

Vision. Value. You.

Introduction to Computers CGS 1100

Spring 2004
Unit 4A

Dr. Martin Hepp

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Reading Assignment for Next Class

MS Word 2000 Textbook:

1. Project 5 & Project 6
2. Read and apply!
3. Check the sections "What You Should Know" (pp. WD 5.58 and 6.62)

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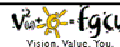

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Reading Assignment for Today

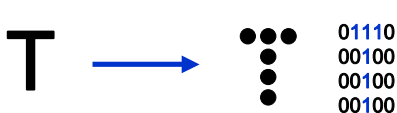
- Download Assignment Description from
<http://ruby.fgcu.edu/courses/mhepp/>
(-> CRN10026)
- Read given web pages about
 - Paper Output: Laser vs. Ink-jet Printers
 - Screen Output: The Monitor and the Graphics Card
 - Sound Cards

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Printer and Display Fonts



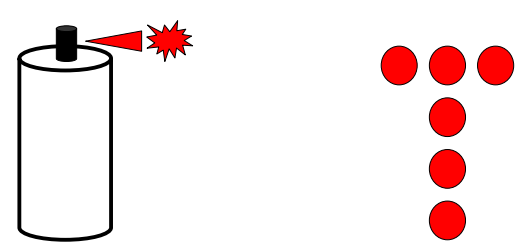
Each Character is represented by a combination of dots.
Those dot patterns are stores as binary numbers.

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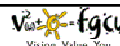

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Ink-jet Printer



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Ink-Jet Printer

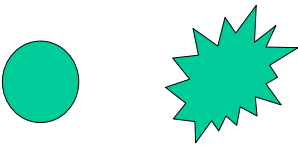
<http://computer.howstuffworks.com/inkjet-printer.htm/printable>

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Ink-Jet Printers: The Paper Matters




<http://computer.howstuffworks.com/inkjet-printer.htm/printable>

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Laser Printer



A laser beam or LED is used to paint an **electrostatic image of the page to print**. Then, the printer coats the drum with a fine black powder (the toner). Toner particles remain only at electrically charged points.

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Laser Printers

<http://computer.howstuffworks.com/laser-printer.htm/printable>

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Making a Buying Decision about Computer Hardware

- Calculate and compare the TCO of one ink-jet and one laser printer model.
- Make necessary assumptions and name them!

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Total Cost of Ownership (TCO)

Purchase Price	} determined by the chosen brand
+ Installation, Training	
+ Supplies	} determined by usage and brand
+ Maintenance	
<hr style="border-top: 1px solid black;"/>	
TCO	


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TCO: Cost of Supplies and Maintenance

- In order to determine the cost of all supplies and maintenance, one must make assumptions about the product usage, e.g.
 - how many pages will be printed per week
 - how many hours will the machine run per day (->power consumption)

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TCO: Examples of Printer Supplies

Paper: 10 \$ per 500 sheets
Toner: 50 \$ for a unit that will last for 2,000 pages
Drum unit: 200 \$, needs to be replaced after 10,000 pages

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Approach 1: Divide Price for Each Part by Amount of Pages

Paper: 10 \$/500 sheets → \$ 0.02/page
Toner: 50 \$/2,000 pages → \$ 0.025/page
Drum unit: 200 \$/10,000 → \$ 0.02/page

\$ 0.065/page

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When one prints 12,000 pages over the whole life span of the printer, you have to pay for **2** drum units, **not 1.2!**

Paper: 10 \$/500 sheets → \$ 0.02/page
Toner: 50 \$/2,000 pages → \$ 0.025/page
Drum unit: 200 \$/10,000 → \$ 0.02/page

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Approach 2

- To solve this problem, you can determine the actual number of supply units needed to print the total number of pages.
- Example for 12,000 pages:
 - 24 boxes of paper, 6 toner kits, 2 drum kits

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Example

- Assumptions:
 - Printer costs \$ 300 including installation, but without first drum kit and toner
 - Costs of supplies as on the previous slides
 - Printer will be used for 3 years
- Usage:
 - 20 pages per day → 100 pages per week (Mo – Fr) → 5,000 per year (50 weeks) → 15,000 within 3 years

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Example

Approach 1		Approach 2	
Purchase Price	\$ 300	Purchase Price	\$ 300
Supplies	\$ 975	30 Boxes of Paper	\$ 300
15,000 * 0.065		30 * \$ 10	
TCO	\$ 1275	8 Toner Kits	\$ 400
		8 * \$ 50	
		2 Drum Kits	\$ 400
		TCO	\$ 1400

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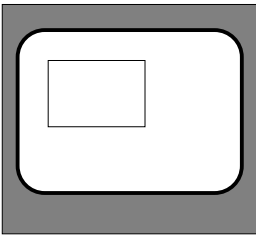
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Screen Output


Video Memory

0000	0000	0000
0111	1111	1110
0100	0000	0010
0111	1111	1110
0000	0000	0000



Monitor


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Monitor and Video Card

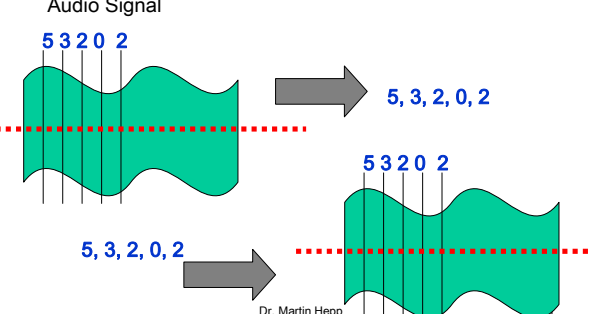
- Size
- Refresh Rate
- Screen Saver

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Sound Card

Audio Signal



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Thank you!

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