Computer Security & Risks

Chapter 11 Part 1

Outline

- Overview
- Computer Forensics
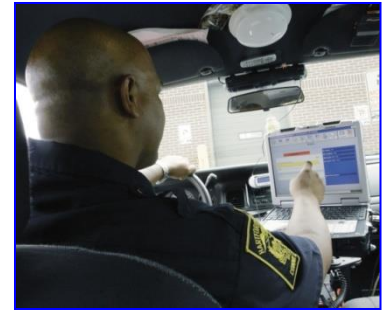- Computer Theft
- Malwares
- Hacking

Overview

- Computer Security
  - The protection of computing systems and data that they store or access from unintended or unauthorized access, change or destruction.
- Computers could be used for either:
  - Upholding laws
    - E.g Computer forensics, etc …
  - Breaking the laws
    - E.g Viruses, Identity theft, etc …

Computer Forensics (YouTube)

- Investigation of a wide variety of computer crimes.
  - Use special software to store and reference clues in complex cases
  - Trace digital fingerprints "deleted files"
  - Automated Fingerprint Detection

Computer Crime

- Cybercrime
  - Any crime using Computer Technology
    - Billion of dollars are lost
    - Majority are conducted by company insiders
   - Insider crimes are covered up to avoid embarrassment
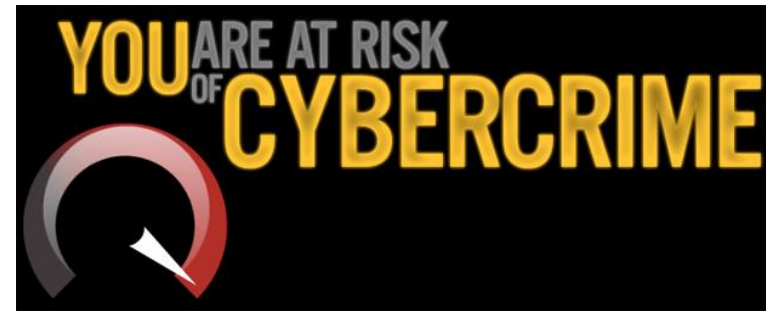
Computer Crime

- Cyberstalking
  - ▫ A form of harassment repeatedly harm or harass other people in a deliberate manner on the internet
  - ▫ To help yourself, limit how much your share your personal info
- Cyber bullying
  - ▫ Targeting children and young adults online, involves humiliation, rumors, lies, taunts or threats.
  - ▫ Stop cyberbullying! (Video Link)
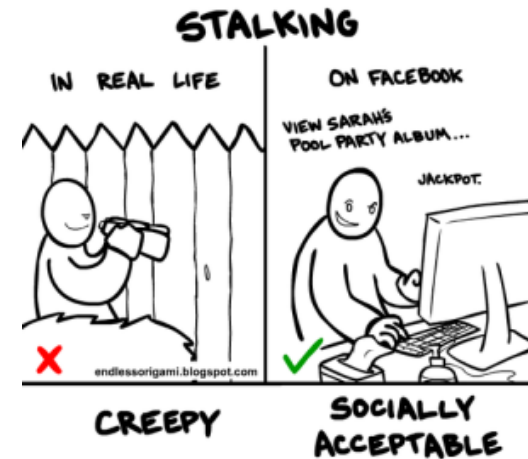
Computer Crime Types

- Computer Theft
- Software Piracy
- Identity Theft
- Viruses
- Worms
- DDoS
- Hacking

Computer Theft

- Theft of computer itself
  - ▫ Laptops, PDAs and Smartphone's are often stolen
  - ▫ The SW and data on the computer are more valuable than the hardware

Computer Theft

- Intellectual Property Theft
  - Software Piracy
  - File sharing of copy righted songs
  - Illegal duplication and distribution of movies
  - Plagiarism of copy righted text

THE COPYRIGHT INFRINGEMENT SHIP

Illegal Downloading

Piracy

Illegal Software

Playing music publicly without permission

Plagiarism

Illegal Streaming

Performing a play without permission

Illegal Photocopying

The Pirate Ship is powered by the winds of acts of infringement. These acts are depicted on the sails.

