

Security+ Chapter 3

Malicious Code

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Twitter|Github



Who Am I?

- Former PSYOP Soldier
- Current Incident Response Analyst for a global food and beverage supplier
- Dad, husband and National Park enthusiast



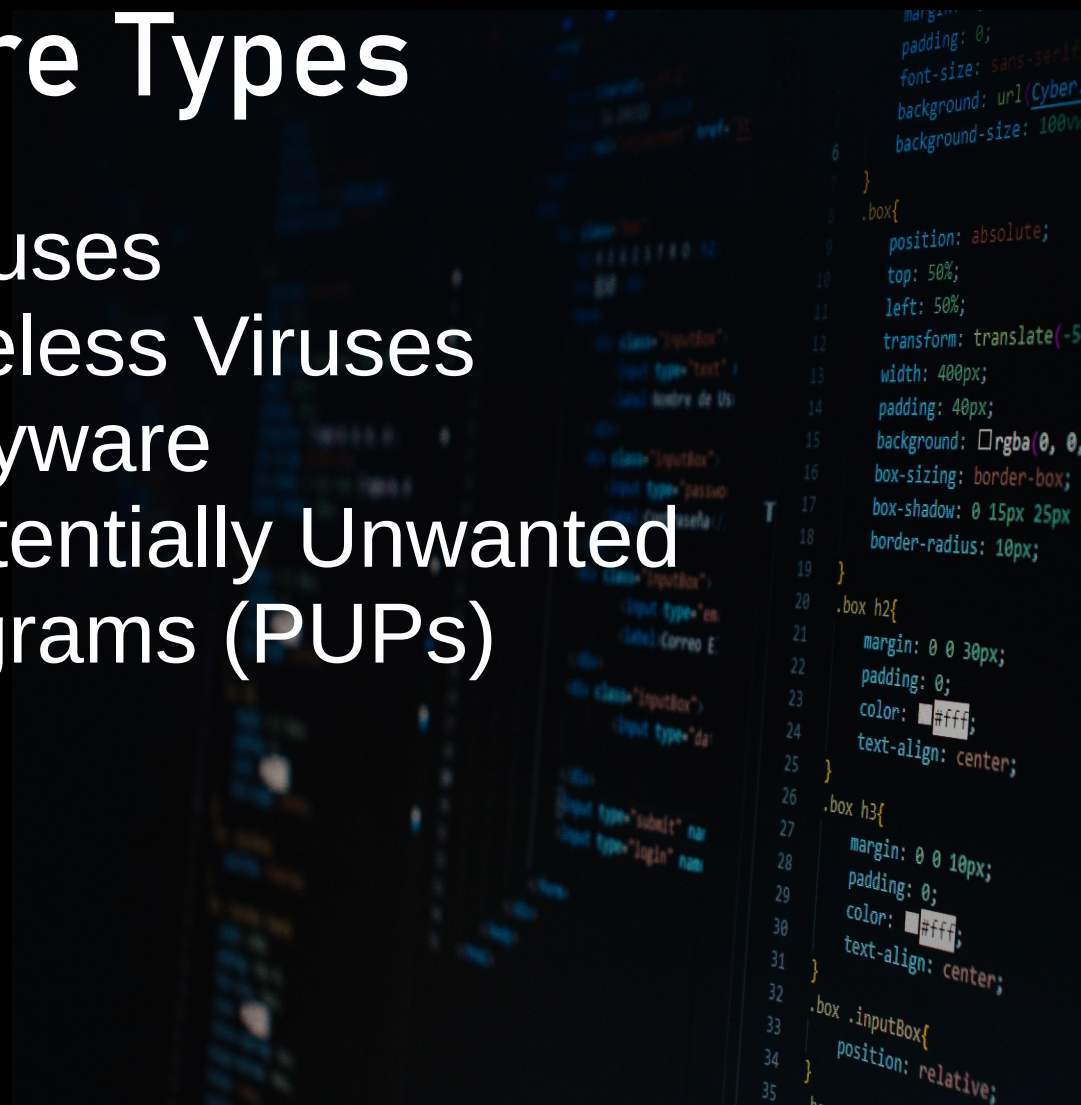
What's In It?

