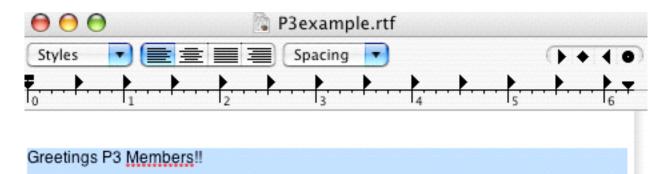
Cracking the Code

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```
{\rtf1\mac\ansicpg10000\cocoartf102
  {\fonttbl\f0\fswiss\fcharset77 Helvetica;\f1\fswiss\fcharset77 Helvetica-
BoldOblique;\f2\fswiss\fcharset77 Helvetica-Bold;
 {\colortbl;\red255\green255\blue255;}
\label{tx720} $$ \operatorname{tx720} tx1440 tx2160 tx2880 tx3600 tx4320 tx5040 tx5760 tx6480 tx7200 tx7920 tx8640 ql\q natural tx720 tx1440 tx2160 tx2880 tx3600 tx4320 tx5040 tx5760 tx6480 tx7200 tx7920 tx8640 ql\q natural tx720 tx1440 tx2160 tx2880 tx3600 tx4320 tx5040 tx5760 tx6480 tx7200 tx7920 tx8640 ql\q natural tx720 tx1440 tx2160 tx2880 tx3600 tx3600 tx4320 tx5040 tx5760 tx6480 tx7200 tx7920 tx8640 ql\q natural tx720 tx1440 tx2160 tx2880 tx3600 tx3600 tx4320 tx5040 tx5760 tx6480 tx7200 tx7920 tx8640 ql\q natural tx720 tx1440 tx2160 tx2880 tx3600 tx3600 tx4320 tx5040 tx5760 tx6480 tx7200 tx7920 tx8640 ql\q natural tx720 tx1440 tx2160 tx2880 tx3600 tx3600 tx4320 tx5040 tx5040 tx5040 tx6480 tx7200 tx7920 tx8640 ql\q natural tx720 tx8640 tx7200 tx7200 tx8640 tx7200 tx7200 tx8640 tx7200 tx
f0\fs24 cf0
Greetings P3 Members!!\
How are you
\f1\i\b RIGHT
f2 i0
f0\b0 now?
```



How are you RIGHT now?

General information

Basic general information about the markup languages: creator, version, etc.

	Creator First public date		Latest stable version	Editor	Viewer				
DocBook	<u>The Davenport</u> <u>Group</u> 점	1992	4.4	Text editor	HTML and PDF converters (For printing)				
HTML	Tim Berners-Lee 1993		4.01	Text editor, HTML editor	Web browser				
MathML	<u>W3C</u> <u>July 1999</u>		2.0	Text editor, TeX converter	Web browser, Word processor				
MIF	Adobe Systems before or during 1993		7.0	Text editor, FrameMaker	FrameMaker				
RTF	Microsoft 1987		1.8	Text editor, Word	Word processor				
TeX	Donald Knuth 1978		3.141592	Text editor	DVI or PDF converter				
XHTML	<u>W3C</u>	January 26, 2000	1.1	Text editor, HTML editor	Web browser				
WML	WAP Forum	?	2.0	Text editor	Microbrowser				
	Creator	First public release date	Latest stable version	Editor	Viewer				

[edit]

Characteristics

Some characteristics of the markup languages.

	Major purpose	Based on	Markup type	Structural markup	Presentational markup		
DocBook	Technical document	SGML / XML	Tag	Yes	No		
HTML	Hypertext document	SGML	Tag	Yes	Yes		
MathML	Mathematical document	XML	Tag	Yes	No		
MIF	Technical document		Tag	Yes	Yes		
RTF	Rich text document		Control code	Yes	Yes		
<u>TeX</u>	Academic document		Control code	Yes	Yes		
XHTML	Hypertext document	XML	Tag	Yes	No		
WML	Hypertext document	XML	Tag	Yes	Yes		
	Major purpose	Based on	Markup type	Structural markup	Presentational markup		

Many markup languages have purposely avoided presentational markups. For markup languages based on SGML and XML, CSS is used as a presentation layer.

Three types of documents

- Text
- Image
- Page

Documents fall into one of these categories.

Text Files

- Can be saved as "open format,"
 making it possible to move the file
 to other software and platforms or
 in a specific software format such
 as the ubiquitous .doc format from
 Microsoft Word.
- Program specific formats become problematic when transferred to different software, even earlier versions of the same software.

Open Text Format: ASCII

- ASCII (American National Standard Code for Information Interchange) is a standard format for digital information, both text and graphic, but usually used for text. It represents the text as numerical data since numbers are what computers understand.
- ASCII is "raw" text. It contains no information about the text's design or formatting (no bolds, italics, tabs etc.)
