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Making Acrobat Bookmarks using FrameMaker

This note explains how to use FrameMaker to make Portable Document Format (PDF) files suitable for Adobe's Acrobat Reader. The note concentrates on how to produce bookmarks. This note is written for Frame 4.0.4 on a Mac, although Windows and UNIX are the same in principle. I assume that you have access to Adobe's Acrobat Distiller.

This document lives at
<ftp://inforamp.net/pub/users/poynton/doc/Frame/Frame_Acro_Bookmarks.pdf>

1   Acrobat Overview

Portable Document Format (PDF) is a file format invented by Adobe for the electronic distribution of documents. A PDF document is not PostScript, but sort of its second cousin. You can think of it as embodying the imaging operations of PostScript without the programming language. A document in PDF form has the same potential print quality as a PostScript file, but it can be viewed or printed without involving the full complexity of a PostScript interpreter. A PDF file contains only the 7-bit ASCII printable character set, and accommodates any line-end convention, so PDF is freely transportable across MS-DOS, Windows, Macintosh and UNIX platforms.

Font handling in the Acrobat system is quite sophisticated. If a PDF file references fonts that are not present during reading, Acrobat Reader uses ATM and MultiMaster technology to synthesize, on-the fly, a font that has the same metrics and roughly the same look.

The PDF file format is documented in *Portable Document Format Reference Manual*, Adobe Systems Incorporated (Addison-Wesley, 1993, ISBN 0-201-62628-4).

Adobe distributes free Acrobat Readers in MS-DOS, Windows, Mac and Sun UNIX versions. Find these at <ftp://ftp.adobe.com/pub/adobe/Applications/Acrobat/>.

2   Generating PDF

To generate a PDF file, you use either Adobe PDFWriter or Adobe Distiller.

PDFWriter is a component of a commercial software package from Adobe called Acrobat Exchange. PDFWriter takes the place of a print driver, and writes a PDF file to disk. PDFWriter offers no Post-Script capability to the application. In the Mac environment, it operates as a QuickDraw printer. Although this is quite satisfactory for many uses, EPS files that are incorporated into a document will have their preview bitmaps written to the PDF file.

Acrobat Distiller, a commercial software package available from Adobe, incorporates a PostScript Level 2 interpreter. It can take any PostScript file, including embedded EPS drawings or pictures, and generate PDF. Adobe Illustrator version 5.5 for the Mac comes with a copy of Distiller.

3   Bookmarks

Bookmarks are a feature of PDF files that make it easy for a reader to navigate through a document. You can think of a bookmark as being an executable element of a table of contents.

Unless special measures are taken, a PDF file produced by either PDFWriter or Distiller has no bookmarks. Bookmarks can be added to a PDF file using Adobe's Acrobat Exchange product, but it is a big nuisance to generate bookmarks manually. The remainder of this note explains how bookmarks can be generated more or less automatically by Frame.

4   Distiller operators

Adobe's Distiller implements a PostScript operator *pdfmark* which inserts a bookmark into a generated PDF file. This operator is documented in Adobe's Tech Note LPS 0172, *pdfmark Reference Manual*. You will use Frame's *Generate/Update* facility to extract bookmarks information from your document, and generate a file of lines with the *pdfmark* operator.

You will make a small batch file that issues the Distiller's *RunFile* operator to pull your bookmark file, then your document's PostScript file, from disk and present them to the interpreter in turn. *RunFile* is documented in Adobe's Tech Note 4402, *Using the RunFile Procedure to Combine PostScript Files*.

5   Inserting the bookmarks

You could generate bookmarks from paragraphs having a certain tag, for example *Heading1* for first-level headings. However the reader of your document may have a restricted amount of screen area that she wants to devote to bookmarks when she is using the Acrobat Reader, and your document may have longish section headings. Also, Acrobat's bookmarks allow no special character formatting, but your document may have headings that include character formatting. I recommend that you generate the bookmarks from markers having short versions of the text of the section headings, instead of the from the section headings themselves. I use Marker Type 11.

Go through your document adding markers of type 11, with the text that you wish to be collected into bookmarks. If you add a section later, remember to add a marker. If you want to include a parenthesis or a backslash in bookmark text, you must "escape" it with backslash: to get "(A)", use "\(A\)". Use only characters in the ASCII set, because bookmark characters in the "upper 128" are apparently not preserved across platforms.

Make sure that your System Variables and Cross-References are up-to-date. I find it frustrating that Frame does not invite me to update these before I Print or Generate, but it's better than Quark or PageMaker which have no cross-reference capability at all!

Print your document to a PostScript file.

Frame inserts into its PostScript code an advertisement that appears only when the PostScript is processed by the Distiller. Use a text editor to search the PostScript for a line containing the word "created", like the line below. Then delete the line.

        187 776 M (This document was created with FrameMaker 4.0.4) FmPT

6   Generating the Bookmarks

Compiling the bookmarks involves generating a file, containing PostScript code, from the markers that you have inserted in your document. While your document is open, you will choose Generate from Frame's File menu. Frame will find a file with the name of the document and the suffix (extension) that you specify, and will insert or replace the body text of that document by generated text.

Frame obtains the format of lines in a generated file from a flow on a reference page in that file. The name (tag) of the flow is the same as the suffix of the generated file. The special flow is normally on a reference page of the same name. That flow has a paragraph whose tag is named according to the tag or marker type and the filename suffix.

