CISY-113 Semester Project

Computers are a part of our daily lives. Our Personal Computer or PC is very customizable because it is a modulus device. Gamers and other tech enthusiast love to make their own computers because it lets them make a computer the way they want without any restrictions except that the items must be compatible.

I have been asked by an entertainment company to create a lab to test games and many entertainment software. I must make 4 personal computers which will run games without any lag or any problems. There are some specifications which I must include while picking out parts. I also must pick 2 notebooks and two printers. The catch is that I cannot go over my budget of $17,000.

To make my first computer I must find a website that allows me to compare different parts of a computer. Making a pc is a very difficult task to do because there are a lot of parts available but not all component go along with each other. The best way to make a pc is by making your life easier and to do that we must find a website which allows us to pick different components which are compatible.

To make my first PC, I went to pcpartpicker.com and selected different components with the requirements that I had to fulfill. For my first PC, I decided to pick a new Intel Processor called Intel Core i7. This CPU has 4 cores and 4.2 GHz speed with 91 Watts of power usage. To cool my CPU, I used a liquid cooler with noise level of low being 21 dba and maximum noise level at 36 dba. Now since we are working in a room filled with computers, I wanted the noise to be minimum, which this fan is. Now comes the hard part, after I selected the CPU I had to pick a motherboard that is compatible with my CPU. So, I had to look for a board that will fit my CPU. I did have to select few different once after getting the compatibility check. To make a gaming computer we must have a good graphics card so I chose NVIDIA GeForce with 8gb memory and 1.61GHz of speed. This card has 3 display ports, which will allow me to connect more than one high density display to my PC for a clear and crisp view. I also picked out 2 ram sticks each 16GB to make things little faster. The power supply is a very important component since it is this device that power the entire computer. So, I calculated the minimum wattage required and

decided to pick a power supply that is not wasting too much power. But has more than enough wattage so that in future I could change a component that requires more power and not have to change the power supply. I also added a wired network card just because wired network is way faster and more secure than WIFI. A gaming PC is not done without a good sound card and speakers. I chose a 96 KHz with 24 bits of digital audio along with a 2.1 speaker system with 200 watts giving a loud yet clear audio. The price for my 1st PC came out to be $2,801.17 including the 4k monitor. Below is the list of all the components with price listed for my PC 1.

Components	PC1	
	Items	Price
CPU	Intel - Core i7	$ 308.87
CPU Cooler	NZXT 73.1 CFM Liquid Cooler	$ 149.99
Thermal Compound	Arctic Silver	$ 5.84
Motherboard	Asus - STRIX Z270-E	$ 196.99
Memory	G.Skill - Ripjaws V Series	$ 269.88
Storage	Seagate - Barracuda 10TB 7200RPM	$ 399.99
Video Card	NVIDIA - GeForce GTX	$ 549.99
Case	NZXT - S340	$ 64.99
Power Supply	EVGA - SuperNOVA NEX	$ 89.89
Operating System	Windows 10 Home OEM 64-bit	$ 89.89
Sound Card	Asus - Xonar DGX	$ 37.88
Wired Network Adapter	TP-Link - TG-3468	$ 12.14
Case Fan	Cooler Master - SickleFlow	$ 6.99
Monitor	AOC - U2879VF-4k	$ 299.99
Keyboard	Razer Chroma V2 Wired	$ 169.99
Mouse	Corsair M65 PRO FPS Wired Optical	$ 48.37
Speakers	Logitech - Z623	$ 99.49
Optical Drive	N/A	$ -
TOTAL	**=**	**$ 2,801.17**

I needed two PC with intel processors so for my 2nd PC I chose Intel Core i5 quad core processor. This processor is great for gaming. Even though there are different types of i5 series I chose the high end one which has very good rating for gaming. For this CPU, I went with an even quitter fan with noise level between 6.6dba to 18.8 dba. To get the highest quality with smooth gaming experience I went with 16Gb Vega Frontier Edition video card with 3 display port and an HDMI port for connecting multiple displays together. Since I had the budget, I chose 4TB Samsung Solid State Drive with cache of 4gb. The SDD are the future of HDD because they are very compact and digital with no moving parts. This means it has longer life than HDD and is way faster. This will help in loading games faster and store more memory faster and easier. Also, I chose ATX tower with options to detach cables to make my PC look clean and neat. I also picked out a Blu-Ray/DVD/CD reader and writer, just in case we play games that are not

online and uses cd instead. I also picked out a 4k monitor with 60Hz for smooth frame movement and it also has calibration settings built in. The total cost came out to be surprisingly $5208.27. Below is the list of all the components with price listed for my PC 2.

