Disassembling a Desktop

Computers have been around for over 50 years and have increased power, performance, and precision greatly over the last twenty years. Throughout this project, our team has taken apart a shuttle desktop from 2012 and learned about the parts, helping us comprehend the achievements of the last 10 years. After disassembling and researching all the components we have learned more about the central processing unit, the motherboard, and many other parts that complete the shuttle desktop.

The central processing unit is essential to the basic functions of any computer. It operates using semiconductors condensed into a small box with pins attached to the motherboard. A semiconductor is a substance, usually silicon, where the conductivity can be switched on and off. The Intel Core i7 was a great leap from its predecessor, the Core i5. It brought new advancements, including more cores, more threads, and multi-thread tasking upgrades. Since then, processors have evolved significantly, but the core i7 was an influential piece of computer history.

While the CPU is quite important the motherboard is what holds everything together and lets all other components communicate. The motherboard's primary job is to run actions from the various hardware through the CPU and graphics card, before exporting those actions to external hardware. All motherboards have some basic components, they all have SATA ports, for connecting storage devices such as hard drives. They all have RAM slots, or random access memory which without you can't keep a program running. All motherboards have a CPU slot, where the CPU sits. Most motherboards also have various sockets to plug external hardware in too, such as a mouse or monitor. The motherboard we deconstructed had an intel Z68 CPU socket, along with four RAM channels that could support up to eight giga-bites. Also, it had SATA and USB ports for storage and hardware. Without the motherboard, a computer couldn't be assembled, making it an essential piece.

While all these pieces of hardware are essential, every piece in the computer must work together to create a functioning and useful piece of equipment. One of the most common components our team discovered was the capacitor. Capacitors are designed to store and release electricity and make sure none of the parts get fried. Most of the time they are cylindrical with two pins extruding from the bottom.

These components may be small, but they play a large role in the function and performance of the entire system.

  Computers used to be massive machines that took up entire rooms just to do simple calculations. Now they can be condensed so that they may fit in a backpack. Processing power has improved to be almost a billion times faster than forty years ago. As technology advances and becomes more complex, understanding it will be a key skill in everyday life. This eight-year-old desktop helped simplify computers into something we could understand and grasp, before applying it to today's technology. Technology may keep advancing, but humans can keep up as well.
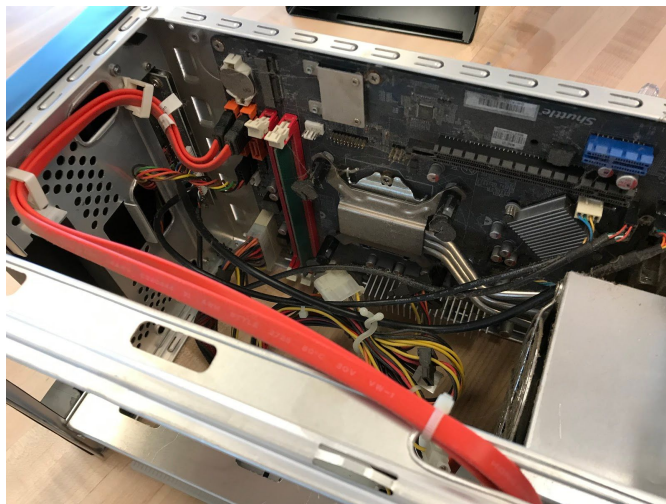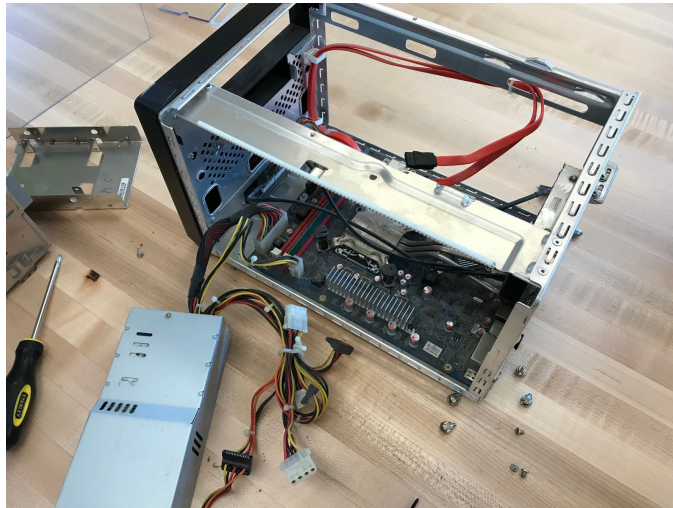

Here is a top view of the shuttle desktop. Red cables are the SATA cables that connect storage devices to the motherboard.

A top down view of the motherboard shows some key features. The red slots are memory slots, and the CPU slot is in the center.
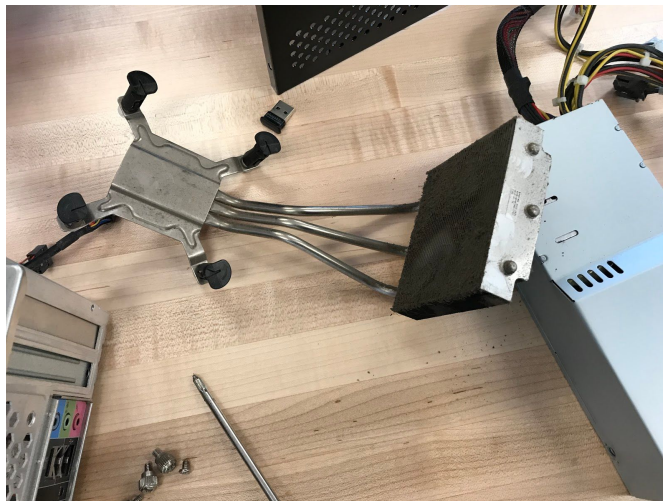
This is the heatsink. it sits on the CPU and cools it, preventing it from burning the rest of the motherboard or itself.

The case serves many important functions. It keeps dust out, cools the entire system with fans, and houses the main controls like the power button.

Here are some of the small capacitors that make the whole system run. They may be small, but they serve an important function.

This is the hard drive. It functions by using a metal needle to read its disks. The one we removed was a 500GB hard drive.
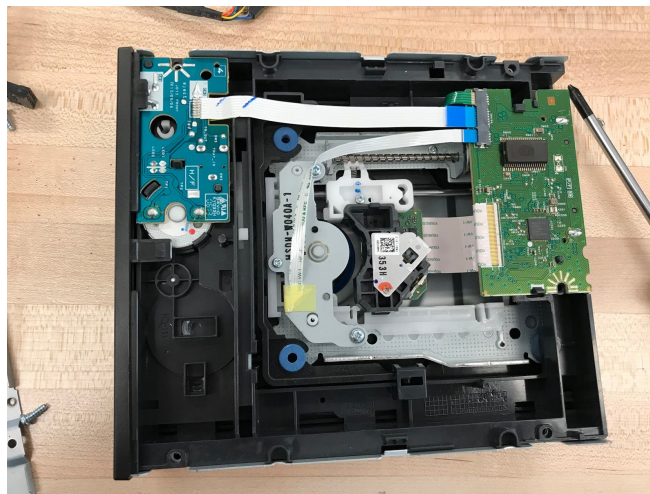
The disk reader is not included in modern computers. It uses a complex system to spin the disk so that it may read it.