Embedded Indexing

Index entries that are inserted electronically into the computer files along with the text of the document are called "embedded." Instead of creating a separate index file with dedicated indexing software, an embedded index is created in the same software as the rest of the document (e.g., Microsoft Word™ or FrameMaker®). Although embedded indexes have several advantages for the client, there are several disadvantages for the indexer who creates them.

When clients ask for an estimate for an index that will be embedded in electronic text files, they are often dismayed at the time that it will take for such an index to be created. I often find myself explaining to the client *why* it takes longer to create an embedded index. Here are some of the advantages and disadvantages of embedded indexing – why clients want them and why they're more of a challenge to create.

Advantages

Embedded indexing is usually desirable for computer-related manuals or other technical documentation that is likely to be updated often. When the manual is updated, the index can be re-generated quickly and the reference locators will be accurate. Another advantage is that if the document goes online, it's fairly easy to make index references into links so the user can click on the index entry and the relevant text is displayed. Companies that publish "high-tech" books usually prefer embedded indexes; traditional publishers rarely request them. Some other advantages of embedded indexing are:

- Indexing can begin before page numbers are finalized. If text is added or deleted, the locaters will still be accurate.

- Future revisions of the text will not require re-indexing of the entire text since index entries will be retained in the text that remains unchanged.

- Material that will be published in both a printed and electronic format will benefit from embedded indexing.

- Embedded indexing is convenient for custom publishing (on-demand publishing); if a university press wants to create a textbook that just includes chapters 1, 3, 5, 7 and 9, the corresponding index can be generated quickly.

- Embedded indexing is convenient for the author during editing of a book-length manuscript to find material quickly.

Disadvantages

Publishing programs like Microsoft Word and FrameMaker were not designed to be tools for indexing. As a technical writer, I've used FrameMaker to produce very large technical manuals. FrameMaker is well suited for this task because it was designed for that purpose. Companies who produce these desktop publishing programs have added other "bells and whistles" to their programs, but there have not been many improvements to the indexing feature in recent upgrades (Mulvany 1999).

The major disadvantages of creating embedded indexes over stand-alone indexes are:

- The indexer can't work on one set of text files while the author edits another set of files. Only one person can make changes to an electronic file at a time.

- It takes much longer to write embedded indexes than stand-alone indexes. Mulvany estimates that creating indexes with DTP programs takes two to three times longer than

creating indexes with dedicated indexing software tools (1994, p. 259), and my experience supports that estimate.

- Embedded entries will be deleted when text is deleted. Because the index entries are right in the text file, they will be deleted when the writer deletes the corresponding paragraph. When a document is extensively revised, how much of the original indexing work will remain? Do the remaining entries still make sense, or has the basic organization of the index been undermined?

- The indexer must carefully check every cross-reference manually (dedicated indexing software does this for you).

- Leading prepositions, articles and conjunctions in subentries aren't ignored, as they should be. This is a feature of most dedicated indexing programs.

- The Indexer has little, if any, control over sorting.

For the first part of this discussion, let's assume that the files are in Microsoft Word. In the latter part of this discussion, we'll talk about the specifics of writing embedded indexes in FrameMaker.

Indexing in Microsoft Word

Every indexer has a different method and style of writing an index; indexing is an art. Because you cannot see the index develop in Word, some indexers use dedicated indexing software (like CINDEX™ or Macrex) to write the index and then re-type the entries into Word. This may save time because it's easier to edit the index in the dedicated indexing software than it is to edit it in Word. You may find a method that is easier or faster for you, but the following is the basic procedure that I use when creating an index in Microsoft Word.

Creating Index Entries

In Word, an index entry that looks like this:

software, installing, 59

would be created by typing an index entry that looks like this:

{xe "software, installing"}

And index entries that looks like this:

software
    copying, 38
    installing, 59
    searching, 71
    troubleshooting, 74

would be created by typing index entries in the appropriate places in the body of the Microsoft Word file that look like this:

{xe "software:copying"}{xe "software:installing"}{ xe "software:searching"}{xe "software:troubleshooting"}

The index entries are actually hidden text in the file, so the index entries aren't visible on the screen unless you choose to display the paragraph markers and hidden text. (Click on the ¶ symbol in the top menu bar to Show/Hide ¶.) The dotted underline indicates that the text is hidden.

