PLTW COMPUTER SCIENCE

Activity 1.4.6

Digital Property and Forensics

Introduction

In Geroge Orwell's book *1984*, brutal thought police control all of the citizens in a dystopian "future" through unconscionable breaches of privacy made possible by technology.

Today we witness unprecedented freedom and ability to design, create, and modify. We enjoy countless creature comforts and quality of life improvements thanks to technology. The same technology has increased the ability of government and industry to track the ideas exchanged by people, as well as to enforce intellectual property laws. Do we need property rights for ideas?

Materials

- Chapter 6 of *Blown to Bits* by Hal Abelson, Ken Ledeed, and Harry Lewis, available at http://www.bitsbook.com/wp-content/uploads/2008/12/chapter6.pdf

Procedure

1. Skim the questions in this activity, especially the debate resolution at the end. Read “Chapter 6: Balance Toppled: Who Owns the Bits?” in *Blown to Bits*. Respond to the following questions indvidually, supporting your answers with information from the text.

    - Consider the text beginning with the second to last paragraph on page 210 of *Blown to Bits* and extending though page 215. Journal about whether you believe U.S. citizens have appropriate rights where the use of digital data is concerned.
    - Consider the information about how U.S. laws may be promoting unsavory business practice in “Copyright Protection or Competition Avoidance?” beginning on page 215 of *Blown to Bits*. Journal about your beliefs regarding balancing the protection of digital work property rights versus safeguarding against anti-competitive practice.
    - After reading pages 219 through 222 of *Blown to Bits*, summarize what you believe about whether creativity is supported and safeguarded in U.S. laws.

2. Metadata is information contained within a digital file, such as

    - Date file was created
    - Location of file creation (e.g., some cameras tag photos with location)
    - Type of file
    - Serial number of the device used License number of the software used

    Medadata is available to the computer, the software it runs, and people who know how to read it.

    - Use the Internet to find five other examples of what metadata might reveal and record them here.
    - Describe how metadata can be used in the investigation of crimes, including theft.

3. As part of the computing revolution, new copyright licenses have been created that enforce the legal rights of people who want to share their work for free. Richard Stallman, founder of the Free Software Foundation, created the GNU Public License (GPL) in 1989. Other similar licenses include the BSD, MIT, and Creative Commons. Creative Commons is typical:

CC-BY: You can use or modify this work, but credit who the work is **by**.

CC-ND: You can use this work but not modify it; **no derivatives**.

CC-NC: You can use this work but cannot sell it: **non-commercial**.

If you want to retain ownership of your work, use the standard copyright, all rights reserved. If you want to donate your work to the commons, use a commons license.

What would motivate someone to want to donate their work to the commons?

4. Consider digital rights management (**DRM**) technologies. Respond to one of the following two writing prompts.

    - Describe what should be done, if anything, to further protect the identities and privacy of people using digital technologies. Provide support for your answer. In addition, acknowledge potential pitfalls (e.g., conveniences we might lose).
    - Describe a real or imagined society where digital technology rights and laws are abused and/or enforced for human benefit. Comment on both the negative and positive aspects of this society as you describe it.

5. Form debate teams as instructed by your teacher. Your teacher will assign you to the affirmative or negative sides of the debate. These sides, respectively, will support or oppose the following resolution:

    Resolved: That the United States federal government should significantly increase the protection afforded to property rights for those who create and distribute digital products.

    With your partner, prepare a 4-minute speech for your position. Also prepare an outline for additional arguments that could be used for follow up.

    Prepare to debate the issue against another team as directed by your teacher. One possible structure is as follows:

Affirmative	3-minute speech supporting the resolution
Negative	3-minute speech opposing the resolution
Preparation	2 minutes for teams to prepare follow-up speeches
Affirmative	2-minute speech supporting their case and responding to the Negative team′s arguments
Negative	2-minute speech opposing the Affirmative team′s case and responding to Affirmative arguments

6. For the AP CS Principles Explore Performance Task you must find three recent, credible sources of information about a computing innovation that:

- Has or could benefit and harm society, economy, or culture
- Consumes, produces, or transforms data
- Raises a storage, privacy, or security concern regarding data

In each unit of this course, you will investigate particular impacts of computing innovations on society. In this activity, find one or more articles referenced in the ACM TechNews archive **http://technews.acm.org/archives.cfm** (or another credible source) about the impact of a computing innovation related to one of these areas:

- the creative arts
- collaboration for creative work
- the rights to own creative work

Technical news is often reported in secondary sources such as newspapers and magazines. You can often get more detailed and accurate information by following references. For summaries from the ACM TechNews, be certain to follow the references to the original secondary article being summarized by the ACM TechNews. Tracking down the primary sources (e.g., peer-reviewed journal articles) is not required by the performance task.

Other topics may be explored at the discretion of your teacher. Find relevant summaries of news article from the ACM TechNews and read the original articles being summarized. Complete some portions of the *Explore* task described below as directed by your teacher.

Task part 1. Create an audio, video, or visual artifact that illustrates, represents, or explains the computing innovation's purpose, function, or effect. (3 page/1 minute/30MB max)

Task part 2. Essays

- Name the innovation and its purpose and function. Describe how your artifact illustrates, represents, or explains the computing innovation's purpose, function, or effect. (Approximately 100 words.)
- Describe the tools, technique, and process you used to produce the artifact. (Approximately 100 words.)
- Explain the beneficial AND harmful effect(s) the innovation has or could have on society, economy, or culture. (Approximately 250 words.)
- Describe the data; the consumption, production, or transformation of data; and the storage, privacy, or security concern(s) directly related to the innovation. (Approximately 250 words.)
- Use APA-style citations to correctly reference the article(s).

Note: This step is adapted from the official College Board Explore Performance Task but it does not duplicate the content of College Board Task or Rubric. The task provided here contains elements that are different than the College Board Performance Task and Rubric. Please reference official College Board materials.

Conclusion

1. How did you feel about digital privacy before this activity? How has your understanding of digital privacy changed?
2. How did you feel about copyright law before this activity? How has your understanding of copyright law changed?
3. In one or two paragraphs, summarize who gets to own what sort of bits in the United States.