Components	PC2	
	Items	Price
CPU	Intel -Core i5	$ 219.39
CPU Cooler	be quiet! CFM Fluid Bearing Cooler	$ 101.89
Thermal Compound	N/A	$ -
Motherboard	Gigabyte-z270x	$ 399.99
Memory	Vengeance LPX-16gb	$ 139.99
Storage	Samsung 4TB -SSD	$ 1,499.99
Video Card	AMD-16GB Frontier Ed.	$ 999.00
Case	Define R4 ATX	$ 149.89
Power Supply	SuperNOVA-650W	$ 89.89
Operating System	Windows 10 Pro OEM 64-bit	$ 125.99
Sound Card	Creative Labs-24bit 96KHz	$ 299.99
Wired Network Adapter	N/A	$ -
Case Fan	N/A	$ -
Monitor	LG-23.8"-3840x2160	$ 594.00
Keyboard	EagleTec-KG010 Wired	$ 39.99
Mouse	Logitech G502-Wired	$ 50.99
Speakers	Audioengine-A5-100W 2channel	$ 399.00
Optical Drive	LG-BluRay/DVD/CD	$ 98.88
TOTAL	**=**	**$5,208.87**

So far, I wasn't having any major issues but now I had pick an AMD processor and I also had to make sure I don't go over my budget. So, for my 3rd PC, I chose AMD processor with 4.0 GHz and AM3+ socket. When I pick a motherboard, I must make sure that it has an AM3+ socket. All my motherboard had many USB 3 and many other ports. I also had to make sure that the motherboard fits my tower case. I had to make sure that the form factor matches, in this case it was ATX. I also had to make sure many other aspects such as how many memory slots and what types of them are on the motherboard. Also, the amount of memory it supports and different types of connections. Even though the website did pretty good job at providing me with the right parts, sometimes it would show me the wrong part. I also chose a 27 inch. 3840 X 2160 resolution Acer display with adjustable settings. But after all the parts I chose, the total came out to be $ 2525.74. And I also picked out few other accessories which are all listed along with the main components down below for my 3rd computer.

Components	PC3	
	Items	Price
CPU	AMD-FX8350 4.0GHz	$ 203.78
CPU Cooler	Corsair-liquid CPU cooler	$ 64.99

Thermal Compound	Arctic Silver-Polysynthetic Paste	$	14.39
Motherboard	Asus-Sabertooth 990Fx ATX AM3	$	291.43
Memory	Corsair-32gb -4*8gb-DDR3	$	234.99
Storage	Segate-4TB- 7200rpm	$	178.00
Video Card	GeForce GTX 4gb	$	149.89
Case	Deepcool-ATX Mid tower	$	39.99
Power Supply	EVGA- 500W ATX	$	42.99
Operating System	Windows 10 Pro OEM 64bit	$	125.99
Sound Card	Creative Labs- 24bit-192KHz	$	233.68
Wired Network Adapter	Intel PCI Express- 1000Mbps	$	26.21
Case Fan	N/A	$	-
Monitor	Acer 27"- 3840*2160-60Hz	$	699.99
Keyboard	Logitech-K120 Wired	$	14.55
Mouse	Redragon-Mammoth Wired	$	26.99
Speakers	Yamaha-550w-5.1channel	$	149.99
Optical Drive	Samsung-CD/DVD	$	27.89
TOTAL	**=**		**$2,525.74**

Now for my 4th PC, I chose the same AMD CPU but with different Motherboard and everything else. I again went with quiet fans and 3TB HDD. I also added MSI GeForce 6GB gaming video card. I picked out a clean ATX fully detachable cables to make it look neater. Again, I had to make sure that I pick out ATX power supply with ATX tower case to fit in. I chose Windows 10 Pro 64 bit as my operating system. Gaming PC is nothing without a good gaming keyboard and a mouse. I decided to get a Corsair RGB wired keyboard and a Logitech Laser mouse. The total cost of this pc was $ 2,142.53. The entire list for my 4th PC is listed below with price.