Since the index entries can really clutter up the text and make it difficult to read on the screen, I put the index entries at the end of each paragraph, as in the example below:

> To install the software, insert the CD into the CD drive.{xe "software, installing"}{xe "installing the software"}

Of course, it is not necessary to type these strange-looking entries as I've shown them; you can use the Mark Index Entry dialog box that Word provides.

From the Insert menu, choose Index and Tables; the following dialog box appears. Click to select the Type of index: Indented or Run-in. Then, select the Format for the index: Classic, Fancy, Modern, etc. Each of the different Formats will be shown in the Preview box to show the appearance of the index.

Figure 1. *Index and Tables dialog box*

Next, click on Mark Entry and type the Main Entry and Subentry in their respective boxes; click on Mark to have the index entry embedded in the Word file in hidden text. Repeat this process for each index entry.

Another way to create an index entry with less typing is to select the text in the Word document. The selected text will be displayed in the Main Entry box of the Mark Index Entry dialog; then click on Mark to create the index entry embedded in the file.
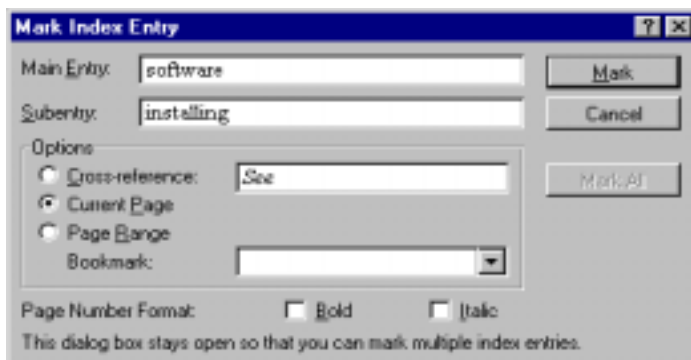

Figure 2. *Mark Index Entry dialog box*

A third way to create an index entry, and the method that I find to be the easiest, is to use the Mark Index Entry dialog box to mark one index entry, and then copy and paste that entry in the Word file and edit it for all of the other index entries. I find that this goes much faster for me.

You can select the index entry by double-clicking on one of the curly brackets ({ }) that surround the index entry; then press Ctrl-C to copy and Ctrl-V to paste the new entry.

To mark an index entry with a page range (for example: software, installing, 59-61), you must first define the range of text with a bookmark. Use the cursor to select the text from the beginning to the end of the topic in the Word file. Then, with the text selected on the screen, choose Bookmark from the Insert menu. The Bookmark dialog box appears:
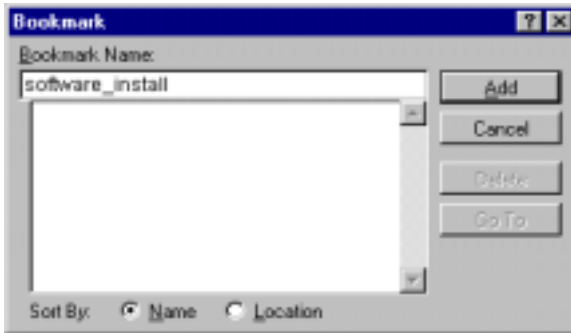

Figure 3. *Defining a page range with a Bookmark*

Type in a name for the bookmark that is unique to that topic, such as "software_install" (spaces aren't allowed) and click Add. Then return to the Mark Index Entry window (Insert → Index and Tables → Mark Entry), choose the Page Range Bookmark option and select the appropriate bookmark name for this topic range.
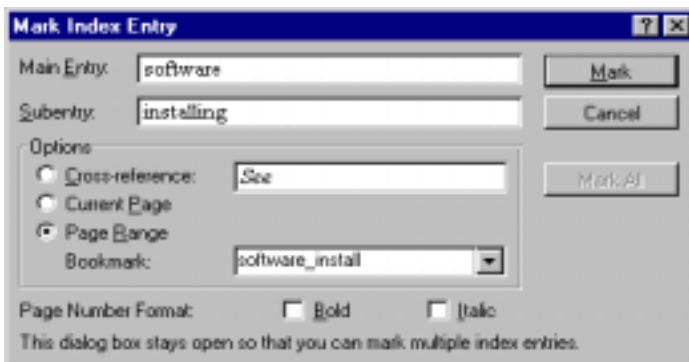

Figure 4. *Marking an Index Entry with a page range*

Word will insert an index entry in the text that looks like this:

{XE "software:installing" \r "software_install" }

The "\r" indicates that this index entry covers a page range that is defined by the bookmark "software_install."

