Unit 4—Part A
Evaluating & Purchasing a Computer

Computer Applications

Making Informed Computer Purchasing Decisions

Before Buying a Computer
Educate Yourself

- Speaking the language of the computer world can be tricky
- It is filled with jargon, acronyms and technobabble

- Take time to educate yourself and put together a plan to make sure you get the kind of system you need.

Types of Computers

- When purchasing a computer, consider portability
- Desktop computers are large stationary machines
- If you need a computer for travel, doing business or attending school, you will want a laptop or an Ultrabook
- Netbooks and tablets keep you connected to the Internet and allow you to do *light* work, but neither offer the full power of a laptop or desktop computer

Data vs. Information

- Data = Raw facts
- Data has no context; it's just numbers and text
- Information = Processed data
- Data becomes information when it is processed and presented to someone in a meaningful way
  - E-mail
  - Letter
  - PowerPoint
  - Spreadsheet

RAM vs. ROM Reviewed…

- RAM = Random Access Memory
  - The memory that stores data as you process it
  - Volatile (Temporary Memory)
  - Cannot store data when the power is off

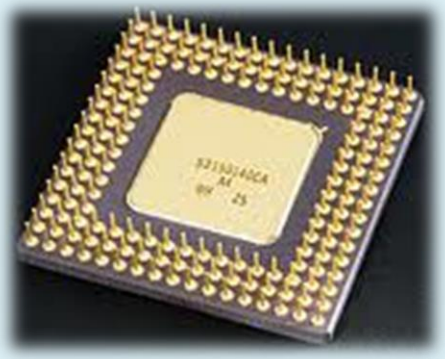
- ROM = Read Only Memory
  - Stores the instructions the computer uses when it boots
  - Non-Volatile (Permanent Memory)

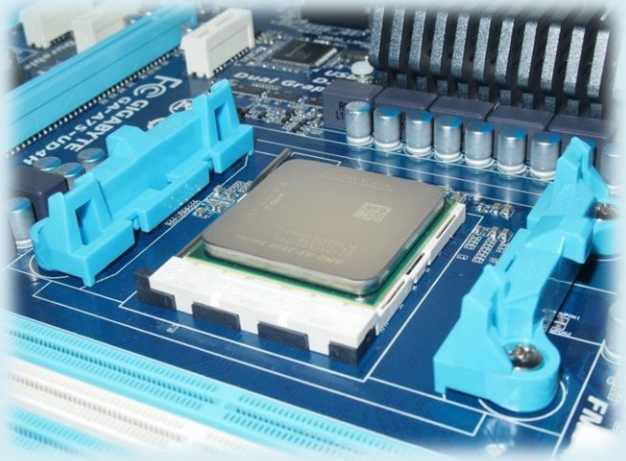
RAM—Your Computer's Short Term Memory

- More RAM is better
- The benefits of purchasing more RAM than you need is slim
- Most people purchase 4 GB of RAM for a typical home PC or 8 to 16 GB for a gaming or video intense PC

Processing

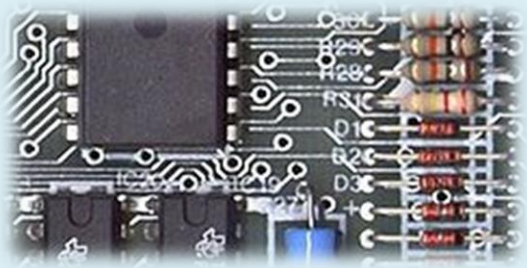
- Processing means manipulating data
- Processing takes place in the CPU
- CPU stands for Central Processing Unit
- CPU is sometimes just called processor
- It is the brains of the computer
- It is located on the Motherboard

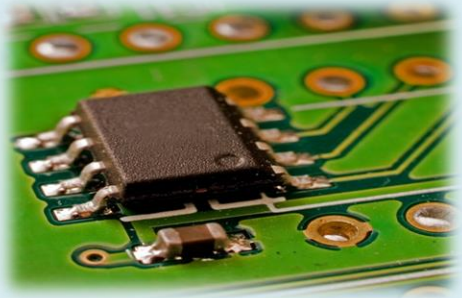




Motherboard

- A circuit board located in the computer's system unit
- It holds many of the important components of the computer, including:
  - Circuits: the paths data follows in the computer
  - Silicon Chips: Small computer chips that contains millions of transistors and other electronic components that control the flow of electrical current on the motherboard





