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*Practical programs for
handling structured text*

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Understanding SGML and XML Tools

*Practical programs for
handling structured text*

by

Peter Flynn

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For Teresina

Table of Contents

How to use this book	xiii
Foreword	xv
Preface	xix
Acknowledgments	xxiii
Technical notes	xxv
1 Introduction	1
1.1 What it's all about	1
1.2 Selection of tools	3
1.3 How much do I need to know about computers?	4
1.3.1 Essential: basic computing	5
1.3.2 Important: textual skills	6
1.3.3 Nice-to-have: basic networking	6
1.4 Organization of the book	7
1.5 The quick-start guide to SGML	8
1.5.1 So what is markup and what is SGML?	9
1.5.2 Why you should consider SGML or XML	32
1.5.3 Dispelling some of the myths about SGML	33
1.5.4 Where to get more information	39
2 What type of document?	43
2.1 Describing the type of document	44
2.1.1 The DocType Declaration Internal Subset	47
2.2 Understanding Document Type Definitions	49
2.2.1 Terms and techniques in DTD construction	56
2.3 What's available in public?	66
2.3.1 DTDs for office documents	66
2.3.2 Industrial DTDs	76
2.3.3 DTDs for technical writing and documentation	79

2.3.4	DTDs for general publishing	84
2.3.5	DTDs for military use	89
2.3.6	DTDs for research and academic use	92
2.3.7	DTDs for Tables	104
2.3.8	DTDs for mathematics	111
2.3.9	DTDs for the Web	122
2.4	Extensible Markup Language (XML)	132
2.4.1	XML syntax	133
2.4.2	XML Links	140
2.4.3	XML Stylesheets	143
2.4.4	XML Data	144
2.5	Identifying the DTD	145
2.5.1	System Identifiers	145
2.5.2	Formal Public Identifiers	146
2.5.3	Locating the DTD and other entities	150
2.5.4	The OASIS catalog (SGML Open catalog)	153
2.6	Writing and modifying DTDs	160
2.6.1	Modifying a DTD	163
2.6.2	<i>Near&Far Designer</i> (Microstar)	172
2.6.3	<i>Graphical DTD Viewer</i> (Corel)	177
2.6.4	<i>EasyDTD</i> (Norm Smith)	178
2.6.5	<i>ezDTD</i> (Duncan Chen)	180
2.6.6	<i>NormDTD</i> (Richard Light)	181
2.6.7	<i>SP</i> (James Clark)	182
2.6.8	<i>Carthage</i> (Michael Sperberg-McQueen)	184
2.6.9	<i>Fred</i> (OCLC)	184
2.7	SGML update	187
2.7.1	The SGML Standard	188
2.7.2	Associated standards	193
3	Editors	201
3.1	Editors and DTDs	202
3.1.1	Resources needed for compilation	203
3.1.2	What to do with compiled DTD files	207
3.2	Stylesheets and WYSIWYG	208
3.3	General-purpose editors	212
3.3.1	<i>ADEPT•Editor</i> (ArborText)	213
3.3.2	<i>Author/Editor</i> (SoftQuad)	219
3.3.3	<i>SGML Editor</i> (GriF)	224
3.3.4	<i>Document Generator</i> and <i>WebWriter XML</i> (Stilo)	228
3.3.5	<i>InContext 2</i> (InContext)	231
3.3.6	<i>XED</i> Henry Thompson	234

3.4	SGML extensions to non-SGML editors	235
3.4.1	GNU Emacs and <i>psgml-mode</i>	236
3.4.2	WordPerfect Suite 8 (Corel)	239
3.4.3	Near&Far Author for Word (Microstar)	244
3.4.4	SGML Tagger (OUP)	246
3.4.5	The MultiDoc Translating Editor (Citec)	249
3.4.6	The Euromath editor	250
4	Parsing and validating	253
4.1	Using a built-in parser	255
4.2	Interpreting and reusing parser output	257
4.2.1	Understanding parser errors	257
4.2.2	ESIS (Element Structure Information Set)	263
4.3	Stand-alone parsing	266
4.3.1	ARC-SGML (Charles Goldfarb)	267
4.3.2	ASP (Jos Warmer)	267
4.3.3	Mark-It! (SEMA Group)	267
4.3.4	sgmls (James Clark)	268
4.3.5	SP and nsgmls	271
4.3.6	SMP00 (YASP)	273
4.3.7	XML parsers	273
5	Manipulation and conversion	281
5.1	Quick and dirty: using non-SGML tools	282
5.1.1	Unix utilities	283
5.1.2	sgrep (University of Helsinki)	297
5.1.3	Perl (Larry Wall)	298
5.1.4	Python	304
5.2	Programmable conversion engines	304
5.2.1	Omnimark (Omnimark)	305
5.2.2	SGMLC (SGML Systems Engineering)	310
5.2.3	Balise (AIS Berger-Levrault)	313
5.2.4	Jade (James Clark)	317
5.3	SGML export and import without programming	319
5.3.1	RainbowMaker (Inso)	320
5.3.2	Dynatag (Inso)	325
5.3.3	SGML Author for Word (Microsoft)	327
5.3.4	Roustabout (Apropos)	331
5.3.5	TagPerfect (Delta Computers)	332
5.3.6	ACS (Lockheed-Martin)	334
5.3.7	SGML-Tools (LinuxDoc)	335

