DocBook Install mini−HOWTO

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DocBook−Install−mini−HOWTO is a detailed practical guide for novices to quickly getting DocBook installed and processing SGML files into HTML, PS, and PDF files on a GNU/Linux system − other systems may be similar. Since setup of DocBook requires files from several separately distributed packages, it can be confusing for beginners.
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1. Introduction

1.1. Information About this Document

The lastest version of this mini−HOWTO can be found at:


See the "Legal" section in the appendix for copyright, licenses, and disclaimer information pertaining to this document.

1.2. What is DocBook

DocBook is a Standard Generalized Markup Language (SGML) Document Type Definition (DTD) that defines a set of textual document markup tags that work much like the familiar HTML language used on the web.

DocBook is intended for the authoring of books and articles. As such, it provides tags specifically designed to describe books and articles. For instance, the <book> and <article> DocBook tags are used to create books and articles. Within these documents, the <chapter>, <sect1>, and <para> tags are used. DocBook SGML files are stored in text files with a sgml or gml suffix.

When processed, a single DocBook SGML file can output html, pdf, ps, txt and other formats for both online and printed publication. The processing is governed by stylesheets that can automatically generate a table of contents, page numbering, chapter & section numbering, and other features.

DocBook is also designed for authoring unix man pages by writing <refentry> documents. If you don't know what a man page is, try the command man man on your terminal.

1.3. Brief Overview

Here are brief descriptions of the packages we will work with in the next sections:

OpenJade. OpenJade is an implementation of the ISO/IEC 10179:1996 international standard Document Style Semantics and Specification Language (DSSSL). OpenJade executes the DSSSL language to process SGML and XML input files. In particular, it uses the Modular DocBook Stylesheets dsl code to process DocBook SGML/XML files into other formats such as html, tex, rtf, txt and others. OpenJade is the essential engine for converting a DocBook file into other formats. The TeX output format is used mostly as an intermediate format to obtain dvi, pdf, and ps via TeX macros and dvi converters.

DocBook SGML DTD. The DocBook Document Type Definition (DTD) files are SGML files that define the DocBook language. It defines the valid tag set and rules of their use. OpenJade requires access to the DTD files for every document type that it parses.

ISO8879 ENTITY SGML. Entities define how to represent special characters that have either no keyboard key or have special meaning in SGML. Examples familiar from HTML include "&amp;"='&', "&gt;='>', and
DocBook DSSSL (Modular DocBook Stylesheets). The DSSSL files (dsl suffix) for a particular DTD, in this case DocBook, specify how to convert DocBook into html, rtf, tex etc. A dsl file is input to openjade along with your DocBook sgml file and tells openjade how to transform/style your document into another file format. The dsl for online (html) formats is often different than for print (dvi, pdf, ps) formats.

SGMLtools−Lite. SGMLtools−Lite is a frontend wrapper for running openjade and the TeX macros jadetex and pdfjadetex, macros included with OpenJade. Converting a DocBook file to ps or pdf is a two or three−step process. OpenJade outputs a tex file which is the input of jadetex to produce a dvi file, and pdfjadetex to produce a pdf. A ps file is obtained by passing the dvi file through dvips. The sgmltools script provides a single command to perform these tasks.

HTMLdoc. HTMLdoc is a free program for converting html files into a pdf or ps file.

SGMLSpm and docbook2X. Together, these two are used to generate man pages. SGMLSpm is a perl5 module library for processing parsed output from onsgmls, a program included with OpenJade. SGMLSpm includes an application called sgmlspl to use the SGMLSpm library. Sgmlspl requires "spec files", which are available from various other sources on the Internet, for each type of document transformation to be performed. DocBook2X is a package that provides the spec files for transforming DocBook files into man pages.
2. Download the Packages

In this section, we will locate and download the software on the Internet.

