

AP Computer Science Principles Summer Work

Technology and specifically much of Computer Science is having a huge impact on our lives and our economy. For example, an Oxford University study estimates that 47% of all jobs will be automated by 2034 – well within your working life. What will that mean for you? What privacies will remain when everything is ‘in the cloud’ and open to legal and illegal access? Should encryption have a back door for law enforcement?

The class is taught as the equivalent of the University of Washington’s CSE 120 – Computer Science for non-majors. You will have the option of getting a UW transcript and credit for taking this class through the UW in the High Schools program.

If you have any questions during the summer I can be reached at rcmiller@seattleschools.org.

The summer work:

These questions are from the free online book “Blown to Bits”. You are responsible for reading chapters 1, 2, 4 & 5. Bring your answers to these questions the first week for classwork credit.

There will be a quiz over the material during the first week of class.

The book is free to download at: <http://www.bitsbook.com/excerpts/>

Chapter 1: Digital Explosion

1. What information is today represented by bits? (read p. 1 - 4)
2. Describe Moore's Law. (p. 8)
3. Give an example of how the digital explosion is "neither good nor bad"

but has both positive and negative implications. (read p. 14- 17)

Chapter 2: Naked in the Sunlight

1. The reading section starts off with an example of a young girl snapping a photo of her attacker. It then discusses how the man claims innocence. If we are all able to take snapshots do we know for sure what we are taking is valid, is it right? Do you think the man was the correct criminal?

2. The next example concerns a woman on a Korean subway. From the event her family was disgraced and it ended up on Wikipedia. Is this a positive that events that occur in our everyday lives can end up world news and on Wikipedia? Is there any way to prevent this? Who now decides what news is? Is this fair?

3. What is an RFID tag and how does it work?

4. Black Boxes talks about what is in our cars right now. Does your family have a model listed that has one? Did you know about this? Knowing that there is a black box in the car would you drive differently? If someone wrecked into you, would you be glad if they had a black box?

5. List the trail or path of information that an MIT student was able to use in order to get the Governor's medical records.

6. (2 or more paragraph answer) How do you feel about de-identification? Do you think it work in some instances? Not everyone is going to do what the MIT student did, but some might. Are you concerned about how your

information or your family's information could be used? List some of the pros and cons to help support your opinions and answer.

7. List 3 of the reasons we "voluntarily leave visible footprints of our daily lives".

8. What do loyalty cards save you? What types of information does the store then have and what can they do with it. Give an example.

9. (1 paragraph) On page 41 explain what the author is talking about when he states 'Bits don't fade and they don't yellow. Bits are forever. And we don't know how to live with that.'

10. (1-2 paragraphs) How do you feel about all this loss of privacy because of time, money, convenience, etc? Is it better to live in this new world where you save, get to pick what you want to watch on TV and other digital niceties? Or was it better when someone couldn't track what you bought, ate, watched, and surfed for?

11. Public data was always public, but until recently it was inaccessible. Now even "private" or personal information is easily available online. Provide at least two examples of what you (and criminals) can get online free or cheap.

12. What is a keylogger? How can a keylogger be used to spy on individuals?

13. What is re-identification? How is re-identification accomplished?

14. "Chinese tracking is far more detailed and pervasive than Britain's ubiquitous surveillance cameras." What technology is China using to track individuals? What personal information is China gathering about its citizens?

15. What is the OnStar system? Is it legal? What good purposes does OnStar serve? How can OnStar be abused? Is this wiretapping which is illegal?

16. In the United States traditions of individual liberty are foremost. The REAL ID act of 2005 created a national ID by 2009, but currently implemented at the state level with a state ID. Even without an ID information is gathered about an individual's biometric data. What is biometric data? How can this data be used to identify an individual?

17. Scanning databases with computer programs for personal information from numerous databases and then correlating, analyzing, and aggregating the information into a rich data source is sometimes called "data mining." Why do you think it is called "data mining?" Is this similar to re-identification?

18. What is the Privacy Act of 1974? What does it do for individuals?

19. Because of the Privacy Act, certain events were in place for the 9/11 terrorists attacks to go almost undetected. How was this information not obvious? What are some effects after 9/11 about personal privacy?

20. What is the Warren-Brandeis articulation of privacy (1890)? How does this agree or clash with the First Amendment which guarantee freedom of speech? Are you really free to say anything you want? Provide example(s).

21. What is FIPP? Explain some details of FIPP. How does FIPP relate to privacy?

22. What is HIPAA? How does HIPAA relate to privacy?

23. On Monday, April 17, 2006, A Duke lacrosse player was accused of rape at a Duke fraternity house party. He left a huge digital footprint. What was this evidence and did it help or harm his defense?

24. What is the digital explosion? Do individuals have control of their private information?

Chapter 4: Needles in the Haystack

1. What exactly do search engines do? How do we determine if they succeed or fail? (p. 110 - 113)

2. When you do a search, what is the difference between sponsored results and organic results found?

3. Does a search engine find every possible website for information you are looking for? What does it do?

4. What determines which sites end up first, second, third, etc. on your list of results?

5. How can the government control what you see on the internet? Explain

Chapter 5: Secret Bits

1. What is *encryption*?
2. What is *cryptography*? Provide an example.
3. What is *security through obscurity* and why is it bad?
4. What is the *key agreement protocol* and why is it so important to Internet commerce?
5. What is a *certificate* and what role does it play in Internet security?
6. In your opinion, are digital signatures more secure than handwritten signatures? Explain.