

Introduction

Lecture 0

DM2112

Digital Entertainment Systems



Lecturers & Tutors

Lecturer

- Name: Mr Eric Sng
- Room: M507
- Tel No: 6550 1812
- Email: eric_sng@nyp.gov.sg

Tutor

- Name: Mr Fritz Lim
- Room: M610
- Tel No: 6550 1787
- Email: fritz_lim@nyp.gov.sg



Rules

- Lecture
 - When I talk, You don't
 - NO Laptops
 - Late-comers of more than 10 minutes considered late
 - System handled
 - Make sure you marked your attendance using your student card



Text Reference

- System Architecture, Fifth Edition
 - Stephen D. Burd
 - Thomson Course Technology
 - QA76.9 A73 B949



Introduction

- Different from Secondary School
- You can't rush at least minute
 - **No exams**
- We do in course assessment



Assessment

- 2 Assignments
 - Tentatively:
 - Exercise worksheet based (Broken into parts)
 - About 2 weeks to complete
 - Answer questions based on research &/| own knowledge
 - Possibly the EASIEST component to do well
 - DON'T Cheat
 - **It's an offence to cheat!**



Assessment

- 2 Tests
 - Tentatively
 - Week **8** and Week **16**
 - **CLOSED** book



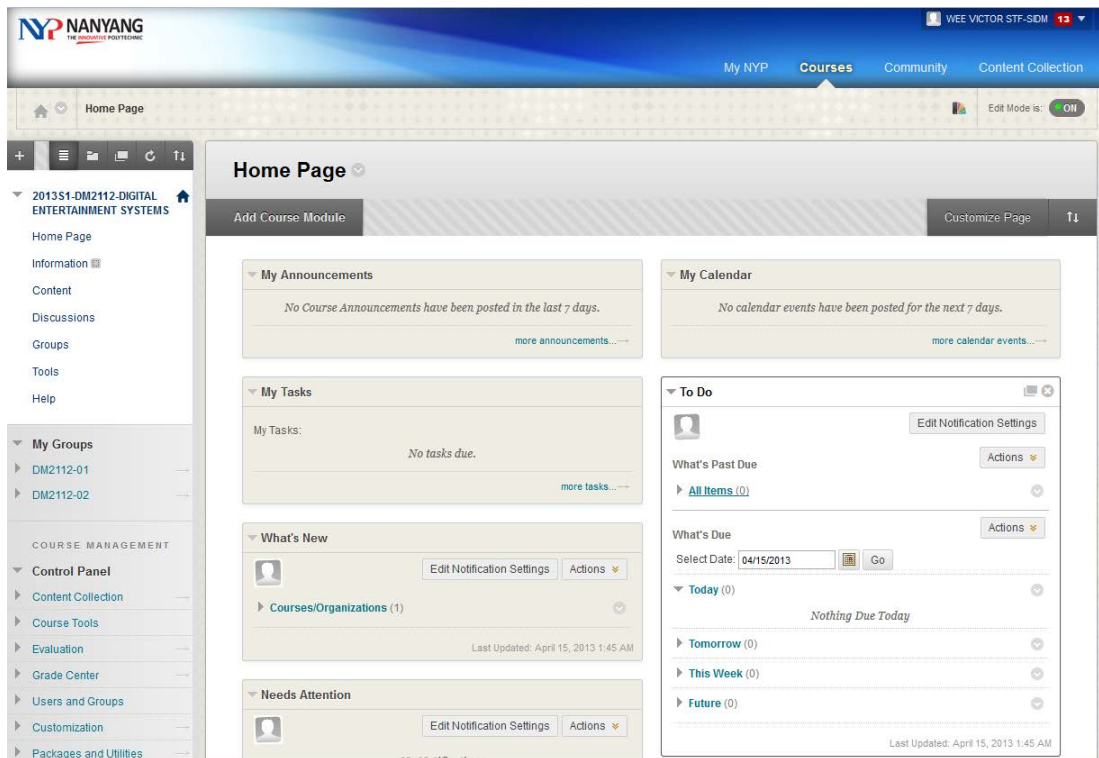
Assessment

- Others
 - Lab practical will be graded
 - Remember to hand in on time
- Marks deducted for late submission
 - Participation
 - Answer questions posed to you in class/lecture
 - Presenting solutions when asked to do so
 - Submit ON TIME!