2.1. OpenJade

OpenJade is an actively maintained open-source software project based on the Jade package by James Clark. Download the latest stable release at:

http://openjade.sourceforge.net/

OpenJade also includes the OpenSP package and the TeX macros, jadetex and pdfjadetex for converting files to dvi and pdf. The following programs are provided by this package:

- openjade
- onsgmls
- osgmlnorm
- ospam
- ospent
- osx

To use jadetex and pdfjadetex for making dvi, ps, and pdf, you must have a working TeX (tex) installation. If you do not have TeX, check with your Linux distribution for a binary package that can be downloaded and installed. Otherwise, you can download the teTeX distribution of TeX from:

http://www.tug.org/tetex/

2.2. DocBook SGML DTD

The DocBook DTD for SGML and XML are maintained by a technical committee at Oasis−Open.ORG. Download the current version (and any old versions you might need) of DocBook SGML at:

http://www.oasis−open.org/docbook/sgml/index.shtml

2.3. ISO8879 ENTITY SGML

The entities define representations for special or untypeable symbols or characters, including mathematical symbols, and the entities that you may be familiar with from HTML. These entity files need to be installed for a proper configuration.

- Resources at OASIS:
  - http://www.oasis−open.org/cover/topics.html#entities
  - http://www.oasis−open.org/cover/ISOEnts.zip
  - http://www.oasis−open.org/cover/isoENT−tar.gz
ISOEnts.zip can simply be unzipped into the directory where the DocBook DTD is unzipped without requiring anything else but the files in isoENT-tar.gz are also needed. Again, the files in isoENT-tar.gz are to be unzipped into the DocBook DTD directory (see next section on installing for details), but the filenames end with ".ent" suffix. These will need to be renamed to a ".gml" ending. You can do this manually, or you can download and use the file below, made by this author, which contains the files of both ISOEnts.zip and isoENT-tar.gz:

http://reaster.com/iso8879–entities.tar.gz

2.4. DocBook DSSSL

Norman Walsh's Document Style Semantics and Specification Language (DSSSL) files for the DocBook DTD (SGML/XML) are maintained at the DocBook Open Repository at SourceForge. These files, also known as the Modular DocBook Stylesheets, tell openjade what to do when converting your DocBook SGML file into other formats. A dsl file specifies things such as the mappings from one DTD's tags to another DTD's tags and other programmatic conversions, programmed in the DSSSL language. The DSSSL language is decomposed into a group of different languages, but running through it all is the Core Expression Language which is based on Scheme.

The DocBook DSSSL package and documentation can be downloaded from the DocBook DSSSL Stylesheets Project.

The Linux Documentation Project has a stylesheet customization file that turns on some nice style features. It can be downloaded at:

http://www.linuxdoc.org/authors/tools/ldp.dsl

2.5. SGMLtools–Lite

SGMLtools–Lite is a frontend for openjade, jadetex, pdfjadex, dvips, and other programs. It provides a single command for generating all the formats possible with these tools. The lastest release can be downloaded at:

http://sourceforge.net/projects/sgmltools-lite/

This package is optional, but does make things easier sometimes.

2.6. HTMLdoc

HTMLdoc is a free program for converting websites into Portable Document Format (pdf) or PostScript (ps). For pdf, it creates a tree of bookmarks that make navigation easy. Both htmldoc and pdfjadetex output pdf files, but in slightly different formats. Try both and see which turns out best for a particular docbook file. See quick links below for download site.

You can download the lastest version of HTMLdoc from Easy Software Products’ ftp site.

2.4. DocBook DSSSL
2.7. DocBook2X

DocBook2X requires perl5 and the SGMLS.pm perl module, available at the Comprehensive Perl Archive Network (CPAN). SGMLS.pm provides libraries and a program called sgmlsp1 which translates DocBook files into other formats by using specification files. The specification files are perl files that provide the logic for the translation to a particular format.

http://www.cpan.org/

http://docbook2x.sourceforge.net/
3. Install the Packages

3.1. Before You Install

The following sections suggest how you might install the downloaded packages to setup your DocBook SGML environment. The examples may make reference to old versions of the packages but you should adapt the examples and use the most recent versions instead.

For the most up-to-date, authoritative information, always read the documentation that comes with a package you are installing. Often, you will find a README and a INSTALL file after you unpack an archive.

The detailed instructions below may not work exactly as shown since packages are changing all the time. However, the instructions should still give you a general idea of the procedure to get DocBook SGML working.