Acts that are permissible and free for public use are found on the open seas.

News Reporting

Legislation

Quotation

Educational Purposes

Single copy for back up (CD, DVD) (not Books)

Computer Theft

- What is stolen?
  - Money
  - Goods
  - Information
  - Software Resources
- Getting sensitive data through:
  - Spoofing
  - Identity Theft
  - Phishing

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"If you were concerned about identity theft, you shouldn't have left your private information lying around where I could find it!"

Computer Theft

- Spoofing/Social Engineering
  - Trick that target to extract secret information
    - E.g. Making a phone call and posing as an internet technician, to extract sensitive data especially passwords.
- Shoulder surfing
  - Is a type of social engineering technique used to obtain information by looking over the victim's shoulder.
    - E.g. Passwords and other confidential data

Computer Theft

Five Common Types of Identity Theft

Drivers License Identity Theft · Social Security Identity Theft · Medical Identity Theft · Character / Criminal Identity Theft · Financial Identity Theft

- Identity Theft
  - ▫ Extract personal information to commit a crime in another person identity
    - National ID
    - Driving License
    - Credit card number
  - ▫ "Catch Me if you Can"
    - Movie about **Frank Abagnale**
    - Between the ages of 15 and 21. He became one of the most famous impostors ever
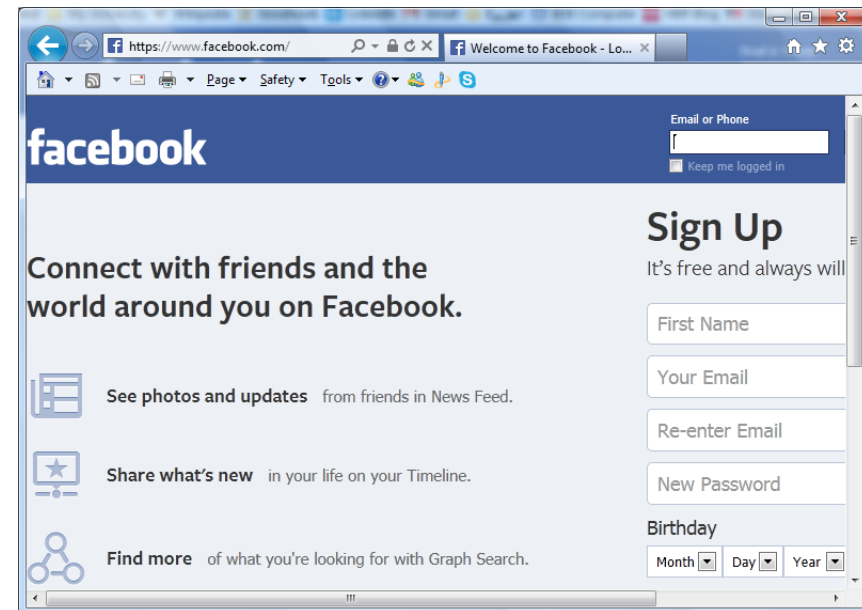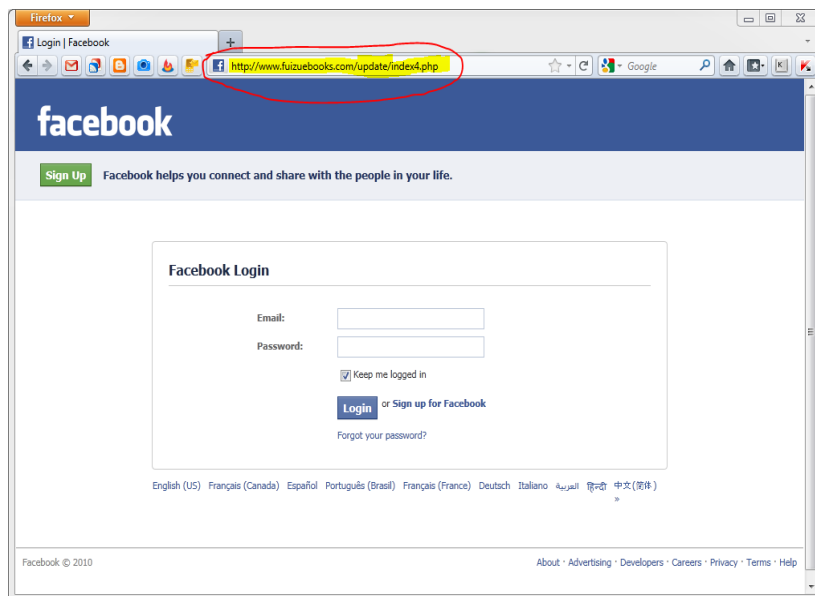
Computer Theft