- The Good News: It will import anywhere
- The Bad News: You have no control over its appearance

For further information, see www.asciitable.com
And http://www.en.wikipedia.org/wiki/ASCII

ASCII Table and Description

ASCII stands for American Standard Code for Information Interchange. Computers can only understand numbers, so an ASCII code is the numerical representation of a character such as 'a' or '@' or an action of some sort. ASCII was developed along time ago and now the non-printing characters are rarely used for their original purpose. Below is the ASCII character table and this includes descriptions of the first 32 non-printing characters. ASCII was actually designed for use with teletypes and so the descriptions are somewhat obscure. If someone says they want your CV however in ASCII format, all this means is they want 'plain' text with no formatting such as tabs, bold or underscoring - the raw format that any computer can understand. This is usually so they can easily import the file into their own applications without issues. Notepad.exe creates ASCII text, or in MS Word you can save a file as 'text only'

<u>Dec</u>	Нх	Oct	Chai	r	Dec	Нх	Oct	Html	Chr	Dec	Нх	Oct	Html	Chr	Dec	: Нх	Oct	Html Cl	hr_
0	0	000	NUL	(null)	32	20	040	a#32;	Space	64	40	100	<u>@</u>	0	96	60	140	& # 96;	8
1	1	001	SOH	(start of heading)	33	21	041	@#33;	!	65	41	101	A ;	A	97	61	141	& # 97;	a
2	2	002	STX	(start of text)	34	22	042	 4 ;	rr .	66	42	102	B	В	98	62	142	& # 98;	b
3	3	003	ETX	(end of text)				#		67	43	103	a#67;	С				& # 99;	C
4	4	004	EOT	(end of transmission)				\$					D					d	
5	5	005	ENQ	(enquiry)				%					E		4000			e	
6				(acknowledge)				&					a#70;					f	
7			BEL	(bell)				'		71			a#71;					g	
8		010		(backspace)				&# 4 0;		72			6#72;		100			h	
9		011		(horizontal tab))	755.00	100			a#73;					i	
10		012		(NL line feed, new line)				*	0.00	100	no 500		a#74;					j	
11		013		(vertical tab)				a#43;	J070000 1000	7 1000			a#75;					k	
12		014		(NP form feed, new page)				e#44;	State Company				a#76;					l	
13		015		(carriage return)				a#45;	THE TOOL		7 70		a#77;					m	
14		016		(shift out)				a#46;	*5800	10000			a#78;					n	
15		017		(shift in)	Printer Printer			6#47;	100000				a#79;					o	
		020		(data link escape)	V20 - 1	100	OVE 705 -	a#48;					O;					p	
				(device control 1)	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			a#49;					Q					q	
				(device control 2)	1000	15 715	10	2					6#82;					r	
				(device control 3)	76/15			3					S					s	
				(device control 4)				4					a#84;					t	
				(negative acknowledge)				5					U					u	
				(synchronous idle)				a#54;					4#86;		ı			v	
				(end of trans. block)				<u>@</u> #55;					<u>4#87;</u>					w	
				(cancel)				a#56;					4#88;					x	
		031		(end of medium)				<u>4</u> #57;					%#89;					y	
26	lA	032	SUB	(substitute)				:					%#90;					z	
27	1B	033	ESC	(escape)				;		ı			[_				{	
		034		(file separator)				4#60;					a#92;					4 ;	
		035		(group separator)				=		I			%#93;	-	ı			}	
		036		(record separator)				>					a#94;		126			~	
31	1F	037	US	(unit separator)	63	3 F	077	4#63;	2	95	5F	137	a#95;	_	127	7F	177		DEL

Source: www.LookupTables.com

Open Text Format: RTF

- RTF (Rich Text Format) is an open text format that also contains codes for formatting and specific typefaces.
- Developed by Microsoft in 1987
- Works well with Mac platform--textedit on Mac has as its default save option Rich Text format.
- This is a good choice to use when sending text documents to others

The Meta- Language: SGML

