

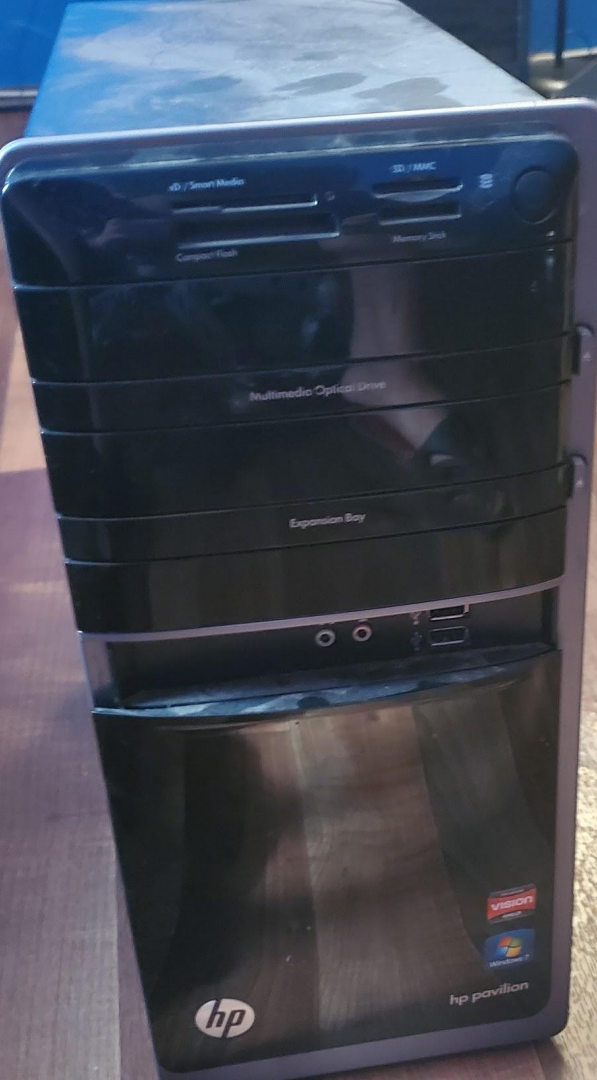
# Electronics Online Challenge

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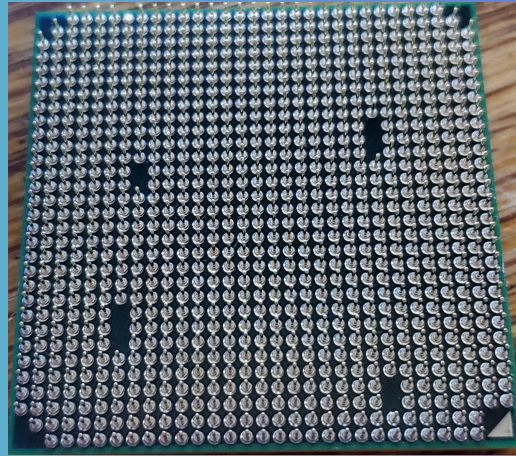
# Parts Inside The Computer

- CPU AMD athlon II
- GPU None
- H-Alvorix-RS880 (Aloe) uATX  
motherboard
- Seagate HDD
- RAM Corsair 2x8<sub>gb</sub> DDR4
- Fans
- Wifi adapter
- Power supply