- Phishing ([Video Link](#))
  - Is the act of attempting to acquire sensitive information by masquerading as a trustworthy entity in an electronic communication
    - Sending an email posing as a bank representative and asking to fill a fake bank web form.

    - Pornographic sites asking users to reveal credit card numbers to prove age
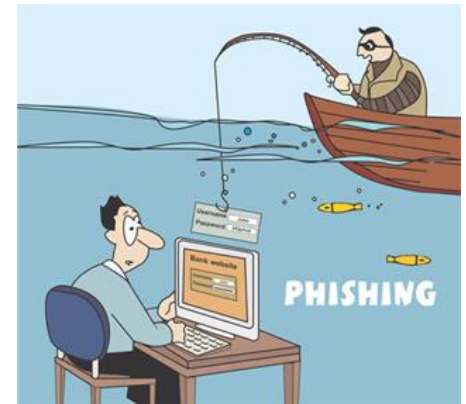
Computer Theft

- Facebook Phishing Example:
  - URL: fuizuebooks/update/index4.php

Computer Theft

From: Microsoft office365 Team [mailto:cyh11241@lausd.net]
Sent: Monday, September 25, 2017 1:39 PM
To:
Subject: Your Mailbox Will Shutdown Verify Your Account

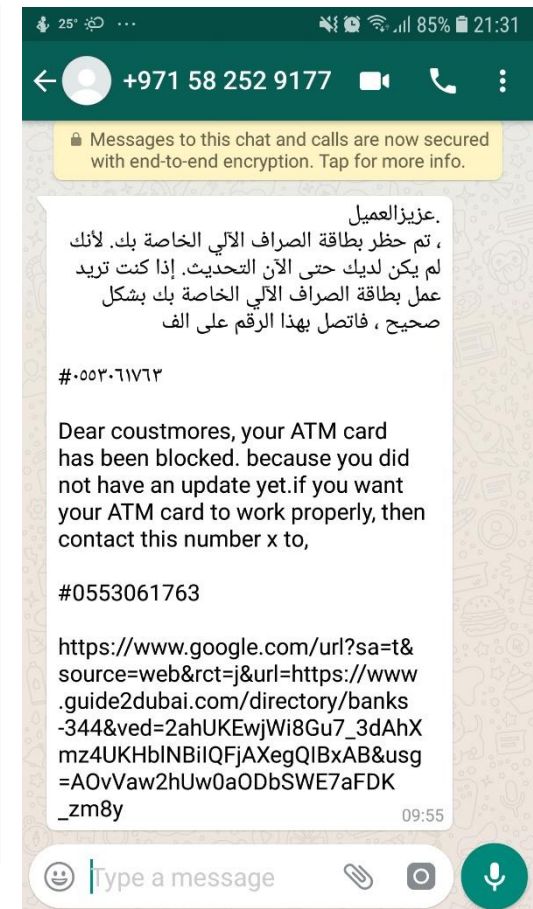Office 365

Detected spam messages from your <EMAIL APPEARED HERE> account will be blocked.