6	Finding, viewing, and printing	339
6.1	Searching	341
6.2	Viewers and browsers	343
6.2.1	<i>DynaText</i> (Inso)	344
6.2.2	<i>ViewPort</i> (Inso)	348
6.2.3	<i>Panorama</i> (SoftQuad)	352
6.2.4	<i>MultiDoc Pro</i> (Citec)	354
6.2.5	<i>Babble</i> (University of Virginia)	356
6.2.6	<i>Sara</i> (OTA)	357
6.3	Non-visual representations	359
6.4	Stylesheet software	360
6.4.1	The XML Styler (ArborText)	361
6.5	Printing and publishing	362
6.5.1	Into print fast	362
6.5.2	Publishing and typesetting systems	363
6.5.3	Programmable batch systems	369
6.6	Document management and archiving	369
6.6.1	Database systems	370
7	Rolling your own	377
7.1	Toolkits for the programmer	378
7.1.1	YASP	378
7.1.2	<i>LT NSL</i> (Language Technology Group)	379
7.1.3	<i>LT XML</i> (Language Technology Group)	380
7.1.4	<i>S4-Desktop</i> (I4I)	381
A	The CD-ROM	383
A.1	Browsing the CD-ROM: using Synex/Inso <i>ViewPort</i>	384
A.2	Words of warning about the software	384
A.3	How does it work?	384
A.4	What am I allowed to do with it?	388
A.5	Documentation	388
A.6	GNU software	389
B	SGML resources	391
B.1	On the Web	391
B.2	Usenet news	391
B.3	Mailing lists	392
B.4	SGML User Groups	394
	References	399
	Glossary	401
	Index	411

Index of people and organizations	423
Index of markup elements and parameters	425
Index of acronyms and abbreviations	431

How to use this book

If you've used SGML before, or if you haven't but you're in a hurry:

- Section 1.4 has a short list and explanation of the chapters.
- Each chapter has a mini table of contents at the start, so you can see what it covers.

Otherwise if you're just starting with SGML, read chapter 1 first, and use the software on the CD-ROM to get a feel for how it works and what you can do.

I use a few standard typographical and indexing conventions:

- markup and other examples of computer text are in fixed-width type: element names, attribute names, and other SGML parameters are indexed separately starting on page 425;
- I use ***bold italics*** the first time a new term is introduced: it is summarized in the Glossary starting on page 401 and it gets a page number in bold in the Index so you can find it again;
- company and program author names are indexed separately starting on page 423.

Foreword

Peter Flynn has been an enthusiastic and skillful contributor in the world of SGML and XML for many years, and it is a pleasure to see him set some of his expertise down in writing as well. The range and power of SGML tools have taken a sharp upward turn: the first step leading to this was that the Web came along with HTML, and showed the whole world that pointy brackets and (at least somewhat) descriptive markup could make a difference. Soon afterward, ‘HTML claustrophobia’ began to grow and XML came to the rescue. Since XML is fundamentally an elegant subset of SGML that reduces complexity without reducing functionality, the movement to XML is great for SGML too.

The massive interest in XML is bringing forth a huge variety of new, faster, more powerful, and cheaper software tools. Peter has caught the cusp of this change and shows in detail how SGML and XML tools fit together into integrated solutions that return value for your investment in structured information.

SGML long ago became the normative way of doing serious documents in mission-critical and large-scale publishing; my own work has largely been in developing SGML delivery systems used in the aerospace, power, telecommunications, hardware and software industries, where technical manuals often outweigh the aircraft or other devices they document. SGML was the only practical choice for such information, and software that could handle huge SGML documents

safely, reliably, and rapidly improved productivity and costs often by many millions of dollars per company per year.

SGML also caught on in a second arena under quite different circumstances: scholarly texts. Although no one is likely to die if an SGML system fails on complicated markup for manuscripts variation or multilingual synchronization, such texts often stress tools even further in terms of features and performance than most high-end publishing applications. As Michael Sperberg-McQueen noted in the closing keynote of SGML/XML '97, scholars are the 'canaries in the mineshaft' of the SGML community. They are far more sensitive to problems (such as poor DTD design, unscalable software, *etc*) and therefore tend to keel over sooner, signaling those in the industry of problems. And just as in the depths of a coal mine, those less sensitive are well advised to notice and fix the problem, lest it get to them soon after.