Creating Cross-references

To create a cross-reference, click on the Cross-reference Option in the Mark Index Entry box, and type the text after the "*See*" in the Cross-reference box. To create a cross-reference:

finding, *See* searching

The index entry will look like:

{XE "finding" \t "*See* searching" }

The "\t" indicates that this entry is a cross-reference. If you want to create a "*See also*" cross-reference, just type the word "also" after the "*See*" in the Cross-reference box.

Formatting and Generating the Index

Before generating the index, you must create a separate Word file and then create field codes in for the index in that file. (Field codes are commands, in hidden text, that tell Word how you want the index formatted.) I typically call my index file Index.doc. The field codes tell Word to search each file sequentially (chapter1.doc, chapter2.doc, chapter3.doc, appenda.doc, glossary.doc, etc.) for index markers before it generates the index.

Following is a sample Index.doc with the field codes visible. The field codes are all of the text that is shown with a dotted underline.

INDEX {Seq chapter \h \r9 * Alphabetic}

{RD chapter1.doc}{RD chapter2.doc}{RD chapter3.doc}{RD chapter4.doc}{RD appenda.doc}{RD glossary.doc}

{INDEX \h "A" \!-z' '\c "2" \s chapter}

Note that the last line of codes {INDEX \h…} must be **after** the RD (Referenced Document) codes.

This index with these field codes will produce an index with headings (A, B, C, etc.) between sections, and characters sorted from ! to z (special characters and symbols will be sorted before numbers and letters). The index will have 2-columns, and page references will include the chapter number as well as the page number, e.g., 1-4, 2-3, 3-6, etc. For more details on the various field codes that you can use for indexes in Microsoft Word, use the Help menu in Word to display Index topics.

Since the generated index is actually a bunch of field codes, the index can be re-generated by pressing a key to update the index. On a PC, press F9 to update the fields.

Editing an Index Entry

After generating the index in Word, you will undoubtedly need to go back to edit some of the index entries. You must go back to each index entry in the text to edit it. Index entries are case-sensitive in some versions of Word; this means that the two following entries could create two different index entries:

    {XE "Software, installing" }
    {XE "software, installing" }

The index entries are not links like they are in FrameMaker, so you can't click on them to display the appropriate index entry. But you can find index entries fairly easily by including "XE" in the search string. For example, to find one of the above index entries, I'd search for: "XE "software, installing"".

Sorting Index Entries

Microsoft Word alphabetizes word-by-word. Mulvany and the *Chicago Manual of Style* recommend that technical manuals be sorted letter-by-letter (in letter-by-letter sort, "database"

would come before "data structure" which is how users would expect to find it). To override the sort order, use the following undocumented technique.[1]

Use a semicolon after the index entry to specify how you want the entry to sort. Here are examples:

{XE ".doc filename extension;doc filename extension"}
{XE "filenames:8.3 naming convention;eightdotthree naming convention"}

The special sorting string is included on the same hierarchical level as what you're sorting. You only need to duplicate (with edits) the part of the entry that you want sorted differently.

If you want to sort symbols in a special order, you have to invent a method that meets your needs. I use the @ symbol, and then I sort symbols in alphabetical order by author-chosen English name. For example:

{XE "* (asterisk);@asterisk:wildcard character"}
{XE "& (ampersand);@ampersand:logical AND operator"}
{XE "| (vertical bar);@vertical:logical OR operator"}
{XE ". (dot);@dot:filenames beginning with"}
{XE ". (period);period" \t "See . (dot)"}

& (ampersand)
   logical AND operator
* (asterisk)
   wildcard character, 000
. (dot)
   filenames beginning with, 000
. (period). See . (dot)
| (vertical bar)
   logical AND operator, 000

It may not be easy, but at least it's possible!