If you do not verify your mailbox, we will be force to block your account. If you want to continue using your email account please verify .

Verify Now

Microsoft Security Assistant
Microsoft office365 Team! ©2017 All Rights Reserved

عزيزالعميل.
تم حظر بطاقة الصراف الآلي الخاصة بك. لأنك ، لم يكن لديك حتى الآن التحديث. إذا كنت تريد عمل بطاقة الصراف الآلي الخاصة بك بشكل صحيح ، فاتصل بهذا الرقم على الف

#٠٥٥٣٠٦١٧٦٣

Dear coustmores, your ATM card has been blocked. because you did not have an update yet.if you want your ATM card to work properly, then contact this number x to,

#0553061763

https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.guide2dubai.com/directory/banks-344&ved=2ahUKEwjWi8Gu7_3dAhXmz4UKHblNBiIQFjAXegQIBxAB&usg=AOvVaw2hUw0aODbSWE7aFDK_zm8y

Computer Theft

- Identity theft protection
  - Use separate credit card for online use
  - Use secure websites (https://)
  - Don't disclose personal info on phone
  - Handle email with care
  - Don't put your national ID on checks
  - Copy your cards to get replacement in case stolen
  - Report Identity theft promptly

Software Sabotage

- Malicious software [Video Link](Video%20Link)
  - Used to disrupt computer operation, gather sensitive information, or gain access to private computer systems
    - Viruses
    - Worms
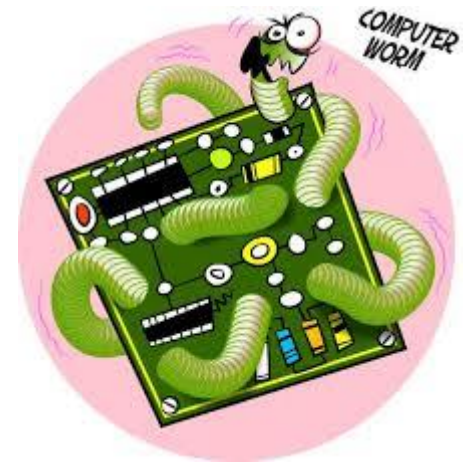   - Trojan horses
    - Spyware
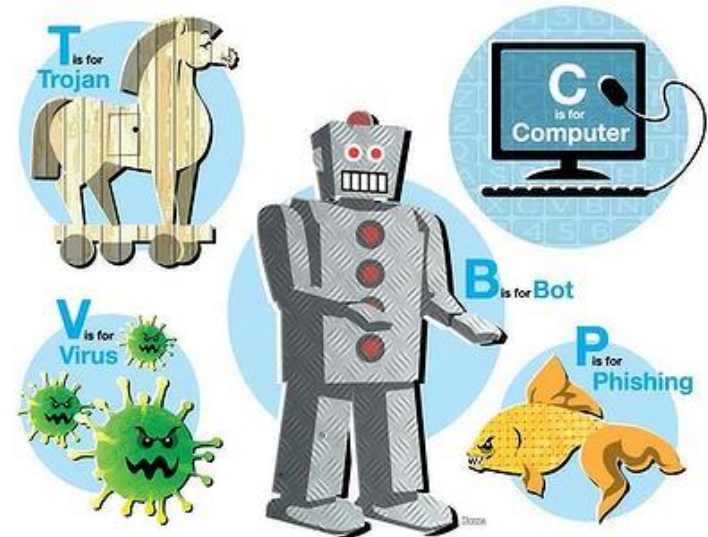
Software Sabotage

