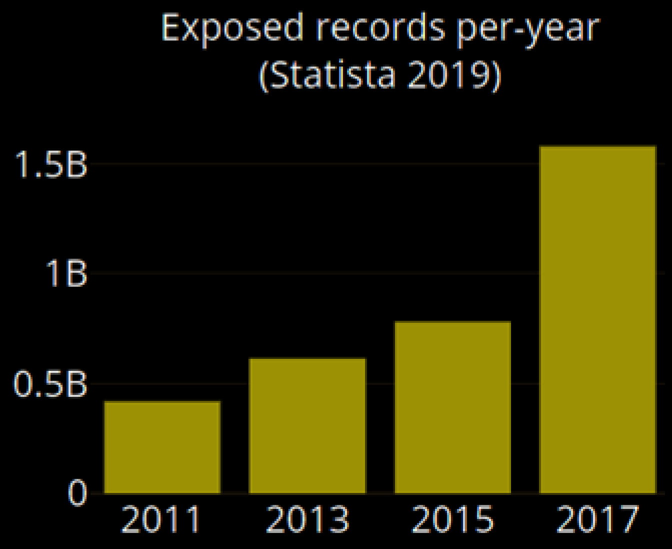
Image removed due to copyright issue

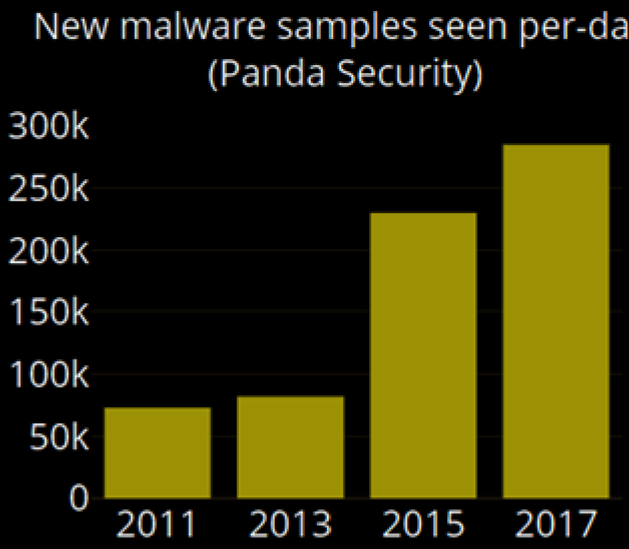
Introduction to

# Cybersecurity

# Who want to be hacked?

**21%** of Canadian businesses impacted
**47%** Banking institutions
**46%** Universities ☺
**45% Pipeline transportation**
**23** avg. hours of downtime
**Equifax** data breach, **200 million** people compromised





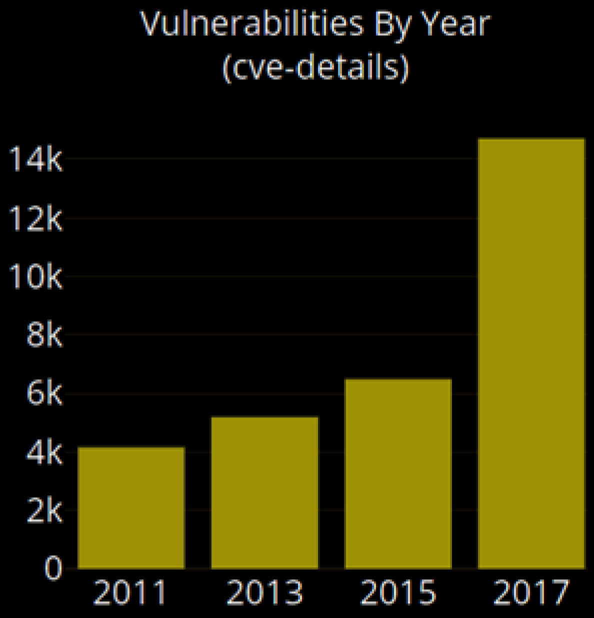
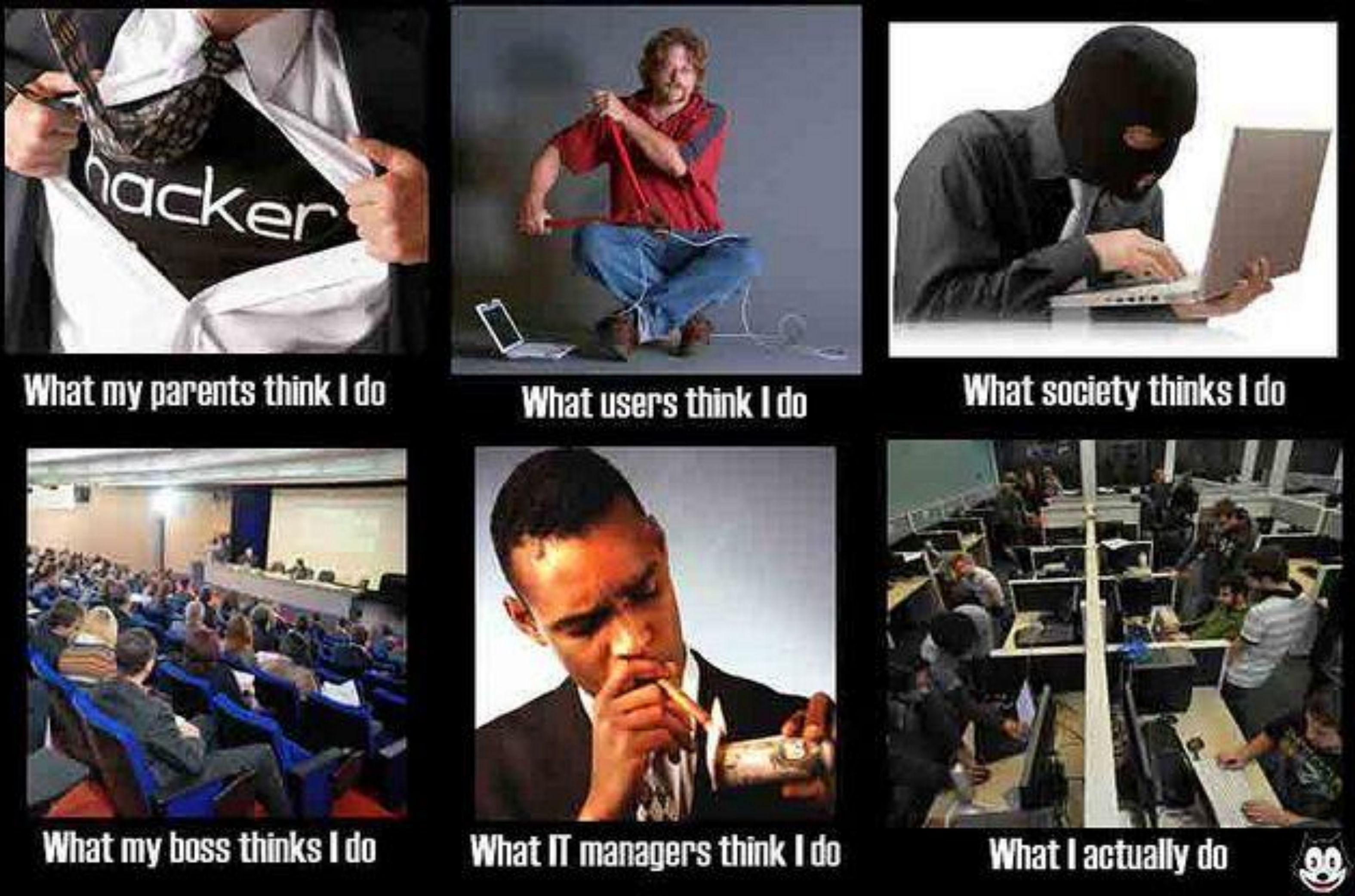


