# Lecture 7-2
# Computer and Network Security

Addison-Wesley
is an imprint of
PEARSON

# Blockchain

- Distributed ledgers offer an alternative approach to electronic money that works more like cash
- Let's review some basics:
  - what is blockchain?
  - what is mining?
  - what stops someone from spending the same digital money twice?
  - what is NFT and why should anyone care?
- But, the currency is incredibly volatile (and, not everyone even agrees that it makes sense to think of it as money)

*What do you think? Should governments encourage blockchain-based currencies? Do you use them?*

# 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

# Hacking as a means of warfare/foreign policy

What hacking/cyberwarfare activities are ethical? Which are unethical? What such capabilities should Canada attempt to develop? What should Canada do to attempt to discourage and/or insulate itself from unethical attacks?