- Viruses
  - Normally it is embedded in a file and travels as an email attachment, or infected flash memory disks.
  - When the virus program is executed it cause
    - Damages to the Operating systems
    - Display messages
  - Viruses are OS specific but **New types** are cross-platform.
  - Macro viruses: attach themselves to documents that contain macros
   - E.g MS Office applications

Software Sabotage

- Worms
  - They are independent programs
  - Capable of reproducing themselves
  - Causes memory freezes
  - Spreads through the internet
- Famous worm:
  - Code Red (2001)
    - Didn't attack PCs, it attacked internet servers running Microsoft Servers

Software Sabotage

- Trojan Horse
  - Disguise themselves as useful programs or apps, but has hidden destructive program
    - Often posted in shareware
    - Names look like games, utilities or pictures
    - Track and monitor your keystrokes
    - Act as a backdoor allowing the attacker to control your PC
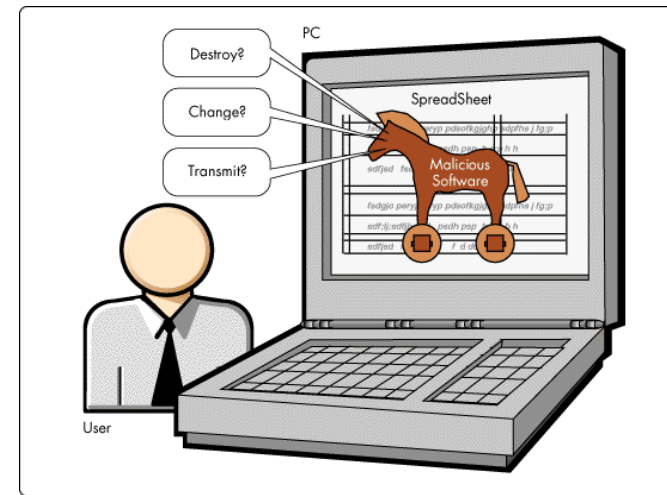
Software Sabotage

- Spyware:
  - Gets installed and collects information without user's knowledge
    - Called Spybot or Tracking software

  - Tracks
    - Keystrokes (Key Logger)
   - Web sites visited
    - Screen displays

Software Sabotage

- Ransomware
  - It is a malware type that locks your computer and encrypts data in your hard drive and then demands that you pay a ransom to unblock the files again.
- How do you get infected?
  - Open an infected email attachment or malicious link

- Attackers usually ask you to pay the ransom using digital currencies, such as Bitcoin because it is untraceable
- Ransomware Examples:
 - TeslaCrypt: uses super strong uncrackable encryption

