

Binary and Typography

CS-150L

Computing for Business Students

Instructor:

Joel Castellanos

e-mail: joel@unm.edu

Web: <http://cs.unm.edu/~joel/>

Office: Farris Engineering
Center (FEC) room 321



9/16/2009

Quiz: e-mail Subject

Travis is was breezing through lab 2 of CS-150 when he got stuck on part 3b. He decided to e-mail his lab instructor with a question. Which of the options below is his best choice for the e-mail's subject?

- a)
- b) Help
- c) Help!
- d) Hi
- e) CS-150: Lab 2 part 3b

9/16/2009

2

Powers of 2

$$\begin{aligned}2^1 &= 2 \\2^2 &= 4 \\2^3 &= 8 \\2^4 &= 16 \\2^5 &= 32 \\2^6 &= 64 \\2^7 &= 128 \\2^8 &= 256 \\2^9 &= 512 \\2^{10} &= 1024\end{aligned}$$

9/16/2009

Binary with 3 bits has $2^3 = 8$
Permutations :

$$\begin{aligned}0: 000 &= 0 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 \\1: 001 &= 0 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 \\2: 010 &= 0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 \\3: 011 &= 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 \\4: 100 &= 1 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 \\5: 101 &= 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 \\6: 110 &= 1 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 \\7: 111 &= 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0\end{aligned}$$

3

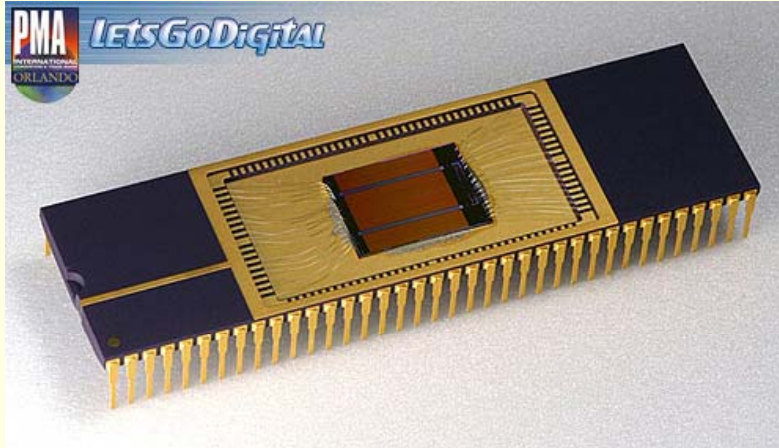
Geek Humor

- There are 10 types of people: those who understand binary, and those who do not understand it.

9/16/2009

4

SanDisk 8-Gigabit Flash Memory Chip



How many bytes of memory does this chip store?

9/16/2009

5

ASCII Byte

- With ASCII Character Codes, one character takes 1 byte to encode
- One byte = 8 bits with $2^8 = 256$ Permutations:
00000000, 00000001, 00000010,...

9	(<i>tab</i>)
32	(<i>space</i>)
33	!
34	"
35	#
36	\$
37	&

47	/
48	0
49	1
50	2
51	3
60	<
61	=

65	A
66	B
67	C
97	a
98	b
99	c
100	d

232	è
233	é
234	ê
235	ë
241	ñ
252	ü

9/16/2009

6

Extended Character Sets

- Extended Character Sets often take two bytes.
- Extended Character Sets can include colors, fonts, styles, Chinese, Japanese, and Arabic Characters
- We saw that 1 byte is 8, bits and has 256 permutations.
- How many permutations do 2 bytes have?

9/16/2009

7

Quiz: Writable Media

How many 3½-inch HD 1.44 MB floppy disks are required to hold the information that can be stored on a single 1 GB USB Flash Drive?

- a) About 5
- b) About 10
- c) About 50
- d) About 100
- e) About 700



1.44 MB
Floppy



1 GB
Flash

9/16/2009

8

Typography

- Typography is the process of selecting typefaces (or fonts), type styles, and type sizes.
- Monospaced typeface
 - Courier New: WWWW iiii
- Proportional typeface
 - Times New Rowan: WWWW iiii
 - Arial: WWWW iiii

9/16/2009

9

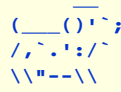
Double Space after Period?