- Malware
- Malicious Code
- Adversarial AI



Malware Types

- Ransomware
- Trojans
- Worms
- Rootkits
- Backdoors
- Bots
- Keyloggers
- Logicbombs
- Viruses
- Fileless Viruses
- Spyware
- Potentially Unwanted Programs (PUPs)



Malware

- Short for Malicious Software
- Overarching term used to describe a large number of malicious softwares. (Replaces the common term “virus”)
- Causes harm to systems and devices, networks, and users and/or gather info, provide illicit access, and take actions on an affected system.

Ransomware

- Hijacks a computer and demands a ransom
- May use encryption to lock down a users files
- May accompany pirated software or pornography and threaten to report users to law enforcement
- Effective backups are the only true protection from ransomware
- Some organizations pay ransoms

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margin: 0;
padding: 0;
font-size: sans-serif;
background: url(Cyber);
background-size: 100%;

}

.box{
  position: absolute;
  top: 50%;
  left: 50%;
  transform: translate(-50%, -50%);
  width: 400px;
  padding: 40px;
  background: rgba(0, 0, 0, 0.5);
  box-sizing: border-box;
  box-shadow: 0 15px 25px rgba(0, 0, 0, 0.5);
  border-radius: 10px;
}

.box h2{
  margin: 0 0 30px 0;
  padding: 0;
  color: #fff;
  text-align: center;
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.box h3{
  margin: 0 0 10px 0;
  padding: 0;
  color: #fff;
  text-align: center;
}

