1. What is a “computer system”?

   -A system that is able to take input, process the input, and produce output, and has some kind of processor inside.

2. What are some of the parts of a computer system?

   A. Digital Logic

   B. Control

   C. Machine

   D. Systems software

   E. Assembly Language

   F. High Level language

   G. User

3. What is the difference between a compiled language and an intepreted language?

   -A compiled language is a language where the target machine translates the program. In interpreted language, instead of the machine there is a separate program reads and executes the code.

   Source: https://www.freecodecamp.org/news/compiled-versus-interpreted-languages/#:~:text=In%20a%20compiled%20language%2C%20the,reads%20and%20executes%20the%20code.

4. Is “C” a compiled language?

   -Yes

5. Who invented the “C” language?

   -The C programming language was invented by the late Dennis Ritchie between 1972 and 1973 while working at Bell Labs.

   Source: https://en.wikipedia.org/wiki/C_(programming_language)

6. How long has “C” been in use?

   -C has been in use for about 50 years.

   Source: https://en.wikipedia.org/wiki/C_(programming_language)

7. Is a compiler a translator?

   -Yes

8. Is an assembler a translator?

   -Yes

9. What is the command to list out the contents of a directory on a mac terminal window?

   -ls

10. What does the “C” function **atof()** do?

    -Converts a string argument into type double or float.

    Source: https://www.tutorialspoint.com/c_standard_library/c_function_atof.htm

11. What are the bottom two layers of a computer system? Give a brief desciption of each.

    -The bottom layer of a computer system is the digital logic, which is primarily made up of the circuitry and gates. The second lowest level is the firmware, which is the operations that happen inside the central processing unit (CPU).

12. What are the three “steps” of the Von Neumann Architecture?

A. The control unit fetches the next instruction to execute from memory
B. The instruction is decoded into machine language (1s and 0s) so that the processor’s microcode can understand what the system is being instructed to do.
C. The Arithmetic Logic Unit carries out the decoded instruction and produces a result which may end up in memory or another register.

13. What is the purpose of an ALU?

    -The Arithmetic Logic Unit exists inside the CPU and serves to execute decoded instructions from the control unit.

    Source: https://www.techtarget.com/whatis/definition/arithmetic-logic-unit-ALU

14. What is a “register”?

    -Registers are a kind of memory that the system uses that is able to store, transfer, and accept instructions for the CPU.

    Source: https://www.javatpoint.com/computer-registers

15. What is one difference between “Application software” and “System software”?

    -The biggest difference between application software and system software is that apps are designed for people, and system software is designed for computers. Applications software is written in languages that have larger runtimes than the languages typically used for systems software.

    Source: https://www.geeksforgeeks.org/difference-between-system-software-and-application-software/

16. Is the phrase **cmp rdi, rsi** machine language?

    -No, instructions in the form of mnemonics are usually assembly code, not machine language.

17. How many buses are included in the system bus?

    -3, the data bus, the address bus, and the control bus.

18. What is the decimal value of 10010111_2?

    -151_{10}

19. What is the decimal value of 11111111_2?

    -255_{10}

20. What is the largest unsigned integer value that will fit into 16 bits?

-65535