Components	**PC4**		
	Items	Price	
CPU	AMD-4.0GHz- 8core	$	118.29
CPU Cooler	NZXT 98.2 CFM Liquid Cooler	$	156.99
Thermal Compound	N/A	$	-
Motherboard	Gigabyte-Atx AM3	$	149.99
Memory	Corsair-2*8gb-DDR3	$	124.83
Storage	WD-3TB 5400RPM-HDD	$	90.89
Video Card	MSI-GeForce 6GB	$	349.99
Case	Phanteks ATX-Full Tower	$	99.99
Power Supply	SeaSonic 520W-Atx	$	53.99
Operating System	Windows 10 Pro- 64 bit	$	125.99
Sound Card	Creative Labs-24bit-192KHz	$	129.99
Wired Network Adapter	N/A	$	-
Case Fan	N/A	$	-

Monitor	Asus 24" 1920*1080-144Hz	$	496.28
Keyboard	Corsair RGB wired	$	99.99
Mouse	Logitech MMO Wired-laser	$	47.76
Speakers	Logitech-155W-5.1channel	$	67.78
Optical Drive	Samsung cd/DVD	$	29.78
TOTAL	**=**	**$2,142.53**	

I also had to buy two notebook computers that are advertised as a gaming computer. For the best gaming notebook computer, I chose MSI GS73VR-STEALTH PRO 4K-223 which costs $ 2,299.99. This notebook computer was hard to find since most of the gaming computers are either PC or laptops that are bulky and heavy. It has over 2tb of HDD and i512 GB SSD. IT had 16 GB of ram and Intel i7 with 2.8 GHz processor speed, it also has the Nvidia GeForce GTX 1060 graphics card with 17.3 inches of Ultra HD screen and fast ethernet connection and WIFI. It only weighs 5.36 pounds 4 speakers and subwoofers. It has USB 2.0, 3.0 and Type C. Also has HDMI, Microphone, Display and many other ports. This notebook computer has everything a game requires. It is also VR ready to enjoy 360 games.

For the budget notebook computer, I really had to do a lot of research because good gaming computers are little more expensive than $500. But I found a computer that is advertised as a gaming computer and has very good specs for the price. It is the 2016 Lenovo Idea Pad with AMD FX-7500 APU and Radeon R7 Graphics card. It has 8Gb of Ram and 1TB of HDD with Dolby audio and up to 3.3 GHz processor speed. It quotes, "AMD Radeon R7 graphics bring outstanding visual realism and ensure excellent performance for gaming and video playback" (Amazon Description). This budget gaming computer only cost $384.

I also had to get two different printers. One of which had to be a general-purpose printer. The Canon Pixma TS6020 has a wired ethernet connection as well as WIFI and google cloud printing options. It includes color and black and white printing options. It doesn't have any internal memory so it won't keep any files but it has a USB 2.0 port. This printer also has a scanner built in to scan documents and pictures. It only costs $79.99.

   The other printer is supposed to be a color unit that can print on ANSI-C (A2) paper and artist canvas.

I chose Canon imagePROGRAF PRO-1000 all in one color printer. This printer is designed to print high quality pictures and arts. It supports both color and mono printing option with paper size of all kind including A2 and canvas. It has 1 Gb memory and maximum print resolution of 2400 x 1200 dpi. Overall it is a great printer that prints high quality prints.

The **TOTAL** cost of everything came out to be *$ 16,737.28.*

Citations

PC1-https://pcpartpicker.com/list/Rd9VvV

PC2-https://pcpartpicker.com/list/zgtMWX

PC3-https://pcpartpicker.com/list/vZRDRG

Pc4-https://pcpartpicker.com/list/9j2XwV

http://www.bestbuy.com/site/msi-17-3-4k-ultra-hd-laptop-intel-core-i7-16gb-memory-nvidia-geforce-gtx-1060-2tb-hdd-512gb-solid-state-drive-aluminum-black/5731311.p?skuId=5731311 (Expensive notebook)

https://www.amazon.com/Lenovo-Premium-Performance-15-6-Inch-Graphics/dp/B01LGBD0Y4/ref=sr_1_3?s=pc&ie=UTF8&qid=1502260698&sr=1-3&keywords=gaming+laptop+under+500 (Budget Notebook under 500)

http://www.bestbuy.com/site/canon-pixma-ts6020-wireless-all-in-one-printer-gray/5746104.p?skuId=5746104 (general purpose printer)

https://www.usa.canon.com/internet/portal/us/home/products/details/professional-large-format-printers/professional-photo-fine-art/imageprograf-pro-1000 (All in one Printer BUY)

https://www.canon.com.cy/printers/inkjet/pro-photo-printers/imageprograf-pro-1000/#specifications (All in one Printer Specs)