**Tech Corner: A Quick Resource for PC Building**

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For most of the past decade, desktop computers have been sold with insane price markups. Even if the total cost of a computer’s components was only about $500, manufacturers would sell it for around $800.

Within the past two years, however, this has changed. Desktops were first set aside by consumers for laptops, and now for tablets. In order to compete with these smaller devices, manufacturers have started selling desktops for only minimal profit.

As recently as three years ago, I would have urged consumers with even a modicum of technical knowledge to spend a few hours learning how they can build their desktops from off-the-shelf parts. Today, there is rarely any price incentive to do so.

Instead, I would like to lay out the more nuanced benefits of PC building and, in the next issue, I would like to give you a few pointers for how you might build a PC.

**Okay, So Why Should I Build My Own PC?**

Because just as knowing how to change your own oil is non-essential, but still very helpful knowledge, knowing how to build your own computer is an optional skill worth having. The experience you’ll gain will make it easy to upgrade and replace computer components without having to buy a whole new desktop. This will save you money down the road, and it will give you greater appreciation for which PC components are worth upgrading.

It’s through this process that I’ve started to appreciate graphical processing units (GPUs). Also known, more simply, as graphics cards, GPUs are the powerhouses behind not just rendering 3D video games but also video editing and even artificial intelligence (I highly recommend this Coding Horror article on the topic: <https://blog.codinghorror.com/thanks-for-ruining-another-game-forever-computers/>).

It’s through this process that I’ve started to disregard the central processing unit (CPU), or, more simply, the processor, which have seen little appreciable performance gains over the last five years. You may have seen Intel spokesperson (and Big Bang Theory star) Jim Parsons (no relation) encourage you to upgrade to new “faster, lighter” computers (see <https://www.youtube.com/watch?v=RQ_GiVoT1M0>). While modern laptops *are* lighter and *do* have longer battery lives (thanks almost entirely to a standard set by Apple’s MacBook design), the Intel CPUs in them have grown barely 50 percent faster for day-to-day tasks in the past five years. Perhaps this is because Intel now has a virtual monopoly on processor production (long-time competitor AMD is mostly disregarded). Or, perhaps it’s because Moore’s law—which once stated that CPUs will double in power every few years—has simply ended as silicon instrumentation approaches the atomic level (see <http://www.pcworld.com/article/2030005/why-moores-law-not-mobility-is-killing-the-pc.html>).

Thus, through the knowledge I’ve gained in building my own PCs, I am smarter even when I buy pre-built computers.

Of course, if you see computers as an annoying tool you have to use for your job, you almost certainly haven’t read this far in the article, and you also won’t get much out of reading further. My advice is, ultimately, for those who see (or want to see) computers as life-augmenting tools, and those people will benefit tremendously from the PC-building experience.

**Building Your Own PC: Helpful Resources**

Put simply, no one article is going to give you all the necessary information for building a PC. For my first build, I spent around 20 hours reading up on the following resources, ensuring that I more understood what I was going to do next:

* If you’re so inclined, Metro State’s CFS 262 class goes into a lot of detail about the inner workings of computers. You could easily see a build as being “practice” for that class, or you could use what you learn from that class to help in building.
* Reddit’s /r/buildapc forum (<https://reddit.com/r/buildapc>) contains many helpful resources and allows you to ask questions of its users as you go along. Their /r/buildapcsales forum can be used to keep track of discounts, while /r/hardwareswap/ could be a useful resource for second-time builders.
* PC Part Picker (<http://pcpartpicker.com/>) is essential to knowing if the components you select are compatible, for comparing components, and for finding the cheapest place to buy components from. **(Seriously: before buying anything, figure out what you want, pick everything out from PC Part Picker, and make sure there are no incompatibilities.)**
* Logical Increments (<http://www.logicalincrements.com/>) is a helpful rule-of-thumb chart for knowing which components to buy within your price range. It also contains primers on what each component does, and how you should decide if you need a high-end component or not.

-And review sites Anand Tech (<http://www.anandtech.com/>) and Tom’s Hardware (<http://www.tomshardware.com/>) have excellent benchmarks and comparisons of nearly every PC component.

In the next issue, I will provide some rules of thumb, both for buying and for assembling your computer, if you decide that’s something you want to do. I do have a quick one for now, however: unlike with pre-built computers, you will need to fork out for an operating system.

There is one easy way to get Microsoft Windows for free, though, that being DreamSpark (<https://www.dreamspark.com>). This is an educational resource offered by Microsoft to students of registered universities (including Metro State). You can only get Windows Server for free from it, which is not *exactly* the same thing as regular Windows, but it comes shockingly close. Server 2012 R2 (the most recent Server release) will run nearly all of the same programs and drivers as Windows 8.1, comes with the normal Windows desktop, and supports most of the same Windows programs.

In my experience, it differs only in two respects: the added server manager program, which can be used to turn your computer into an actual fully-fledged server (but can also be completely ignored); and the strange removal of the Bluetooth stack. Unfortunately, you will not be able to use Bluetooth devices with a Server 2012 R2 installation. Still, by using the slightly different operating system in your build, you may be able to save $100.

I’ll see you in the next issue for more building tips.