The Motherboard

- If you buy a computer from a major manufacturer, you will not be able to choose the motherboard
- Motherboards have almost no impact on performance
- They are best judged by their features
  - BIOS, Fans, Ports (USB, SD, HDMI) etc.
- High-end motherboards will include features that make it easier to install multiple video cards for graphic and video intense computer systems

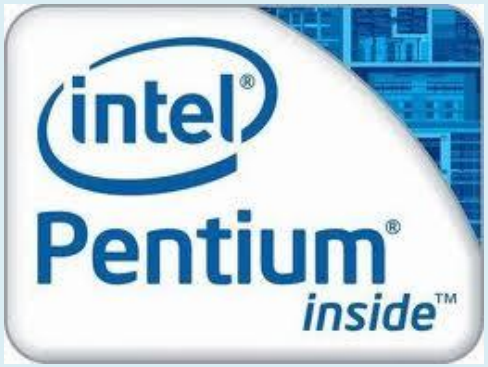
Processor Speed

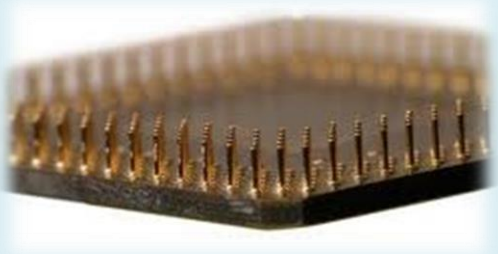
Hertz (Hz) = Refers to the speed of the processor (clock-speed)

- Processing speed is measured in HERTZ
- Hertz represents how quickly the CPU can interpret instructions from the operating system and applications.
- One kilohertz (KHz) = one thousand cycles per second
- One megahertz (MHz) = one million cycles per second
- One gigahertz (GHz) = one billion cycles per second.
- The typical CPU today runs in the 3 GHz + range

Type of Processors Continued…

- **Pentium**: A brand of processors created by the company Intel intended for middle to high-end computers
- Pentium is originally derived from the Greek word pente meaning "five" (Intel's 5th generation processors)



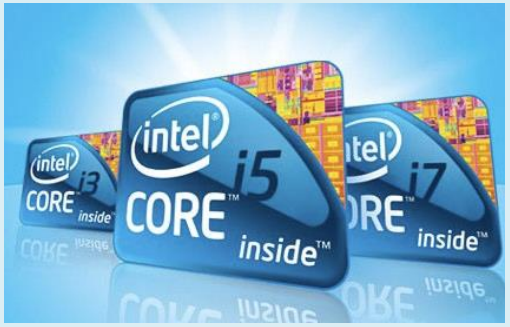


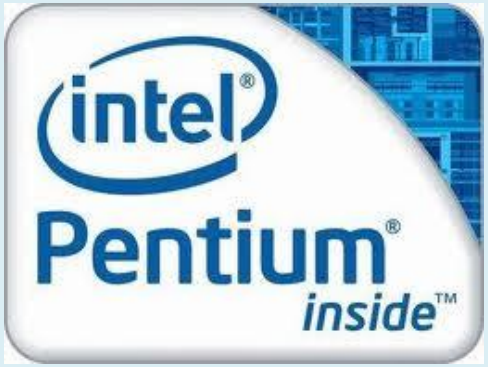
Type of Processors

- Celeron Processor
  - A low to middle-end computer processor used for basic applications:
    - document processing (e-mail, Internet and basic document processing) simple photo editing and Internet browsing
  - Targeted for budget computers

