Career in Software Development - Hardware/Software

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Hardware

Most software development work is done on a desktop computer or a laptop. The choice of the computer depends on the developer's needs and preferences. Hardware will also depend on whether the developer works from home or in the office or a combination of both. Developers often prefer machines with powerful processors, sufficient RAM, and high-resolution displays to handle resource-intensive tasks like compiling code and running virtual machines. Powerful processors can significantly reduce the time it takes to compile code, run tests, and build software projects (Dell, 2023). This speedup in the development process allows software engineers to be more productive. Many developers use multiple monitors to increase productivity. Having multiple screens allows them to have code on one screen while having documentation, tools, or a web browser on another. Software development often involves juggling various tasks, such as coding, testing, debugging, and referring to documentation or online resources. Multiple monitors make it easier to manage these tasks simultaneously, reducing interruptions and increasing efficiency. High-resolution displays provide software engineers with more screen real estate, making it easier to work with multiple code files, documentation, and debugging tools simultaneously. This can enhance productivity and reduce the need for excessive scrolling or window switching. Comfortable input devices are crucial for developers who spend long hours coding. Mechanical keyboards are popular among some developers for their tactile feedback. Mobile app developers often require smartphones and tablets for testing and debugging mobile applications on various devices and operating systems. Printers, scanners, external hard drives may be necessary for specific development tasks.

Sustainable Computing

Sustainable computing is an important consideration for software engineers and the technology industry as a whole. One way developers can practice sustainable computing is by writing code that is energy-efficient by optimizing algorithms and data structures to minimize computational work and power consumption. They need to consider the efficiency of their code in terms of CPU, memory, and network usage. Efficiently utilizing CPU resources leads to faster execution of tasks (Paliychuk, 2023). This can result in reduced operational time, which, in turn, lowers energy consumption and reduces the environmental impact of computing operations. (Energy5, 2023). Work with server developers that optimize server resources that reduce energy consumption. This can include optimizing database queries, load balancing, and using serverless architectures that scale with demand. VMware, Hyper-V, or KVM to run multiple virtual machines (VMs) on a single physical server. For example, Hyper-V, developed by Microsoft, serves as a hardware virtualization solution enabling the creation and operation of software-based computer instances known as virtual machines (Microsoft, 2023). Each virtual machine functions as a self-contained computer, complete with its own operating system and software applications. By harnessing virtual machines, you gain enhanced flexibility, cost-effectiveness, and improved resource utilization compared to the traditional approach of running a single operating system directly on physical hardware. This maximizes resource utilization and reduces the number of physical servers needed. They can choose web hosting and data center providers that prioritize renewable energy sources and energy-efficient hardware. Many providers are now offering "green" hosting options. Encourage the use of energy-efficient hardware for both development and production environments. For example, consider using laptops, servers, and data center equipment that meet Energy Star or other energy efficiency

standards. Reduce paper usage by using electronic documentation, collaboration tools, and project management systems. Encourage telecommuting and remote work when possible to reduce the environmental impact of commuting to a physical office.

Software

A system that a software developer would need to learn is Linux. Linux is a popular open-source operating system used in various domains, including web development, server administration, embedded systems, and scientific computing (Linux, 2018). Ubuntu is one of the most user-friendly and widely used Linux distributions. Learning Linux is essential for software engineers because many servers and cloud platforms run on Linux. Understanding how to navigate and administer Linux systems is crucial for deploying, maintaining, and troubleshooting software applications. It's also a valuable skill for software development as Linux provides a robust development environment with powerful command-line tools and libraries. Software developers will need to learn an IDE like VS Code. Visual Studio Code is a free code editor developed by Microsoft. It is highly extensible through the use of extensions and provides a range of features such as syntax highlighting, code completion, debugging support, version control integration, and more. VS Code is a versatile and widely adopted code editor that is suitable for a variety of programming languages and development tasks. Learning to use it effectively can significantly improve a developer's productivity. Its rich extension ecosystem allows developers to customize and extend their development environment to meet specific project requirements. It's an excellent choice for web development, backend development, and many other software engineering tasks. These skills are valuable for software engineers working

on a wide range of software development projects and can be adapted to various domains and technologies.

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