.box .inputBox{
  position: relative;
}
```


Trojans

- named after the Trojan Horse
- disguised as legitimate software and requires user interaction
- RATs (Remote Access Trojans) are a subset
- Used to take control of a system to perform additional behavior
- Not to be confused with Remote Access Tools, legitimate software used to provide remote assistance

Worms

- doesn't require user interaction
- can spread themselves
- often spreads by network connections, file shares, email attachments, etc...
- self install without user interaction
- Extremely dangerous to work with



Rootkits

- Designed to allow attackers backdoor access
- Puts malicious code between the user and the computer to modify user inputs, computer outputs, and hide its traces
- Extremely difficult to diagnose using the infected system
- Removal may not be possible, or extremely costly, backups are a great defense

Backdoors

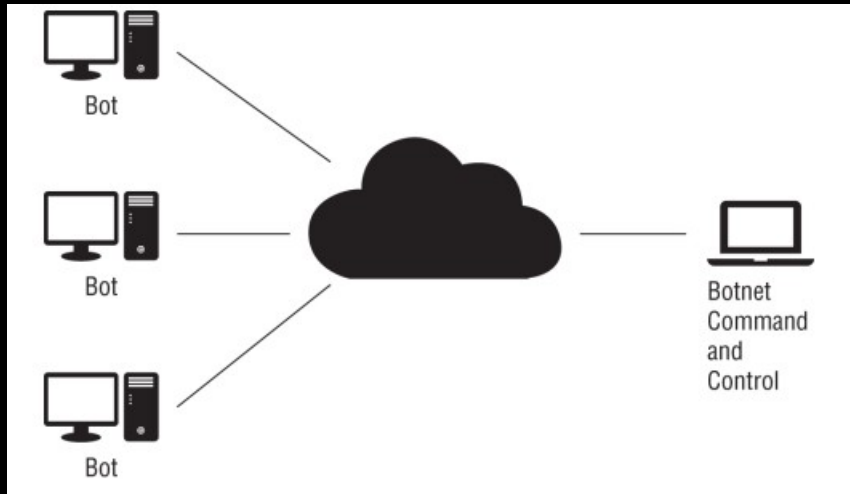
- access that bypasses normal authentication and authorization
- allows access to systems, devices, or applications
- Trojans and Rootkits often include backdoors
- May be intentionally included by hardware/software manufacturers during development, then left for deployment
- Often discovered by attackers