Blackboard

- <http://Learn.nyp.edu.sg>



System Architecture 1

Lecture 1

DM2112

Digital Entertainment Systems



Motive

- We are all here to learn how to create games
 - Computer games
 - Console games
 - Handheld games
 - Facebook/Web games



Motive

- What is the similarities between them?
 - Computer (PC/Mac)
 - Console (PS4/PS3/Xbox/Vita/PSP/DS)
 - Android/Iphone/Windows 8 Mobile
 - Tablets
 - Web browser (PC/handheld)



Similarities

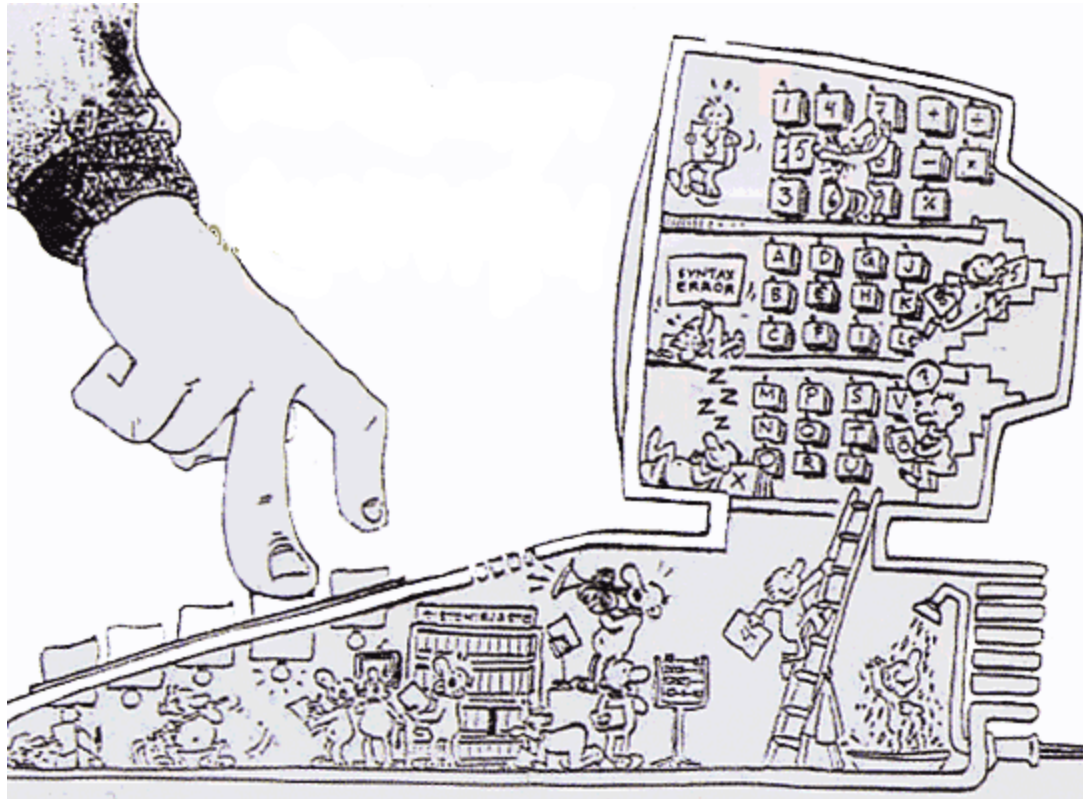
- All the mentioned hardware have
 - Processor
 - Memory
 - Storage space
- They are a form of a computer system

What is a **Computer**? What is a **System**?
What is a **Digital Entertainment System**?



How Computer Works

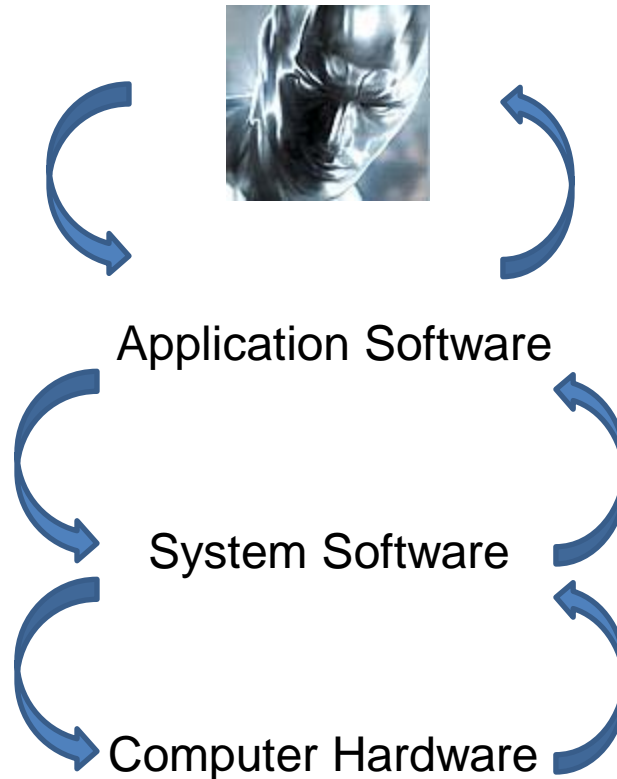
- First we need to know how computer really works!