Multi-Core Processors

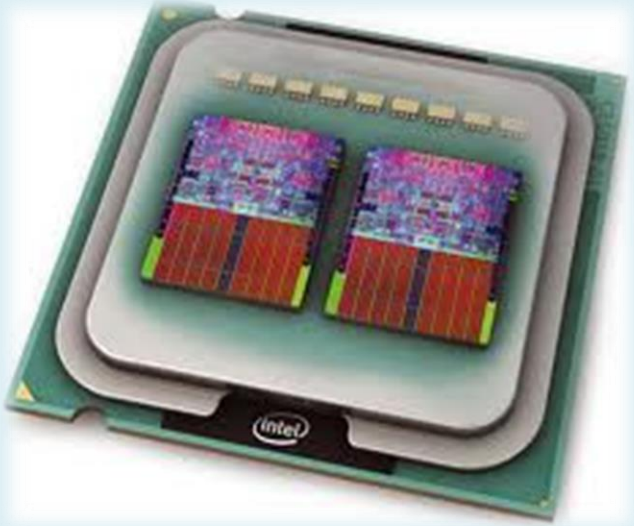
Watch the video below to learn more about the popular Intel i3, i5 and i7 Core Processors





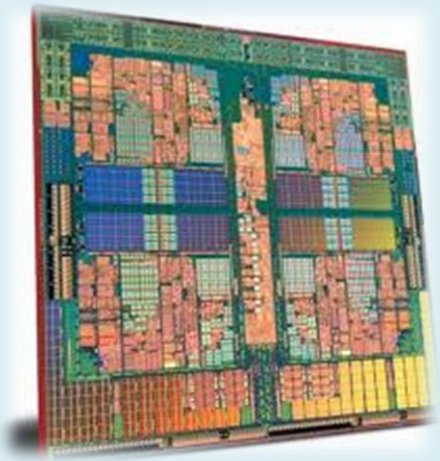
Multi-Core Processors

- To re-cap what the video taught, a multi-core processor is a single chip that contains two or more independent central processing units called "cores"
  - Dual Core = 2 cores
  - Quad Core = 4 cores
  - Hexa-Core processor = 6 cores
  - Octa-Core processor = 8 cores



Advantages of Multi-Core Processors

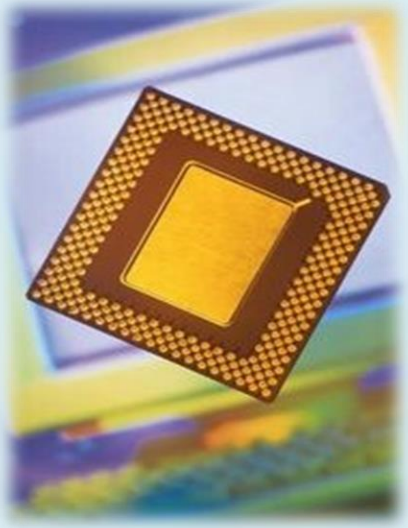
- Multi-core processors allows the processor to operate at a higher clock-rate
- The speed of a processor doesn't only depend on Hertz, it also depends on how many "cores" the processor has.



- Each core is like a separate processor, so a dual core processor at 2 GHz is as good as having two processors at 2 Ghz working at the same time (2Ghz X 2GHz).

The difference a few years makes…

- 1981 Intel CPU = 8 MHz
- 1991 Intel CPU = 33 MHz (4 times faster)
- A CPU today can do a job in 1.5 seconds that took the original Intel CPU 10 minutes to process!
- Now that is PROGRESS!



Storage Capacity

- Hard drive size and amount of RAM have a major impact on computer performance
- Not enough of either one can destabilize a computer or cause you to be unable to run some programs
- So, how much is enough?

Get Enough Storage Space

- Text documents, pictures and music generally don’t require much space alone
- The larger your collection, the more storage capacity you will need
- Storage capacity is measured in Gigabytes and Terabytes
- When determining storage capacity, consider:
  - Cloud storage
  - External storage devices