This has been a brief overview of creating embedded indexes in Microsoft Word—a topic that covers 10 pages in the *Microsoft Word User's Guide*. My intent has not been to show you all there is to know about creating embedded indexes in Microsoft Word but to give you an overview of how to create basic index entries with this tool.

Indexing in FrameMaker

The process for creating indexes in FrameMaker is similar, but different. For this discussion, I'll assume that you are familiar with using FrameMaker, its commands, and its Reference Pages.

There are products like IXgen™ that make it easier to create an index in FrameMaker, but for this discussion, we'll just use the indexing feature that comes with FrameMaker.

Creating Index Entries

1. Open the FrameMaker document that you need to index.

2. Place your cursor in the text where you want to create an index entry. I prefer to put index markers at the end of each paragraph because then they don't clutter up the text.

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[1] Thanks to Seth Maislin for this section on sorting index entries in Microsoft Word.

3. Pull down the Special menu and choose Marker… The Marker box appears, with the default marker type of Index.

4. Type the index entries for that paragraph in the Marker Text box, separating index entries with a semi-colon as shown in the illustration below. To create a subentry, separate the main entry and subentry with a colon. For example, "software:installing".
   To enter an index entry that includes a page range, you must precede the index entry with the <$startrange> tag. At the end of the discussion (in a different index Marker box), the page range must end with a matching <$endrange> tag. For example, "<$startrange>installing the software" and "<$endrange>installing the software". Make sure that the text which follows the <$startrange> and <$endrange> tags is *identical*. If there is an extra space or any other difference, the page range will not be created correctly. FrameMaker will assume that any text after the <$startrange> tag is part of the page range, so I always put them at the end of the Marker Text. You may have up to 255 characters in an Index Marker.
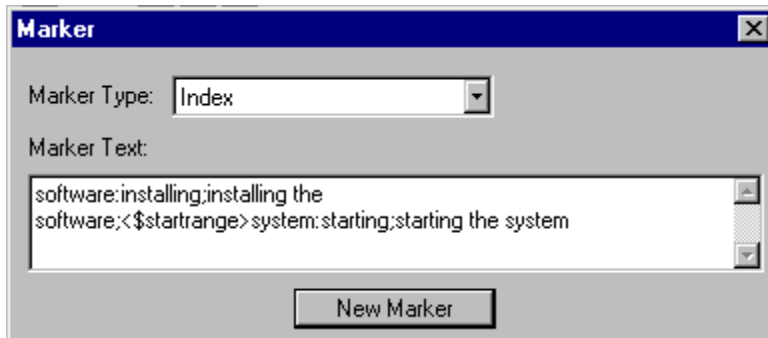
5. Click on New Marker.

Figure 5. *Creating several index entries in a Marker dialog box*

Once you click on "New Marker" in the Marker box, FrameMaker creates an index marker in the text. If you choose to View → Text Symbols, the index marker will be visible; it looks like a bold capital **T**. Note that the Marker box remains on the screen, but the "New Marker" button changes to "Edit Marker." Since the index marker is still selected, you can make changes to the index entries that you just created and then click on "Edit Marker" for those changes to take effect.

Creating Cross-references

To create a cross-reference, precede the entry with the tag <$nopage>. For example, "<$nopage>finding. <Emphasis> See <Default Para Font>searching". Note the initial capital letters in "Emphasis" and "Default Para Font." These tags are case sensitive; if you type <emphasis> or <Default para font> the text will not format correctly. The <Emphasis> tag causes "See" to be in italics; the <Default Para Font> restores the font to what it was before you applied the italics.

