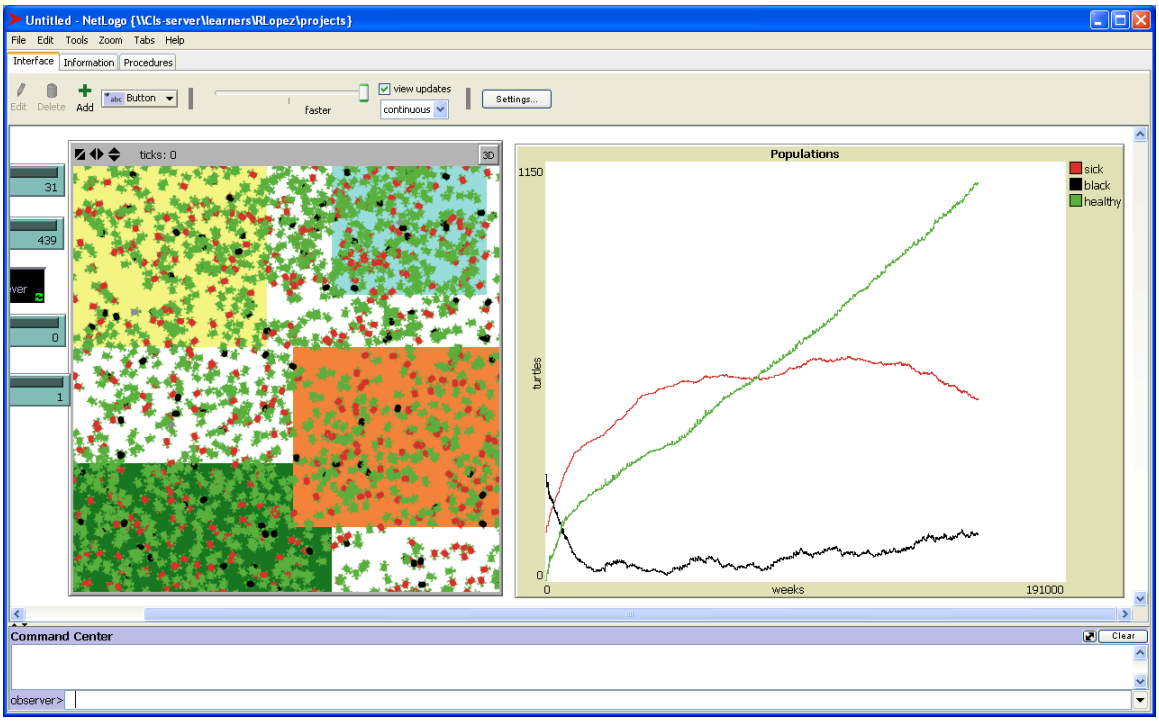
Change



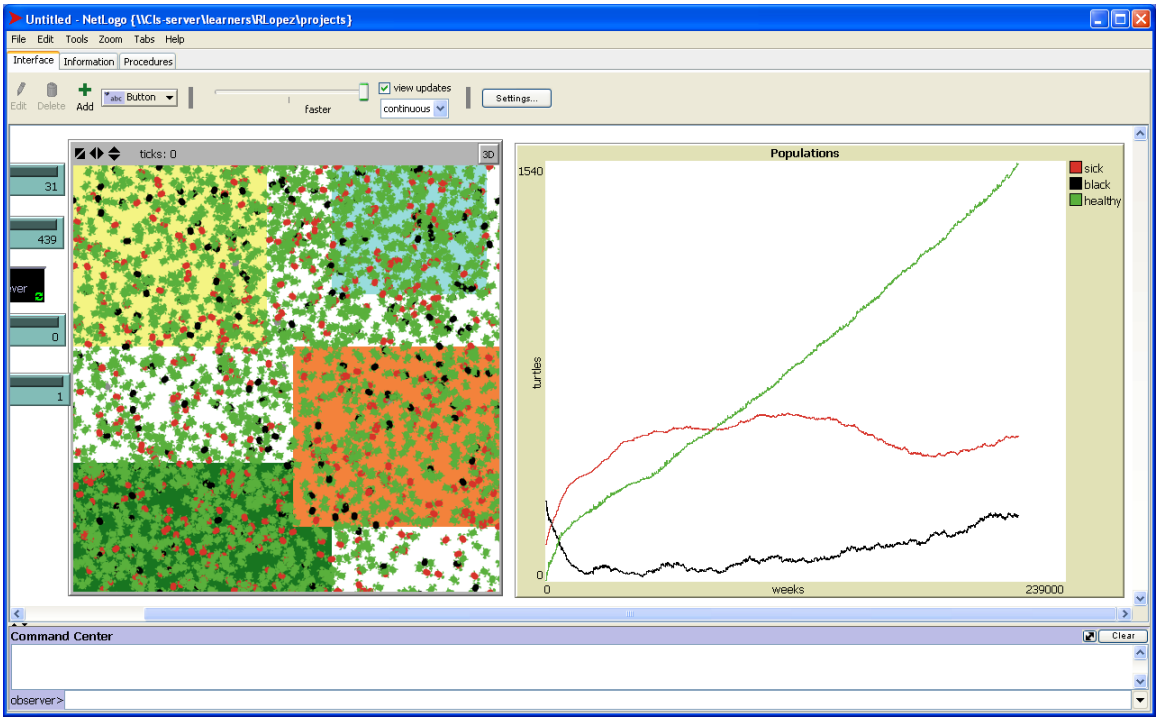
The strong



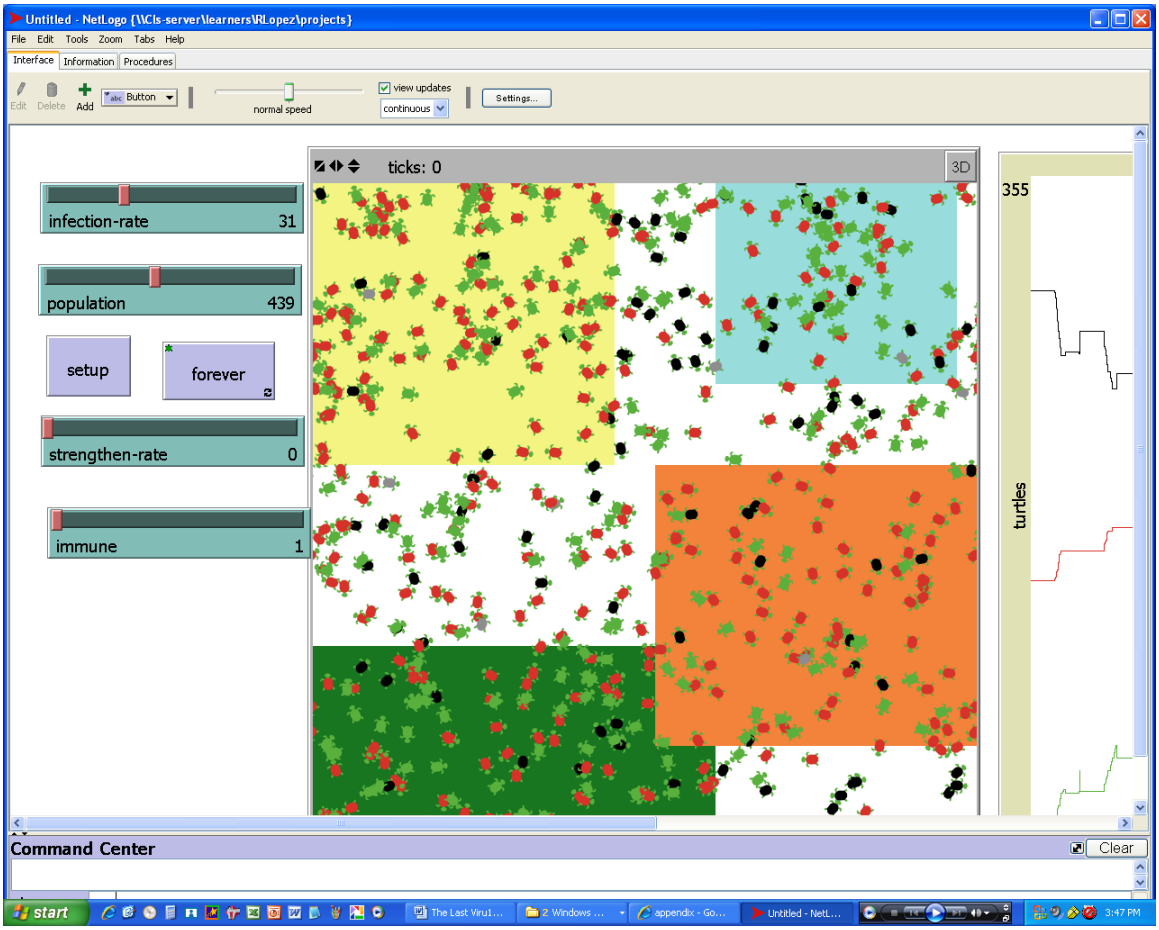
The decline



The end


Untitled - NetLogo {\\Cis-server\learners\RLopez\projects}
File Edit Tools Zoom Tabs Help
Interface Information Procedures
Edit Delete Add Button faster view updates continuous Settings...
ticks: 0
3D
Populations
1540
0
turtles
0
weeks
239000
sick
black
healthy
Command Center
Clear
observer>

C3



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