Image removed due to copyright issue

Attackers are making use of more, and better, digital and economic resources than ever before, allowing them to develop attacks that are increasingly sophisticated.

# Cybersecurity



# The Black, the White and the Grey

- Black hat hackers:
  - The bad guy!
- White hat hackers:
  - Honest, Ethical, Moral
  - Full responsibility
  - Respect the code of conduct
  - Always hack with permission
- Grey hackers conduct attacks not for personal or malicious purpose. But they may conduct hacking activities without permission. They may disclose the vulnerability to the public, BUT leaving very short time period for the organization to fix it.

# Data vs Information

- Data
    - Raw data stored as its raw physical format
        - e.g. 10101000101010101
        - or raw text data
        - or raw numbers
- Information
    - Putting the data into the context
    - Giving a meaning to the data
    - E.g.
        - Email, messages, etc.
        - Banking account number, social insurance number, etc.

# Three aspects of data

## Breaking ***Integrity***

- Unauthorized access/transaction
- Corrupted data
- Corrupted software
  - Injected backdoor
  - Skip license virifcation

## Breaking ***Availability*** :

- [Distributed ]Denial of Service
- Loss of Data/Unavailability of data

## Breaking ***Confidentiality***

- [Personal] Sensitive Information
- Internal information
- Military operation

# Cybersecurity

- three types of security controls
  - Administrative
    - Security policy/guideline
    - Security training/education
    - Incidence response
  - Physical
    - Access control
    - Surveillance
  - Technical
    - Anti-virus
    - Firewalls
    - Spam filter

# Cybersecurity – types of threats

- Adversarial
  - Individual or hacker groups involved
  - With a specific purpose
- Accidental
  - Forget to lock the door/computer
  - Send out confidential file by accidence
  - Working cellphone stolen
- Structural
  - The failure caused by the depended systems
  - Power supply failure
  - Cooling system water leaking
- Environmental
  - Earthquake
  - Power outage
  - Any environmental chance

# Threat Event

- More examples on adversarial vs non-adversarial

- Adversarial:
  - Web server live hacking
  - Phishing/Social engineering
  - Malware distribution/campaign
  - Network penetration

- Non-adversarial:
  - Dropped key/cellphone/laptop for work
  - Disk failure
  - Overheating, water leakage,
  - Earthquake

# IDA - FREE

- https://www.hex-rays.com/products/ida/support/download_freeware.shtml
- Yes this is their logo -------------→

# Check Pwned Password/Account

- You can check if your personal email account has been released through data breach in the past:
- https://haveibeenpwned.com/PwnedWebsites

- Or even password (you can check your old passwords if you want):
- https://haveibeenpwned.com/Passwords

- **Warning: use at your own risk.** Developed and maintained by Troy:
- https://haveibeenpwned.com/About
- Privacy policy:
- https://haveibeenpwned.com/Privacy