Hacking and Electronic Trespassing

- Zombie Computers
  - Internet connected computers that have been hijacked using viruses to perform malicious acts without the knowledge of the owners
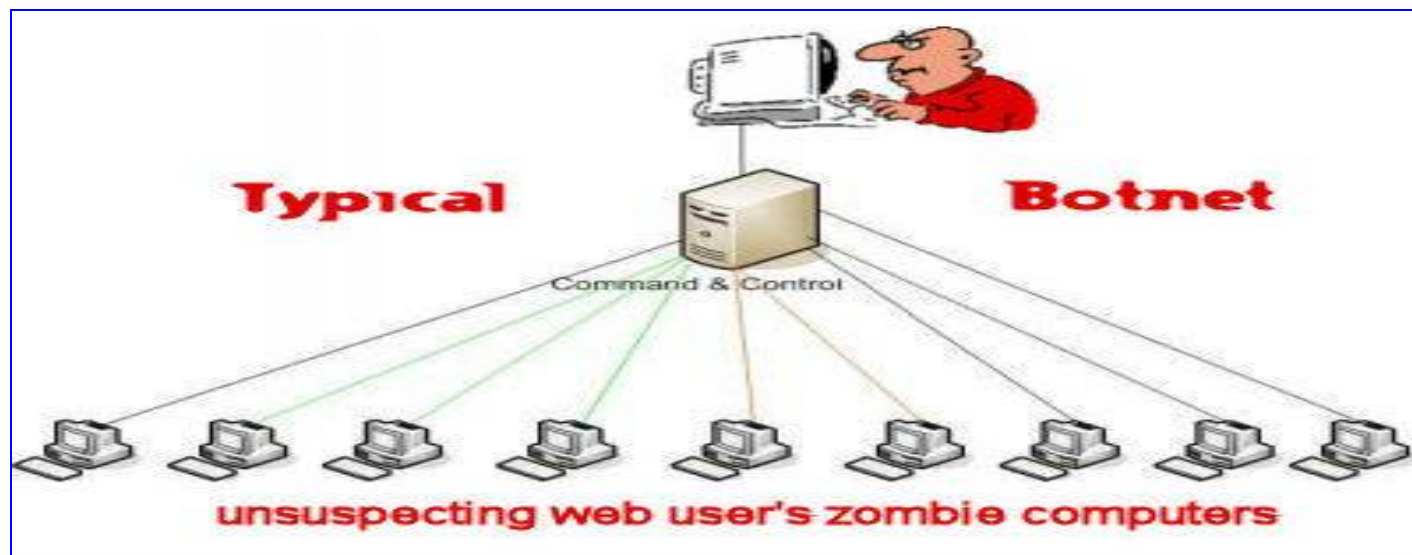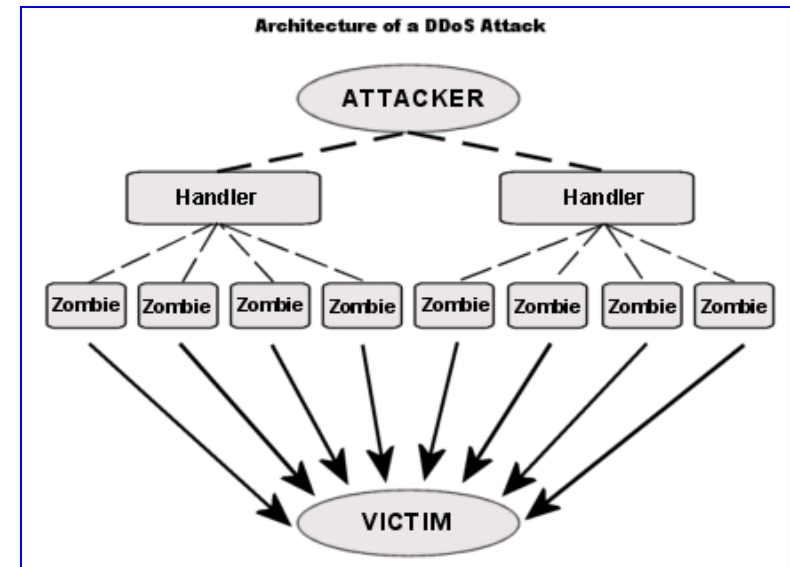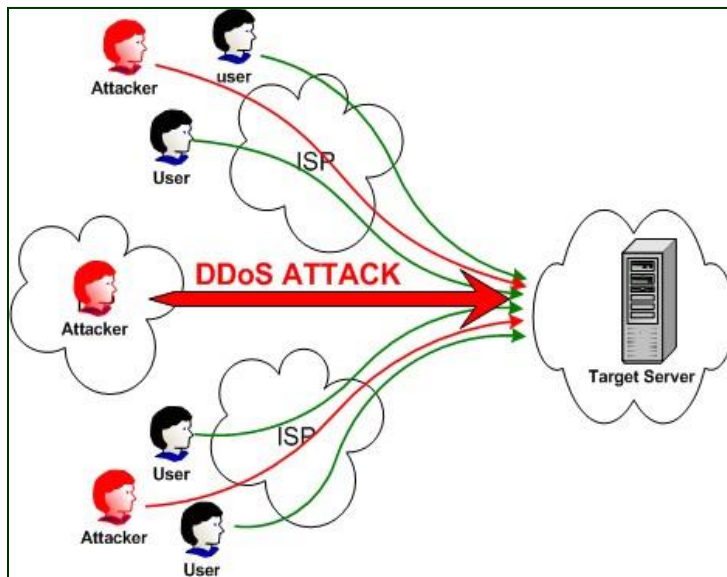
Hacking and Electronic Trespassing