- Two spaces after a period was common on typewriters with Monospaced typeface.
- When using a proportional font, there should be only one space after a period.
- A single space after a full stop has been the norm in mainstream publishing for many decades. This is supported by:
 - Modern Language Association of America (MLA),
 - American Psychological Association (APA) style
 - The Chicago Manual of Style.

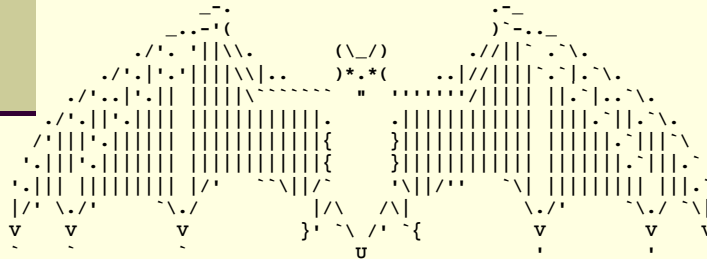
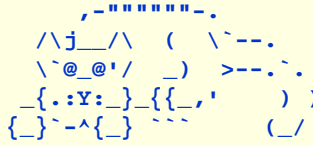
9/16/2009

10

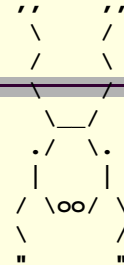
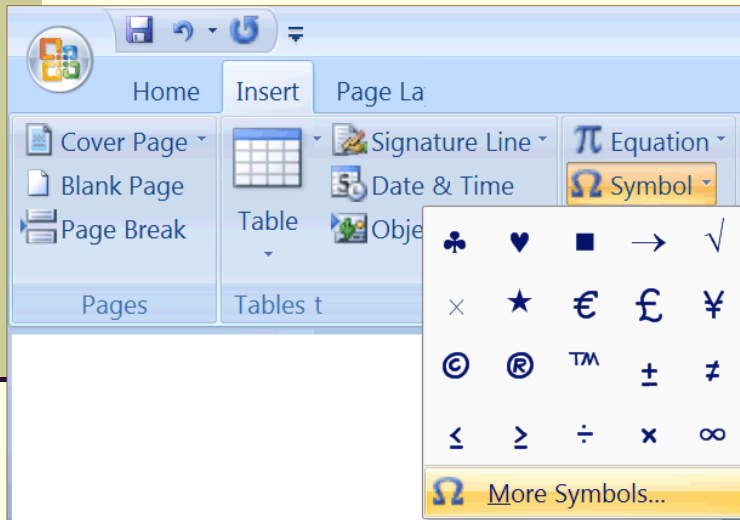
ASCII Art



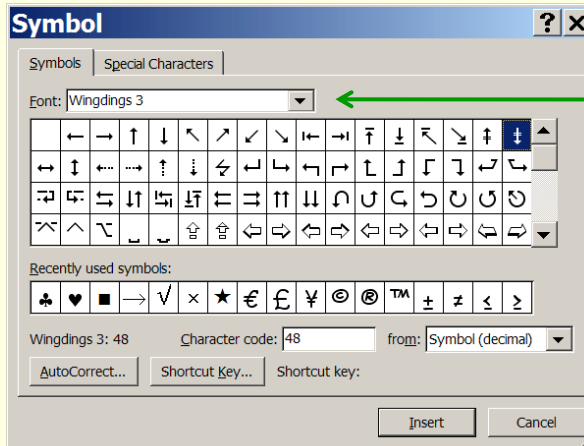
- **Font:** Monospaced typeface.
- **Line Spacing:** Single spacing
Zero points after a paragraph
Zero points before each paragraph



Insert Symbol



More Symbols...



Select a Font.
Greek Letters and
Math symbols can
be found in the
Symbol Font.