SGML moved beyond these two areas only slowly, however, until the Web. Now everyone is experiencing different markup systems first-hand. They go to beautiful pages with carefully adjusted layouts, then come back with a different browser version or a different window size, and fail. Or they go to sites that adjust automatically, using their built-in knowledge of structure in their information resources to customize display for exactly the user's circumstances and preferences. Web managers with the first sort of site are watching their costs skyrocket, and are (sometimes desperately) seeking tools to manage rapidly growing complexity. In short, the power of descriptive markup is now a perceived need.

This new popularity also makes for a large and diverse tool environment, and it is there that Peter's book is perhaps most valuable. He provides a guide to the labyrinth of SGML and XML tools, organized carefully in the way many users need it: in terms of the life-cycle of their documents. Rather than going into every detail of each system, or providing a user's guide that would be wholly outdated almost before reaching the shelves, he presents various systems' distinctives: what is it that stands out in product X, and why might I use it? These distinctives often reflect the fundamental approach of each system, which is much more stable than the feature details of a given release. The focus here is on seeing the SGML and XML tool landscape, rather than individual trees (or as in a few books, the veins in the leaves!). This approach promises great practical advantages in helping the reader actually evaluate tools and make wise choices in the face of ever-growing diversity.

Such a book could easily be dry, but the reader will quickly realize that this book comes out of real experience with the tools. The many

anecdotes and witty summaries make it much more accessible. The survey of DTDs reflects this as well: few authors could speak competently about the enormous range of DTDs covered here, or do so with a sense of history. Anyone considering work with SGML or XML will find this book very useful indeed.

Steve DeRose
March 1988

Preface

In Charles Manby Smith's *A Working Man's Way in the World*[37] there is an example quoted of a 19th century printer's proofreader at work, with his reading-boy sitting beside him reading the copy aloud while the proofreader checks it:

'This *ruling passion* **two ital par** the most enduring of all the passions which obtains a mastery over the mind **close** is described in Pope's **eps** thus **turns** odious in woollen 'twould a saint provoke **close** were the last words that poor narcissa spoke **turns** no let a charming chintz and Brussels lace wrap my cold limbs and shade my lifeless face one need not sure be frightful though one's dead and Betty.'[...] 'Give my cheek a little red **close turns again** I give and devise **close** old Euclid said and sighed **turns** my lands and tenements to Ned **close turns again** your money sir **close turns again** my money sir what all why if I must **close** then wept **turns again** I give it Paul **close** he cried **turns again** not that I cannot part with that **close** and he died **pop ep one oct ed p two five three.**'

Smith clearly picked this particular example because it was popular in 1846 (he notes that 'everybody knows the above passage', although I have been unable to trace it), but the point he was making was that to achieve correct printing, the text had to be interlarded with technical terms (distinguished in the quotation) when it was spoken to a proofreader. Any errors would be marked up on the printed proof, and

returned for correction to the compositor who set the type. Although proof-correction markup is not quite the same thing as SGML markup, the intention is similar: to indicate the meaning behind the text. Emphasis, quotation, and poetic linebreaks can all be seen in the example above.

In this sense electronic texts are no different from paper ones: they also need markup, and the conventional way of applying this in a word processor or desktop publishing system is to press the buttons or use the mouse until the text ‘looks right’. The difference between paper and electronic texts, however, is that computers cannot generally detect the significance of a word just by its position and appearance, as humans can. Putting these words *into italics*, for example, has no actual meaning unless you know what the italics signify, and this often depends on the context. Italics could mean *emphasis*, a *product name*, a *scientific name*, a *foreign word*, a *program variable*, a *list sub-heading*, or just *sloping letters because they look nice*.

Just making things *look right* is fine if the sole destination is print, and the text is guaranteed never, ever to be wanted for any other purpose. For text which is to be handled by a computer for any other reason, and especially for reprocessing for a variety of other outputs, it needs clear and unambiguous markup that can be read by different programs on different computers, but following the same series of well-defined steps. SGML provides a language for defining exactly this kind of markup, and this book is all about how to make it work and some of the programs you can use with it.

If you are actually doing the writing yourself — whether you are using SGML for business reports, space station manuals, legal records, a thesis, or your latest novel — you are probably more interested in *what* you are writing (the words, the meanings, the thoughts) than in its final appearance. This is normally at least true while you are occupied in the process of writing, because you may in fact not yet know what the final formatting is going to look like, and you may not have any control over it, either.

There certainly have been authors who spent their lives looking over the compositor’s shoulder to make sure the typesetting was done exactly to their specification, but with a few exceptions their works have sunk below the horizon now. Everyone wants their work to ‘look right’, of course, but an author who spends more time fiddling with fonts and layouts than in doing the writing is unlikely to be very productive as a writer.