- Standardized Generalized Markup Language. Became an ISO (International Standards Organization) standard in 1986. It is a standard for the description of a marked up electronic text.
- SGML is designed for managing large documents that need to be output in different print formats.
- It is a standardized approach to defining the elements of a document. It does NOT specify any formatting. It specifies the rules for tagging elements.
- In SGML, tags are meant to describe contents, not the presentation. A tag would denote a headline, a product description, a movie review, a caption, etc. NOT the font or the leading, etc.
- device-independent and system independent

Markup Languages: SGML

- So, one would not use <I>, an italics command when one had a book title. Instead, one would use <booktitle>.
- Very important to realize this distinction as XML, the subset of SGML that is all the buzz now in our world, acts more like SGML than HTML in this crucial aspect.

For further information, see:

http://www.w3,org/MarkUP/SGML

Markup Languages: XML

- XtensibleMarkup Language, a subset of SGML
- It avoids the pitfalls of html in that is focuses on content not presentation. More rigid in its structure.
- XHTML (Xtentsible Hypertext Markup language)-the W3C's recommendation for replacing HTML with an XML version of HTML.Simon St. Laurent notes in his book, XML: A Primer that "XML requires a different focus, demanding that designers examine the way their documents are built rather than the way they are formatted.
- As with SGML, you need to use a DTD when using XHTML. XHTML has now replaced HTML

http://www.w3.org/MarkUp/Guide/

Markup Languages: HTML 5

- Hypertext Markup Language, a derivative of SGML, was used for presentation of text on the World Wide Web. It identifies headings and paragraphs. It identified content in a document BUT also specified presentation of that document. This later changed when XHTML was introduced within HTML which used Cascading Style Sheets for Presentation
- HTML 5 does allow for separate presentation and content. See links below:
 - http://www.w3,org/MarkUP/html-spec/ http://www.w3.org/MarkUp/Guide/
- Browsers interpret the HTML code. Every browser interprets the code slightly differently

Terms You should know

HTML Document

- Plain text file, that can be created using a text editor (Notepad in Windows, or TextEdit in Mac OS)
- A Web page editor

Web Page Editors

- Example: Adobe Dreamweaver
- Allows you to create and edit the page visually without having to manually add markup tags

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
 <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
 <title>Dave Raggett's Introduction to HTML</title>
 <style type="text/css">
 body {
  margin-left: 10%;
  margin-right: 10%;
  font-family: sans-serif;
 h2,h3,h4,h5,h6 { margin-left: -3% }
 pre {
  color: green; font-weight: bold;
  white-space: pre; font-family: "Courier New", monospace;
```

```
Happenings
                view-source:http://www.citytech.cuny.edu/
                                                                                                                                            Mental Health Program - 5/4/20 at 8:30 PM
                                                                                                                                            CLICK HERE TO REGISTER FOR THE PROGRAM DIS.
🌣 Most Visited 🧶 Getting Started 👫 https://cunyportal.c... 🖨 New York State Ass... 🔯 Office Hours Wedne... 🥒 The One Club / Her... 🀞 Kevelyn Vargas's eP... 🚄 Education | New ro...
    <!DOCTYPE html>
    <!--[if IE 9]> <html lang="en" class="ie9"> <![endif]-->
