CS101: HW 1

Due: April 9, 2018

Submission Instructions: Type your answers to the following questions in a .doc or .txt file and submit on Canvas. You will also need to submit your code **in a separate file**.

Introduction to Code Exercises

Complete the code exercises at `http://web.stanford.edu/class/cs101/code-1-exercises.html` and submit them on Canvas **as a separate file**. You should collect all your code by clicking the "retrieve code" button at the bottom of the page, then copying and pasting the code into a new document.

1. What is the output of the following code?

   ```
   print("hello");
   print(1, 2, 3);
   print("print(hello)");
   ```

   Be sure to include line breaks when appropriate.

2. Why are computers considered "dumb"?

3. What makes a computer powerful? How do we measure how powerful a computer is?

Hardware Exercises

4. What is the difference between RAM and Persistent Storage?

5. Name two differences between flash storage and disk storage.

6. Given your understanding of Moore's Law, why does a laptop today cost roughly the same amount as a laptop did in 2005?

7. If you bought a chip today for $64, how much would a chip with the same capabilities cost in 4 years (hint: use Moore's Law).

8. How many $100 chips would you need to buy 8 years ago to have the same power as a $100 chip does today?

9. What does a CPU do?

10. Describe what parts of a computer are involved in editing a file without saving it.

11. What happens when you save a file? What parts of the computer are involved in saving the file?

Software Exercises

12. How can you stop a program if it's not responding to the normal quit command?

13. What are application files made up of? Why can't we read them like we can read Javascript code?

14. Name three responsibilities of an operating system.

15. You notice that all the programs on your computer are running sluggishly. Why might your computer be running slowly, and how can you make it run faster?

16. Why shouldn't programs share RAM?

Programming Languages Exercises

17. Why doesn't Apple give you the source code for iTunes instead of the .exe file (Windows) or the .app file (Mac)?

18. What is the purpose of programming languages?

19. Find some software that is open source that we did not discuss in class. How has that software had an impact? For example: Java was open-sourced by Oracle, and now it's one of the most popular programming languages. Firefox is an open-sourced web browser that eventually led to the creation of Google Chrome.

20. Why would a company open source their own software? Name one potential benefit and one potential downside of open sourcing code.

21. Why do for-profit companies contribute to open-source software like GCC?