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Process Description: Constructing a PC

Technology evolves at an exponential pace. Competing brands present us with new iterations of ongoing devices from smart phones, tablets to laptops each year. During this era of numerous upgrades, learning how to build a customized personal computer (PC) can serve as a valuable skill. Constructing a PC can help achieve your specific goals whether it may be work, hobby or personal project related. In this process description, I'll provide a brief overview of the components and assembly of a gaming/workstation PC.

The vital components of a PC consist of a Central Processing Unit (CPU), the "brain" of the computer and a Graphics Processing Unit (GPU) used for generating images/video. The main CPU brands to monitor are Intel's *Core* and AMD's *Ryzen* series [1]. The main GPU brands to note are NVIDIA's *GeForce* and AMD's *Radeon* series [2].

For the CPU and GPU to interact, a PC needs a motherboard. Auxiliary components required to operate include Random Access Memory (RAM), a cooler fan, a Solid-State Drive/ Hard Disk Drive (SSD/HDD) for memory, and a power supply (PSU). Ideally all these components would be encased in a sturdy case.

In order to interact with your PC, you will need peripherals for inputs. These include a monitor to display your work, a keyboard and a mouse. You may also need a speaker or a pair of headphones for sound and a mouse mat for comfort.

Costs can vary, and is dependent upon power requirements. However, with clever budgeting and timing during sales, building a PC can be a much cheaper option compared to other devices such as consoles in a cost to power ratio. One can even build a high-end PC that

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can run extremely demanding applications/games for many years, whereas consoles, laptops, and

tablets are more likely to become obsolete in a shorter time-frame. Your investment reflects your

output.

Figure 1. "Design Build Your Own Gaming PC." *GeForce*. Accessed September 23, 2019.

https://www.geforce.com/whats-new/guides/design-build-your-own-gaming-pc.

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The process of building a PC is similar to slotting in LEGO pieces. Building a PC should be done in a clean spacious room. The motherboard has all the labelled slots for you: CPU, GPU, RAM, cooler, HDD/SSD and PSU as well as peripherals to slot in.

1. You would start by gently placing the CPU on the motherboard's CPU slot. Be very careful as the pins are delicate, do not put any pressure on the CPU. Make sure the golden triangle on the motherboard's CPU slot aligns with the marked triangle corner of the CPU itself.

2. When slotting in RAM cards, push back the RAM slot pin on the motherboard and firmly slot in the RAM. An audiable click verifies a correct connection.

3. Placing the case on its side, insert the motherboard into the case and screw in with the rubber stoppers. It is essential that the motherboard's pins do not scrape against the case.

4. Insert the GPU into the motherboard while aligned with the slot in the case. Like the RAM insertion, an audible click can be heard when inserted correctly.

5. Place the cooler fan directly on the CPU and place the cooler radiator either on the bottom or top of the inner case. Screw in.

6. Place additional componentns in any order: PSU supply, SSD/HDD, and connect to the motherboard while finding an ideal pspot in your case to screw in. This is flexible.

7. Enclose the case and plug in your peripherals: mouse, keyboard and monitor.

8. The hardware construction is complete! After installing an OS (Operating System) and BIOS (basic input ouput system: set of computer instructions), your PC should be operational!

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| Component		Selection
CPU		AMD Ryzen 7 2700X 3.7 GHz 8-Core Processor
CPU Cooler		Corsair H100i PRO 75 CFM Liquid CPU Cooler
Motherboard		MSI X470 GAMING PLUS ATX AM4 Motherboard
Memory		G.Skill Trident Z 16 GB (2 x 8 GB) DDR4-3200 Memory
Storage		Samsung 860 Evo 1 TB 2.5" Solid State Drive
Video Card		Asus GeForce GTX 1070 Ti 8 GB ROG STRIX Video Card
Case		Fractal Design Define S2 ATX Mid Tower Case
Power Supply		EVGA SuperNOVA G3 750 W 80+ Gold Certified Fully Modular ATX Power Supply
Monitor		Asus ROG SWIFT PG278QR 27.0" 2560x1440 165 Hz Monitor
Keyboard		Corsair K70 LUX RGB Wired Gaming Keyboard
Mouse		Logitech G502 Proteus Spectrum Wired Optical Mouse
Headphones		Astro A40 + MixAmp Pro - Black 7.1 Channel Headset
Custom		HyperX HX-MPFS-XL FURY S Pro Gaming Mouse Pad X

Figure 2. "System Builder." *PCPartPicker*, 2018. Accessed September 23, 2019.

https://pcpartpicker.com/list/MNCCkd

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<div align="center">Citations</div>

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[2] Smith, Matthew. "AMD or Intel? We Take a Look at the Pros and Cons of Both Processors."

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