    <!--[if !IE]><!-->
    <html lang="en-us">
        <!--<!/endif!-->
        <!-- BEGIN HEAD -->
            <title>City Tech - New York City College of Technology</title>
            <meta name="robots" content="all" />
            <meta name="robots" content="index, follow" />
            <meta name="GOOGLEBOT" content="INDEX, FOLLOW" />
   <!-- <meta charset="utf-8" /> -->
 16 <meta http-equiv="Content-type" content="text/html; charset=utf-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
 18 <meta name="viewport" content="width=device-width, minimum-scale=1.0, maximum-scale=1.0, user-scalable=no">
   <meta content="New York City College of Technology (City Tech) is the designated college of technology of The City University of New York, currently offering both baccalaure</pre>
   <meta name="keywords" content="City Tech, College of technology, higher education, NYC College of Technology, Entertainment Tech, Hospitality Management, Nursing, City Tech</pre>
    <meta content="CIS Web Team" name="author" />
 22 <!-- <meta name="robots" content="noindex, nofollow"> -->
    <meta name="msvalidate.01" content="A75D65E5F5BF70F45CCD0754BD405044" />
    <!-- BEGIN GLOBAL MANDATORY STYLES -->
   k href='//fonts.googleapis.com/css?family=Roboto+Condensed:300italic,400italic,700italic,400,300,700&subset=all' rel='stylesheet' type='text/css'>
    <link href="/assets/socicon/socicon.css" rel="stylesheet" type="text/css" />
    <link href="/css/plugins/bootstrap-social.css" rel="stylesheet" type="text/css" />
 28 <link rel="stylesheet" href="https://use.fontawesome.com/releases/v5.8.1/css/all.css" integrity="sha384-50oBUHEmvpQ+11W4y57PTFmhCaXp0ML5d60M1M7uH2+nqUivzIebhndOJK28anvf" crc
 30 k href="/assets/font-awesome/css/font-awesome.min.css" rel="stylesheet" type="text/css" />
    <!-- <link href="/assets/simple-line-icons/simple-line-icons.min.css" rel="stylesheet" type="text/css" /> -->
    k href="https://cdnjs.cloudflare.com/ajax/libs/simple-line-icons/2.2.4/css/simple-line-icons.css" rel="stylesheet" />
   k href="/css/plugins/animate.min.css" rel="stylesheet" type="text/css" />
 34 href="/assets/bootstrap/css/bootstrap.min.css" rel="stylesheet" type="text/css" />
    <!-- END GLOBAL MANDATORY STYLES -->
    <!-- BEGIN: BASE PLUGINS -->
    <link href="/assets/revo-slider/css/settings.css" rel="stylesheet" type="text/css" />
   <link href="/assets/revo-slider/css/layers.css" rel="stylesheet" type="text/css" />
   <link href="/assets/revo-slider/css/navigation.css" rel="stylesheet" type="text/css" />
 40 href="/assets/cubeportfolio/css/cubeportfolio.min.css" rel="stylesheet" type="text/css" />
 41 41 sink href="/assets/owl-carousel/owl.carousel.css" rel="stylesheet" type="text/css" />
    <link href="/assets/owl-carousel/owl.theme.css" rel="stylesheet" type="text/css" />
    <link href="/assets/owl-carousel/owl.transitions.css" rel="stylesheet" type="text/css" />
    <link href="/assets/fancybox/jquery.fancybox.css" rel="stylesheet" type="text/css" />
    k href="/assets/slider-for-bootstrap/css/slider.css" rel="stylesheet" type="text/css" />
    <!-- END: BASE PLUGINS -->
    <!-- BEGIN THEME STYLES -->
   k href="/css/base/plugins.css" rel="stylesheet" type="text/css" />
   <link href="/css/base/components.css" id="style_components" rel="stylesheet" type="text/css" />
    <link href="/css/base/themes/blue10.css" rel="stylesheet" id="style theme" type="text/css" />
    <link href="/css/base/custom.css" rel="stylesheet" type="text/css" />
   <!-- END THEME STYLES -->
 53 shortcut icon" href="/favicon.ico" />
 54 <!-- analytics -->
```