3.2. Install OpenJade

3.2.1. openjade

Here is what to do, but remember to read the files that come with OpenJade to see if there are any things you want to do special for your platform:

```
cd /usr/local
tar -xvzf ~/openjade-1.3.tar.gz
cd openjade-1.3
./configure --prefix=/usr/local/openjade-1.3
make
make install

# Once installed, the objects etc. can be deleted.
make clean
```

The installation puts libraries in /usr/local/openjade-1.3/lib, so you might like to add it to /etc/ld.so.conf and run ldconfig. Add /usr/local/openjade-1.3/bin to your $PATH.

You might be wondering why I dump the openjade source directly into /usr/local. The author experienced some issues with openjade's installation. However, with newer releases of OpenJade, you might try a standard (/usr/local/src) location for the openjade source package with some other prefix install location, and see how it goes.

3.2.2. jadetex & pdfjadetex

As mentioned, jadetex and pdfjadetex are TeX macros that are packaged with OpenJade. They can be found in /usr/local/openjade-3.1/dsssl. A handy guide to installing these macros was prepared by Frank Atanassow Christoph and can be found at:

The following is based on the instructions in install.pdf:

### 3.2.2.1. Create hugelatex (if needed)

The `jadetex` and `pdfjadetex` tex macros require more memory than a regular run of `tex`. The default `tex` memory limit configuration is often too limited. The `tex` configuration file, `texmf.cnf`, can be edited and variables which limit `tex`'s memory use can be increased. But rather than just editing the `texmf.cnf` file to allow `tex` in all instances to have more memory, a custom `tex` context can be created, called `hugelatex`. If `hugelatex` is already configured on your system, you can skip this subsection (which `hugelatex`).

Verify that a working TeX is installed and find its directory:

```bash
bash$ which tex
/usr/share/texmf/bin/tex
bash$ kpsewhich −expand−var='$TEXMFMAIN'
/usr/share/texmf
bash$
```

Using `which` should find the location of the `tex` program. If it’s not found, then you might need to install `teTeX` then return here. `kpsewhich` is a utility that comes with `teTeX` and finds the main `tex` directory if all goes well. Now that the `texmf` directory is known, installation can begin:

```bash
cd /usr/share/texmf
cd tex/latex
cp −r config config-temp
cd config-temp
tex −ini −programe=hugelatex latex.ini
mv latex.fmt hugelatex.fmt
mv hugelatex.fmt /usr/share/texmf/web2c
cd ..
rm −r config-temp
cd /usr/share/texmf/bin
ln −s tex hugelatex
cd /usr/share/texmf/web2c
```

The `web2c` directory contains the `texmf.cnf` configuration file. Make a backup of this file: `cp texmf.cnf texmf.cnf.orig`. Edit the file using whatever editor you like, and add the following lines at the end:

```plaintext
% hugelatex settings
extra_mem_top.hugelatex = 8000000
extra_mem_bot.hugelatex = 8000000
hash_extra.hugelatex = 15000
pool_size.hugelatex = 5000000
string_vacancies.hugelatex = 45000
max_strings.hugelatex = 55000
pool_free.hugelatex = 47500
nest_size.hugelatex = 500
param_size.hugelatex = 1500
save_size.hugelatex = 5000
```

---

**3.2.2. jadetex & pdfjadetex**
Here, we've gone ahead and added entries for *jadetex* and *pdfjadetex*, which we'll be setting up below. You can play with these memory settings any way you like if you experience trouble with them.

After setting up *hugelatex*, like above, it may not work until the *texhash* program is called:

```bash
root# texhash
texhash: Updating /usr/share/texmf/ls-R...
texhash: Updating /var/cache/fonts/ls-R...
texhash: Done.
root#
```

### 3.2.2. jadetex & pdfjadetex

Setting up *jadetex* and *pdfjadetex* is similar to *hugelatex*.

```bash
cd /usr/local/openjade-1.3/dsssl
make -f Makefile.jadetex install
# make creates and installs the .fmt
# files to /usr/share/texmf/web2c

# Now create symlinks ...
cd /usr/share/texmf/bin
ln -s tex jadetex
ln -s pdftex pdfjadetex

# Finally, run texhash.
root# texhash
```
This Makefile uses hugelatex, so hugelatex must have been setup already. When tex is run as hugelatex, jadetex, or pdfjadetex, it gets its program name (context) from argv[0] in the environment. Then, it scans texmf.cnf, and uses any context-specific settings it finds. The format (.fmt) files in /usr/share/texmf/web2c are also loaded based on the context.