# CPU



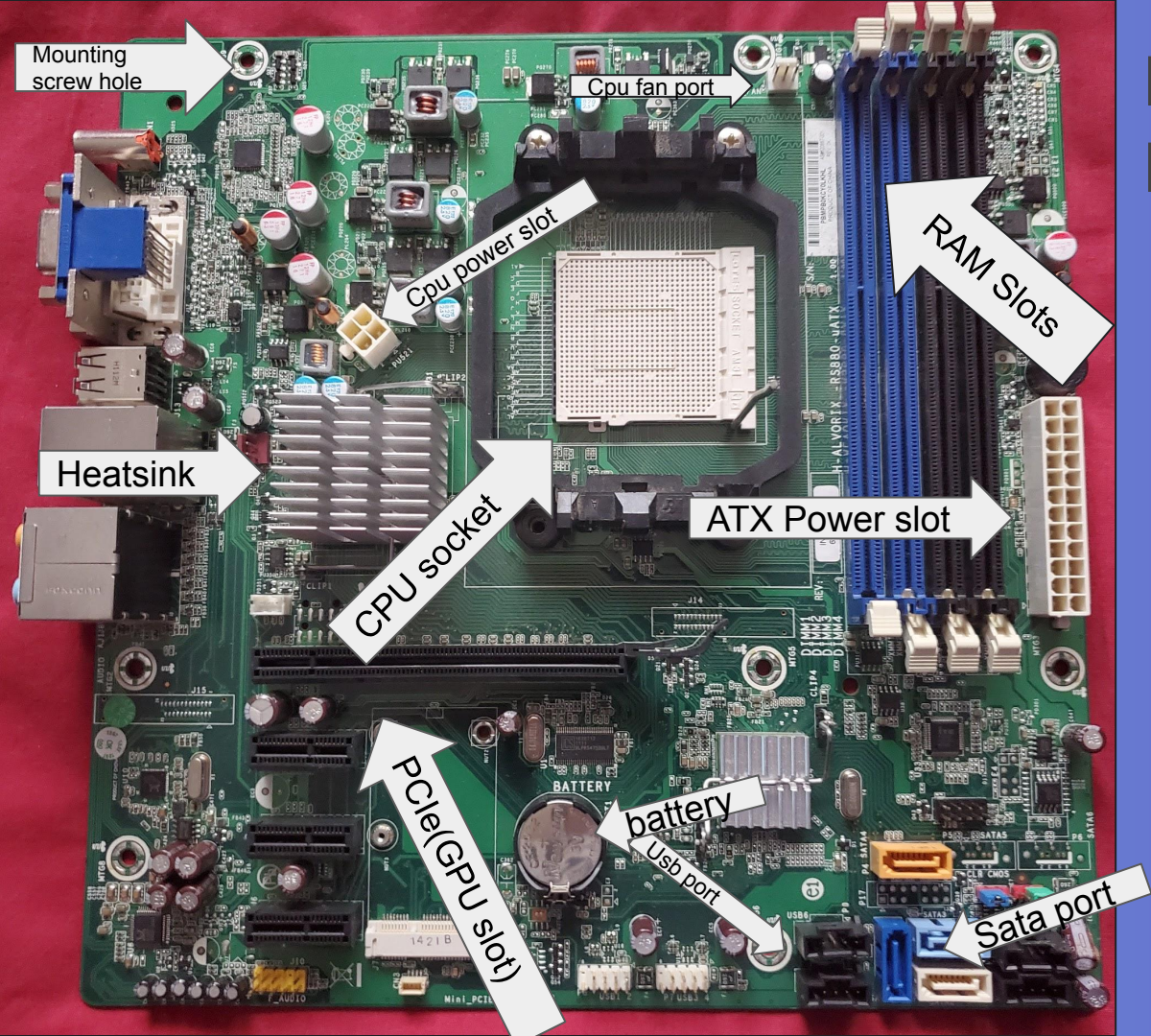
The central processing unit more known as the CPU is the principal part of any digital computer system, generally composed of the main memory, control unit, and arithmetic-logic unit. This part of the computer is most commonly referred to as the brain of a computer. Now let's dissect the CPU. One of the main components of a CPU are the little gold pins on the back of the CPU. The little gold pins on the back are basically the connectors for the CPU socket. They get power to send signals and communicate with the rest of the system. Now let's talk about cores, Processor cores are individual processing units within the computer's central processing unit (CPU). The processor core receives instructions from a single computing task, working with the clock speed to quickly process this information and temporarily store it in the Random Access Memory (RAM). Fun fact some CPUs have integrated graphics so you don't need to use a dedicated gpu.