Firefox's view of CityTech's website: Found Under Tools/ Web Developer/Page Source/Command U

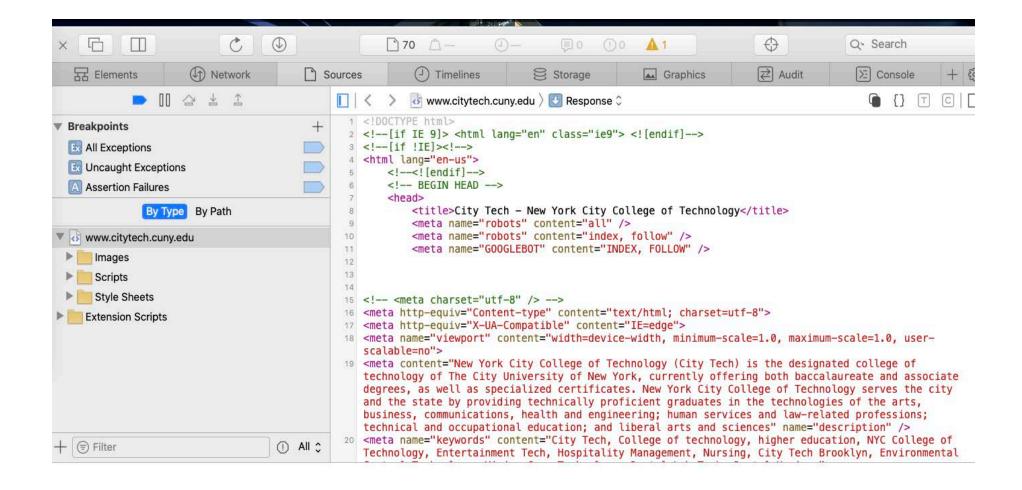
Here's how:

- Open Safari.
- Select 'Preferences' from the 'Safari' menu.
- 3. In the 'Advanced' section and select 'Show Develop menu' in menu bar. '
- 4. Visit the web page you want to view HTML source for.
- Select 'Show Page Source' from the 'Develop' menu that has been added to Safari.

