

## Starlogo\_Wanthy ....

Wears down virus protection and then infects new computers.

## Observer Procedures

*Creates 30 yellow turtles and spreads them all over*

to **setup**

ca

*Clear all*

crt 30

*Create 30 turtles*

wait 0

*Not needed*

ask-turtles [setc yellow fd 30]

*Tells each turtle to change to yellow and move 30 steps*

ask-turtles [patch-setup]

*Each turtle runs the patch-setup program*

end

## Turtle Procedures

*stamps a black place sky, then finds a sky place, makes it lime, reproduces and then jumps away . Note the button for **go** has the double arrows, which means it keeps executing forever. Also note – **stop** is used in the procedures to exit that specific procedure and return to the calling routine. In other words, **go** tells the turtles to **search-for-chip**. When they find a chip (a black patch) – **go** gets control back, and then the turtles **find-new-pile**. When they find a blue patch, **go** gets control back again and continues. Since the procedures (i.e. **search-for-chip**, **find-new-pile**, etc.) call themselves as the last line, they would run forever without the stop. This behavior (calling themselves) is called recursive.*

(This was the last procedure – moved it up since it is the main procedure)

to **go**

*Button*

search-for-chip

*Find black patch – change it to sky*

find-new-pile

find-empty-patch

reproduce

get-away

end

*Jumps all over – doesn't really do anything else*

*Do the following 100 times*

*Pick a direction between 0 and 359 (randomly)*

*Jump a distance between 0 and 199 (randomly)*

*Change your color to yellow (which it is already)*

*Hence could simply have done*

*to patch-setup*

*seth random 360 jump random 200*

*end*

*The turtles are already yellow – they may have meant to hit*

**to patch-setup**

repeat 100 [seth random 360 jump random 200 setc yellow]  
end

*Move one step at an angle between +/- 49 degrees*

**to wiggle**

fd 1

rt random 50

*Turn right between 0 and 49 degrees*

lt random 50

*turn left between 0 and 49 degrees*

end

*if black – make it sky, otherwise keep looking*

**to search-for-chip**

if pc = black

*If patch color is black – has virus protection – weaken it*

[stamp sky jump 20 stop]

*Change patch color to sky – then jump and stop*

wiggle

*otherwise Keep moving – one step in random direction*

search-for-chip

*Keep looking for black patch*

end

*Stop on a sky pile. If the patch is sky stop, if not, wiggle and keep looking for a sky patch.*

**to find-new-pile**

if pc = sky

*If patch color is sky - stop*

[stop]

wiggle

*otherwise – keep moving*

find-new-pile

*keep looking for sky patch*

end

*if sky, make it lime, jump, and stop, otherwise keep looking (this will be the second blue patch it lands on)*

**to find-empty-patch**

wiggle

*Move*

if pc = sky

*If patch is sky*

[stamp lime - 5 get-away stop]

*Make it lime colored jump away until land on black*

find-empty-patch

*otherwise keep looking*

end

**to reproduce**

if pc = [setc sky] [hatch []]

end

*Go until land on black*

**to get-away**

seth random 360

```
jump 20  
if pc = black [stop]  
get-away  
end
```