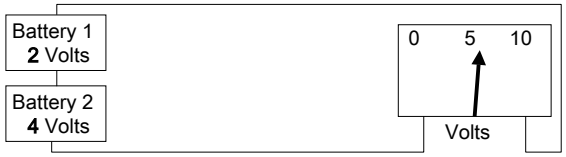
# Introduction to Computers
# CGS 1100

Spring 2004
Unit 1B



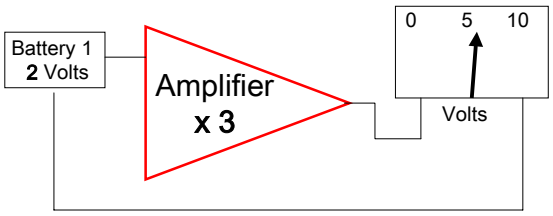
## Analog Adding




2 + 4 = 6



## Analog Multiplication




2 * 3 = 6

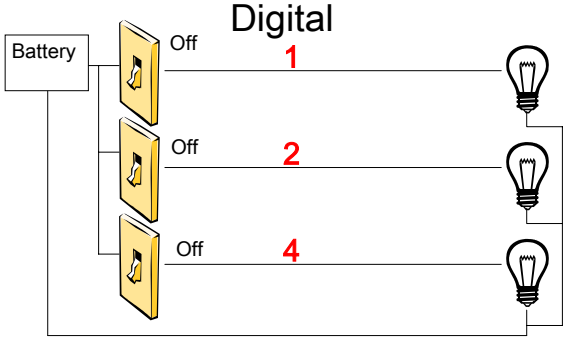


## Problems with Analog Systems

- Expensive
- Lack of Reliability
- Transmission Errors

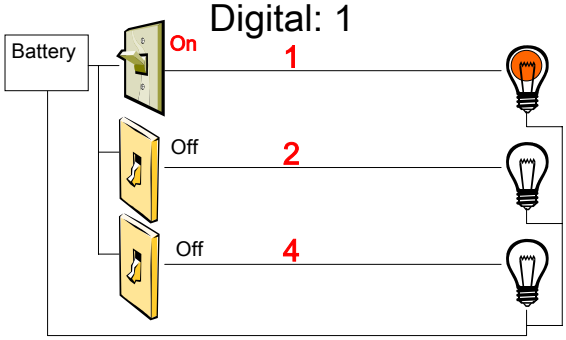


## Digital






## Digital: 1



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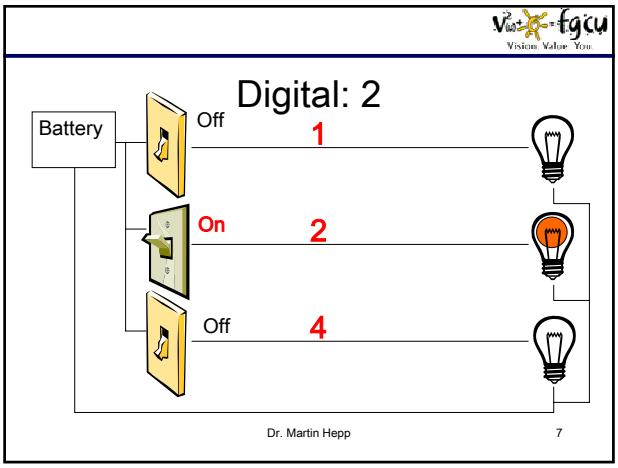


