



Computer Science Virtual Learning

PLTW Computer Science Principles

May 12, 2020

Lesson: May 12, 2020

The Heist

Learning Target:

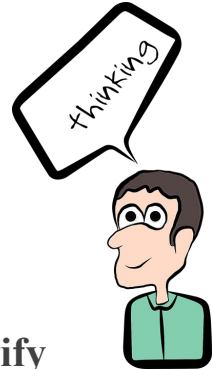
The goal of this lesson is for students to personally invest in maintaining online security and to improve their personal cybersecurity hygiene. Students focus on cybersecurity from the perspectives of the user, the software developer, businesses, the nation, and the citizen. Encryption is used as a route to explore the efficiency of algorithms and how the time required for an algorithm to execute can depend on its input.

Introduction

Hacking is figuring out ways to use a program that were not intended, so there are never directions. Ethical hackers understand computers and are able to improve computer security by identifying and closing vulnerabilities in hardware and software. **Script kiddies** use existing programs that automate the work of identifying and exploiting vulnerabilities. Review this presentation about **Penetration Testing**

Explain each of the following true statements:

- Script kiddies do not necessarily understand much about computers.
- Script kiddies do not act ethically.
- Script kiddies and white-hat penetration testers use the same tools to identify and exploit vulnerabilities, but these two groups have the opposite effect of each other on computer security.
- Script kiddies are not hackers under the definition of hacking.



Practice: The Heist

Many high school competitions exist for cybersecurity teams. You will explore one "Capture The Flag" (CTF) competition called picoCTF2019. Watch the video and click [here](#) to learn more about picoCTF2019





Practice: The Heist

There are some Rules!

- a. Do not post keys on the Internet. It spoils the fun for others.
- b. Do not attempt to hack into the game server or interfere with the game infrastructure.
- c. Do not provide or receive help from anyone outside your team that leads *directly* to the key.

Practice: The Heist

***You will not be joining a classroom and you do not need an email token from a teacher to play the game**

- ★ Simply, link to [picoCTF2019](#) and click the register link in the upper right corner.
- ★ Create an account. You will not need to join a classroom or a team to click the [game](#) link at the top of the page and start playing the game, although, if you would like to create a team with your friends online, you can.



Practice: The Heist

Play the 2019 Game!

- ★ **Work through each challenge and document your solutions on a Google doc.**
- ★ **If you get stuck there are places you can go online for help. Consider watching one of these [videos](#) or or looking through this [document](#) to see how others have attacked each problem.**



Conclusion: Reflection

Open a page in the Computer science Notebook, and consider this question for your activity reflection.

- 1.** Penetration testers attempt to access computing power and data without being detected. Some aim to improve a company's cybersecurity, while others aim to steal data. Even with good intent, however, a penetration tester is unethical if they lack written permission from the system's owner. Why is it unethical and often illegal to attempt to access a system without permission if your intent is to help improve the system's security?



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