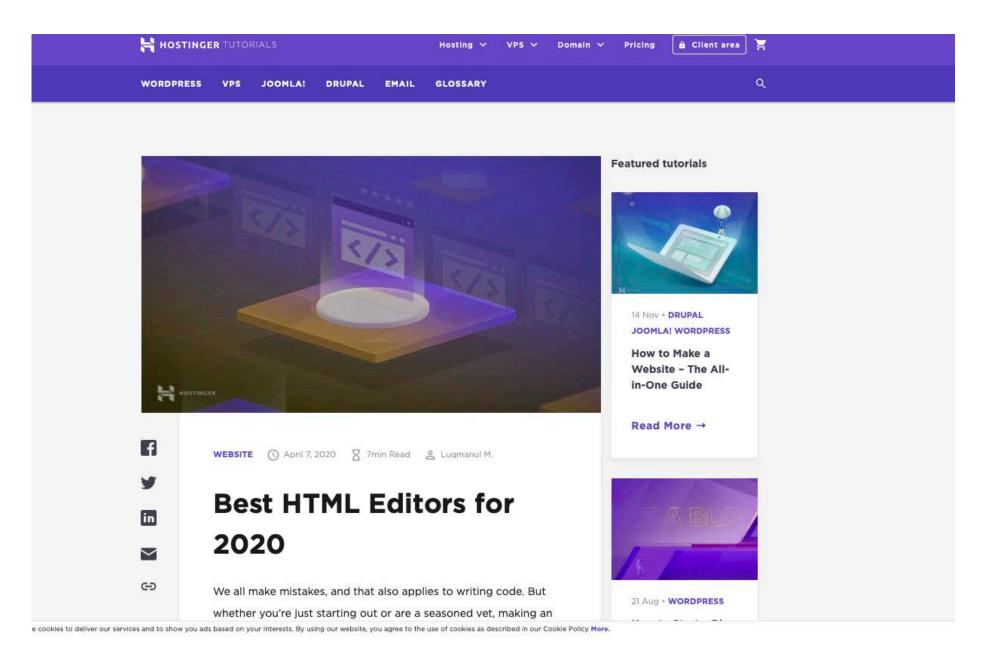
Mar 4, 2013

www.socialmeteor.com > 2013/03/04 > how-to-view-ht... *

Quick Tip: How to 'View HTML Source' in Safari - Social Meteor



A look at the source Code from Safari's Developer Source Code



https://www.hostinger.com/tutorials/best-html-editors

Terms You should know

• URL

- Stands for Uniform Resource Locator
- This is the standard for specifying the addresses of web pages and resources on World Wide Web

URL

- Example:
 - http://www.schoolname.edu/departments/compsci/index.html
- The address is made up of segments of standard information:

- 2. www.schoolname.edu
 - This is the domain name of the Web server

URL

- Example: http://www.schoolname.edu/departments/compsci/index.html
- The address is made up of segments of standard information:

3. departments/compsci/index.html

- This is the file path of the document index.html
- The file path is the location information of the page on the Web server
- In this example, the document index.html is in a folder called compsci, which in turn is located in a folder called departments

Term

XHTML

- Stands for Extensible Hypertext Markup Language
- Intended to be a replacement for HTML
- Most of the tags are the same as those in HTML
- Has stricter rules for writing HTML
- These stricter rules are also supported but not enforced in HTML

Term

- Cascading Style Sheets (CSS)
 - Widely used for Web page design and layout
 - Style sheets allow you to define styles to display HTML elements
 - Multiple style definitions can be combined or cascaded into one—thus the term cascading style sheets
 - Style sheet files are text files
 - The styles defined in the files follow specific rules and syntax

Cascading Style Sheets (CSS)

```
Example:
h1 {
    margin-bottom: -0.5em;
body{
    font-family: Arial, Helvetica, sans-serif;
    font-size: 10pt;
a {
    text-decoration: none;
a:visited {
    color: #CC9900;
a:link {
    color: #CC3300;
.mycode {
    font-family: "Courier New", Courier, monospace;
    color: #666666;
```

Term

- JavaScript
 - A scripting language for Web pages
 - Can be used to:
 - add interactivity
 - generate content on the Web page based on the viewer's choice
 - validate online forms before submission
 - create and track cookies

Term

HTML 5

- The newest standard of HTML
- Its specifications are still a work in progress (at the time of writing the book)
- New features of HTML 5 include:
 - video and audio tags
 - content-specfic tags: footer, header, nav, article, section, figure, summary, aside
 - tags for form elements
 - canvas element:
 - allows drawing graphics and displaying images dynamically using JavaScript
 - commonly used for HTML 5 game development
 - allowing storage and retrieval of data on the user's device using JavaScript

Vector Vs. Raster

- Vector images are created in programs such as Illustrator and CorelDraw. They defines lines, curves, etc. as a series of mathematical instructions. They can be enlarged without losing quality.
- Raster data (or bitmap) are images composed of pixels--Photoshop is the leading bitmap editing program. These contain a fixed resolution and when enlarged too much, image quality is compromised.

How Much Is Too Much?

- In general, for print, the rule of thumb for maintaining image quality is 2x the line screen. So, for a 133 line screen publication, one needs 266 ppi (pixels per inch in Photoshop).
- For 150 line screen, one needs 300 ppi. Because these are the two most common image sizes, most people scan or reduce the file so that image is no lower than 300 ppi.
- One should avoid enlarging an image in Indesign.

The Good: For Print

- TIFF
- EPS
- DCS
- JPEG- proceed with caution unless JPEG 2000.
- PDF- this file format is great for sending pages

Profile: EPS (Encapsulated PostScript File)

- Can contain both vector and bitmap data
- CMYK, RGB, lineart or grayscale
- It treats type as lines and curves
- Can be created with or without a preview file. The preview file will be viewed on the page in Quark, but when printed, the underlying Postscript is used to print, not the preview. Use TIFF previews when creating eps files as they will can be read on both Mac and PC platforms.
- Quality of EPS previews depends on the program which created the EPS.
- * Can be stored with information about halftone screens and with information about print prerequisites with regard to color.

