CPU

If someone asked you, calculate the square root of 5,000,439,493 would you do the math by hand? Unless you really love tedious math problems, you'd probably use a calculator. What about binary? Well, you probably wouldn't calculate binary by hand either. There's actually a very powerful calculator right inside of your computer, that process binary for us. We've already discussed this in calculator in detail. Do you know what it is? It's our CPU, the brain of our computer. In this video, we'll cover the more practical aspects of the CPU. Remember that transition book that I talked about in an earlier lesson? The CPU uses this to translate and perform functions on our data. This translation book is called an instruction set, which is literally just a list of instructions that our CPU is able to run. Functions like adding, subtracting, copying data are all instructions that our CPU can carry out. Every single program on your computer, while extremely complex, is broken down into very small and simple instructions found in our instruction set. Instruction sets are hard-coded into our CPU so different CPU manufacturers may use different instruction sets, but they generally perform the same functions. It's like how car manufacturers build their engines differently, but they all get the same job done. You probably worked with computer hardware as an IT support specialist, replacing failed hard disks, upgrading RAM modules, and installing video cards. You need to be aware of what's out there. You've probably heard of a few popular CPU manufacturers or chipsets, like Intel, AMD, and Qualcomm. These CPU manufacturers use different product names to differentiate their processes. Like Intel Core i7, AMD Athlon, Snapdragon 810, Apple A8, and more. Now when you hear these terms, you'll know what they mean. Each of these CPU manufacturers have their strengths and weaknesses. If you're interested in learning more about why some CPUs are more popular than others, you can check out the next supplemental reading. When you select your CPU, you need to make sure it's compatible with your motherboard, the circuit board that connects all your components together, heads up. You can't just buy a bunch of parts and expect them to work together there are different ways of CPUs fit on motherboards using different sockets. Your CPU might have lots of tiny pins that are either stick out or have contact points that look like dots. Depending on your motherboard, you need to make sure these CPUs fit correctly in the socket. There are currently two major types of CPU sockets; Land Grid Array, also known as LGA, and Pin Grid Array, also known as PGA. In an LGA socket, like this one, there are pins that stick out of the motherboard. The socket size may vary, so always make sure your CPU and socket are compatible beforehand. When you purchase a CPU or motherboard, they'll tell you right on the box what type of socket it has. Make sure your CPU and motherboards socket also both match. If it's not listed on the box, you can go to the manufacturer's website where you usually list what types of CPUs are compatible with the motherboard. The other type of socket is the PGA socket, where the pins are located on the processor itself. When we installed our CPU, we need to do a few things to it to keep it cool. Since it does a lot of work, it's prone to overheating. We have to make sure to include a heat sink too which takes the heat from our CPU and dissipates it through a fan or another medium.

There's one last thing I want to call out about CPUs. If you purchase the CPU, you'll see that it has either a 32-bit or 64-bit architecture. What does that mean? Well, we know we can process eight bits in binary now, imagine how we can process with 32 or even 64 bits. CPUs that have 32-bit or

64-bit architecture are just specifying how much data they can efficiently handle. For now, the main takeaway is that the CPU is one of the most important parts of the computer so we have to make sure it's compatible with all other components and can perform well for our computing needs.

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