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February 1, 2024

Hz

Hertz is the unit of measurement for frequency. As a previous speech-language pathologist, frequency was equated to sound waves. As a budding software engineer, it indicates how many cycles the CPU can execute in one second, i.e., the clock speed.

Kilo-, Mega-, Giga-, Tera- (byte, Hz, etc)

These are all prefixes that represent a certain magnitude. They can be used with different units, such as bytes or hertz.

Kilo = 1,000 units
Mega = 1,000,000 units
Giga = 1 billion units
Tera =1 Trillion units

elf (in terms of Unix programs)

ELF stands for Executable and Linkable Format. This is the format for executables and object code. It is the code with the loader, linker, and executable.

Thrashing

Thrashing is when the CPU spends all of its time swapping data between memory and so nothing is ever fully able to run, leading to a decrease in computer performance.

Virtual Memory

Virtual memory is the idea that a CPU can “virtualize” memory by allowing multiple processes to use the same memory space, seemingly independently of one another.

Virtual Address Space

Virtual address space is the idea that each specific process has its own memory location from 0 to x7FFF. Those addresses each correspond to physical address locations, but each process thinks that they have access to all the memory between those locations.

Address
This is the memory location of a specific item. Each address is unique and allows to find items in memory.

Machine
A machine processes data and executes programs.

Time Sharing
This happens when the CPU allows multiple processes to use the same memory but just rapidly switches between them. This helps the CPU multi-task and run programs, making the running of the programs seem simultaneous.

Digital (Discrete) vs Analog
Digital is a computer that uses a discrete signal for its operation, and analog is a computer that uses a continuous signal to process.

Kernel vs OS
The OS has different modes that it can operate instructions in. This consists of user mode and kernel mode. Kernel mode is the part of the operating system that can talk directly to the hardware. It has access to more than in user mode, and instructions running in kernel mode would not run in user mode.

Von Neumann
Pronounced vɑn nɔimIn (in IPA, another ode to my background as a speech-language pathologist), this references the Von

Neumann Architecture that existed in around 1945. It includes a CPU, RAM, a system bus, and input/output devices.

Integrated Circuit (IC)
An integrated circuit is a miniaturized electronic circuit made up of resistors, transistors, and capacitors.

State Machine (FSA)
A state machine is a concept which depicts how systems, which can exist within a limited set of conditions, switches between these states in response to specific input signals. For instance, a process state machine illustrates how individual processes exist in particular states and transition between them based on various actions. This makes efficient and organized operations.

Hardware (or program) privilege level
This refers to the level of access/control that hardware or software has in a computer. Higher privilege levels have more access/control over system resources. For example, to execute certain calls, a program executes a trap, which can jump into kernel mode and raise the privilege level from user mode.

Context Switch
This is when the current running process is stopped and its registers are saved to a memory location, and the OS can "switch" to the saved state of another process. This allows CPU to switch between different processes.

Lazy loading (of program, of memory, etc
This is when parts of a processes code/data are loaded only as they are needed when executing. This is in opposition to loading processes eagerly, which is when they are loaded all at once.

PID - Process ID

Each process that is running receives its own unique id number, called a process ID. This way, the OS can call on specific processes via their ID to mange their execution.

DMA - direct memory access

To write to a disk, this is when you go directly to memory instead of going through the CPU. This is important to be aware of since anything with direct access to memory can cause problems.

MMU / TLB

MMU, stands for memory management unit, and TLB, stand for translation look aside buffer. The MMY is a hardware piece that plays a role in handling memory and translation of virtual addresses into their corresponding physical addresses. TLB is a cache in the MMU that stores addresses that are frequently looked up to speed up memory access.

Daemon

A daemon is a process that is running in the background. They are usually running on a longterm basis, and can include things like the terminal, network time protocol, and web servers.

Symbol (with respect to Code, object files, assembly)

A symbol is a named item in the code and are used for reference and linkage during compilation and linking of code.

Shared Library

A shared library is code that multiple programs can use. This provides code reusability and reduces memory usage because they are loaded into memory once but then shared among multiple processes.