Lecture 7-2
Computer and Network Security
Participation Quiz

You are the conductor of a train. It is headed down on one track where you see 5 workers fixing the track. They cannot hear, see, or feel the train coming. You know for a fact that the train is going fast enough to kill them if a collision occurs. However, you notice there is an alternate track ahead that you can switch the train onto. It has 1 worker and again, she cannot hear, see, or feel the train coming. Do you make the switch to the alternate track?

A: Make the switch, 5 live and 1 dies
B: Do not make the switch, 5 die and 1 lives
Participation Quiz

You are a doctor working at a hospital. You have 5 patients. They are in dire need of an organ; a different one for each patient. They need a new organ immediately or they will die. Thinking fast, you remember that there is a patient of yours next door who just came for a check-up. He is asleep. You know that if you do not take his organs for transplant your 5 patients will die. If you do take the organs, they will survive (and for the sake of argument, assume they will have a normal life after transplant). There are no other options. Do you take the organs?

A: Take the organs, 5 live and 1 dies
B: Leave the patient alone, 5 die and 1 lives
Malware: Evil Code that can Run on Your Computer

• **Viruses**
  – What is a virus?
  – *Have you ever (knowingly) gotten one?*

• **Worms**
  – What is a worm? How is it different from a virus?
  – *Is it wrong to distribute a virus or worm that doesn’t harm anyone?*

• **Trojan Horses**
  – What is a Trojan horse? How is it different from the first two?

• Do the victims of a virus/worm/Trojan horse share responsibility for being attacked if their system is not up to date?
Malware II: More Evil Code

• Spyware/Adware
  – What is spyware? What is adware?
  – *Is it ever moral to install spyware/adware on a user’s computer without their consent?*

• Drive-by Downloads
  – What is a drive-by download?
  – *What do you think the best defenses are against them?*

• General-purpose Defensive Measures
  – security patches
  – anti-malware tools
  – firewalls
  – *Anything else?*
Attacks: how mean computers hurt nice computers

• How:
  – Phishing
    • Have you been targeted? Has an attack been successful?
  – [Distributed] Denial of Service

• Why:
  – Cybercrime: professionalization of malware
    • renting botnets (DDoS; spam)
    • stealing credit card numbers, passwords
  – Cyberwarfare: states as actors or targets
    • North Korea vs USA gov, corporate sites (2009)
    • Russia vs Georgia during and after South Ossetia war (2008)
    • Stuxnet (2009-)
    • A variety of government, activist sites during Arab Spring (2011)
    • Anonymous
“Canadians should have the right to vote online in federal, provincial and municipal elections.”
Online Voting

• Motivation:
  – More people would vote
  – Votes would be counted more quickly
  – Cost less money
  – Avoid disputed elections like Florida 2000
  – Eliminate ballot box tampering
  – Software can prevent accidental over-, under-voting

• Risks:
  – Gives unfair advantage to those with home computers
  – More difficult to preserve voter privacy
  – More opportunities for vote selling
  – Obvious target for a DDoS attack
  – Security of election depends on security of home computers
  – Susceptible to phony vote servers
  – No paper copies of ballots for auditing or recounts