### **Documents**

### **Duration: 1 Week**

### **Summary**

This lesson first continues the learning of binary data by introducing hexadecimal, which is an important format often used for representing binary data for humans. One use of hex, viewing the file signatures of file formats, is shown in the video lecture and then used in the assignment. The lesson then introduces the first computational artifact types: those that are primarily text-based. It does so by introducing the Google Docs document editor to illustrate creating text-based documents, to illustrate cloud-based applications, and to illustrate the important AP CSP idea that computing facilitates collaboration (which Google Docs is designed to do). It also introduces the concept of *meta data* by showing the metadata kept in documents.

The assignment has students create a text-based Google Doc and save it in .txt, .docx, and .pdf formats. It then has the students examine properties of the three formats including: files size, metadata, and files signatures using a hex editor to see the bytes of the files. One of the video lectures is dedicated to showing how to do this assignment.

### **Learning Objectives**

* Explain how binary sequences in hex are used to abstract the bit-level binary representation of data.
* Convert among binary, decimal, and hexadecimal number systems.
* Describe how cloud-based tools facilitate collaborating in the creation of computational artifacts and working with data.
* Create, store, manage, and share, text-based documents in Google Docs.
* Describe how text can be represented in many file formats such as .txt, .PDF, and .doc.
* Define *metadata*.
* List several prominent forms of metadata in office documents.
* Use a hex editor to look at the bits of document file types including txt, PDF, doc.

### **Course Material**

* Review: [Hexadecimal and File Signatures](https://www.youtube.com/watch?v=jf1Rz9AFk7I&feature=youtu.be) [23:11]
  + [Slide PDF](http://homepage.cs.uri.edu/~thenry/csc414/08_File_Signatures_TOC.pdf)
* Read: [Computing as a Creative Activity and Computational Artifacts](http://computing-concepts.cs.uri.edu/index.php/Computing_As_A_Creative_Activity_and_Computational_Artifacts)
* Watch: [Google Drive Tutorial 2017](https://www.youtube.com/watch?v=LW9gh2myDhA&index=3&list=PLs7zxED4oCep9tBlcr9bQx3v4uUjrenVE) [20:02]
* Watch: [Google Docs and Sheets Tutorial 2017](https://www.youtube.com/watch?v=W7wOQaGbf-A&list=PLs7zxED4oCep9tBlcr9bQx3v4uUjrenVE&index=1) [20:43]
* Watch: [Documents and Metadata Practicum](https://www.youtube.com/watch?v=cj1TNXWiP5w&feature=youtu.be) [35:06]

### **Assessments**

* Conceptual Quiz:
  + [Data Types](https://docs.google.com/document/d/1TWRRZQ4cCbrjH7mtsHPB_Wm90t22svb-Gkk7ZVU8zY4/edit?usp=sharing) (requires access)
* Practical Assignment:
  + [Documents](https://drive.google.com/open?id=15opnyTZDlnrytp0zPcuhz9n2ZZDQhfwUsrB7NwDSLq4) | [Grading Rubric](https://drive.google.com/open?id=16nvqmwnRTuxMi712-zfWju5plKgaYqaeelyVQGwcpRo) | [Answer Key](https://docs.google.com/document/d/1FiDlEu6aNphlIWZ-31HSIRttO2HUtjdgjl80IzIW3J4/edit?usp=sharing)