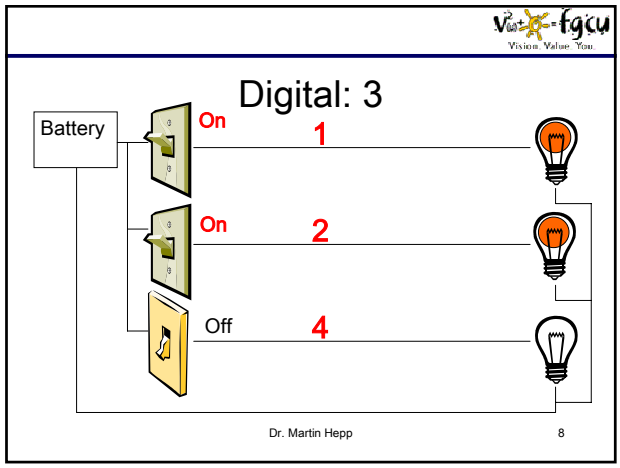


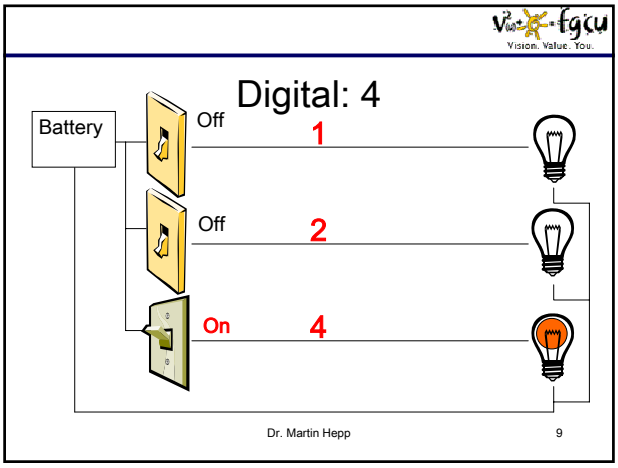


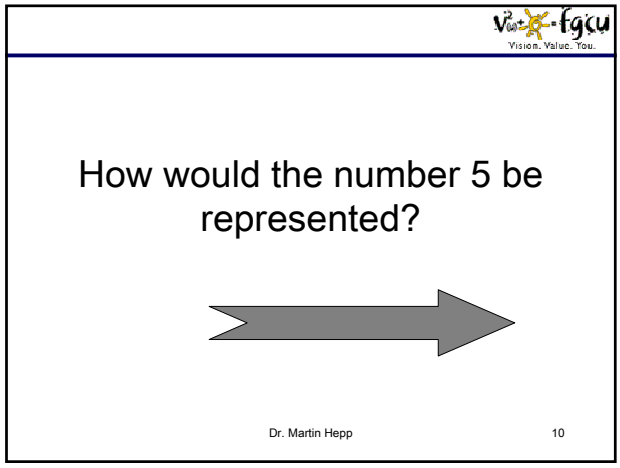


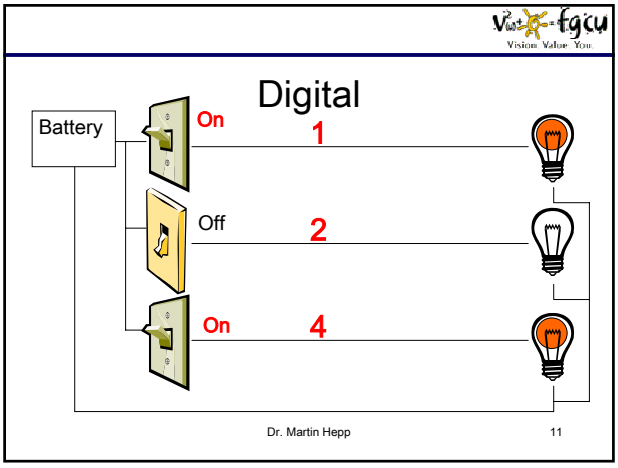


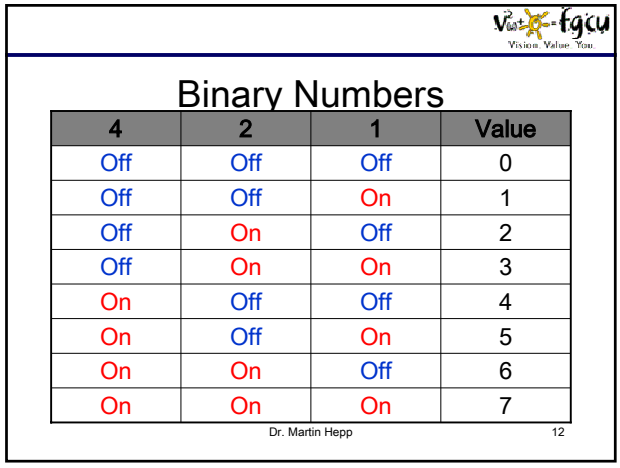


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## Binary Numbers

| 4 | 2 | 1 | Value |
|---|---|---|---|
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 |
| 0 | 1 | 0 | 2 |
| 0 | 1 | 1 | 3 |
| 1 | 0 | 0 | 4 |
| 1 | 0 | 1 | 5 |
| 1 | 1 | 0 | 6 |
| 1 | 1 | 1 | 7 |

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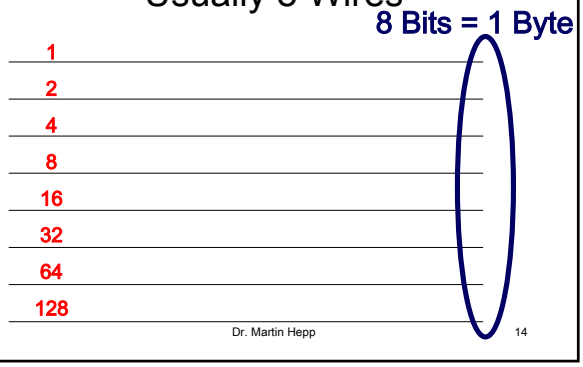
## Usually 8 Wires

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## One byte represents any number from 0 through 255

| 128 Bit 7 | 64 Bit 6 | 32 Bit 5 | 16 Bit 4 | 8 Bit 3 | 4 Bit 2 | 2 Bit 1 | 1 Bit 0 | |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 20 |
| | | | | | | | | |