The <$nopage> tag will omit page references from any index entry that follows it in the Marker Text, so I always put the <$nopage> tag at the end of the index entry, as shown in the following example:
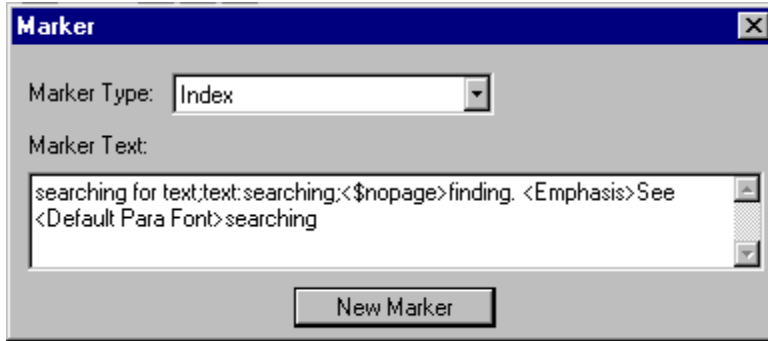
Figure 6. *Creating a cross-reference in a Marker dialog box*

If you're creating a cross-reference for an entry and you want the "*See also*" to follow the main entry

like this:	instead of being a subentry like this:

problems. *See also* troubleshooting
    correcting, 33
    reporting, 34
	problems
	    correcting, 33
	    reporting, 34
	    See also troubleshooting

You must create the following index entries in FrameMaker:[2]

> problems. <Emphasis>See also <Default Para Font>troubleshooting:correcting
> problems. <Emphasis>See also <Default Para Font>troubleshooting:reporting

Note that in this example, the <$nopage> tag is not required.

Generating the Index

Follow the previous steps to create index entries throughout the document. When you are ready to generate the index, do the following:

1. Pull down the File menu and select Generate/Book… FrameMaker displays the Generate/Book window.

2. Select the button for Standard Index, and click on Generate. FrameMaker will display the Set Up Standard Index box that is shown below.
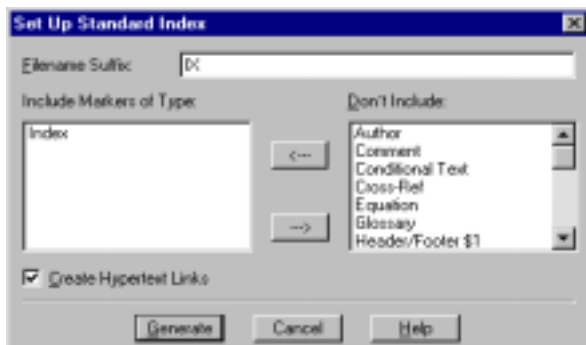

Figure 7. *Generating the index*

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[2] Thanks to Lynn Moncrief for sharing this helpful hint.

3. Check to make sure that the "Create Hypertext Links" box is checked, and click on Generate.

FrameMaker will create the index and put it in a separate file. Now that you can see what your index entries look like, you'll probably need to go back to edit some of them. Because you checked the box, "Create Hypertext Links," FrameMaker created a link between your index entries and their associated text.

Editing an Index Entry

1. In the index document that FrameMaker just created, put the mouse pointer over the page number for the index entry that you need to edit.

2. Hold down the Ctrl and Alt keys simultaneously, and click on the page number. FrameMaker will display the index marker for that index entry.

3. Edit the index entry in the Marker Text box, and click on "Edit Marker." You will have to generate the index again for the changes to be visible in the index.

If you see index entries with page references of 2-?? or ??-7, it means that you didn't specify the <$startrange> or <$endrange> tags correctly. In the index, you can return to the entry to correct this by holding down the Ctrl and Alt keys simultaneously, and clicking on the page number.

Finding Index Markers

While editing the index, you might want to search for index markers in the FrameMaker document. You can search for an index marker by using the Find/Change box.

1. Check that the Marker window is displayed so you can see the index entries as you find them (choose Marker from the Special menu).

2. Pull down the Edit menu and choose "Find/Change" (or press Ctrl F).

3. Click on the down arrow that is next to the "Find Text:" field, and choose "Marker of Type:"

4. Type "index" and press Enter. FrameMaker will find the next index marker and will display its contents in the Marker window.

Figure 8. *Finding index markers*

Deleting Index Markers

You may occasionally want to delete all of the index entries in a FrameMaker document.

1. Display the Find/Change box (choose Find/Change from the Edit menu).

2. Choose "Marker of Type" and type "index" as the type of marker to find.

3. Leave the "Change" field blank.

4. Click "Change All In" to delete all index entries in the document[3].

Sorting Index Entries

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[3] Thanks to Karin Arrigoni for sharing this helpful hint.

