1. The Von Neumann Architecture description of the ‘general purpose computers’ relates to the four sub-components. These components compose of “Program control unit (PCU), Arithmetic Logic unit (ALU), Main Memory and Input/Output Equipment (I/O)”. These allow the computer to store data to use later. This was a major jump. Computers at the time could only execute the commands as they process them. The CPU was the only connection to the input/output. Everything else was done through the CPU commands. Memory connected to CU and the CPU. The CU connected to the CPU and Memory management. I/O only connected to the CPU. The future was to be set using these components for the general computer.

Main Memory would act in a similar manner to Memory Management. It has a few different types of memory for different purpose. For example, RAM allows the user to write to this memory. It can also be modified. ROM can only be read from. Therefore, critical information is stored here only.

The ALU acted the same way the CPU was described. As the brain of the computer. It could perform instructions based of latches, flip-flops and gates. This was to be done instead of the norm at the time where instruction were executed immediately simultaneously.

The PCU drive the fetch-execute cycle. This gets into memory and get a specific address to use. This would be based off the instruction the ALU has gotten from the I/O end. Without the PCU, the ALU would not work properly.

The I/O Equipment interacts with the end user. Based on the input received, the computer would know which instruction to execute. It would also know what to display as a result. Whatever instruction is passed through this process is passed to the ALU to deal with.

1. The sub-components of the Central Processing Unit (CPU) are the “control unit (CU Memory management, input/output (I/O) and Buses/Wires”.

The CPU itself is the brain of the computer. It can perform instructions based of latches, flip-flops and gates. Because of this, the CPU deals with the I/O, Memory Management (Data) and CU. Without the CPU, the computer is unable to perform the storage mechanism behind the architecture itself.

The CU drive the fetch-execute cycle. This gets into memory and get a specific address to use. This would be based off the instruction the CPU has gotten from the I/O end. Without the CU, the CPU would be significantly slower.

The I/O end is how the user is interacting with the machine itself. Based off the input received, the computer would know which instruction to execute. It would also know what to display as a result. Whatever instruction is passed through this process is passed to the CPU to deal with.

Buses are the connection between all the fragments and how the data get from one component to another. If it was not for these, data would not get from the I/O to the CPU.

1. The Processor bus is the communication pathway between the CPU and immediate support chips. This transfers data between the CPU and the external memory cache. Since the job of the processor bus is to receive and give at the fastest pace possible, this bus is among the quickest of all the buses with the motherboard.

The process bus has electrical circuits for data, addresses and control purposes. The CPU controls this control purpose as well. One example is the Pentium-based system. In this, the processor bus consists of 64 data lines, 32 addresses and associated control lines. This type of bus operates at the same period as the CPU. It can transfer one bit of data per data line per clock cycle. This allows the bus to transfer 64 bits per given time.

1. The expansion slots allow devices to be connected to the computer. Each slot has a different series of pinholes, depending on the need of the device. The pinholes can range from 16 to 64 in numbers. They connect to the motherboard itself. These normally from “Input/Output (I/O)” purposes. This means the CPU communicates with the devices needs so it can expand the computer capabilities. A few examples are: USB, phone charger, projector screen etc. This allows portability between different devices from file transfer. This makes every device used with the computer faster. It also makes the computer perform better.
2. A computer system composes of both hardware and software components. For the software to work, it must be connected to the hardware. It must allow the hardware to deal with the arithmetic logics and data transfer itself. A few examples of the hardware components are: The Central Processing Unit (CPU), the keyboard, a mouse, the motherboard, input devices, output devices etc. You must be able to physically interact with the hardware component for it to work. Software is the CPU (or the AI) job. These are the part we do not interact with physically. We instead use the CPU to interact with the software side. A few examples of the software components are Applications, such as Google. There is also system settings, such like the brightness of the screen or displaying the power of the battery to the user. The user interface is one common example to those who use a device belong to a windows company, Mac or online from a Linux source. For the CPU to access certain software features its gets the instructions from the user itself.
3. Digital circuits are constructed of a power supply, devices and conduction nets. These nets provide circuit input from user input in a schematic. Some normally enter the left side of any component or the overall circuit. This means others exit from the left side. The digital circuit needs a power supply to function. This will provide electrons making an imbalance between the protons and electrons. This will provide electricity. This allows all data to be transferred between the circuits. Since electrons are portable, this makes them able to transfer through particular wires. This changes the device the files are going through properties.
4. The numbers bases associated with computing are through three different types. There are bit numbers, also known as base 2 (Only Zero and one are used). There are decimal numbers, which cover base 10 (0 to 9) and there are hexadecimal numbers. These are base 16. It is easy to convert from base 16 to base 2 as one base 16 number is equivalent to four base 2 numbers. The computer reads everything in base 2, so if we input a base ten number how does the computer read this. The computer translate it into a base 16 numbers then converts it in base 2. This is how circuits works, as well as all the other bits. All the hardware bits read in base 2 standard. For example, the processor bus goes through one wire when it reads the number “0”. It goes through another when “1” is read. This is how the software cooperates with the hardware, based off the base 2 numbers. When a letter is entered, it is saved by its ascii value, which is a big hex number. This is how a computer tells the difference between one input over another.
5. Boolean Algebra is an expression that assigns a true/false value to a statement. These eventually came to be expressed using a two-value system – 1 for true and 0 for false. These came with the logic expressions of AND, OR and NOT. Using these expressions, we can manipulate the expression of each original input. These expressions were used for calculations and switch statement which relied on true or false statements. For example, using the or statement with a number “1” always leaves 1 as a result. AND with a zero always leaves a zero behind. Since this logic is known, statements can come for use of switch statements and loop conditions. Thanks to these expressions, machines could perform on the standards expected from these results.
6. The logic gates are the decision behind each instruction and how they are executed within the computer based in each input. They use Boolean algebra as the sole decision maker behind each execution. The logic gates themselves only recognises two input. One is Zero and the other one is One. Like the Boolean Algebra, the logic gates use the “And, Or and Not” expressions and can even combine the latter with the former two.
7. Latches are electronical circuits used to stored one bit at a time. They can change output based off the data input received. Some latches have time stamps for instructions. Other do not. Flip-flops are another type of electronical circuit that bi-stable. These are not as stable as latches and store single bits. Flip-Flop are used in states in such that it remains in one until a trigger causing it to flip into another state. This could be sequentially flipping which is why it is called Flip-Flop. The main difference between latches and Flip-Flop is latches are level-sensitive, where Flip-Flop are edge-sensitive. The output is different however. This is due to how each one operate. For latches the input can change the output, even if the logic gate did not. Flip-Flop differ in that they operate with the clock. If the clock is suddenly triggered, the logic gate of the Flip-Flop would also change. This would result in a new output.