And nowadays, especially, that we have more media than just print to handle, we need a new paradigm, and a new set of tools to help

us cope with them. This book is designed to guide you through the different types of tool you can expect to see.

Acknowledgments

Dozens of people have helped in the making of this book, from the users whose comments on a mailing list or at a meeting made me ask questions, to the regular denizens of the `comp.text.sgml` newsgroup who have put up with my own questions for so long. Many of them distinguished themselves by answering my queries in great detail, unfortunately far too many to list them individually here, so I thank them now as a group for taking so much of their time to ensure I represented the facts correctly: if I have got it wrong anywhere, the blame is mine alone.

A special thank-you goes to all the software vendors who lent me review copies, sometimes including unpublished manuals and beta releases at short notice; and to the authors of public domain software and shareware for their unstinting generosity, both to me and to the SGML community at large. I would also like to express my gratitude to those who lent me equipment, time on their machines, software, manuals, and training material, as without them a substantial chunk of the book would have remained unwritten.

I want to thank my reviewers, Elaine Brennan, Martin Bryan, Steve DeRose, Betty Harvey, Eve Maler, James Mason, Liam Quin, and Wayne Wohler. Their suggestions were invaluable, and kept me from publicly putting my foot in my mouth quite spectacularly on at least five occasions (perhaps I should release the out-takes like film studios do!).

Some smaller sections of the text were also reviewed by an assortment of students, colleagues, and friends, and them I thank also.

Two people, however, deserve not just my own thanks but that of almost every SGML user who has ventured onto the Internet in search of answers: Robin Cover for maintaining the SGML Web pages, and Steve Pepper, whose invaluable *Whirlwind Guide to SGML Tools*[34] remains the canonical online listing.

Most importantly to my wife Teresina goes my love and thanks for having put up with precarious stacks of software and manuals, and with my virtual absence while I blunted my fingers on the keyboard each evening. And to my children Rachael, Thomas, and Olivia I say thank you too for being so patient, and I promise we'll go places again now.

A final word of thanks must go posthumously to Yuri Rubinsky, for his encouraging words about the idea for this book while it was still only an idea, and only a couple of weeks before his untimely death. Along with many others I posted my own tribute to his memory, but I reproduce here his words that I quoted then, because as I write, what he said is on the verge of becoming reality. I had spoken with him at the end of 1992 about the Web and HTML: he was full of enthusiasm and said, 'Just think of it, in a few years the whole world could be using SGML.' It has taken a little over five years for the use of HTML-as-RTF to turn into SGML-as-XML, but it is possible that we are now passing a critical point of inflection on the adoption curve of SGML, and that the whole world will indeed be taking a much keener interest in how it works and what it can do for everyone. If this book helps you to move up that curve, then it has all been worthwhile.

Cork, April 1998

Technical notes

When I was finishing *The World Wide Web Handbook*[19], I was asked to include a note on what I had used to write it. At the time, HTML3 was still under discussion, and I said that I thought it unlikely that HTML in any form could be meaningfully used for a book. I still hold to this, although given enough semantic loading of attributes, it would probably just about be possible.

This book, like the previous one, was done using the Davenport Group's *DocBook* DTD, which is markup designed for computer manuals, the closest there is to computer books. I made a few very small changes to enable the use of tables and to add a few attributes to make life easier: these are documented in section 2.6.1.2. I used a variety of editors to do the actual writing, because it was all in SGML, which meant I could copy the text from platform to platform and back again according to where I was working and the kind of software I was looking at, allowing me to have the text open beside me all the time. The principal systems I used for the bulk of the writing were SoftQuad's *Author/Editor* and GNU *Emacs*.

Screenshots were mostly taken using JASC, Inc's *Paint Shop Pro* (PSP) v4.12 and Bruce Schuchardt's *xgrabsc*, saved as TIFF or XWD files and converted to PostScript with Jef Poskanzer's *PBM* or John Bradley's *xv* for printing. Despite its ubiquity, TIFF can be a pain in the neck, as every manufacturer has invented their own little proprietary extensions for

it, which are often stored in the file in weird ways. *PSP* is a great utility, but conversion to PostScript is not quite as good as in *PBM*, which in turn is not quite as robust as in *xv*.

For printed proofs, I used *Panorama Publisher* and *MultiDoc Pro*, both of which performed well. For the final output I experimented with several systems but fell back upon $\text{\LaTeX}$ partly because I know it better than anything else, and because it is very stable and reliable, dimensionally accurate, exhaustively documented, heavily supported, highly extensible and programmable, and runs on almost anything. The conversion of the *DocBook* SGML to $\text{\LaTeX}$ was done with *Omnimark LE*.