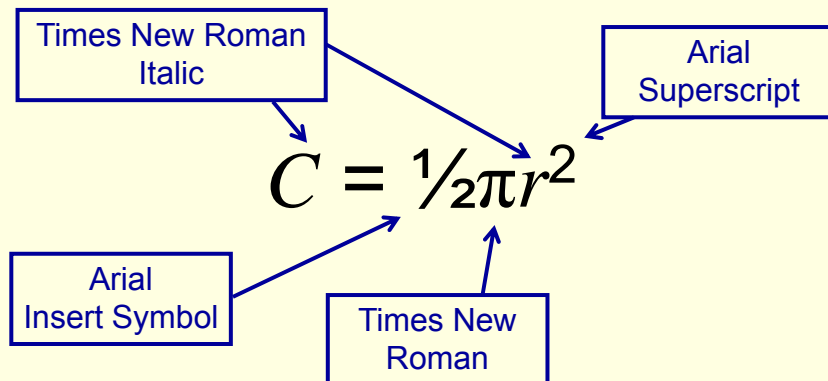
For the Exam, be sure you can find symbols:

Ω λ \cong π Δ \rightarrow ☺ ☹ ☹ ☠

9/16/2009

13

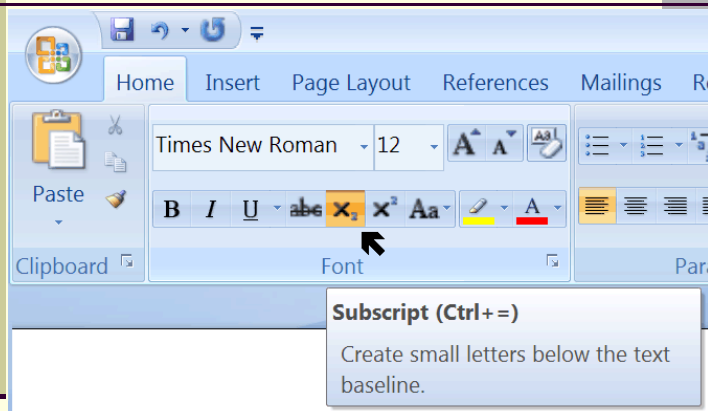
Simple Equations



9/16/2009

14

Special Font Formats



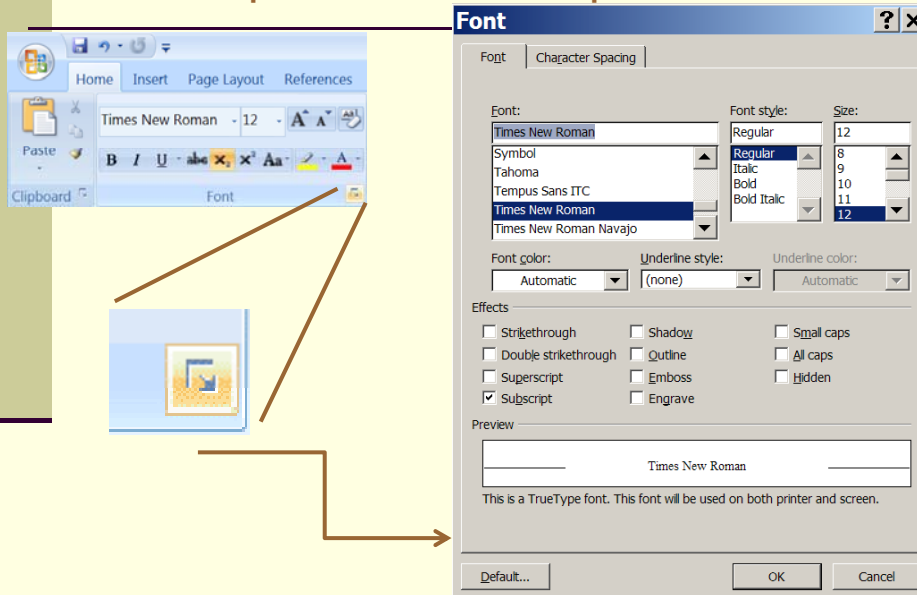
$a_1 \rightarrow a_1$

- Times New Roman
- The 'a' is Italic.
- The '1' is a subscript.

