**PC Maintenance and Repair - Chapter 4 Notes - RAM and CPU**

**CPU Terms**

Processor Speed - Frequency at which the CPU processes information, usually measure in GHz.

Socket - Motherboard slot type that the CPU will fit into.

Processor Architecture - Data path for the CPU. 32 bit or 64 bit.

Multiprocessing - Current CPUs have more than one ALU, which allows the CPU to processor more than one calculation or instruction at the same time.

Dual Processor - Some server motherboards have two sockets

Multi-core - Newer CPUs actually hold several processor cores in a single container. That container, or housing, can contain from 2 to 8 processors and is called dual-core, triple core, quad-core, six-core or 8-core CPU.

Multithreading - A thread is a task given to the CPU by the operating system, such as Windows. Newer CPUs can handle two threads at the same time. Intel calls it HyperThreading. AMD calls it HyperTransport.

Memory Cache - Additional memory, like RAM, that is located directly on the CPU. There are three levels of cache on a CPU. Data waiting to be processed by the ALU is held here to prevent loss of data if the CPU is busy or overloaded.

Level 1 Cache - Cache is located directly on the processor chip (AKA die). This is fastest as it doesn't have to leave the CPU to make use of it.

Level 2 Cache - Cache is located near the die, but not on it.

Level 3 Cache - Cache is off the die and further from the die than Level 2 cache.

Integrated Graphics - Some CPUs have an integrated GPU. Most current processors do have Integrated Graphics. If you have a dedicated graphics card, you would most likely not use this CPU feature.

ALU (Arithmetic Logic Unit) - Part of the CPU that performs calculations. Current CPUs have two of these which can function simultaneously.

Registers - Small holding areas for data on the CPU. Functions like RAM.

Bus - Connects the CPU to other components.

x86 processors - 32 bit processors

x86-64 processors - 64 bit processors

Intel CPU Families - Core i7, Core i5, Core i3, Atom, Celeron, Pentium

AMD CPU Families - FX Black multi-core , Phenom, Athon, Sempron

**RAM Terms**

RAM - Temporarily holds data and instructions as the CPU processes them.

DIMM - Dual Inline Memory Module - RAM type used in current desktops

So-DIMM - Smaller version of DIMM used in laptops

RIMM - Older type of RAM developed by Rambus, Inc.

SIMM - Really old RAM used in the early days of personal computers.

pin - Number of contact points on the RAM through which data can flow. More pins means higher data transfer rate.

DDR - Double Data Rate - RAM reads/writes data twice per clock cycle, effectively doubling the data transfer rate. There are four versions of DDR, DDR1 to DDR4. Each version is faster than its previous, while consuming less power.

Single Channel - Only one RAM stick can be accessed at a time.

Dual, Triple, Quad Channel - 2, 3 or 4 RAM sticks can be accessed at the same time.

DIMM Speed - The frequency with which data can be pulled from the RAM. It is measured in Mhz.

PC Rating - This is the data transfer rate of the RAM, expressed in MBps. It is preceded with PC. For example, DDR3 RAM operating at 800 MHz with a data path of 64 bits can also be expressed as PC6400.

Singled-Side - RAM of this type only have memory chips installed on one side of the RAM stick.

Double-sided - RAM has memory chips on both sides.

ECC - Error correcting code - Error checking operation that makes sure the data, as it is moved from CPU to the RAM is not corrupted.

parity error - Older error checking mechanism

CAS Latency - Timing measurement that goes column by column

RAS Latency - Timing measurement that goes row by row