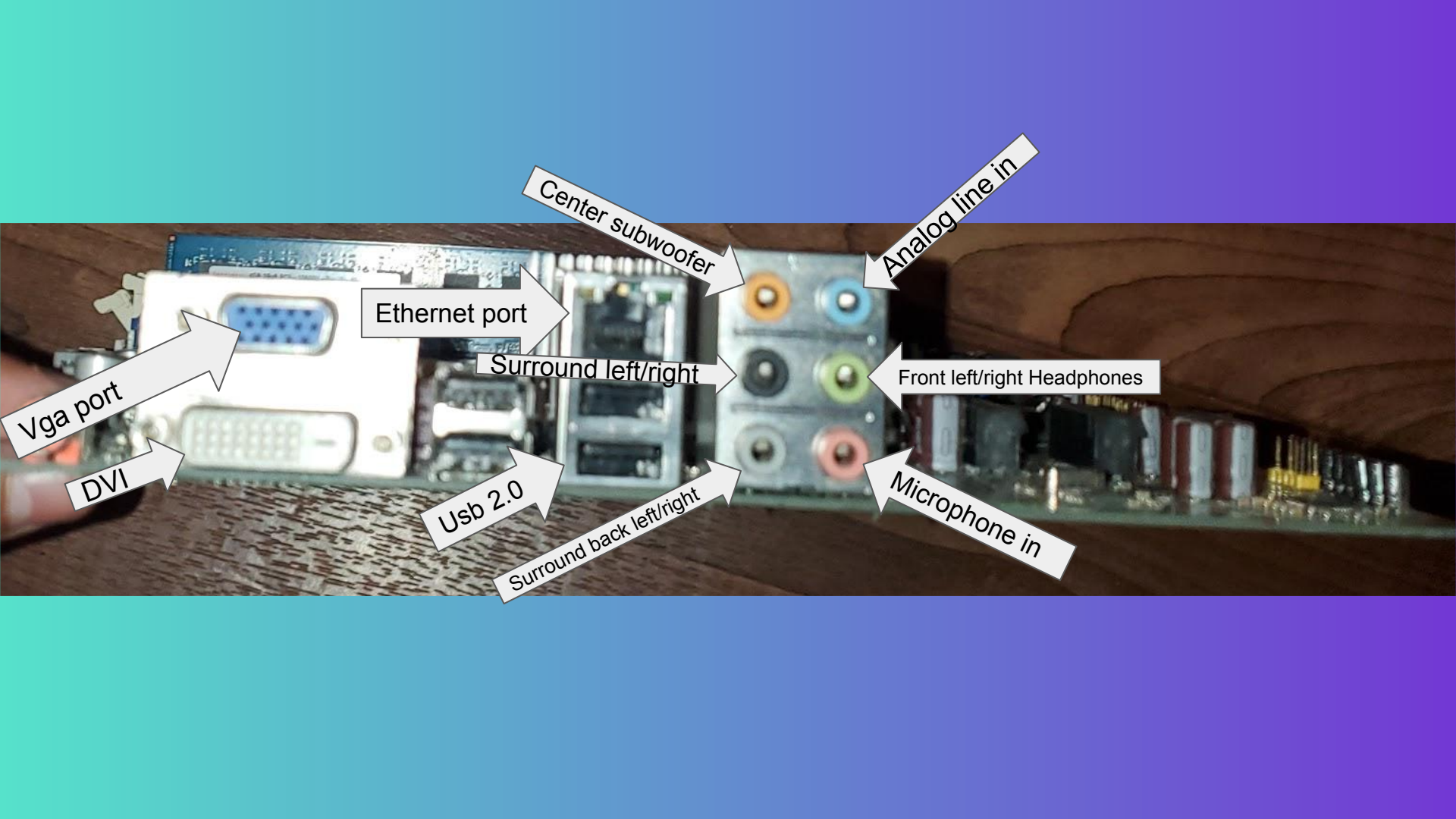
# Motherboard



Now let's talk about the motherboard one of the most complex parts of a computer. First let's talk about what it does, The motherboard is the heart of the system without it the CPU GPU or hard drives would interact. Let's talk about how it connects the whole system together, it connects everything with ports, sockets and pins. It receives power through the power supply once connected through the ATX power port and diverts power to all the other components. There are 2 sizes of motherboards the first is ATX and the second is mini ATX. The reason there is important is because if someone wants to build a PC they need to know if the actual motherboard will fit in the case. Another thing to notice is the RAM speeds. Depending on the motherboard you use it can support a certain RAM speed it doesn't affect the performance but it won't use the RAM full potential. Now what is that silver cube with lines inside on the motherboard, well that is a heatsink now you may ask what does a heat sink do. The motherboard heatsink is a cooling device used on certain chips found on system boards. The main chip or computer processing unit (CPU) requires a heatsink, and chipsets also use heatsinks. Heatsinks are designed to move heat away from a computer's central processing unit.

# Mapping of The Motherboard





Vga port

DVI

Ethernet port

Usb 2.0

Surround left/right

Surround back left/right

Center subwoofer

Analog line in

Front left/right Headphones

Microphone in



# AIO Ports and Purpose

## Ethernet Port

An Ethernet port (aka jack or socket) is an opening on computer network equipment that Ethernet cables plug into. Their purpose is to connect wired network hardware in an Ethernet LAN, metropolitan area network (MAN), or wide area network (WAN). ... An Ethernet port accepts a cable that has an RJ-45 connector

## VGA Port

The most common type of port was a VGA output, which allowed you to connect your analog computer monitor to other monitors or televisions. At the inception of HDTV, VGA was used in order to provide a higher quality picture through an HD15 connector. But as technology advanced, new solutions were created.