The jadetex command takes a .tex file generated from openjade, and outputs a .dvi file. pdfjadetex takes a .tex file generated from openjade, and outputs a .pdf. The dvips program takes the .dvi file and outputs a PostScript .ps file that you can send to your printer or view with ghostscript gs.

3.3. DocBook SGML DTD

3.3.1. Unpack the DocBook SGML DTD

The DocBook DTD is just some .sgml text files, so there is nothing to compile. Just unzip them somewhere:

```
# DocBook DTD V4.1 in
# /usr/local/share/sgml/docbook/4.1

cd /usr/local/share
mkdir sgml; cd sgml
mkdir docbook; cd docbook
mkdir 4.1; cd 4.1
unzip -a ~/docbk41.zip
```

If you install doctools-1.2 from the XFree86 distribution, it will put some older versions of DocBook DTD, like 2.4.1/ and 3.0/ in subdirectories of docbook.

There are some differences between the different versions of the DocBook DTD. The xxissues.txt files document those issues. Tags have been added, removed, and renamed between the versions.

If you need to use DocBook DTD V3.1, it is available from the same place where V4.1 is downloaded. V3.1 is used a lot, so its a good idea to get it and install it in a 3.1/ subdirectory.

3.3.2. Unpack the ISO8879 Entities

For each DocBook DTD version unpacked, go into its directory and unpack the iso8879-entities.tar.gz file:

```
cd /usr/local/share/sgml/docbook/4.1
tar -xvzf ~/iso8879-entities.tar.gz
```

In each DocBook directory, there should be a docbook.cat file or a catalog file, or both. If both are present, they are likely to be identical. If only docbook.cat is present, go ahead and make a symlink:

```
# If needed ...
cd /usr/local/share/sgml/docbook/4.1
ln -s docbook.cat catalog
```
3.4. DocBook DSSSL

Installation of the DocBook DSSSL, which works for all versions of DocBook, is just a matter of unzipping it somewhere.

```
cd /usr/local/share/sgml
mkdir dsssl; cd dsssl
unzip -a ~/db160.zip

# If you downloaded the ldp.dsl stylesheet
# customization, copy it to ...
    cd docbook
    cp ~/ldp.dsl html
    cp ~/ldp.dsl print
# Copy into both directories.
```

That's all there is to installing the DSSSL, except for the setup of the $SGML_CATALOG_PATH discussed later. Don't forget to straighten out the file modes and owner/group of these unpacked files – often they are scrambled and inappropriate.

3.5. SGMLtools−Lite

If you like it, you can install the SGMLtools−Lite, but it is optional. Its installation is the standard:

```
cd /usr/src
    tar −xvzf ~/sgmltools-lite-3.0.2.tar.gz
    cd sgmltools-lite-3.0.2
    ./configure
    make install
```

This installs the sgmltools python script to /usr/local/bin. Note that it uses python, so if you don't have it, then this package is useless.

One tweak that has to be done to make the sgmltools script work, is you have to edit it and set the path to openjade: vi `which sgmltools`. Consult its docs to learn more about it.

3.6. htmldoc

3.6.1. binary

Preferrably you downloaded a binary distribution of htmldoc for your platform. The installation is straightforward: just unpack it and run the setup. Read the docs in the package for more info.

3.6.2. source

If you downloaded the source, you will also need the Fast Light Tool Kit or else it will not link:

http://www.fltk.org/
Installation is autoconf style. Just run the configure script, make, make install. If all goes well, it will install in /usr/bin.

### 3.6.3. ldp_print

The htmldoc program has (or had) a few glitches when generating output from html files from openjade. For instance, bullet items are not rendered properly and shaded areas are not always shaded.

To fix this problem, a perl script (ldp_print) is available from LinuxDoc.org. The ldp_print script processes a nochunks html file from openjade and then runs htmldoc on it to produce correctly rendered pdf and ps.

