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How is non-volatile memory different in an embedded system and a desktop system?

- Non-volatile memory in both embedded systems and desktop systems will retain the data even when disconnected from power (Ong, 2020). The differences are highlighted below:

Embedded Systems:

- Non-volatile memory is generally a small chip found in the microcontrollers (Ong, 2020).
- They can be used for storing data encryptions (Ong, 2020).
- Faster than non-embedded memory: generally faster than a hard drive, but slower than solid-state storage (Ong, 2020).
- Data stored in the memory of an embedded system will retain the data even when disconnected from power (Ong, 2020).
- Usually requires less memory than a desktop system (GeeksforGeeks, 2024).

Desktop systems:

- Type of memory is referred to as RAM, a volatile type (Avila, 2021).
- There is a secondary type of memory, called storage, that is non-volatile (Avila, 2021).
- Compared to the RAM, the storage is much slower, however it is permanent (Avila, 2021).
- Need much more memory than the typical embedded device (GeeksforGeeks, 2024).

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What are the differences between embedded systems and desktop systems?

Embedded System:

- Needs human interaction to work.
- Very limited in what it can do, designed to do specific tasks.
- Cheaper than a desktop computer.
- Generally, very simple.
- Very little, if any UI is used.

Desktop System:

- Can operate on its own, without humans.
- It can do lots of tasks.
- Can get expensive, quickly.
- Very complex, needing many parts to function correctly.
- Needs a user interface.

(GeeksforGeeks, 2024)

What are the advantages of various embedded system architectures?

Based on what I put above, I see several advantages to embedded systems. First, they seem to be cheap and easy to make. This means that it can be a great solution to run something simple and repeatable instead of buying something large and expensive to run it. This makes it very scalable. They are faster for the price (GeeksforGeeks, 2022). An embedded system is considered

very reliable (GeeksforGeeks, 2022). Not needing human interaction to function is also a big one as it means you can set it and forget it and it continues to do its job.

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References

Avila, R. (2021, December 17). *Memory Options for Embedded Systems: How to Select the Right Memory Configuration*. Retrieved from qt.io: https://www.qt.io/embedded-development-talk/memory-options-for-embedded-systems-how-to-select-the-right-memory-configuration

GeeksforGeeks. (2022, December 2). *Advantages and Disadvantages of Embedded System*. Retrieved from geeksforgeeks.org: https://www.geeksforgeeks.org/advantages-and-disadvantages-of-embedded-system/

GeeksforGeeks. (2024, February 29). *Difference Between Computer and Embedded System*. Retrieved 03 14, 2024, from geeksforgeeks.org: https://www.geeksforgeeks.org/difference-between-computer-and-embedded-system/

Ong, D. (2020). *Everything you need to know about Non-volatile Microcontroller Embedded Memory!* Retrieved from seeedstudio: https://www.seeedstudio.com/blog/2021/05/19/everything-you-need-to-know-about-non-volatile-microcontroller-embedded-memory/