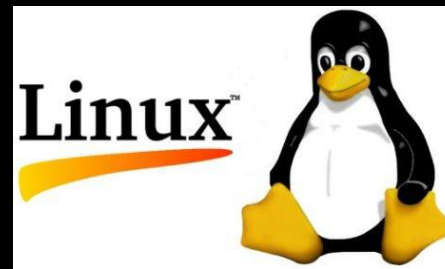
How Computer Works

- <http://computer.howstuffworks.com/pc.htm>

User
interaction
limited
by software



Operating Systems



Operating Systems

- System Program
- 3 main roles
 - Make computer user friendly*
 - Use computer hardware (HW) resources in an efficient way
 - Provide common services for application software



Operating Systems

- Have come a long way

```
Microsoft(R) Windows DOS
(C)Copyright Microsoft Corp 1990-2001.

C:\>mem

        655360 bytes total conventional memory
        655360 bytes available to MS-DOS
        578352 largest executable program size

        4194304 bytes total EMS memory
        4194304 bytes free EMS memory

        19922944 bytes total contiguous extended memory
         0 bytes available contiguous extended memory
        15580160 bytes available XMS memory
        MS-DOS resident in High Memory Area

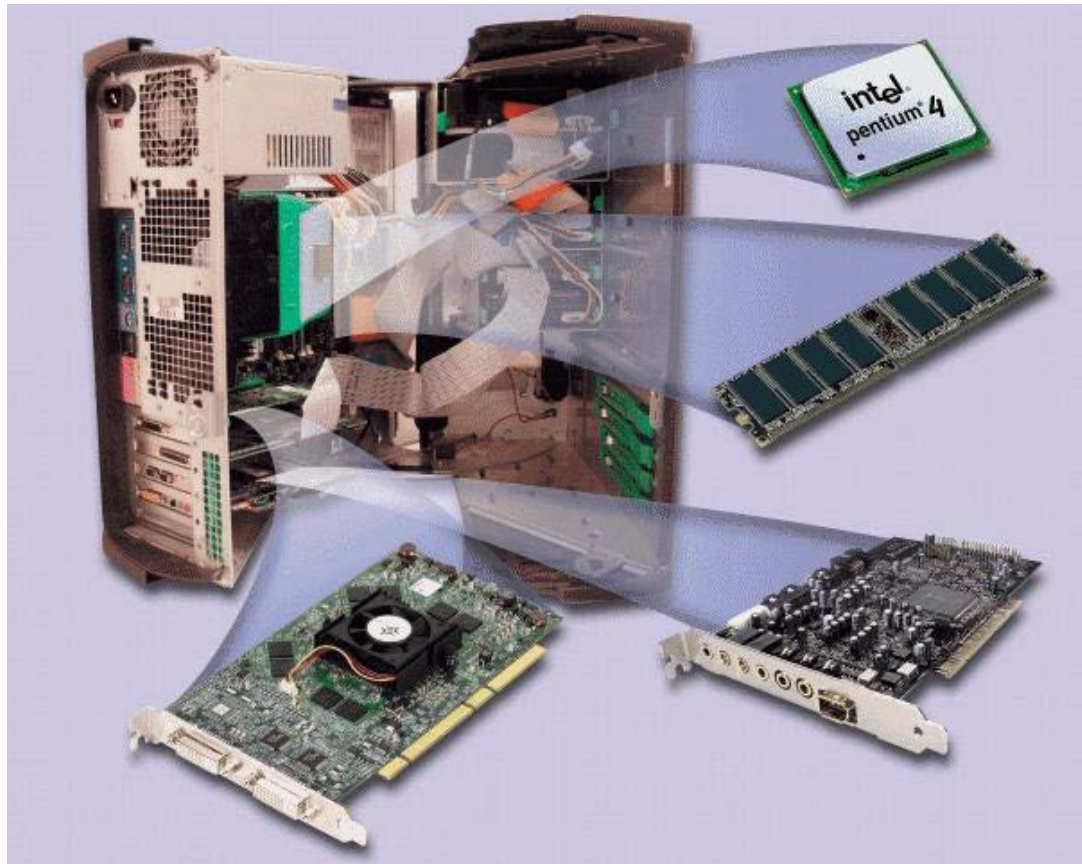
C:\>
```