For bookmarks, you will generate a List Of Markers (LOM) of type 11. Create a new empty document with a single text column on its body page. Add a reference page named *LOM,* with a flow named *LOM*, with a single line having the tag *Type11LOM.* The line contains this text:

```
[/Page <$pagenum> /View [/XYZ null null null] /Title (<$paranum> <$markertext>) /OUT pdfmark
```

This line contains the arguments and the operator that the Distiller needs to create a bookmark. The items in angle-brackets will be substituted by Frame during the course of file generation. Save this as a Frame document with the name of the main document and the suffix *LOM.*

Now open your document file. Choose *Generate/Update*, specify List of Markers, Type 11, and indicate an suffix LOM. Frame will discover the file that you just saved, so it will use the formats in that file instead of generating a new file. The generated text will look something like this:

```
[/Page 3 /View [/XYZ null null null] /Title (4 Gamma) /OUT pdfmark
[/Page 4 /View [/XYZ null null null] /Title (5 Gamma correction) /OUT pdfmark
[/Page 5 /View [/XYZ null null null] /Title (6 NTSC gamma 2.2) /OUT pdfmark
```

Save this document as text, with the suffix ".txt". Giving it the suffix *txt* emphasizes that it contains text, but more importantly it avoids overwriting the LOM file whose format information will be required the next time you generate.

When Frame generates a document, if it can't find an appropriate reference page with an appropriate flow and an appropriate paragraph tag, it creates whatever is missing. So if you have trouble generating, see if Frame has created a new reference page or a new paragraph. Then you can diagnose what caused Frame to generate it.

7   Batch file

You will present to the Distiller a single small batch file that specifies your bookmark text file and the PostScript file from your document. The file looks like this:

```
%!
% collect named .ps files into a single Distiller run. See Adobe Tech Note 4402.
%
/prun {/mysave save def RunFile clear cleardictstack mysave restore} def
(Macintosh HD:Frame Work:Manifesto.LOM.txt) prun
(Macintosh HD:Frame Work:Manifesto.doc.ps) prun
%EOF
```

Create this file in Frame and *Save As ... Text*, or use your favourite text editor. Replace *Macintosh HD* and *Frame Work* with the full path to your documents. I use the suffix *LOM.txt* for the bookmark file and *doc* for the document file, but this is just my convention. Save the batch file with the name you wish to give the completed document, and include the suffix .PS.

8   Distill

Finally, drop the batch file onto the Distiller. If anything is wrong, you'll hear about it. But if all is well, the Distiller will produce a single file named for the batch file and with the suffix ".PDF".

Test the result by viewing it with the Acrobat Reader. The Reader normally starts up with bookmarks out of sight, so grab the window pane bar at the lower left and drag it to make the bookmarks visible, or choose *Bookmarks* from the *View* menu.

You can now distribute your bookmarked PDF file.

When you update your main document, to make a new PDF file take these steps:

- Update system variables and cross-references,

- Print your document to a PostScript file,

- Generate from your document file,

- *Save* the generated file *As ... Text*, and

- Drop the batch file onto the Distiller.

Send me e-mail if you like the results! Better still, send me your PDF file!

9   Bookmarks for a Book

The technique of generating bookmarks for a single Frame document can be applied to a Frame book. If you are familiar with Frame books you should also be familiar with Frame Tables of Content (TOCs). If you are not interested in books or TOCs, skip this section!

You will start with a document in one or more "chapters" of a Frame book file, including a TOC. Add to your book a generated file for bookmarks, giving an suffix of LOM and one or more markers to be collected. Be sure to put a "dot" in front of the suffix.

You will use a batch file to present all of your PostScript files to the Distiller in one session. This is necessary due to a series of three circumstances. First, Frame puts any generated file on its own page or pages. Second, when Frame prints a book to a PostScript file, it makes each chapter into a self-contained PostScript file. Third, the Distiller starts page numbering at 1 for each PostScript file it processes. This combination of circumstances means that you must present a single file to the Distiller, to preserve the page numbers of your bookmarks.

You want your bookmarks to be included in the PDF file, but not the PostScript code that generates them! The batch file bypasses the bookmark "chapter", but the first actual chapter in your book must reset page numbering to 1. Acrobat accommodates only page numbering starting at 1 and incrementing throughout the PDF file, so you must not restart page numbering anywhere else.

Since the bookmark file has the suffix *txt*, you can print the entire book at once into separate ".ps" files, even the bookmark document, without disturbing the bookmark PostScript file.

Frame does not – as of version 4.0.4 – provide direct access to the total page count of a book. If you wish to reference the total page count in the front matter, you must work around this by using a cross-reference to the variable <$lastpagenum> on a paragraph of its own in the last chapter of the book. This messy business is documented in the Frame manual ("page count, in book file").

10 Bookmarks from paragraphs

Your bookmarks could be taken from paragraph tags instead of from markers. For example you could collect paragraphs having tags *Heading1* for both the Table of Contents and the bookmark file. But for the reasons that I mentioned earlier in *Inserting the bookmarks*, I recommend that you generate the bookmarks from markers.

If you choose to collect paragraph tags instead, rename the reference page, rename its flow, and change the paragraph tag of your formatting string. Also, change <$markertext> to <$paratext> in the format string.