

AP Computer Science Summer Assignment

Welcome to AP Computer Science! I am looking forward to our class.

Please complete the assignment below. I will be collecting all work on the first day of school.

I read my email regularly during the summer. Please email me at mbachrach@glenridge.org if you are having difficulty completing the assignment.

Enjoy your summer!

Mrs. Bachrach

"Genius is 1 percent inspiration and 99 percent perspiration. As a result, genius is often a talented person who has simply done all of his homework.

- T. Edison"

Part I: Hardware and Software

Read chapters 1 to 4 of the Online Introduction to Computer Science tutorial found at <http://chortle.ccsu.ctstateu.edu/java5/cs151java.html> and answer the questions below. **Please answer the questions on index cards to be handed in on the first day of school.**

Chapter 1: Hardware and Software

1. Explain the difference between hardware and software. Provide an example of each.
2. On separate index cards, define, explain the function of and provide an example (where possible) of the following:
 - a) Systems Unit
 - b) Main Memory
 - c) Secondary Memory
 - d) Input Devices
 - e) Output Devices
 - f) bus
 - g) controller

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3. Explain the difference between application programs and systems programs. Provide examples of each.
4. What is the Operating System? Explain its function.
5. What is meant by "booting" a computer? Where does the name come from?
6. What is a network?
7. Explain the difference between a local-area network and a wide-area network?
8. What is a network protocol? Name a commonly used network protocol.
9. What makes up the Internet? What is an IP address?
10. Explain the difference between the Internet and the World Wide Web.
11. What does "URL" stand for and what does it identify?

Chapter 2: Analog and Binary Signals

1. What does "Binary" mean?
2. What is a "Bit"?
3. Explain some of the advantages of using Binary?
4. Why do computer systems have clocks?

Chapter 3: Computer Memory

1. Explain the difference between a "bit" and a "byte"?
2. What is a kilobyte, megabyte, gigabyte, terabyte?
3. What is a memory address?
4. What is a file?
5. Explain the meaning of the following statement: "As far as the hard disk is concerned, all files are the same".

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Chapter 4: The Processor

1. Explain the following terms:
 - a. Machine operation
 - b. Machine instruction
 - c. Executable program
 - d. Integrated Circuit
 - e. High Level language
 - f. Source program
 - g. Translator
 - h. Interpreter
 - i. Compile
 - j. Software portability

Part II: Number System

Read the Number Systems handout provided. On separate index cards and in your own words, describe the process and provide examples of the following:

- a) Converting a Decimal number (base 10) to Binary (base 2)
- b) Converting a Decimal number (base 10) to Octal (base 8)
- c) Converting a Decimal number (base 10) to Hexadecimal (base 16)
- d) Converting from Binary to Decimal
- e) Converting from Octal to Decimal
- f) Converting from Hexadecimal to Decimal