Bots & Botnets

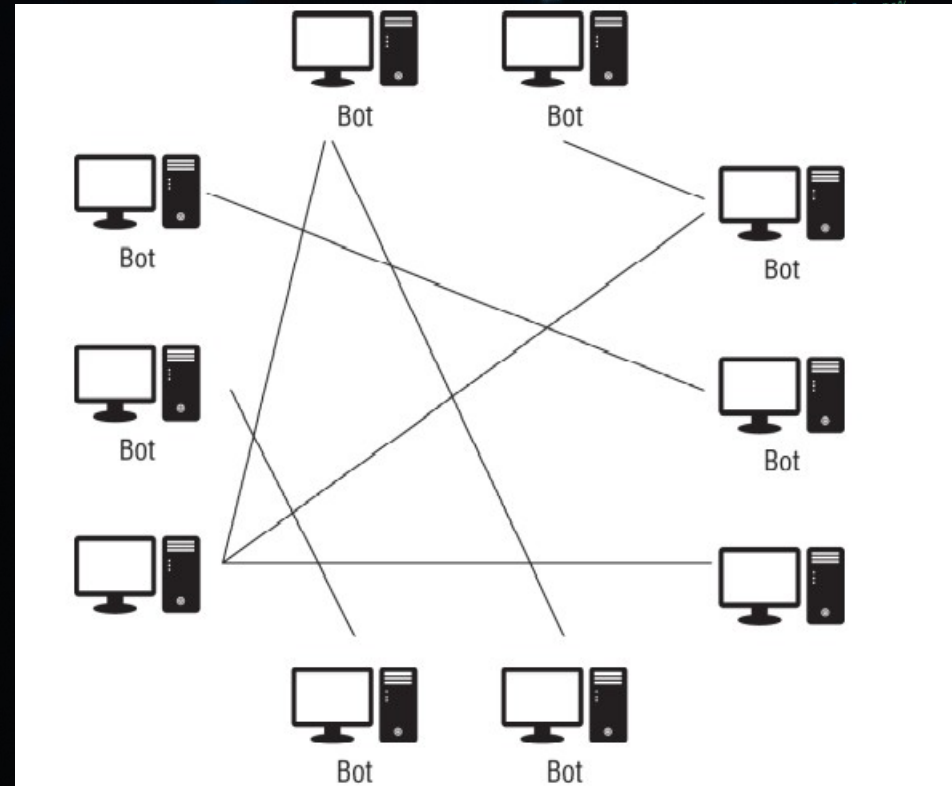
- remotely controlled systems or devices with a malware infection
- used in concert to perform additional compromises and infections, relay spam, and provide infrastructure for denial-of-service attacks
- Communicate over C2 (Command and Control) channels

2 Different Flavors

Client → Server



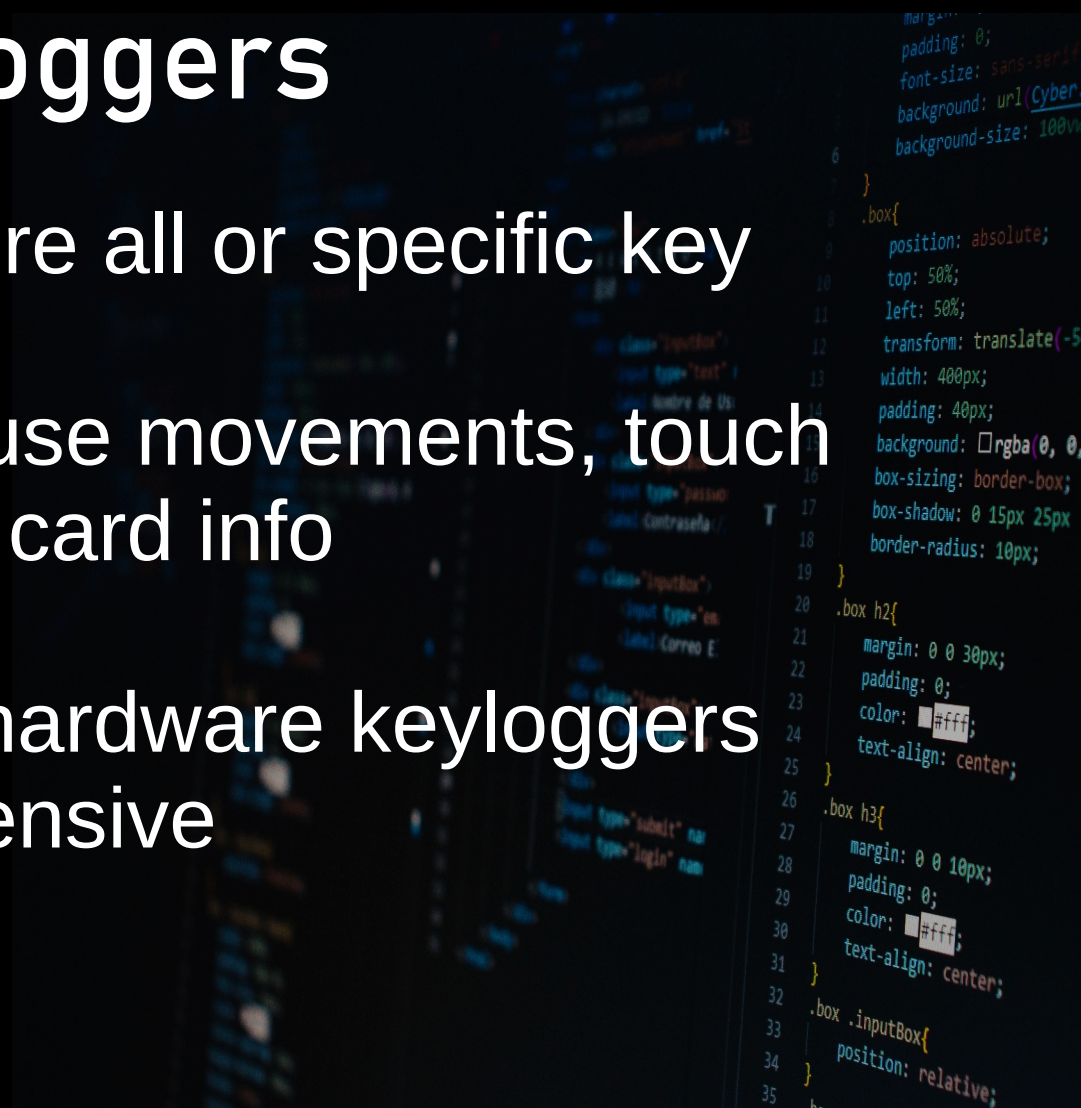
Peer-to-Peer



KeyLoggers

- software that can capture all or specific key presses
- may also consume mouse movements, touch screen taps, or payment card info

***Not on the Exam*: But hardware keyloggers exist and are very inexpensive**



Logic Bombs

- require a specific set of circumstances to activate, a date, a specific input, etc...
- very rare
- not independent programs, rather malicious content within a program
- hard if not impossible to detect without reviewing original code

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padding: 0;
font-size: sans-serif;
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background-size: 100%;

}

.box{
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  left: 50%;
  transform: translate(-50%, -50%);
  width: 400px;
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  border-radius: 10px;
