

NMIUMC Computer Class

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Agenda

- Introduction
- Computer Basics
 - Dull Stuff
 - Less Dull Stuff
 - Interesting Stuff
- Good Stuff – Acronyms
- My How You've Changed
- RAM, ROM, HDD, Whatever!
- Fun Stuff – Exercises
- Virus Protection
- Internet – Browsers & Search Engines

Introduction

- Shawn Stephens – Instructor, Tutor, Comic
 - Mechanical Engineer
 - Computer Gamer & Enthusiast
 - Affiliations – None
 - Opinions expressed are my own and not the following:
NMIUMC, Intel, nVidia, AMD, Microsoft, etc...
 - No warranties are expressed or implied
 - No refunds – You get what you pay for...
- Nathan Stephens; Video – Lupe Stephens; Moral Support
- Class Goals and Rules
 - Increase computer understanding
 - Improve computer usage
 - Provide input for advanced class
 - Laugh, enjoy, have fun!
 - Rules – Be considerate, questions are welcome at anytime!

Computer Basics – Dull Stuff

- Computers are binary
 - 0 and 1
 - Off and On
- This is called a *bit*
 - Basic unit of computing
- Most familiar is a *byte*
 - 8 *bits* = one *byte*
- Bits are *b*
Bytes are *B*
- 30 Mbps is not the same as 30 MBps

Decimal (Base Ten)	Binary (Base Two)
0	0
1	1
2	10
3	11
4	100
5	101
6	110
7	111
8	1000
9	1001
10	1010

Dull Stuff – Continued

- Processors
 - 8-bit
 - 16-bit
 - 32-bit
 - 64-bit
- Operating System (OS)
 - 32-bit
 - 64-bit
- Memory
 - 128 Megs
 - 256 Megs
 - 2,048 Megs – 2 Gigs

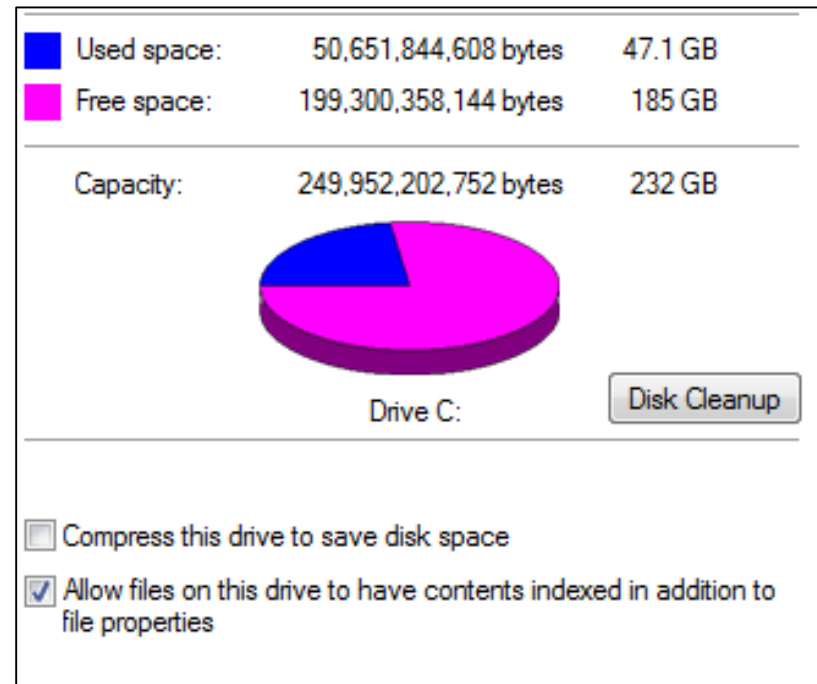
Decimal (Base Ten)	Binary (Base Two)
0	0
2	10
4	100
8	1,000
16	10,000
32	100,000
64	1,000,000
128	10,000,000
256	100,000,000
512	1,000,000,000
1,024	10,000,000,000

Less Dull Stuff

- 8 Bits = One Byte
- 1,024 Bytes = 1 Kilobyte
- 1,204 Kilobytes = 1 Megabyte
- 1,024 Megabytes = 1 Gigabyte
- 1,024 Gigabytes = 1 Terabyte
 - Over one *trillion* bytes, or exactly 1,099,511,627,776 bytes, make up a terabyte, or more than *eight trillion* bits!
 - Sometimes 1,024 = 1,000 (terabyte or tebibyte)
 - 1 Terabyte = 1 TB = 1,000,000,000,000 bytes = 10^{12} bytes
- Lawsuits have been filed over 1,000 vs 1,024!

Interesting Stuff: 1,024 = 1,000

- Hard drive manufacturers have dropped the 1,024 and moved to 1,000
- Windows still uses the 1,024 which makes your shiny new hard drive look smaller!
 - 250 GB drive is only 232 GB
 - 1 TB ~ 931 GB
- Good time for a computer exercise! What's in your computer?



