

## **CMSI 2210 Homework 2 - Christina , Michael, Nidhi**

1. What is a computer system?

A group of layers, consisting of hardware and software, that work together to provide functionality.

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

- System software
- Assembly code
- Microcode

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

An interpreted language is not able to be directly translated into machine language. A compiled language is directly able to translate to the machine language.

[https://www2.hawaii.edu/~takebaya/ics111/process\\_of\\_programming/process\\_of\\_programming.html](https://www2.hawaii.edu/~takebaya/ics111/process_of_programming/process_of_programming.html)

4. Is C a compiled language?

Yes; C is a compiled language.

5. Who invented the C language?

Dennis Ritchie invented C.

6. How long has C been in use?

C has been in use since 1972.

<https://ieeexplore.ieee.org/document/6499601>

7. Is a compiler a translator?

Yes.

<https://www.youtube.com/watch?v=hD0db1VkVoU>

8. Is an assembler a translator?

Yes.

<https://www.youtube.com/watch?v=hD0db1VkVoU>

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?

**atof()** converts the argument from a string to a floating point number

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

The bottom two layers of a computer system are digital logic and control. Digital logic deals with the processes of the hardware (eg. Circuits). Control involves the process of the microcode (which is the lowest level of processor instruction sets).

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

Fetch - Decode - Execute

13. What is the purpose of an ALU?

The ALU (arithmetic logic unit) is responsible for executing the decoded program instructions.

The ALU (arithmetic logic unit) performs computations with data from registers on the CPU or in RAM, ROM, or other devices.

14. What is a register?

A register is a special form of memory in the computer processor. They may hold an instruction, a storage address, etc.

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

While application software is designed for humans, system software is designed for the computer.

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

No. The phrase **cmp rdi, rsi** is in assembly.

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

There are three buses in the system bus (data bus, address bus and control bus)

18. What is the decimal value of  $10010111_2$ ?

The decimal value of  $10010111_2$  is  $151_{10}$

19. What is the decimal value of  $11111111_2$ ?

The decimal value of  $11111111_2$  is  $255_{10}$

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

The largest unsigned integer value that will fit into 16 bits is 65,535.