Solzhenitsyn presents

The BuildingBrain

The BuildingBrain is here to enhance your experience of using computers so that you are able to see all your designs come to life. At only $2601.93, the BuildingBrain has everything you'll need!

Team Solzhenitsyn (Sean Ging, Salsabil Kamal, and Maggie Jin)
IntroCS pd5
L1: On Wednesdays We Wear Pink
Spring 2020

The BuildingBrain

Nuts, bolts, and screws,
Check out our mighty machine.
If there's one you must choose,
Ours is one that you've never seen.
A brawny keyboard and mouse,
And high quality streaming from your house.
Got a virus? Have no panic attack,
Mcafee Antivirus 2019 has your back.
Feeling your computer's temperature rise?
Our cooler and mesh casing will help it cool,
So purchase this computer we advise.
Come on now, don't be a fool,
With a magnificent sound card for your music to blast,
It's no doubt this machine is a prize.
The GPU with image producing quite fast
With price you won't want to compromise.

Some hardware highlights:
The CPU and GPU are top of the line models in their respective areas, which is more than enough to handle architecture and engineering programs and their video and imaging processing for years. The CPU cooler and the mesh case allow for superb airflow throughout the PC. The RAM will support any architecture programs, and our snappy SSD allows for a smooth user experience. The motherboard supports all of the other high-spec hardware we've chosen, and our PSU produces more than enough power. The BuildingBrain uses a reliable OS with software that includes features for architecture and engineer design in addition to standard work. The large monitor allows for an encompassing experience, and its built in speakers play the sounds produced by the sound car. BuildingBrain also comes with software to protect the almighty, powerful BuildingBrain!

BuildingBrain costs $2601.93, which well below Mr. Tyrone's $3000 budget, and provides him with an other-worldly machine worth admiration from all who see it!

The following is a breakdown of the components for the BuildingBrain:

CPU
AMD Ryzen 7 3800X 3.9 GHz 8-Core Processor
Price: $338.99

The central processing unit, known as the CPU, is the "brain" of the computer that sends signals to control other parts of the computer, similar to the brain sending electrical signals to control the rest of the body. A good CPU is imperative in an architect's PC, since a poor CPU could also limit the power of the GPU. The CPU will be used whenever you draw a line or change a color, so it's vital that the BuildingBrain has a high-functioning CPU. Our group chose the AMD Ryzen 7 3800X 3.9 GHz 8-Core Processor because the 8-cores allow for very heavy information processing and the 3.9GHz clock speed indicates fast processing for our PC.

CPU cooler
Cooler Master Hyper 212 Black Edition 42 CFM CPU Cooler
Price: $34.17

The central processing cooler, known as the CPU cooler, is necessary to prevent the CPU and nearby components from overheating. Our CPU has a built in CPU cooler, but the BuildingBrain deserves the best cooling power available. We chose the Cooler Master Hyper 212 because it is a stand-up fan—not a stand-up guy, though it would be *cool* if it was—meaning that it's airflow is more effective compared to its competitors. Also, the sound ranges from 6.5-26 dB, which is quiet (20 dB is whispering). This cooler would ensure superb airflow for the entire PC, making it a great addition to the BuildingBrain.

Motherboard
Asus Tuf Gaming X570-PLUS (WI-FI) ATX AM4 Motherboard
Price: $189.99

The Motherboard connects various hardware components to each other and contributes to the speed of the BuildingBrain. In short, it is the foundation of the computer. The CPU, GPU, RAM, PSU, sound card, video card, fan, SSD, and all other pc hardware units are connected to the Motherboard. Each motherboard is designed to be compatible with specific types of CPUs, RAMs, hard drives, and video cards. Our decision to buy the Asus Tuf Gaming X570-Plus model was based on its compatibility with AMD CPUs and our Nvidia card, while having four DDR4 RAM slots (allowing up to 128 GB of RAM). This motherboard's compatibility with our other hardware parts makes it a great fit for the BuildingBrain.

RAM
Corsair Vengeance LPX 32 GB (2 x 16 GB) DDR4-3000 Memory
Price: $146.99

The RAM, or random access memory, is the computer's short-term memory that stores information, but that information is lost when the computer turns off. RAM is essential to access and process data without delay, so we chose the Corsair Vengeance LPX 32 GB DDR4-3000. This model has 32 GB, which allows for many programs to be open at once on the PC. Moreover, DDR4 RAM demands less energy than its DDR3 counterparts and is an extremely cost-efficient option because 32 GB is priced under $150.