## UB2.0

The USB 2.0 data port is used to connect a variety of peripheral devices such as mice, keyboards, printers, scanners, external hard drives, video game consoles, digital cameras, mobile devices and network adapters. Another widespread and convenient USB device is the flash drive or memory stick

## DVI Port

DVI Connection. DVI keeps data in digital form from the computer to the monitor. There's no need to convert data from digital information to analog information. LCD monitors work in a digital mode and support the DVI format.

## Center subwoofer

The use of a subwoofer augments the bass capability of the main speakers, and allows them to be smaller without sacrificing low-frequency capability.



### **Surround left/right and surround back left/right**

Surround left/right and surround back left/right are audio ports that helps speakers create surround sound by plugging it in

### **Analog line in port**

line in or **line-in** is a jack found on computer sound cards enabling users to connect an external audio device. These devices include CD players, audio mixers, musical instruments, and microphones. ... The picture of a desktop sound card shows the blue **line-in port** represented as an arrow pointing into sound waves.

### **Front left/right headphones**

Front left /right headphones is the audio port that you plug in your headphones so when you plug in your headphones you can hear from the left and right



# RAM



RAM is random access memory is one of the most important components in determining your system's performance. RAM gives applications a place to store and access data on a short-term basis. It stores the information your computer is actively using so that it can be accessed quickly. Lets talk about DDR4 Physically, a DDR4 module, or dual in-line memory module (DIMM), looks very similar to a DDR3 DIMM. However, DDR4 has 288 pins compared with DDR3's 240 pins; DDR4 SO-DIMMS have 260 pins instead of 204 in DDR3. This makes the RAM stick faster. There's something else about RAM its called dual channel and this affects the pc in a big way Dual channel RAM is simply faster than single channel RAM. ... Dual Channel likely will not show any huge difference in gaming or things of that nature, BUT for rendering, compiling, and encoding there's a dramatic advantage. But generally speaking, there will be advantages to using dual channel RAM over single channel.

