Andy NET-1120 Week2, 30 August, 2025

Disk drives, Memory and Mainboard components.

Disk Drives:
Harddrives are non-volatile, random access-ish, and have moving parts. Non-volatile means that it persists during power-cycles. Random access means that it doesn't have travel forward or backward like a tape drive would to find the data. Having moving parts is a downside because you can eventually expect mechanical failures and it causes heat. Heat is a killer among computer parts. The components of the hard drive consist of a controller board with a connector, platters, and an armature accesses the data on the platter. The data is stored using magnetism. Hard drives have different access speeds based on the speed of the platters spining around. This is called the RPM. Hard Drives come in these speeds: 5400 RPM, 7200 RPM, 10,000 RPM, and 15,000 RPM.

SSD Drives are different than hard drives. There are no moving parts and magnetism isn't used to store data. The data can be accessed much faster than it's counterpart.

All modern drives use the SATA interface. Older drives use the PATA interafce or what we used to call the IDE interface. NVMe is a new interface designed to keep up with the speed of SSD drives.

Disk drives come in different form factors: 3.5 inch, 2.5 inch mSATA (which no longer exists) and m.2 form factor (smallest)

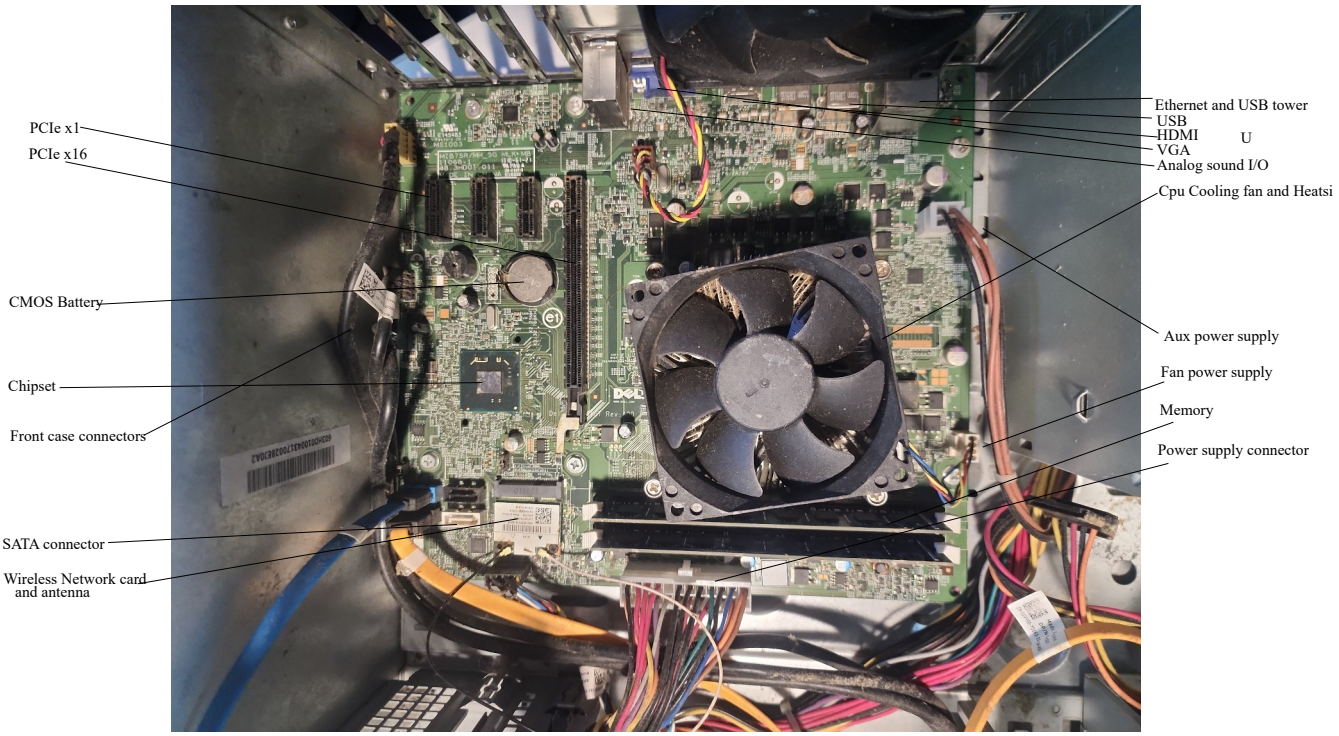
RAM:
RAM, or Random Access Memory, or just memory is volatile. Volatile means that the information they store is wiped during a shutdown. It acts like the counter-top in your kitchen. Your refrigerator acts like your harddrive, your pantry acts like your tape drive and your oven or microwave are your CPU. Your food is temporarily stored on your counter-top during meal prep. That meal gets processed or cooked in the oven. When you are done, all the ingredients go back into the refrigerator or pantry and your counter-tops get cleaned and cleared. The same way memory is cleared when the computer is shutoff.

Memory lives in slots on the mainboard. The memory is inserted into the slots and locked in place by clips. They are called Dual, as opposed to Single (SIMM), because they have connectors on both sides of the module and can transfer twice as much data per clock-cycle as it's predecessor.

Laptops use a SO-DIMM (small outline). SO-DIMM is the same as DIMM but have a smaller form-factor.
On the boards of memory are the chips that are the actual memory circuits.

Each memory module has notches to prevent us from putting DDR-2 memory into a DDR-3 slot.

DDR3 is version 3. it's twice as fast at DDR2.
DDR4 is faster and can handle up to 64GB per module.
DDR5 is even faster but still supports up to 64GB per module.


PCIe x1
PCIe x16
CMOS Battery
Chipset
Front case connectors
SATA connector
Wireless Network card and antenna
Ethernet and USB tower
USB
HDMI
VGA
Analog sound I/O
Cpu Cooling fan and Heatsi
Aux power supply
Fan power supply
Memory
Power supply connector