No E-Mail submissions will be accepted.
Submission formats and file naming:
File name :Pts_firstName_lastName_lab_1
File format: pdf or MS Word format
e.g. Pts_Donald_Trump_lab_1.pdf

Reading materials

Use the following link and write a one page summary about the movie.

The Transistor: a 1953 documentary, anticipating its coming impact on technology

https://www.youtube.com/watch?v=V9xUQWo4vN0&ab_channel=AT%26TTechChannel

The video explained three different transistors, the origin point contact type, the junction type and the photo transistor. They also mentioned a more advanced transistor named junction tetrode and highlight the importance of the these transistors, how they can make electronics more compact, while increasing quality. The high vacuum tube, bases of the electronic age, where Dr. Lee de Forest discovered a way to control the flow of electrons, through using a grid of fine wire in a vacuum tube can amplify electricity, giving it the name Audion. Dr. Arnold and Dr. Langmuir used this bases to develop an even better amplification. Many of these amplifiers where used the develop a phone line, making the first calls between New York and San Fransicso.

Shortly after, these amplifiers where used in radio towers, making it possible to send signals over seas. Over the next several years, these first breakthroughs were commercialized into TV, radar, and microwaves.

Eventually, these Doctors found a to use germanium to mirror the behaviour of the vacuum tube, without the heat and size. And the transistor was born. This groundbreaking discovery made a huge step in the electronic world.

1.Order the following architectural layers from **lowest to highest**:

Operating System
Digital Logic
Assembly Language
Problem Oriented Language
Microarchitecture
Instruction Set Architecture

Operating System	Highest
Problem Oriented Language	
Assembly Language	
Instruction Set Architecture	
Microarchitecture	
Digital Logic	Lowest

2.Explain each of the following terms in your own words:

a. Translator – converts code from one language to another
b. Interpreter – understands a computer program and runs it's instructions without needing to convert it.

3.Can you imagine any multilevel computer in which the device level and digital logic levels were not the lowest levels? Explain.

I think it's possible: in quantum computing, there exists a level that is lower than the digital logic level, since quantum computing uses a different low level logic.

4.Identify the mechanism that is used by the following programing languages to convert a source file to the machine language code:

Java, C++, PHP, Python
C, JavaScript

Translator	Interpreter
Java	Python
C++	JavaScript

C	PHP

5. In what sense are hardware and software equivalent? In what sense are they not equivalent?

They are equivalent, in the sense that a hardware circuit can perform be performed by software ie. Gates

They are not equivalent, in the sense that a computers lowest level is hardware, there must be something to run the software.

6.Babbage's difference engine had a fixed program that could not be changed. Is this essentially the same thing as a modern CD ROM that cannot be changed? Explain your answer.

Year	Name	Made by	Comments
1834	Analytical Engine	Babbage	First attempt to build a digital computer
1936	Z1	Zuse	First working relay calculating machine
1943	COLOSSUS	British gov't	First electronic computer
1944	Mark I	Aiken	First American general-purpose computer

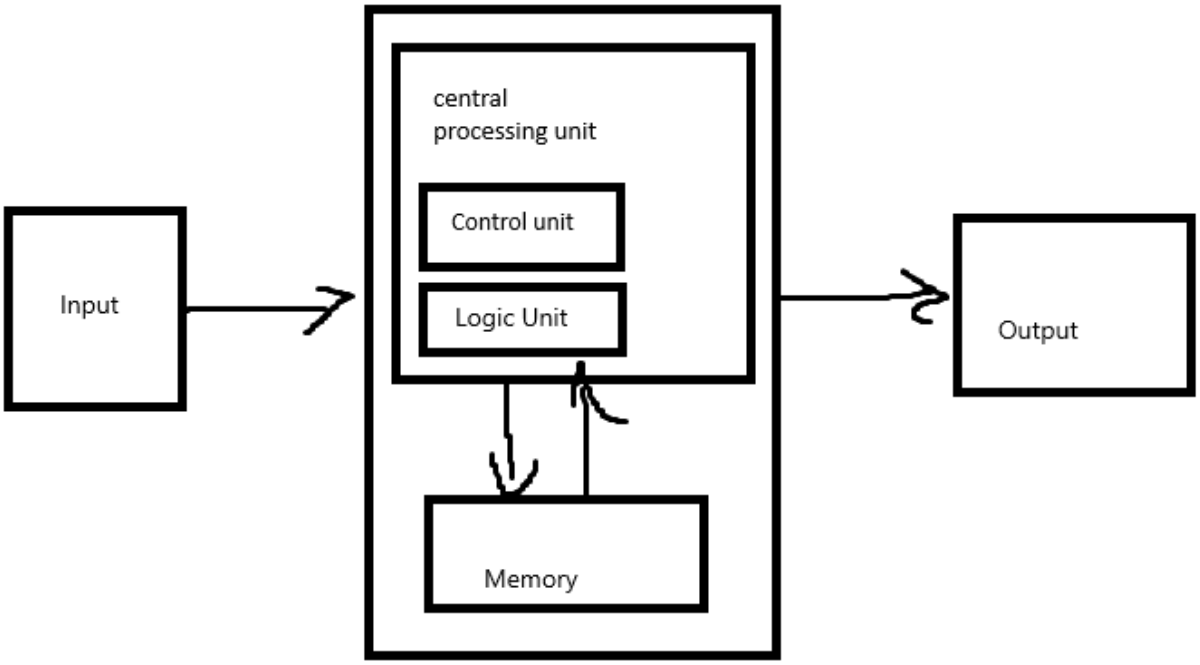
In the sense that they cannot be changed, yes, because both were designed to be immutable, and only able to do what they were designed to do. Babbage's difference handles polynomial functions and CD ROM handles CDs. The difference engine has hard-wired functionality ; likewise, the CD Rom is burned and cannot be changes.

7. Consider a computer with identical interpreters at levels 1, 2, and 3. It takes an interpreter n instructions to fetch, examine and execute one instruction. A level 1 instruction takes k nanoseconds to execute. How long does it take for an instructions at levels 2, 3 and 4?

Considering that all interpreter levels take n instructions, and a level 1 instruction takes k nanoseconds, then levels 2 would take n x n since it needs the level 1 instructions and would be delayed k times.
So for Level 2: its n x n x k
level 3: n x n x n x k

level 4: n x n x n x n k

8.Draw a diagram for the Von Neumann Machine.



9. Name two ways that a program written at a given architectural layer can be converted for execution by a lower layer.

1. Can be converted in the language to assembly level
2. Can be converted in assembly level to instruction set level