By default, FrameMaker sorts index entries word-by-word. You can tell FrameMaker to sort letter-by-letter, by changing the Reference Page for the index. The following steps explain how to change the Reference Pages.

1. Make sure that the window containing the index is the active window, and pull down the View menu; select Reference Pages.

2. Find the Reference Page that ends in IX.

3. Add a space to the *beginning* of the IgnoreCharsIX paragraph.

4. Pull down the View menu and select Body Pages.

5. Save the index document and re-generate the index to sort the index letter by letter.

FrameMaker does not ignore prepositions, conjunctions and articles (and, in, with, for, a, an, the, etc.) in subentries. To ignore insignificant terms at the beginning of subentries, you must change the way FrameMaker sorts the subentries.

FrameMaker will usually sort subentries in alphabetical order, as in the following example:

> errors
> > in software 3
> > reporting to technical support 2

To force FrameMaker to ignore the word "in" in the subentry, type the following entries in the index Marker box:

> errors:reporting to technical support
> errors:in software[errors:software]

The result will appear as follows:

> errors
> > reporting to technical support 2
> > in software 3

Formatting the Index

FrameMaker does not put a comma between the index entry and the page reference unless you tell it to. If you want a comma to precede the page reference, you must edit the Reference Page.

1. When the index document is displayed in the active window, choose Reference Pages from the View menu.

2. In the paragraph called SeparatorsIX, change the em space at the beginning of the line to a comma and a space.

3. Pull down the View menu and select Body Pages.

4. Save the index document and re-generate the index to see commas after the page references.

FrameMaker will apply the same formats to the index that are applied to the source document. Here are some common formatting tips:

To make a two-column index, choose Format → Page Layout → Column Layout; change the number of columns to two.

Once you get an index formatted the way you want it, you can save that index and apply its format for future indexes (File → Import → Formats…). If changes are made to the document

after it is indexed, it can make a real mess of the index. If a paragraph is moved from one page to another, the <$startrange> tag might end up *after* the <$endrange> tag. This would cause the "?? errors" that I mentioned earlier under Editing an Index Entry. This is another reason why indexers should insist that the text and page numbers be final before they start indexing.

Be sure to check each line of the index carefully before having it published!

Good news!

Fortunately, there are some products that make it easier to create and edit embedded indexes. When I write an index in Microsoft Word, I use the latest version of CINDEX (V 1.5), which allows me to drag and drop index entries from the CINDEX window into the Microsoft Word document in another window. This allows me to use CINDEX to write the index, sort it in page number order, and then drag and drop the entries into the Word file. This saves time because it's so much faster to edit the file in dedicated indexing software than in Word. There are a couple of other companies who are currently working on other programs that will work similarly.

For FrameMaker, IXgen is available from Frank Stearns Associates, Inc. (See www.pacifier.com/~franks/ixmid.html for more information.) IXgen allows you to do the following:

- Gather some or all of your marker text in an alphabetized list, edit that list (using find/change, spell checker, and so on), then update the source markers.
- Edit marker text while embedded in body text.
- Collect text from selected paragraph tags (such as heads and subheads) or character tags (such as emphasis) and place that text in new markers.
- Shuffle existing marker text to create new markers.
- Search a document on a list of keywords and insert markers where those keywords were found. A keyword list, once made, could be used over and over again for new documents in similar topic areas.
- Base a keyword list on an existing index.
- Build hypertext links based on a keyword list.

For now, all of the advantages of embedded indexing seem to lie with the client or manager who publishes the documents with embedded index entries in them. Indexers had to wait many years for computers and dedicated indexing software to make their jobs easier. Hopefully, we won't have to wait so long for embedded indexing tools to be improved so that they meet the needs of their users.

References

CINDEX™ indexing software, Indexing Research, www.indexres.com

FrameMaker is a trademark of Adobe Systems Incorporated, www.adobe.com

IXgen, by Frank Stearns Associates. www.pacifier.com/~franks/ixmid.html

Macrex indexing software, www.macrex.cix.co.uk/

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Parts of this article were previously printed in *KeyWords*, (Jan/Feb 1998 and Sept/Oct 1998) and *The Indexer*, (April 2000).

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