Problem Solving with the Internet of Things and Python

Unit 1

Case Western Reserve University — Institute for Smart, Secure, Connected

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Unit 1 Topics

- 1.1 What is IOT? What is a Thing?
- 1.2 IOT Connectivity
- 1.3 IOT Communication Protocols
- 1.4 IOT Services
- **1.5 IOT Security**

Unit 1.5

IOT Security

Why IoT Security?

Unfortunately there are people out there that will spend their time doing "bad things".

While you may not worry about someone finding out the temperature data from your greenhouse, your internet connected device can provide access to the internet which can then allow the bad players to do many malicious things.

Adafruit has another excellent video about IoT Services. Check it out on the next slide.

Why Hack IoT?

- Access point for DDoS bot attacks
- Looking to access money or credit card data
- Trying to steal usernames and passwords which could be then used on other sites
- Capture sensor data, like personal fitness data, to harass people

Common attack methods

- Automated logins - looks for default passwords
- Automated exploits - looks for OS flaws to exploit
- Sniffing - listen to device communication
- Spoofing - listen and pretend to be the same safe device
- Man-in-the-middle - grab communication in the middle and change it

IoT Security Bottom Line

- Consider security from the beginning

- Assume someone will try to hack your IoT system

- Assume someone will succeed in hacking you someday and have a plan in place to deal with the intrusion

More resources

https://learn.adafruit.com/all-the-internet-of-things-episode-five-the-s-in-iot-is-for-security
https://www.youtube.com/watch?v=pGtnC1jKpMg

https://www.techtarget.com/iotagenda/definition/IoT-security-Internet-of-Things-security

https://www.iotsecurityfoundation.org/

https://www.reportlinker.com/p06195542/Internet-of-Things-IoT-Security-Market-Report-2031.html