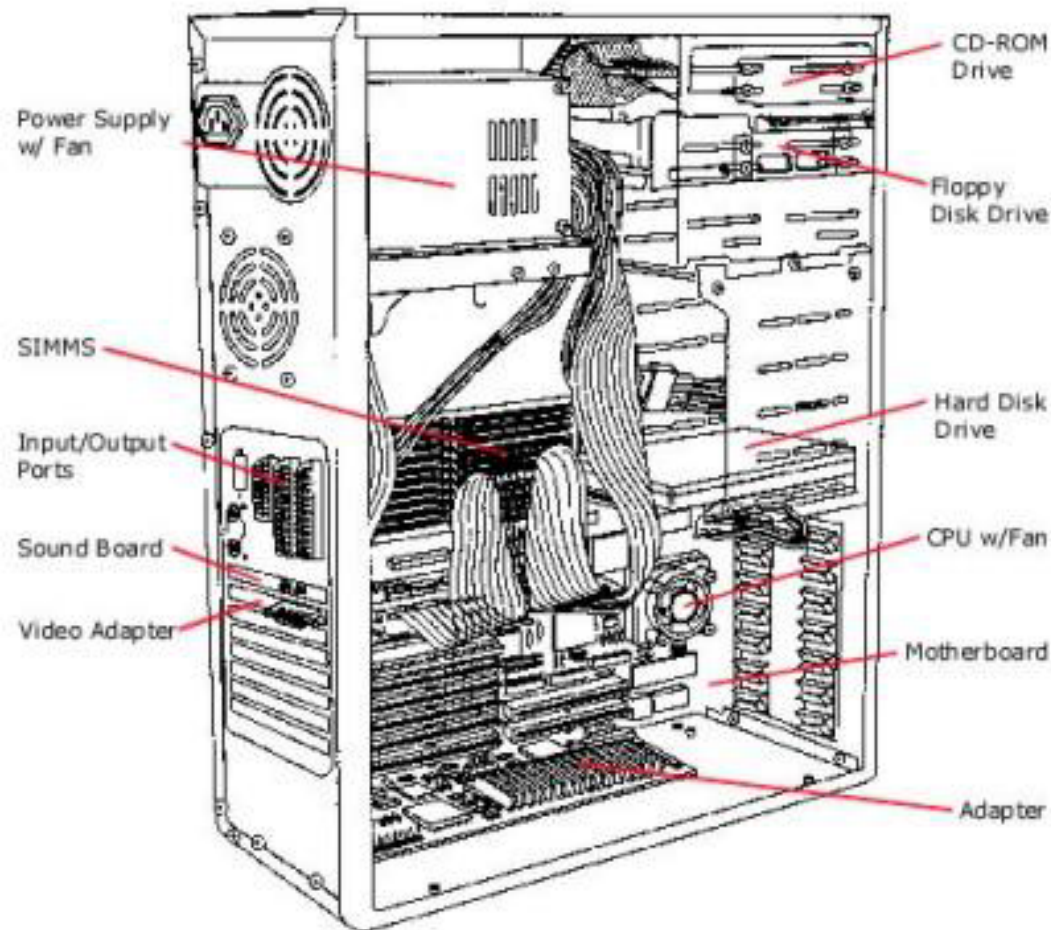
Computer Hardware



Computer Hardware

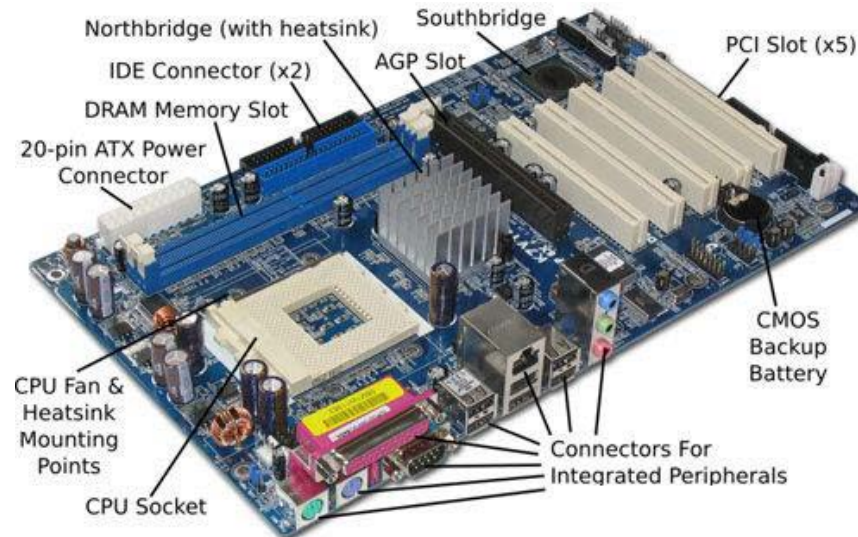


Computer Hardware



Basic Hardware Component

- Motherboard
- 'Backbone' of the computer
 - Parts of computer connect to it directly or through cables.