9/16/2009

15

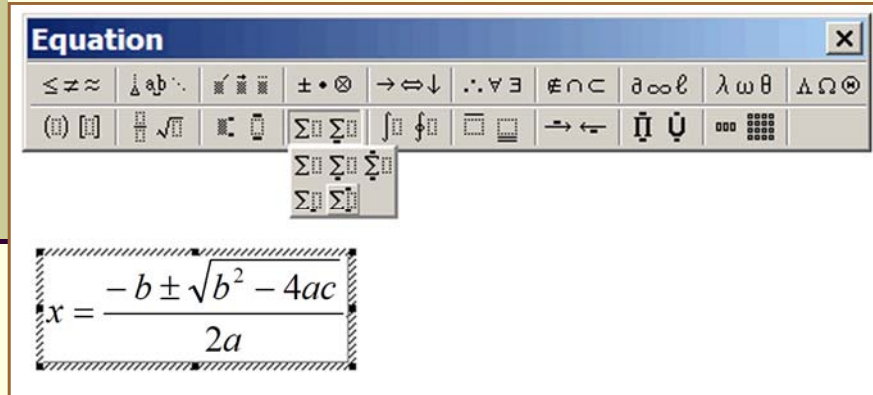
More Special Format Options



9/16/2009

Advanced Equations

- Insert → Object → Microsoft Equation
- Just for your edification (not on exam)



The screenshot shows the Microsoft Equation Editor interface. At the top is a title bar labeled "Equation" with a close button (X). Below the title bar is a toolbar containing various mathematical symbols and operators, including less than or equal to, greater than or equal to, approximately, square root, fraction, summation, integral, and Greek letters. Below the toolbar is a text input area where the quadratic formula is displayed:
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

9/16/2009

17

Quiz: Superscript

In Typography, a *superscript* is

- A font that includes extended ASCII codes.
- A font that is larger than usual.
- A font that has a hand written appearance.
- Text that is smaller than the normal line of type and is set above it.
- Text that is active and can be clicked on and used to navigate through linked documents.

9/16/2009

18

Quiz: Proportional Typeface

What is a proportional typeface?

- a) A font where the letters are in proper proportion to the page size.
- b) A font where the letters are in proper proportion to any pictures on the page.
- c) A font in which different letters take up different amounts of space on the line.
- d) A font that is very fancy.

9/16/2009

19

Google: Free Fonts

<http://www.1001freefonts.com/>

■ Western Fonts

Alfredos Dance



BURNSTOWN DAM



CHIPPERRFIELD



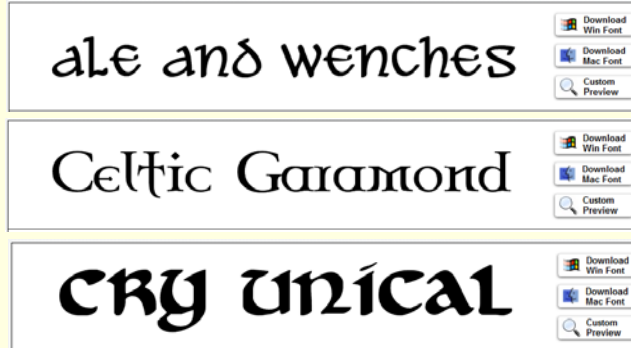
9/16/2009

20

Google: Free Fonts

<http://www.1001freefonts.com/>

■ Celtic



9/16/2009

21

Quiz: ASCII

ASCII character encoding is

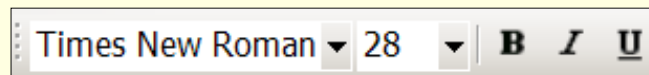
- a) A standard, 8-bit representation of 256 letters, numbers, and other symbols.
- b) An encryption method used in secure business transactions.
- c) A weak encryption method not suitable for business transactions.
- d) A representation of American movie characters in uTube.
- e) The Microsoft proprietary encoding used for saving Word 2003 files.

9/16/2009

22

"This computer's keyboard is messed up"

- I type: "I have three (3) cars."
- But what shows up is: "I have three ÍáÓ cars."
- *Check your font!* I did.



- *Look again my friend...*