HDD (or rather SSD)
Sabrent Rocket 2 TB M.2-2280 NVME Solid State Drive
Price: $279.98

The HDD, or hard disk drive, is the computer's long-term memory that stores information permanently. We opted for an SSD, or solid state drive, due to its significantly faster read and write speeds when compared to its HDD counterpart. We only want the best of the BuildingBrain, and the Sabrent Rocket 2 TB M.2-2280 NVME Solid State Drive would allow for a smooth user experience. It is important for the BuildingBrain to have a large storage to save all the files of your designs, and 2 TB of storage should suffice the demanding storage needs of architects for many years.

GPU
Asus GeForce RTX 2070 SUPER 8 GB STRIX GAMING Advanced Video Card
Price: $584.99

The GPU, or graphics processing unit, is a processing unit dedicated specifically for manipulating computer graphics and image processing, which is why many gaming PCs demand a GPU. The Asus GeForce RTX 2070 Super 8GB card has more than enough vRAM for processing even the most demanding architecture apps. This card processes any structure loaded in AutoCAD with ease, making it a perfect choice for the BuildingBrain. Moreover, due to its large amount of vRAM, you can load many architecture, electrical design, or mechanical design apps and files at once. GeForce RTX 2070 is a top of the line graphics card, made by Asus, a reliable company that produces their own computers.

Case
Fractal Design Meshify C ATX Mid Tower Case
Price: $89.99

The case contains most of the components of the computer, allowing the hardware components to be packed away in a tidy box. We picked the Fractal Design Meshify C ATX Mid Tower Case due to its sleek style and see-through case, which allows for a sick view whenever you wish to peek inside your PC! The mesh panel aids with allowing airflow, and the case can hold all the hardware for the BuildingBrain, while still having a sleek design.

PSU
Cooler Master MWE Gold 650 W 80+ Gold Certified Fully Modular ATX Power Supply
Price: $99.99

The PSU, or power supply unit, is hardware that converts electricity from outlets into low-voltage power that the computer components can use. This component is necessary in order for a computer to be usable because without the PSU, the computer won't turn on. When we were picking a PSU for the BuildingBrain, we had to make sure that the wattage produced sufficient energy for the BuildingBrain. According to PCPartpicker, the BuildingBrain needs an estimated wattage of 450W, and the Cooler Master MWE produces 650 W, which is more than enough. In addition, we looked at the conversion efficiency of the PSU, and the Cooler Master MWE is ranked gold. According to the chart below, the gold certification is one of the more efficient models, converting up to 90%, so the BuildingBrain would benefit greatly from the Cooler Master MWE.

Level	White	Bronze	Silver	Gold	Platinum	Titanium
10%	X	X	X	X	X	90%
20%	80%	82%	85%	87%	90%	92%
50%	80%	85%	88%	90%	92%	94%
100%	80%	82%	85%	87%	89%	90%

(https://thegamingstuff.com/guides/picking-right-power-supply/)

OS
Microsoft Windows 10 Pro OEM 64-bit
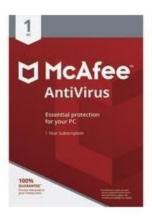Price: $139.99

The OS, or operating system, is software that communicates from computer to user (through a GUI) and manages various aspects of a computer, including hardware, memory, and processing. According to Autodesk, AutoCAD 2020 requires the Microsoft Windows 10, 8.1, or 7, so we have chosen the 64-bit Microsoft 10 because it supports up to 2048 GB. The Windows 10 has additional features that aren't necessary for designing, but these perks mean that BuildingBrain can also be used for producing presentations, such as word documents, excel spreadsheets, and powerpoints for your engineering projects.
(https://www.microsoft.com/en-us/windows/features)

Software
McAfee Antivirus 2019 (1 Year Subscription) Software
Price: $14.99

Antivirus software is used to detect and destroy any computer viruses that your precious PC may have or obtain. Computer viruses can hinder your PCs performance significantly, cause PC crashes, or even reformat your PC's hard drive. Windows 10 has Windows Defender, an anti-malware program, but we want you to be protected from potential cyber threats. So for the BuildingBrain, we chose to add McAfee's antivirus, a reliable antivirus at a good price. This 2019 edition of the McAfee Antivirus will last your PC one year.