- Botnets
  - Network of computers
    - That have been hijacked using viruses
    - To perform malicious acts without knowledge of the owners
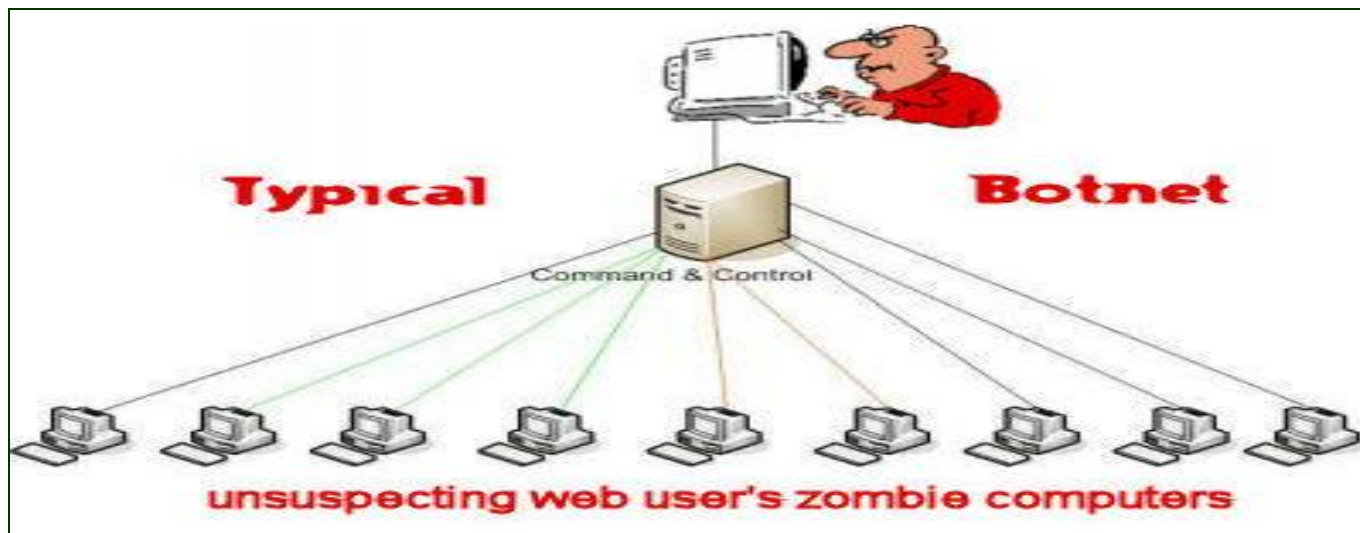
Hacking and Electronic Trespassing

- DDOS ([YouTube Link](#))
  - ▫ Distributed Denial of Service
    - attacks bombard servers and web sites with traffic that shuts down Web sites → uses botnets

Hacking and Electronic Trespassing

- Hackers
  - People who break into computer systems (In 70s it was considered intelligent and harmless). But now it is synonymous with Cracking.
- Cracking
  - Breaking into computer systems with criminal intention.

Hackers

- Black Hat Hacker
  - Criminals develop new techniques to penetrate security systems with harm intentions
- White Hat Hacker
  - Security experts developing new techniques to protect us.
  - Called Ethical Hacker

Inspiring white hackers videos

- James Lyne: Everyday cybercrime -- and what you can do about it

- Mikko Hypponen: Fighting viruses, defending the net

- https://www.youtube.com/watch?v=mwj2NkTYWuw