}

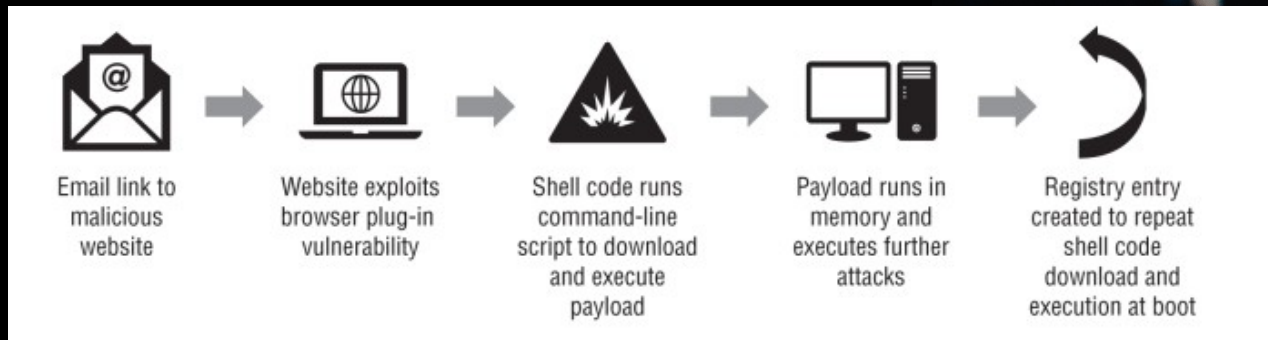
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Fileless Viruses

- like normal malware, but never get saved to disk
- always reside in memory
- persist in future re-infections through registry keys that re-infect machines



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font-size: sans-serif;  
background: url(Cyber  
background-size: 100%  
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} .box{  
position: absolute;  
top: 50%;  
left: 50%;  
transform: translate(-50%  
width: 400px;  
padding: 40px;  
background: #000000;  
box-sizing: border-box;  
box-shadow: 0 15px 25px  
border-radius: 10px;  
}  
} .box h2{  
margin: 0 0 30px;  
padding: 0;  
color: #fff;  
text-align: center;  
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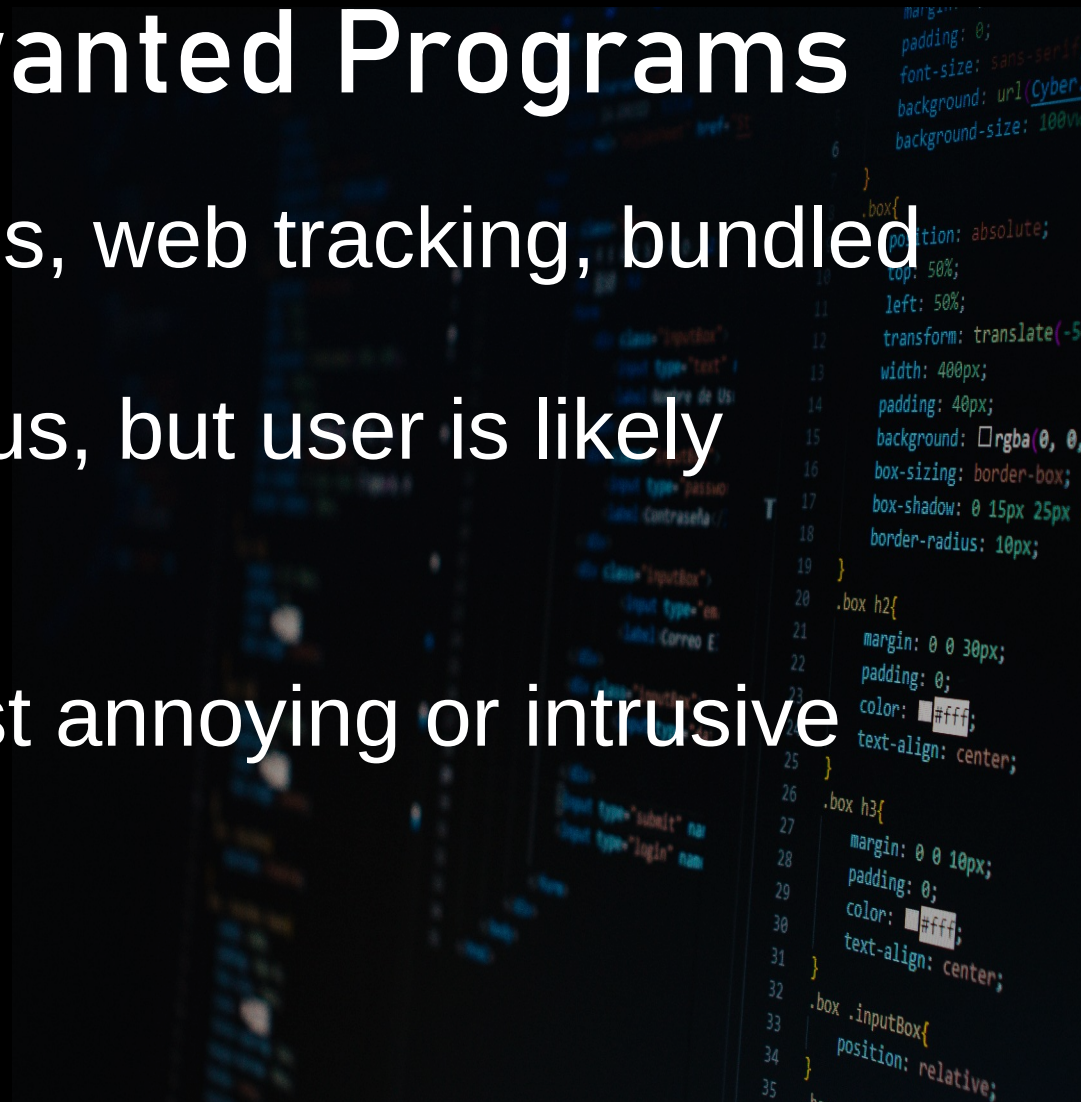
Spyware

- designed to obtain location data, message contents, browsing habits, spending habits, camera access, etc...
- may be used against a company, enterprise, government, individual users, or a romantic partner
- A subset of this software type is *Stalkerware*, often installed by individuals in unhealthy or abusive relationships (Life360?)