Get it!

```bash
    tar -xvzf ldp_print.tar.gz
    cd ldp_print
    # Copy the lib somewhere where perl looks.
    cp fix_print_html.lib /usr/lib/perl5/site_perl
    cp ldp_print /usr/local/bin
```

Take a look at the script in case there are lines in it you need to change for your system. Perhaps someday htmldoc's bugs will be fixed and this script will not be needed anymore.

### 3.7. DocBook2X and SGMLS.pm (sgmlspl)

#### 3.7.1. sgmlspl

Before the spec files from DocBook2X are of any use, the SGMLS.pm module for perl version 5 has to be installed, assuming that perl version 5 is installed. The installation of this module is not as automated as most perl module installs. It uses a Makefile that has to be edited first before running make.

```bash
    cd /usr/src
    tar -xvzf ~/SGMLSpm-1.03ii.tar.gz
    cd SGMLSpm
    # Edit Makefile
    vi Makefile
    # In the user options of the Makefile
    # set everything correct for
    # your system.
    # Example:
    #   PERL = /usr/bin/perl
    #   BINDIR = /usr/local/bin
    #   PERL5DIR = /usr/lib/perl5/site_perl
    #   MODULEDIR = $(PERL5DIR)/SGMLS
    #   SPECDIR = $(PERL5DIR)
    #   HTMLDIR= /usr/local/apache/htdocs
```
make install

sgmlspl gets copied to /usr/local/bin.

3.7.2. docbook2X (docbook2man−spec.pl)

DocBook2X contains no program to compile or install, though it has some scripts you might want to look at, so all there is to do is unpack it somewhere.

```bash
cd /usr/local/share/sgml
tar -xvzf ~/docbook2X-0.6.0.tar.gz
cd docbook2X
```

In the unpacked directory is the docbook2man−spec.pl and a patch file for it that corrects a few things. Applying the patch is optional but recommended.

```bash
patch docbook2man-spec.pl docbook2man-spec.pl.patch
```

Later, in Using DocBook, you will see how to use sgmlspl and docbook2man−spec.pl to generate a man page from a <refentry> DocBook document.

3.8. $SGML_CATALOG_FILES

The $SGML_CATALOG_FILES environment variable is used by openjade (and other SGML software) to locate DTDs and DSL (stylesheets). SGML software cannot function without finding these files, which have been unpacked to various directories. Given the setup as done so far, here is how $SGML_CATALOG_FILES can be set in /etc/profile:

```bash
# SGML DocBook - openjade sgmltools-lite
JADE_HOME=/usr/local/openjade-1.3
SGML_SHARE=/usr/local/share/sgml
PATH=$PATH:$JADE_HOME/bin

# DSSSL stylesheets
# Norman Walsh's Modular DocBook Stylesheets
SGML_CATALOG_FILES=$SGML_SHARE/dsssl/docbook/catalog
# OpenJade stylesheets
SGML_CATALOG_FILES=$SGML_CATALOG_FILES:$JADE_HOME/dsssl/catalog
# sgmltools-lite's stylesheets
SGML_CATALOG_FILES=$SGML_CATALOG_FILES:$SGML_SHARE/stylesheets/sgmltools/sgmltools.cat
# DocBook DTD
# From OASIS-Open.org
SGML_CATALOG_FILES=$SGML_CATALOG_FILES:$SGML_SHARE/docbook/3.1/catalog
SGML_CATALOG_FILES=$SGML_CATALOG_FILES:$SGML_SHARE/docbook/4.1/catalog
# These old ones were installed with doctools-1.2 from XFree86.org
SGML_CATALOG_FILES=$SGML_CATALOG_FILES:$SGML_SHARE/docbook/2.4.1/catalog
SGML_CATALOG_FILES=$SGML_CATALOG_FILES:$SGML_SHARE/docbook/3.0/catalog

# sgmltools-lite catalogs for LinuxDoc
SGML_CATALOG_FILES=$SGML_CATALOG_FILES:$SGML_SHARE/dtd/sgmltools/catalog
```
Save your profile, **logout** and then log back in to take effect.