Basic Hardware Component

- Processor
 - Central Processing Unit (CPU)



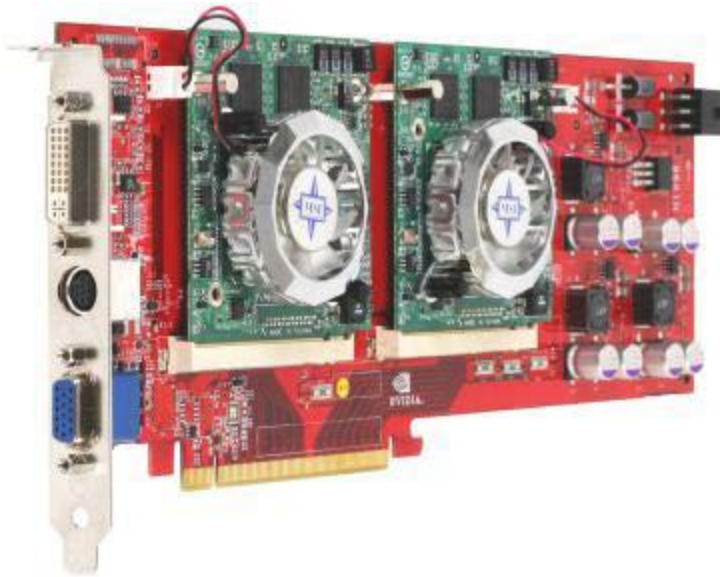
Basic Hardware Component

- Memory
 - Random-access Memory
 - RAM
 - Short time memory
 - Store important data or information while computer is on/working



Basic Hardware Component

- Graphic card



Basic Hardware Component

- Input Devices
 - It's more than just keyboard and mouse!

