Discussion Prompt: Exploring Computer Hardware

Introduction

Computer hardware forms the foundation of the digital world, enabling us to interact with technology and accomplish various tasks. In this discussion, let's dive into the realm of computer hardware and uncover its components, functions, and impact on our daily lives. **Choose 2 of the following prompts to write about for this discussion.**

Prompt

1. **Key Components:** Identify and briefly explain the essential components of a computer hardware setup. Mention components such as the CPU, RAM, storage devices, motherboard, and input/output devices.
2. **Component Functions:** Choose one component from the list and delve deeper into its function. How does it contribute to the overall performance and functionality of a computer system?
3. **Hardware Evolution:** Reflect on the evolution of computer hardware over the years. How have advancements in technology led to the development of faster processors, larger storage capacities, and more efficient devices?
4. **Personal Devices:** Discuss the role of computer hardware in personal devices such as smartphones, tablets, and wearables. How do hardware components differ between traditional computers and these portable devices?
5. **Gaming and Graphics:** Explore the importance of hardware in the gaming and graphics industries. How do high-performance GPUs and dedicated hardware impact gaming experiences and visual content creation?
6. **Trends and Innovations:** Research current trends and innovations in computer hardware. Are there any emerging technologies or breakthroughs that are shaping the future of hardware development?
7. **Environmental Impact:** Consider the environmental implications of hardware production, consumption, and disposal. How can sustainable practices be integrated into the design and lifecycle of computer hardware?

Conclusion

Engage in a thought-provoking conversation with your peers about the intricacies of computer hardware. By examining its components, functions, and broader implications, we can gain a deeper understanding of the technological landscape that surrounds us.

Guidelines

- Participate actively, valuing different viewpoints and fostering a respectful discussion.
- Support your insights with relevant examples and reliable sources.
- Respond to at least two peers to promote a well-rounded conversation.

Let's unravel the world of computer hardware and explore how it influences our digital experiences and innovations!

---

from **L04: Discussion - Hardware**

Environmental Impact

The constant and rapid improvements with technology on the surface really are incredible and nothing but a benefit for the consumer. However, consider just how quickly it feels that your desktop, laptop, or smartphone seem to become outdated or just "too slow". Whenever this happens, sure you can simply purchase a new and more performant device, but what do you do with your old device? Some shove it into boxes for storage and others may simply throw them away.

Let's just look at smartphones for a more detailed example. While there are some means of recycling old smartphones, most people don't seem to recycle their old devices. (Suckling & Lee, 2025, pp. 1190-1191) So if they're not being recycled, most likely they'll end up as e-waste added to landfills. The subsequent release of toxic chemicals from batteries and PCBs has a tremendous impact on the surrounding environments. There's also the consideration of the many expensive and limited resources like gold and platinum that go into the production of these devices simply being thrown away. (Suckling & Lee, 2025, p. 1192)

One potential way to address this issue would be to simply make our devices more repairable. It seems difficult if not impossible to source documentation or parts needed to repair aging or failing devices. Even a simple swapping of the battery in a phone or

laptop can extend their life for many additional years, however that "simple" task is often anything but.

Gaming and Graphics

When comparing a device with and without a dedicated graphics processer, the performance is visible to even those without awareness of the presence or absence of a GPU. That, paired with the increasing demands of newer titles every year means that the cost for consumers to keep their machines up to date enough to achieve the level of performance they wish can be prohibitively expensive.

That exact situation is where cloud gaming services have occasionally popped up to address. Though they seem to have failed thus far to gain wide consumer adoption, the technology behind consumer-available, networked computing for gaming is very interesting.

Cloud gaming refers to services that allow those without high-end GPUs (or computers in general) to stream gameplay through the internet. The difference between video streaming however is that these services perform GPU-intensive rendering on their own servers. However, a challenge that perhaps is the reason for a lack in widespread adoption of this technology, is the challenge of providing a low latency experience to gamers; perhaps something just as important as the graphics themselves. (Shea, Liu, C.-H Ngai, & Cui, 2013, pp. 16-17)

References

Shea, R., Liu, J., C.-H Ngai, E., & Cui, Y. (2013). Cloud gaming: architecture and performance. *IEEE Network, vol. 27, no. 4*, 16-21.

Suckling, J., & Lee, J. (2025). Redefining scope: the true environmental impact of smartphones? *The International Journal of Life Cycle Assessment*.