Computer Science Virtual Learning

PLTW Computer Science Principles

May 11, 2020
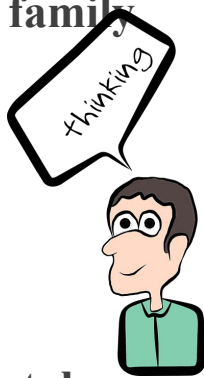
Lesson: May 11, 2020
Security and Liberty

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.

The Internet and the global nature of computing offer opportunities for both security and liberty. Consider the following questions, discuss them with your friends and family members, and take notes in your computer science notebook.

- In what ways can computing improve the safety of our society?
- In what ways can computing increase our liberty and our ability to preserve democracy?
- Will both security and liberty increase because of computing, or will one overtake the other?
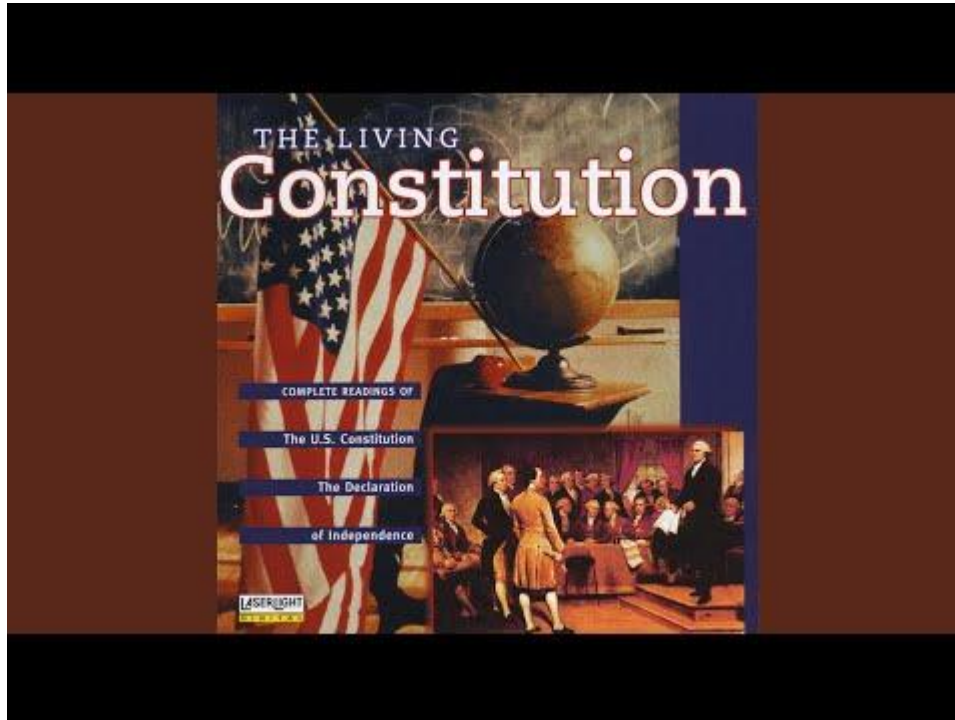- Can computing help us balance these two principles?

Watch this video about Cybersecurity and Crime

Read Amendment IV of the Constitution

Of all the countries in the world, the United States offers some of the most extensive rights to citizens accused of a crime. Consider the constitutional rights guaranteed to people accused of a crime.

★ Brainstorm all of the rights that you can think of into a single list. Group ideas together where appropriate.

★ Record your thought in your computer science notebook: Why you think the founders of or leaders of our branches of government created those rights?

If a perfect lie detector were invented, one that never made mistakes, perhaps some of the rights of the accused would be unnecessary.These rights are known as the **Miranda Rights.**

★ **Would want to eliminate these rights if a perfect lie detector were invented?**

★ **In writing, state and support your individual opinion on this question.**

The Fourth Amendment was written at a time when government searches often tore a house apart. With technology, searches can be less physically disruptive. A person wouldn't even know if their email was searched!

★ *"Because technology makes searches less disruptive, searches should be permitted more now than 50 years ago."* Consider whether you think the government should have to have probable cause to conduct a search using technology that doesn't disrupt your things.

★ If your school provides students with an email address, under what circumstances do you think the school administration should be able to search your email? Write your thoughts in your computer science notebook.

Read the following sections from Chapter 2 in *Blown to Bits*, pages 48-72:

★ Brainstorm a list of decision makers who determine what data are collected about you based on your Google searches and how long those data are retained about you?

★ Brainstorm a list of the stakeholders that are affected by the decision to mine Google search data.

★ Consider and discuss the collection and retention of data about all of your purchases. Who makes the decisions about the collection and retention of that data? Who are the stakeholders affected?

Read the following sections from **Chapter 5 in _Blown to Bits_ pages 187-193** and answer the questions below In your computer science notebook.

★ **Is email commonly encrypted?**
★ **Who determines whether most email is encrypted?**
★ **Who are the stakeholders affected by whether email is encrypted?**

Computing can affect democracy by making government both more accessible and more accountable to people. The Open Data Movement argues that making raw data available in standardized formats is especially powerful because third parties can create applications that use the data. Complete one of the following Task:

★ Citizens can more easily participate in decision making because of networked computing. The status of bills being considered by the legislature is posted on the U.S. Legislature's site, **congress.gov**, and on private sites like **govtrack.us**. Use one of these websites to identify and describe a bill currently being considered by the legislature.

★ Prepare a video or a presentation about the current bill that you learned about and practice presenting the information to your family and friends.

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

1. How will computing increase our liberty? How will computing increase the rule of law and order?