Understanding Computer Components

About the Authors

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Computer Components

A) What is the importance of understanding computer components and their role in overall system functionality?

It's essential that we understand how the computer works to ensure that we'd be familiar with things that we ought to do just in case it stops working. Through examining and by understanding every computing device component we will learn about its significance and then we are able to accomplish the correct troubleshooting steps. Every hardware component is essential for the operation of that computer.

b) What are your CPU's specifications like clock speed, number of cores, and cache memory? Discuss how it affects the performance of a computer.

These different specifications can either help the performance of the central processing unit (CPU), or be a bottleneck to them. Clock speed can improve performance during heavy activities, but at the cost of possible incompatibility with older software that may not work with stronger processors.

Additional cores can split up the workload among them, in a process known as multi-threading. Unfortunately, some apps are not designed to control this efficiently, with an infamous example being *Minecraft: Java Edition* only occupying one core by default.

Finally, cache memory is a temporary storage zone for computer data. It is typically faster than random-access memory 🐑 (RAM), and have multiple levels to prioritize certain kinds of information.

C) What is the motherboard's role in connecting and facilitating communication between different components. Describe its form factor, chipset, expansion slots, and connectors. Discuss how it affects overall system performance and capabilities.

- The motherboard is known as the house of all components and is a computer's main communications. Back when I was in highschool, I've disassemble a computer before as an activity - hence I was able to discover that the motherboard hosts all connections to each component with its piece. Connected by microchips that serve a lanes of communication towards each and every component. Other components are also linked to the motherboard, such as the HDD, Graphics Card, and RAM Expansion slots. The motherboard is composed as it is so as to ensure it communicates with each and every component in the system, and the motherboard also houses the processor, or what is referred to as the CPU.

D) What is the importance of RAM In providing temporary storage for data that the CPU actively uses. Describe RAM types (DDR, DDR2, DDR3, etc.), capacity considerations, and their impact on multitasking and overall speed.

The importance of providing temporary storage for data is for rapid read and write access.DDR stands for double data rate. It also allows both reading and writing data, providing dynamic and quick access to information that's lost when the power is turned off.

	DRAM	DDR	DDR2	DDR3	DDR4	DDR5
Prefetch	1 – Bit	2 - Bit	4 - Bit	8 - Bit	Bit per Bank	16 - Bit
Data Rate (MT/s)	100 - 166	266 – 400	533 - 800	1066 - 1600	2133 - 5100	3200 - 6400
Transfer Rate (GB/s)	0.8 - 1.3	2.1 - 3.2	4.2 - 6.4	8.5 - 14.9	17 - 25.6	38.4 - 51.2
Voltage (V)	3.3	2.5 - 2.6	1.8	1.35 - 1.5	1.2	1.1

Comparing of RAM's in numbers:For capacity considerations, multitasking and overall speed, the higher the prefetch or transferring data the faster it writes.

e) What are the differences of hard drives (HDD) and solid-state drives (SSD)? Compare their differences in terms of speed, capacity, durability, and cost.

SSDs are said to be faster yet are also capable of handling the same amount of storage just as HDDs do. Their difference is that SSDs are compact, and they are able to be worked with and applied easily to a computer, compared to HDDs which require an HDD slot and the cables required in installing, not to mention the weight of each HDD. However, compared to HDDs, SSDs practically cost more than HDDs, it may be considering the convenience it provides and the hassle it lessens to consumers, even so, based on our sharing, it appears that HDDs are seemingly used as of today, since it is more in the affordable range of our expenses.

f) What are the connectivity options (USB, Bluetooth, etc.) of input/output devices and their impact on user experience?

Input and output devices can be connected to processors in many ways. The most common are different forms of the Universal Serial Bus (USB) connectors. My mouse is connected to my laptop using the more traditional USB Type-A, which is the original USB, while my phone is charged using the newer USB Type-C. USB-A is rectangular and cannot be reversed, while USB-C is oblong and is reversible.

Other wired ports include HDMI and VGA, both of which are for connecting to monitors. Nowadays, newer laptops have USB-C ports that also support connecting to displays.

Protocols like Bluetooth and Wi-Fi create wireless connections to devices. Wireless earbuds, mice and keyboards usually use Bluetooth. The lack of wires can make them more flexible, but they can be less stable and can lag in the inputs they send to the device.