Good Stuff - Acronyms

- CPU – Central Processing Unit
 - Brains of the computer
 - Intel – 8086/8088; 286, 386, 486, Pentium, i3, i5, i7
 - AMD – 286, 386, 486, 586, Athlon, FX
- APU – Accelerated Processing Unit
 - AMD series of CPUs
- GPU – Graphics Processing Unit
 - Provides graphic output
 - Intel- 3000, 4000, 5000 (Integrated Graphics)
 - nVidia – 460, 660, 680, 980
 - AMD (ATI) – X1900XT, 4870, 4890, R7, R9
- VGA – Video Graphics Array 640x480 – 256 Colors
 - EGA – Enhanced Graphics Adapter – 16 Colors
 - CGA – Color Graphics Adapter – 4 Colors

Good Stuff - Acronyms

- HDD – Hard Disk Drive
 - Main computer storage
 - Western Digital, Seagate, Toshiba, Hitachi
- SSD– Solid State Drive
 - New computer storage solution replacing HDD
 - No moving parts, faster
 - Expensive, longevity issues
- ROM – Read-Only Memory
 - CD-ROM, DVD-ROM
 - Usually store programs for installation or backup
- RAM – Random Access Memory
 - Storage of programs currently in use
- Hz – Hertz
 - Frequency – One cycle per second

My how you've changed

First Computer

- CPU – 386 @ 20 MHz
 - Single Core
- HDD – 40 MB (85 MB)
- RAM – 2 MB
- Video – 1 MB

Current (Gandalf)

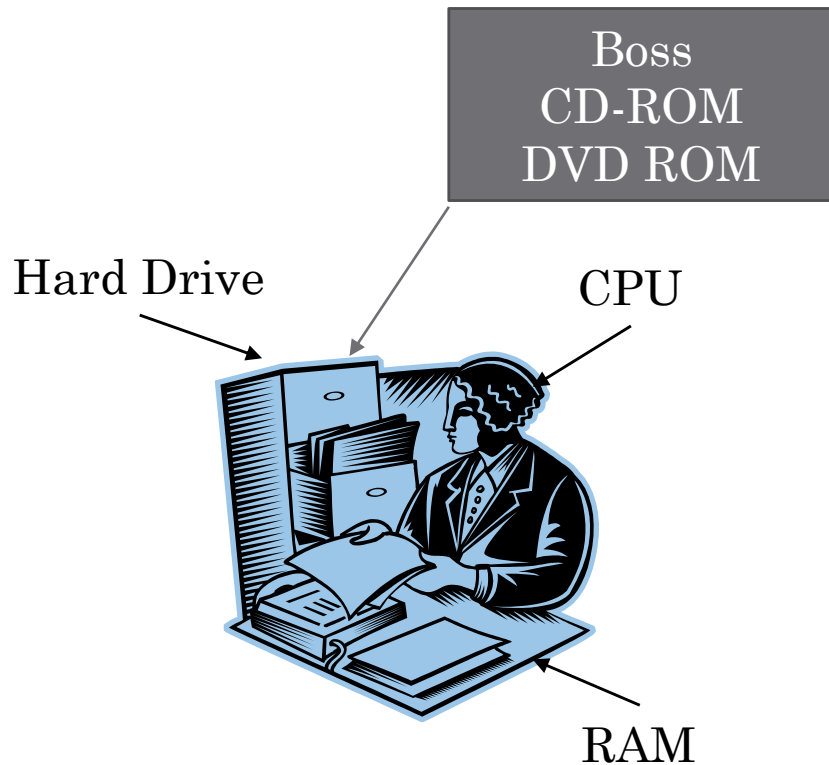
- CPU – i7 @ 4.5 GHz
 - Quad Core with Hyper Threading
- HDD – 2 TB Primary; 1 TB Backup
- SSD– 256 GB Boot
- RAM – 16 GB
- Video – 3 GB

RAM, ROM, HDD, Whatever!

- Your computer works a lot like you do
- Maybe a *tiny bit* more organized
- Let's simplify things and take a look!



RAM, ROM, HDD, Whatever!



- We'll use a more organized example where you are the CPU
- The file cabinets store all your projects and work that you may work during your career (Hard Drive)
- The boss can give you more work (CD-ROM, DVD-ROM) which goes into your file cabinet (Hard Drive)
- To actually work, you move it out of the file cabinet onto your desk (RAM)

*If your desk is too small, you spend time putting things away and getting new things out!
Your computer does the same thing!*

Good Stuff – Exercise Time

- Goals
 - Determine what you are running
 - OS, RAM, HDD, 32 or 64?
 - Maneuver around computer
 - Personalize your computer
 - Understand Windows file structure
 - Mouse – Right Click, Left Click (Context Menus)
 - Copy vs move – Drive to drive; folder to folder
 - Three-finger salute (Ctrl-Alt-Del)
 - Task Manager
 - Control Panel
 - Device Manager

Virus Protection

- Run something, anything
 - Microsoft provides a great list for starters
 - [Consumer security software providers - Microsoft Windows](#)
- Real-Time Antivirus
 - Microsoft Security Essentials – Minimum
 - Equivalent included with Windows 8 – Defender
 - AVG
 - Bitdefender
- Maintenance
 - Malwarebytes
 - Spybot
 - Free Super Anti-Spyware

Browsers & Search Engines

- Browsers – Surf the Internet
 - Internet Explorer – Microsoft
 - Firefox – Mozilla
 - Chrome – Google
 - Safari – Apple
 - Opera
- Search Engines – Search the Internet
 - Bing – Microsoft
 - Google – Google
 - Yahoo!
 - Ask!