

Outline: Lecture 5

Date: April 12, 2011

Topic: Silicon Biology

1. Discussion: classes and testing over the Internet
2. Malware
 - a. What it is
 - b. Trojan horses
 - i. Regular
 - ii. Replicating Trojan horses: the animal game
 - c. Computer viruses
 - i. Basic: boot sector, executable, TSR viruses
 - ii. Hiding: stealth viruses
 - iii. Morphing: encrypted, polymorphic viruses
 - iv. General: macro viruses
 - d. Computer worms
 - e. Rabbits, bacteria
 - f. Logic bombs
3. Defenses
 - a. Cannot write a program to detect computer viruses without error
 - b. Can detect all such programs if willing to accept false positives
 - c. Static analysis: signature scanning
 - d. Heuristic analysis: emulation, generic decryption
 - e. Restricting execution
 - i. Distinguishing between data and instructions
 - ii. Restricting access rights (sandboxing, jailing)
 - iii. Checking statistical characteristics
 - iv. preventing, detecting changes to specific files