Profile: TIFF

- Stands for Tagged Image File format
- Bitmap file, with lots of support for high quality images
- Can be created at any size & resolution,
- Can include b/w (lineart), grayscale or CMYK info

Profile: JPEGs

- Since JPEG pre-2000 is a lossy format, quality has been lost in the image, depending on how much JPEG compression the originator applied. Could be okay to use it, depending on the quality you need. It is regularly used in the magazine world for images from wire services because of the compression.
- JPEGs are the same on all computer platforms so that is an advantage so long as one is careful with the compression used for the type of image being printed.

For further information see:

http://www.jpeg.org/

http://www.disc-info.org/

The Ugly (For Print)

- PICT
- GIF
- PNG

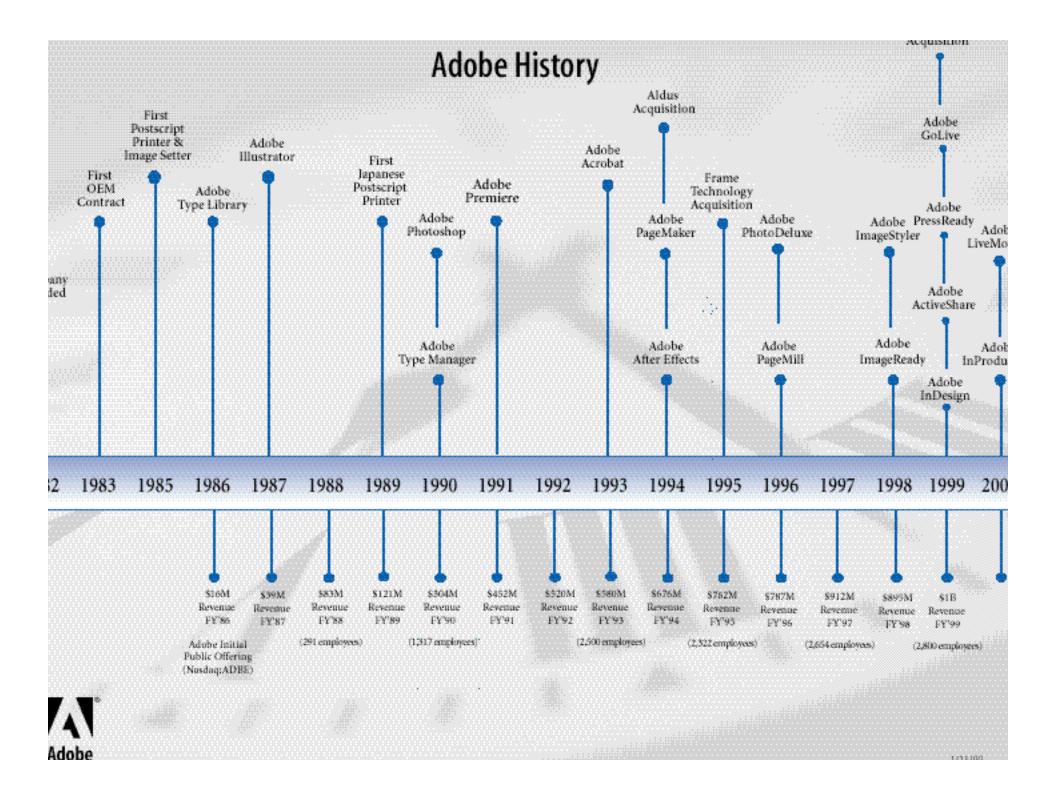
GIF (Graphic Interchange Format)

- The industry standard for graphics on the World Wide Web. CompuServe orginally created this file format to make images small enough to be sent via telephone lines. This should tell you something.
- GIF files are designed for the screen, where file size is more important than Quality so if you see a .gif, you know the image wasn't intended for print so don't use it, get a new picture from the client!!

For the entire page...