Sound Card
Creative Labs Sound Blaster Audigy Rx 24-bit 192 kHz Sound Card
Price: $54.99

A sound card is an expansion card that, when inserted, allows a computer to produce sound that can be heard through speakers or headphones. They are included on every machine and take many different forms, and we chose the Creative Labs Sound Blaster Audigy Rx 24-bit 192 kHz model. This model produces crisp and clear sounds, and you can listen to songs, podcasts, and lectures while working on your various architecture and engineering tasks. (https://www.lifewire.com/what-is-a-sound-card-2618160)

Wireless Network Adapters
Gigabyte GC-WB867D-I PCIe x1 802.11a/b/g/n/ac Wi-Fi Adapter
Price: $42.90

A wireless network adapter takes signals from a computer and changes them into radio waves. These waves are sent out through the antenna, which are usually attached to a PC, allowing connection to a network. A good network adapter is crucial to any PC, so for the BuildingBrain, we chose a wireless network adapter that supports bluetooth 4.0 and has a high speed wireless connection that goes up to 867 Mbps (100 Mbps or higher are considered fast internet). This fast connection speed will prevent any lagging while designing, and being wireless allows for a more organized PC. This adapter by gigabyte is reliable and not excessively expensive, making it a good fit for BuildingBrain.
(https://www.allconnect.com/blog/internet-speed-classifications-what-is-fast-internet)

Monitor
LG 32GK650F-B 32.0" 2560x1440 144 H Monitor
Price: $396.99

Monitors are essential for any computer, and display the information decoded from binary code by the Computer's video card. Monitors have display functions such as powering it on and off, controlling its brightness, contrast, and etc. This monitor has a screen size of 32" which is more than enough screen real estate for a PC setup. Moreover, the 2560 x 1440 resolution produces sharp, crisp images for you while you work on your tasks. In addition, it has built in speakers and has a 144 Hz refresh rate, allowing for a smooth user experience while you work.

Keyboard
Razer Huntsman Elite Wired Gaming Keyboard
Price: $168.99

The keyboard typically contains keys for individual letters, numbers and special characters, as well as keys for specific functions to make the machine do your bidding. Keyboards are usually attached to the PC through a cord, and though wireless keyboards are becoming more common, having a cord will ensure there is no delay between pressing a key and its translation on the screen. Keyboards are essential for proper usage of modern day PCs, so our group chose the Razer Huntsman Elite. This keyboard has padding so you will be comfortable when typing, and it has advanced key switches due to the combination of mechanical switches with optical sensors, dubbed optomechanical switches. Moreover, its RGB lighting is quite the treat as well.

Mouse
Corsair Harpoon RGB Wired Optical Mouse
Price: $17.99

The mouse is an input device that helps the user navigate and use the PC by showing up as a cursor on the monitor. It is important to have a reliable mouse since you'll be using it frequently as long as you are using your PC. We chose the Corsair Harpoon RGB Wired Optical Mouse for the BuildingBrain because Corsair provides good quality at a low price. This model has good grip, good sensors, and RGB lighting, allowing for nice colors to shine while you shine working on architecture and engineering tasks.

List of components

Part	Name + Link	Cost
CPU	AMD Ryzen 7 3800X 3.9 GHz 8-Core Processor	$338.99
CPU cooler	Cooler Master Hyper 212 Black Edition 42 CFM CPU Cooler	$34.17
Motherboard	Asus Tuf Gaming X570-PLUS (WI-FI) ATX AM4 Motherboard	$189.99
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GPU	Asus GeForce RTX 2070 SUPER 8 GB STRIX GAMING Advanced Video Card	$584.99
Case	Fractal Design Meshify C ATX Mid Tower Case	$89.99
PSU	Cooler Master MWE Gold 650 W 80+ Gold Certified Fully Modular ATX Power Supply	$99.99
OS	Microsoft Windows 10 Pro OEM 64-bit	$139.99
Software	McAfee Antivirus 2019 (1 Year Subscription) Software	$14.99
Sound Card	Creative Labs Sound Blaster Audigy Rx 24-bit 192 kHz Sound Card	$54.99
Wireless Network Adapters	Gigabyte GC-WB867D-I PCIe x1 802.11a/b/g/n/ac Wi-Fi Adapter	$42.90
Monitor	LG 32GK650F-B 32.0" 2560x1440 144 H Monitor	$396.99
Keyboard	Razer Huntsman Elite Wired Gaming Keyboard	$168.99
Mouse	Corsair Harpoon RGB Wired Optical Mouse	$17.99

Total: $2601.93

Note: The current price of AutoCAD 2020 is $1,690 for one year. This would bring the total price for the computer peripherals and software to be $4291.93.