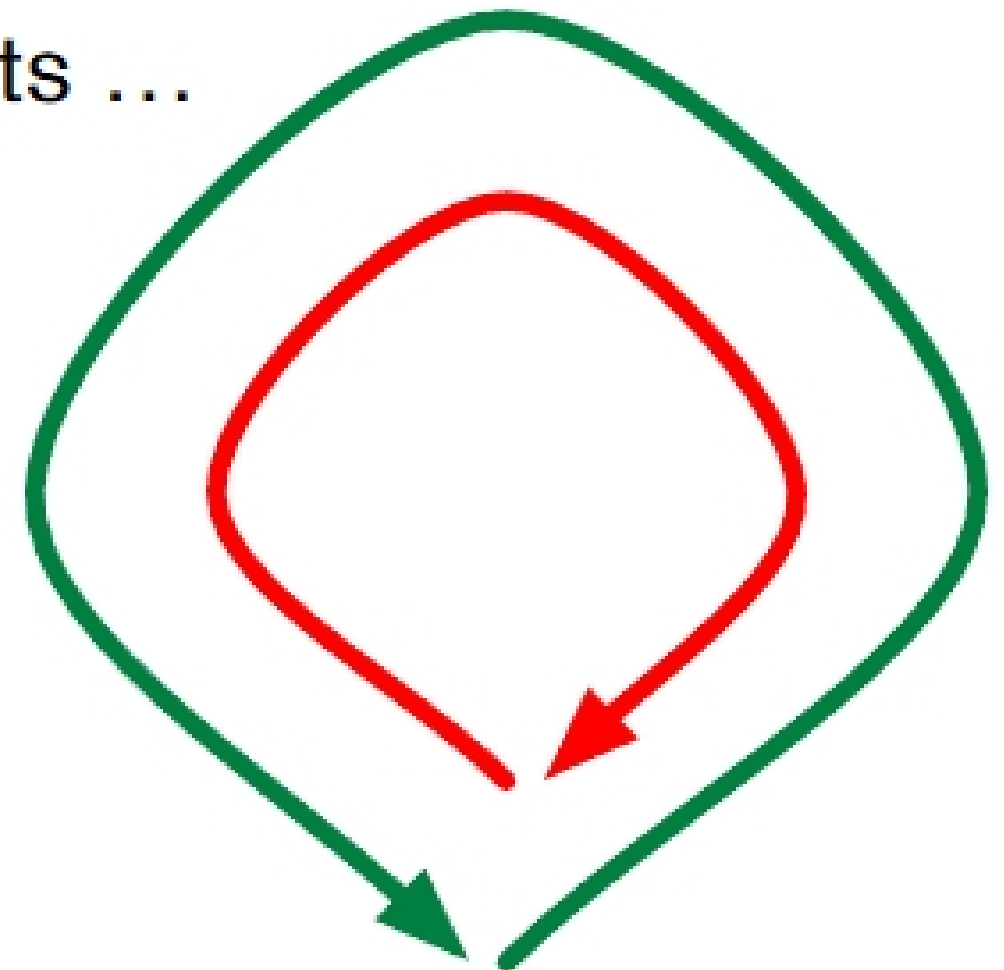


UNIVERSITY OF OREGON

**CIS 433/533 - Computer and  
Network Security**  
**Worms, DDoS, Web**

Professor Kevin Butler  
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- A worm is a self-propagating program.
- As relevant to this discussion
  1. Exploits some vulnerability on a target host ...
  2. (often) embeds itself into a host ...
  3. Searches for other vulnerable hosts ...
  4. Goto (1)



# The Danger

- What makes worms so dangerous is that infection grows at an exponential rate
  - ▶ A simple model:
    - $s$  (search) is the time it takes to find vulnerable host
    - $i$  (infect) is the time it takes to infect a host
  - ▶ Assume that  $t=0$  is the *worm outbreak*, the number of hosts at  $t=j$  is

$$2^{(j/(s+i))}$$

- ▶ For example, if  $(s+i = 1)$ , what # infected at time  $t=32$ ?