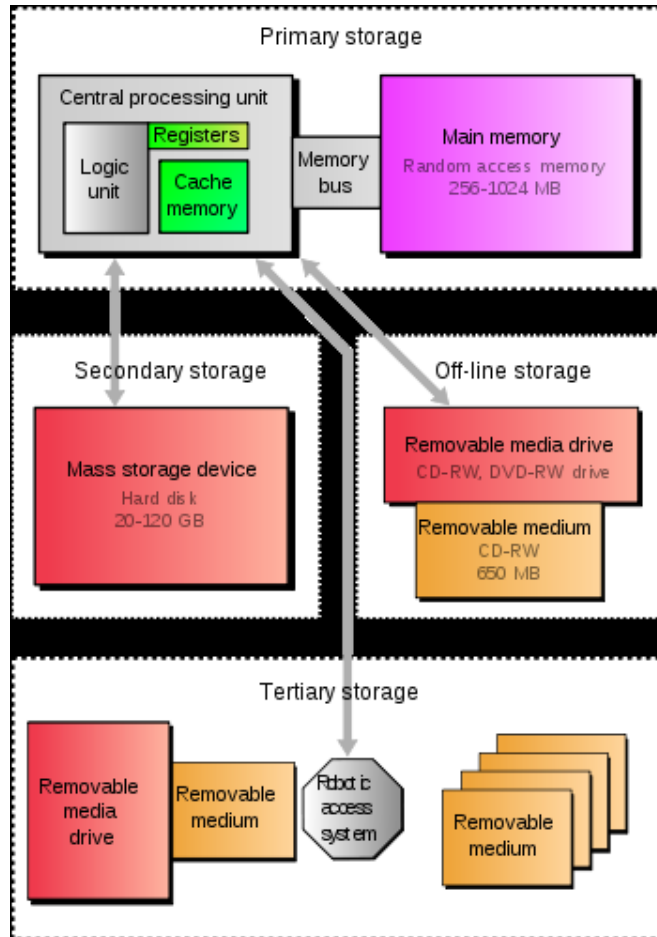


Basic Hardware Component

- Output Devices
 - Visual , Sound, etc



Basic Hardware Component

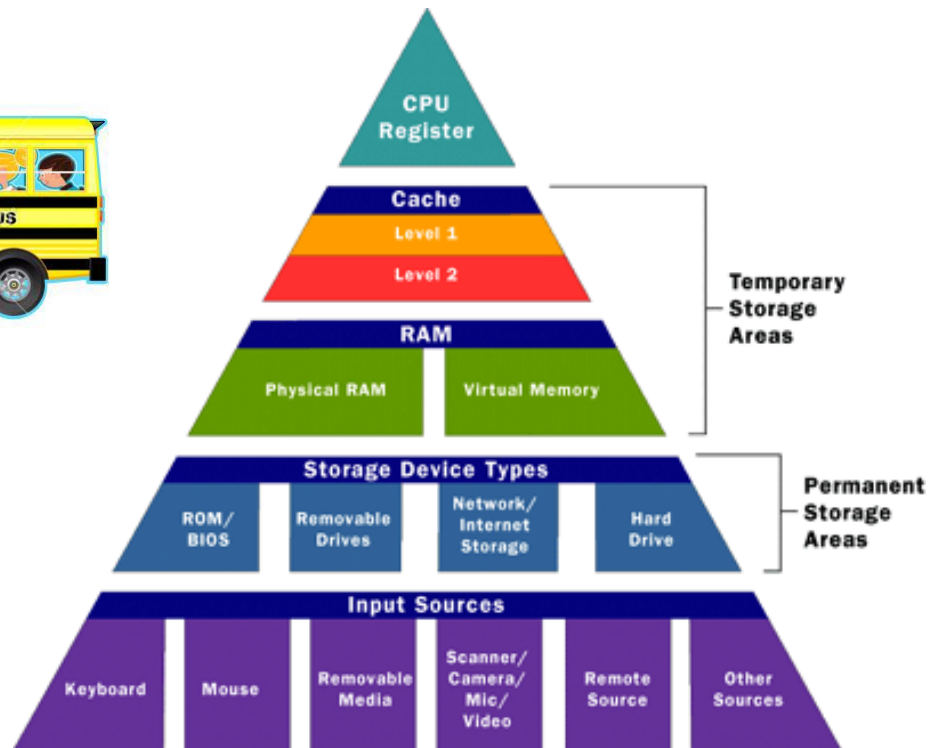


- Primary Storage
 - Main Memory
 - Cache Memory
- Secondary Storage
 - HDD / SSD
- Tertiary Storage
 - Tape libraries



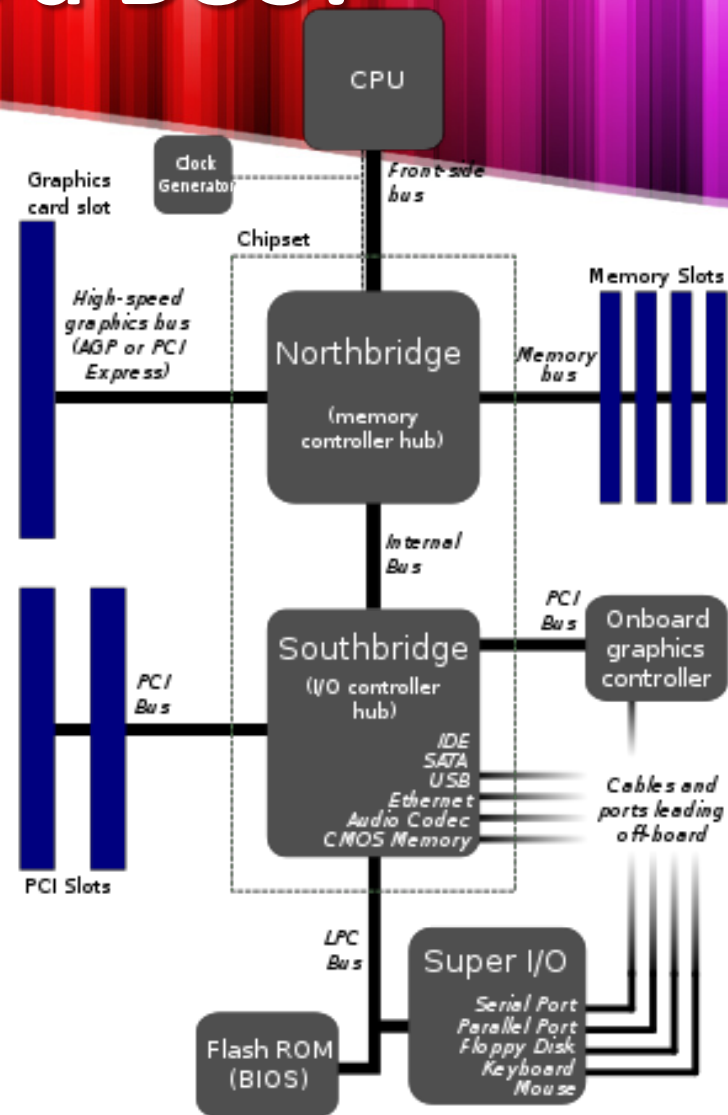
Basic Hardware Component

- How does data travel?
 - BUS!

