# Commentary: Week 10

CSE120: Computer Science: Principles

The last week! The main goal is to wrap things up, and prepare students for the final exam. But, I want to go out in style, so I cover Big Data and Steganography before the last lecture’s review. Steganography is an amazing technology, which is little known, but lots of fun.

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| Lecture 25 | Majoring In CS | Lecture 26 | Lab 12 | Review |
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**Lecture 25:** Big Data is a topic that should have been part of CS Principles class all along, but I never really got my brain around how to do it. This is my first try … I like it, but it may not be the last word. Among the points to be made are (a) big data is all around us, and we’ve seen it before, (b) it doesn’t take really sophisticated analysis to discover interesting stuff, (c) much of the “big data” we are interested in is metadata, so don’t think of it as innocuous, and (d) here’s how to “out” Paul Revere with metadata. It’s a fun lecture.

**Assignment**: N/A

**Lab 10:** This class covers careers in computing, and is delivered by Raven Alexander of the CSE department. Everyone should have seen the code.org video in preparation for the class. The main point is that CS is a powerful career choice – 60% of the future STEM jobs will be CS-based over the next 10 years according to the Bureau of Labor Statistics. The subsidiary point is that SOME CS will be part of almost all careers from now on, so taking more than CSE120 is smart. My students definitely got the message.

**Lecture 25:** This is my favorite lecture – steganography. I explain that the word comes from Greek, but not the same root as stegosaurus; moreover the name is apt because of the claimed original use of hiding a message in a slave’s hair. We’ve done the ground work for this lecture, so I discuss how to “trim” a photo to save just the high order bits, and show how that doesn’t harm a photo like the one from Ukraine. (I used a Tahrir Square photo, but thought I’d upgrade to a new uprising.) Then I imbed it in the innocuous calendar photo from Spokane’s Spokesman review. Then I make it come back! It is amazing! The explanation has been enhanced this year. The point that the least significant bits are statistically irrelevant to the photo is made by asking a “photo search” app to find both the original (5 occurrences) and the “steganized” photo (should be 0 occurrences, but the same 5 are found)! [steg1Ukraine throws away a least significant bit with each mouse click; steg2Ukraine does the embedding when mouse clicked – note the creation of stegFog.png; steg3Ukraine reveals the hidden picture by pushing the RGB bits left one position per keyPress.]

**Assignment: N/A**

**Lab 11:** Students comment the code used in the lecture, explaining how it works. The explaining was not as easy as I thought, but most students went back to the lecture slides and followed the logic.

**Lecture 26, Review:** Students had been given a review sheet for the final at the previous lecture and were asked to bring a question to class. Some did and we got a good review discussion going. (A few were still asking about binary!)