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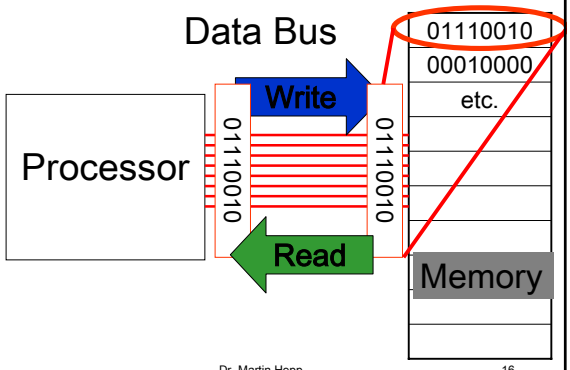
## Data Bus

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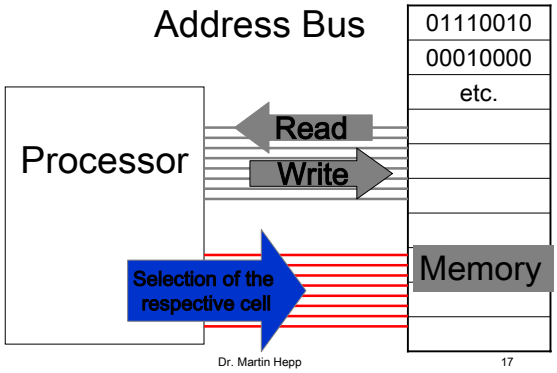
## Address Bus

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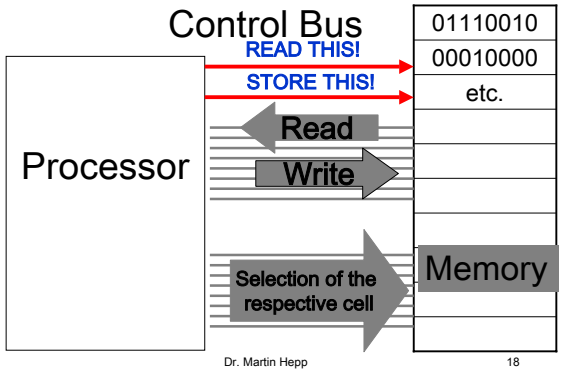
## Control Bus

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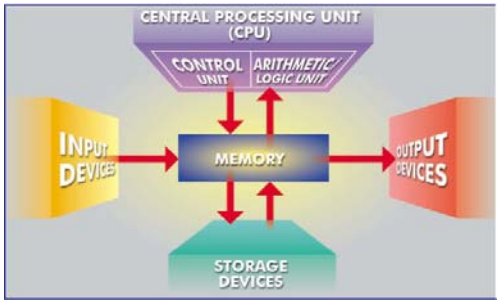
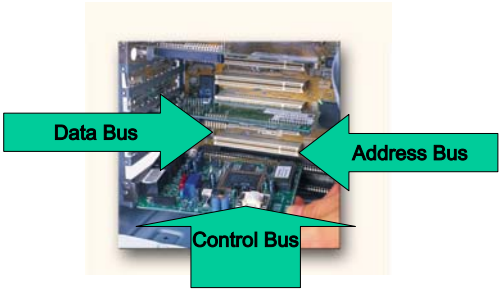
## Communication between the CPU, Memory, and Components




## Add-on Cards

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## Why does the processor know what to do?

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## Memory contains values and instructions

| Cell No. | Value | Meaning |
|---|---|---|
| 0 | 120 | ADD to Buffer |
| 1 | 4 | 4 |
| 2 | 140 | JUMP to … |
| 3 | 10 | cell no. 10 |

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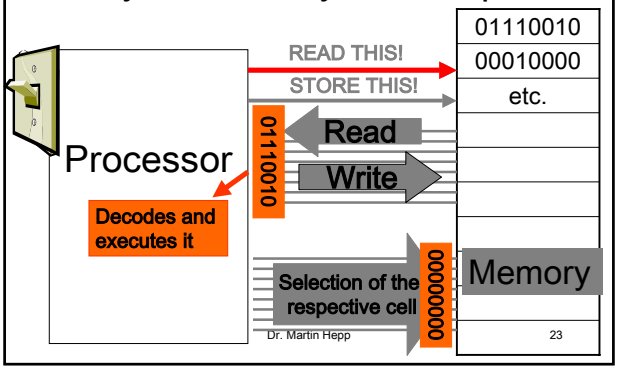
## When you turn on your Computer…

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## Reading Assignment

- Download Assignment Description from
  http://ruby.fgcu.edu/courses/mhepp/
  (-> CRN10026)
- Read given web pages about
  - Hard Disks
  - Floppy Disk
  - Magneto-Optical Drives
  - CD-ROM
  - CD-R

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Vision. Value. You.
Thank you!
The slides will be available on the internet at
http://ruby.fgcu.edu/courses/mhepp/
(-> CRN10026)
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