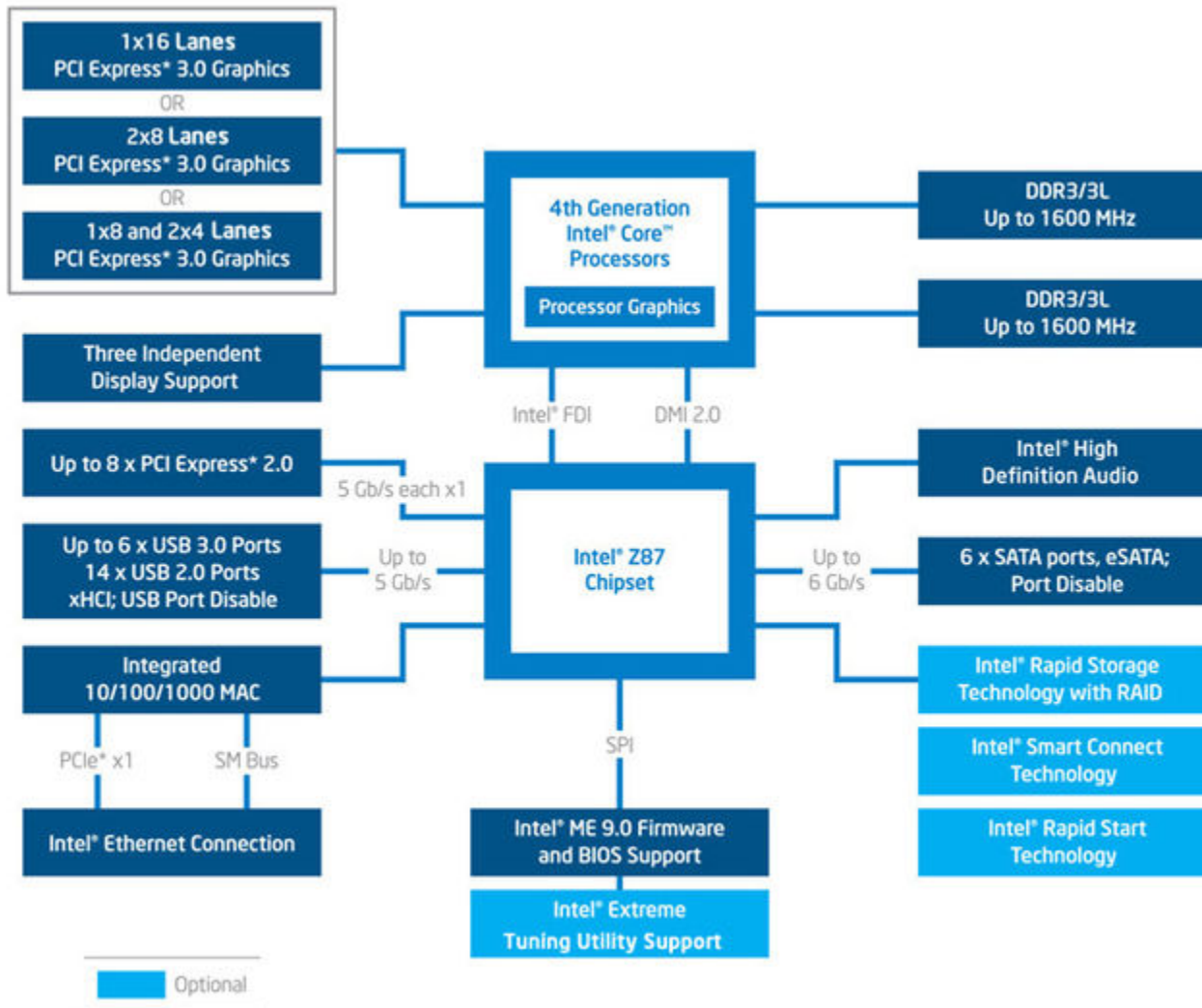


What is a BUS?