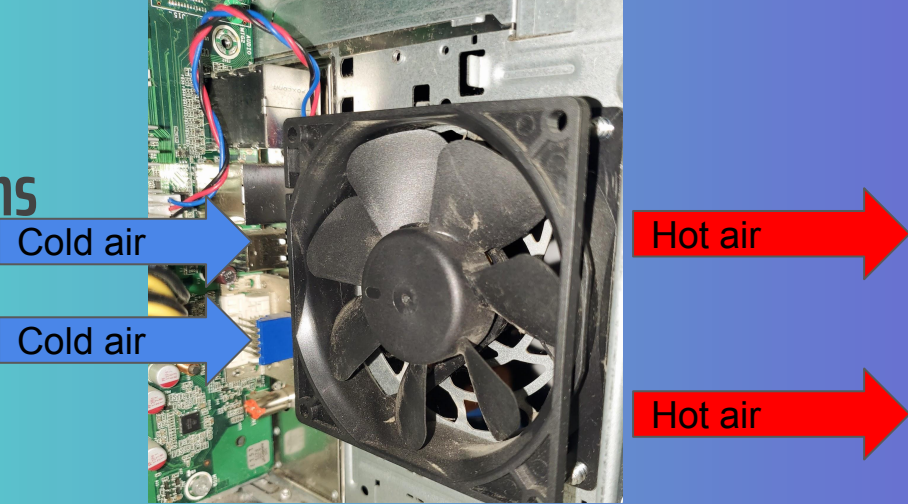
# Memory

## Seagate 1tb Hard drive



Now let's talk about memory there's many options for memory there's hard drives,SATA SSD,M.2 SSD NVME.My pc had a Hard drive but you're probably wondering what does it actually do and how does it work.The hard drive contains a spinning platter with a thin magnetic coating. A "head" moves over the platter, writing 0's and 1's as tiny areas of magnetic North or South on the platter. To read the data back, the head goes to the same spot, notices the North and South spots flying by, and so deduces the stored 0's and 1's.Every type of memory has a limit of how much data it can store.Data is measured by (GB) or gigabytes.My storage device had 1000gb or 1TB (Terabyte)which is plenty of storage.Now you may ask what are ssd and what is the difference between ssd and HDD.HDDs are a legacy storage technology that use spinning disks to read/write data. SSDs are faster and more power efficient than HDDs. HDDs are priced lower, but SSD prices are dropping,but what are the differences between m.2 ssd and a normal sata ssd.Certain desktop PC peripherals like wi-fi cards can come in the M. 2 form factor, but the most common use for M. 2 is SSD data storage, basically functioning as an alternative to the existing 2.5" storage drives that are mounted in a separate bay and then connected to the motherboard via a SATA cable.

## Fans



Well how does the pc keep cool or why does it need to be a certain temperature. The sole function of computer fans is to cool the system by drawing colder air from the outside into the computer chambers and components, mainly, the CPU. In some computers, you will find the fan as a component of its power supply where it is performing its cooling function. You will also find fans on the gpu. But why does your pc components need to keep cool. If your pc components get too hot it produces thermal throttling. You may ask What is thermal Throttling? When your GPU takes on a heavy workload, such as gaming, it generates a load of heat. When your cooling solution can no longer dissipate heat fast enough to keep temperatures within a safe range, your graphics card starts to dump performance to shed heat.



# Wifi Adapter

You may ask how do you get internet it doesn't come magically does it? No a wifi adapter is A wireless adapter is a hardware device that is attached to a computer or laptop and allows it to connect to a wireless network. Typically, they come in the form of a USB dongle device that you input into your computer. WiFi adapters help you connect to WiFi networks nearby.

# Power Supply



You may ask how do you get power to all of your components and why do you need a power supply and why isn't there something smaller well The computer power supply changes alternating current from a wall socket of mains electricity to low-voltage direct current to operate the processor and peripheral devices. Several direct-current voltages are required, and they must be regulated with some accuracy to provide stable operation of the computer.

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# Conclusion

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This project was very interesting to say the least. I was able to see how many different components a computer has to use to actually function and all the variables that can go wrong. It's fascinating how much a computer can resemble the human body. I enjoyed this project very much and hope to win this competition.