Storage Space

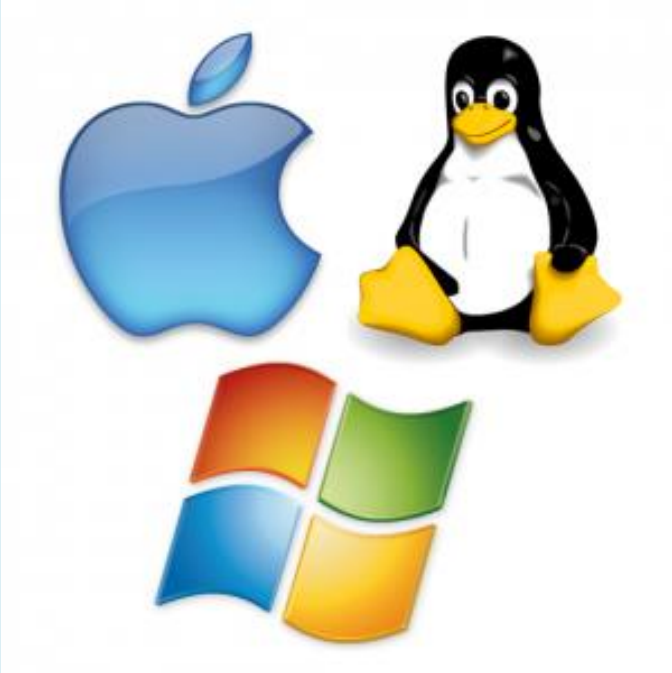
- Solid state drives are extremely quick, but expensive (10 to 17 times more than hard dives)
- Most people can’t afford to use them as their only form of storage
- Hard drives are the best bet for storing lots of data
- If you have money to spend, buy both
  - A 120 GB solid state drive is large enough to fit your operating system and a few critical programs
  - Then add a 500 GB to 1 TB mechanical hard drive for storage
- If your budget is tight, go with the fastest hard drive you can afford (usually 7,200RPM rotations per minute)

Video Card

- Video cards refresh the little red, green, and blue dots (pixels) on your screen many times per second
- The more it refreshes, the more solid your screen appears
- Integrated graphics cards are built into the motherboard
- Gamers usually choose to purchase a “discrete video card” which is a separate video card that plugs into the motherboard because it contains its own source of memory and consumes less RAM

Operating Systems

- The biggest decision is choosing an operating system
- Once you pick an OS, you are committed to learning the rules of that OS
- So what is it going to be?
  - Windows
  - Macintosh
  - Linux
  - Other



Windows

- It’s a Windows world out there (98% of the market share)
- Vast number of products available
- Windows support is easy to come by from a wide variety of sources
- Inexpensive repair and upgrade services available

Macintosh OS X

- The most intuitive user interface on the market today
- Less number of products available
  - Vendors may not produce Mac versions of their product
  - Mac versions are produced months or years after the Windows product
- Support from Apple is top-notch
- Macs are more expensive than comparable Windows machine
- Better for graphical design and video editing applications

Linux

- Powerful and sophisticated operating system that is FREE!
- Thousands of people around the world spend their free time working on various versions of Linux called “ditros and” then make them available for free (open source)
- Very few people use Linux
- Difficult to find software because most vendors don’t make a Linux version of their software

Other Factors to Consider

- Hardware
  - Monitor
  - CD/DVD drive
- Bundled Software (pre-installed software)
- Warranties
  - Most computers come with a 1-3 year warranty
  - Is free telephone and online support included

1/3/5 Rule

- Whatever you buy today will be beaten by a new product one year from now
- It will be common technology three years from now
- It will be obsolete five years from now
- This applies to everything, even if you purchase a fancy, top of the line computer
- Future proofing is not possible, therefore, you should only buy what is adequate for right now
- You will save a lot of money if you keep this simple rule in mind

Conclusion

- PC Hardware is a complex topic
- Educate yourself on your computer needs and computers available BEFORE you start looking for a new computer
- Many people break the general hardware rules and buy a computer that is faster and has more storage capacity than they need just because it excites them!
- There is nothing wrong with enjoying your PC—just keep your budget in mind

If Time Permits…

- Visit Consumer Reports Website
- Watch the video called Computer Buying Guide
- Finally scroll below the video and read through Consumer Report's suggestions in choosing the type of computer and operating system that best suits your needs

Works Cited

- http://www.pcmag.com/article2/0,2817,2382326,00.asp
- http://www.makeuseof.com/