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}  
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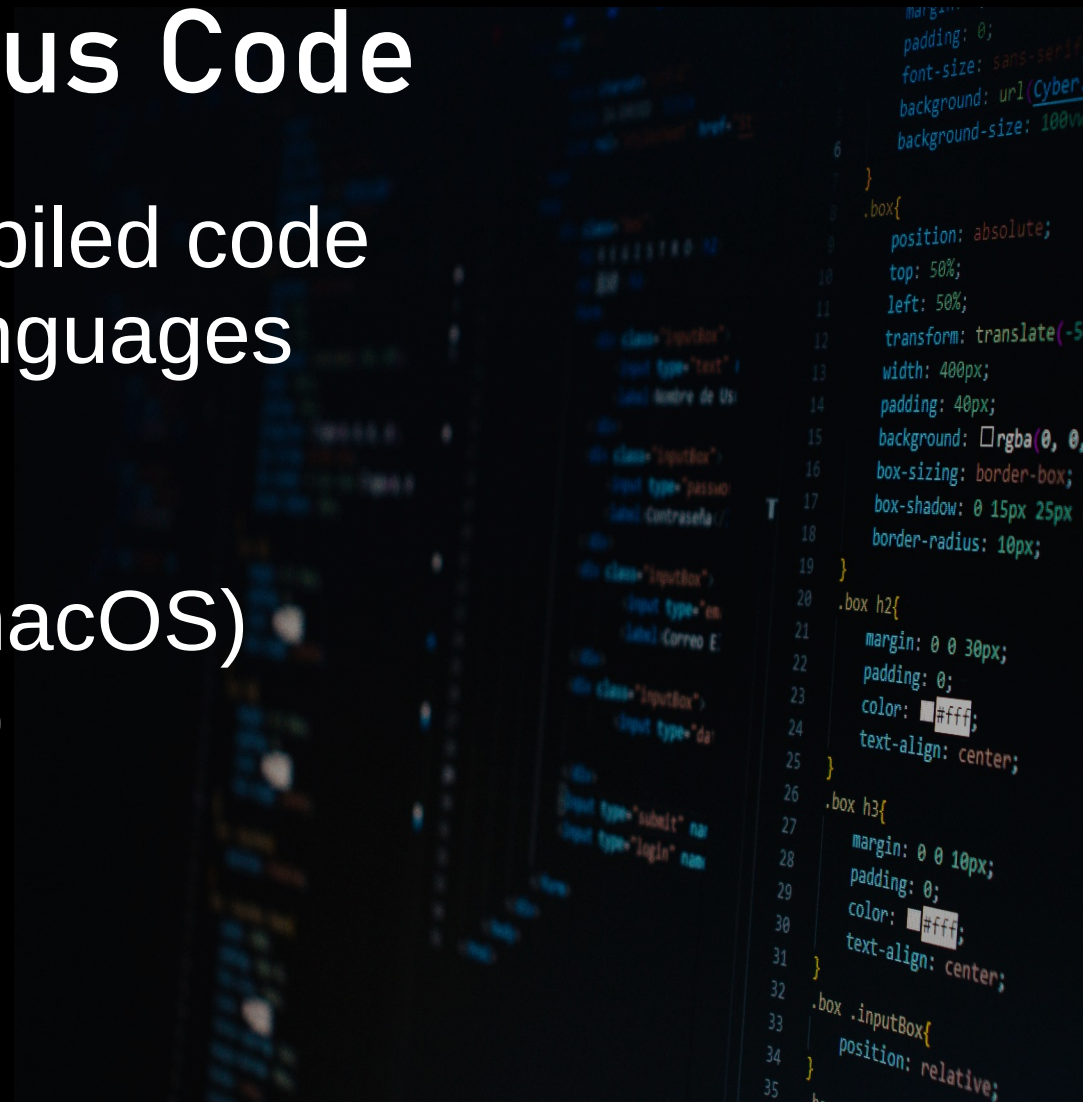
Potentially Unwanted Programs

- adware, browser plugins, web tracking, bundled programs
- not necessarily malicious, but user is likely unaware of installation
- Often not malicious, just annoying or intrusive



Malicious Code

- Scripts/macros vs compiled code
- May use interpreted languages
 - Powershell (Win)
 - Visual Basic (Win)
 - Python (Win/Linux/macOS)
 - Bash (Linux/macOS)
- Also includes “macros”



AI/ML and Adversarial AI

- AI and Machine Learning are “trained” by being given certain sets of data and programmed to recognize them
- May be unintentionally corrupted by unaware installers/users
- May be intentionally corrupted by threat actors

Check on Learning

- software that collects key strokes and mouse movements
- malicious software that only exists in memory and reinfects after removal or reboot
- software that demands users pay for access to files or to prevent embarrassing consequences

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padding: 0;  
font-size: sans-serif;  
background: url(Cyber  
background-size: 100%  
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