- An information channel system that transfers data between computer components inside a computer

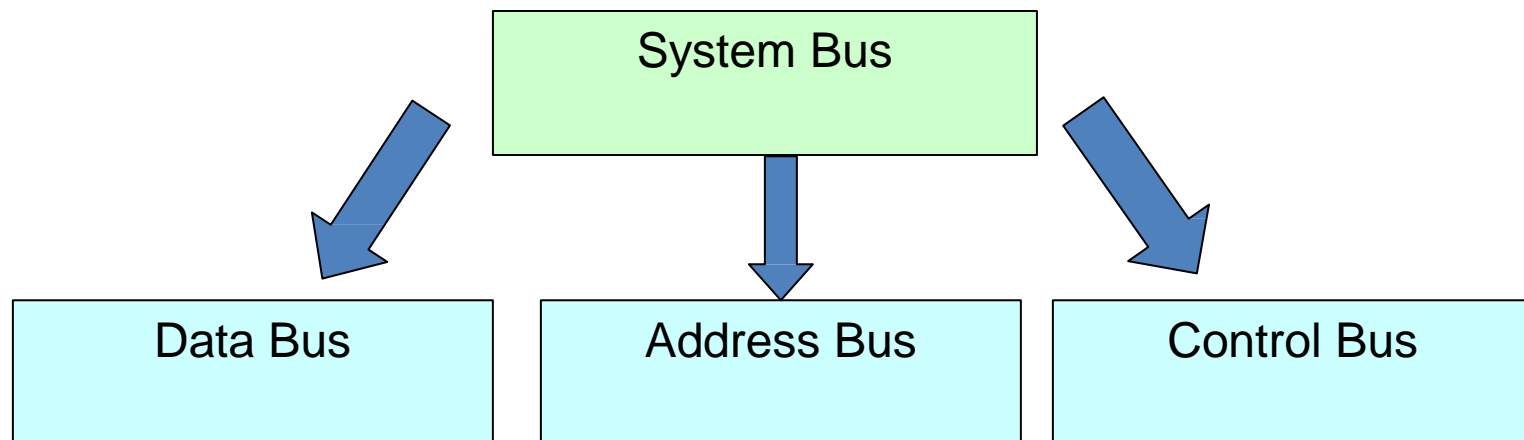


Modern Motherboards



BUS

- Data Bus
 - Used by CPU to carry information (data/instructions)
- Address Bus
 - Used to specify the address of interface (I/O) and memory devices
- Control Bus
 - Used to specify the operations to be performed (READ,WRITE,etc..)



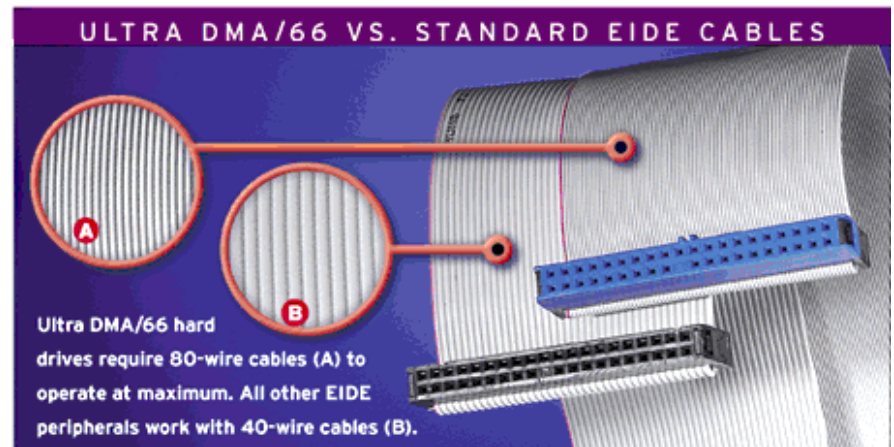
Drive Connection - IDE

- IDE (Integrated Drive Electronics)



Enhanced IDE / PATA

- For hard disk connections
- Built into motherboard (prior to SATA)
- Main storage connection for most PCs in late 90s to early 2000s



IDE vs. EIDE

- IDE

- Couldn't handle hard disks bigger than 528MB
- Interface: ISA bus



- EIDE

- Enhanced edition of IDE
- Cheaper
- High-performance
- Interface: high-speed PCI bus



Drive Connection - SATA

- SATA



Drive Connection

- Today's PCs primarily use SATA only
- eSATA WAS an upcoming competitor to USB
 - 'e' stands for external
 - Read up on **eSATAp**



Peripheral Component Interconnect

- Primarily used for devices such as graphics card, sound card etc.
- Today, PCI is superceded by PCIe



PCI cards use 47 pins.



This motherboard has four PCI slots.



End of Part 1