The DeFacto PDL: Postscript

- A page description language that RIPs (raster image processors) interpret for output to a proofer or to film (today it would most likely be output directly to the printing plate).
- A page description language is a programming language that describes the layout and appearance of a page. Quark Xpress, Adobe Indesign and even MS Word all write PostScript on the fly when you print to PostScript printer.
- Postscript is not the only Page Description language. HP printers, for example, use one called PCL (Printer Control Language).
- However, PostScript is used in almost all higher end graphic arts devices so it is by far the most important.



Profile: PostScript

 Vector File Format that can also contain bitmap data but key point is that text and line drawings are still a series of mathematical instructions rather than dots.

Identifying the PostScript File

- PostScript files are one file and usually have the .ps extension after it.
- One can open a Postscript file in a text editor or word processing program to view the code, but this will only tell you a limited amount of viable data and will not provide you with any visual clues.

%%%!PS-Adobe-2.0

%%Creator: dvips 5.521 Copyright 1986, 1993 Radical Eye Software

%%Title: html-spec.dvi

%%CreationDate: Thu Sep 21 18:28:17 1995

%%Pages: 76

%%PageOrder: Ascend

%%BoundingBox: 0 0 612 792

%%DocumentFonts: Times-Roman Times-Bold Courier Helvetica-Bold Helvetica

%%EndComments

%DVIPSCommandLine: dvips html-spec.dvi %DVIPSSource: TeX output 1995.09.21:1828

%%BeginProcSet: tex.pro

/TeXDict 250 dict def TeXDict begin /N{def}def

Enter PDF:

Portable
Document
Format.

And a PDF is...

- A Document Description format that describes a document for printing or display, It uses the imaging model of the PostScript language to render text & graphics.
- It is more efficient and predicable.
- It is a compact, sophisticated format for storing, transmitting, and displaying a wide variety of environments
- One can view it as the 21st century spawn of PostScript--quicker, better and cheaper.
- Essentially, PDF is a shorthand version of PostScript. It eliminates idiosyncrasies within the PostScript instructions.

For example, a cake recipe might be:

 Take the eggs and put them in a bowl. Take the milk and it in the same bowl. Take the sugar and put it in the bowl with the eggs and milk. Mix what is in the bowl.

Or I could say:

- Mix together eggs, sugar, and milk in a bowl.
- That's like what PDF does for PostScript files when you distill them. Same information, just standardized and compressed so that it is easier for the RIP (Raster Image Processor) to interpret the instructions. The RIP interprets the PDF file just as the browser interprets the html markup

But, PDF...

- Was created originally for the paperless office. It would solve the problems of exchanging documents across platforms that would preserve formatting of text and graphics. In other words, a page would look identical on my Mac and my boss's Windows NT machine.
- Therefore, PDF is designed for more applications that just high-end print and people can make PDF just for the screen or just for printing out on their laser printers.
- So, they can make a "bad" PDF for print unless you give very specific instructions. To solve this, a standard for the print industry called PDFX-1a was developed.

Which brings us to PDFX-1a... The X File

- American National Standards Institute specification for exchange of Digital Ads
- If PDF is a subset of PostScript, PDF-X1 is a subset of PDF that is designed only for printing on high-end devices.
- CMYK only and fonts must be embedded
- dpi is not specified as newspapers, magazines, etc. have different line screens

Yet more: PDFX-3

- chief distinction is that this allows for tranferring data in CIELab or RGB with a profile attached
- Not used here in North America, but used in Europe

Adobe Acrobat is:

- The program that makes PDF, but it is NOT the only program that can do so.
- The part of Acrobat that makes PDFs from PostScript files is Acrobat Distiller
- Acrobat, the main body of the Application, allows one to add features such as links, bookmarks, notes, etc.

Acrobat Reader is:

• The free viewer of PDF files that gives the view the ability to see the page and some navigational and search capabilities. One can also comment in Reader an view comments.

Acrobat Professional is:

 This program is for professional users who wish to create PDF files, preflight them, view separations and many other features. This is the program the a graphics arts professional should purchase.