Installation is complete! In the next section, we'll test the installation and **convert** some test DocBook files.
4. Using DocBook

Now that everything is installed, it's time to test it out and see how to use openjade and the other tools.

Figure 1. Example DocBook SGML file – test.sgml

```xml
<!DOCTYPE article PUBLIC "−//OASIS//DTD DocBook V4.1//EN">
<article lang="en">
<articleinfo>
   <title>This is a Test</title>
   <author>
      <firstname>John</firstname>
      <surname>Doe</surname>
      <othername role="mi">L</othername>
      <affiliation>
         <address>
            <email>j.doe@jdoe dot com</email>
         </address>
      </affiliation>
   </author>
   <revhistory>
      <revision>
         <revnumber>v1.0</revnumber>
         <date>2000−12−30</date>
         <authorinitials>jld</authorinitials>
      </revision>
   </revhistory>
   <abstract>
      <para>This is a test DocBook document.</para>
   </abstract>
</articleinfo>

<sect1 id="test1">
   <title>Test 1</title>
   <para>Test section 1.</para>
   <sect2>
      <title>Test 1.1</title>
      <para>Test section 1.1</para>
   </sect2>
   <sect2>
      <title>Test 1.2</title>
      <para>
         openjade −t sgml −d $DSLFILE test.sgml
      </para>
   </sect2>
</sect1>
</article>
```
For a guide to DocBook and a reference of DocBook elements, see:


4.1. Generating HTML

4.1.1. docbook.dsl

Figure 2. Generating HTML output using docbook.dsl

bash$ ls -l
total 4
-rw-r--r--  1 reaster  users        1077 Dec 31 16:25 test.sgml
bash$ echo $SGML_SHARE
/usr/local/share/sgml
bash$ openjade -t sgml -d $SGML_SHARE/dsssl/docbook/html/docbook.dsl test.sgml
[snip - DTDDECL catalog entries are not supported, repeats]
bash$ ls -l
total 12
-rw-r--r--  1 reaster  users        1885 Dec 31 17:34 t1.htm
-rw-r--r--  1 reaster  users        1077 Dec 31 16:25 test.sgml
-rw-r--r--  1 reaster  users        1544 Dec 31 17:34 x27.htm
bash$

The warnings about DTDDECL can be ignored. They might be a little annoying, but these warnings are normal when using openjade. Other warnings and errors should be looked at and often indicate syntax errors that you should fix.
Two htm files are generated, one for each <sect1>. The filenames are not very descriptive. Section one appears on the same page as the article information. These are the results of using the default stylesheet that comes with the *Modular DocBook Stylesheets*, docbook.dsl.

Stylesheets can be customized to improve on these defaults. If you downloaded the [Linux Documentation Project's ldp.dsl file](https://www.linuxdoc.org) and installed it as shown in Section 3.3, then you already have a customized style available.

## 4.1.2. ldp.dsl

### Figure 3. Generating HTML output using ldp.dsl

```bash
bash$ openjade -t sgm1 -d $SGML_SHARE/dsssl/docbook/html/ldp.dsl#html test.sgml
bash$ ls -l
total 16
-rw-r--r-- 1 reaster users 2006 Dec 31 18:00 index.html
-rw-r--r-- 1 reaster users 1077 Dec 31 16:25 test.sgml
-rw-r--r-- 1 reaster users 1677 Dec 31 18:00 test1.html
-rw-r--r-- 1 reaster users 1598 Dec 31 18:00 test2.html
bash$
```

Using ldp.dsl, the output looks better:

- An index file has been created that contains the article information.
- A table of contents has been automatically generated.
- Each <sect1> is in its own file.
- Filenames are derived from ID attributes of the <sect1> elements.
- The file extension has changed to html.
- The <screen> elements are shaded.

Note how the ldp.dsl file is written in the command line: it has "#html" appended. ldp.dsl contains two <STYLE-SPECIFICATION> elements, one with ID="html" and another with ID="print". This selects the html style from within ldp.dsl. The DocBook DSSSL contains support for converting DocBook files into html and print formats. In Section 3.3, we copied ldp.dsl into both the print and html directories. When generating html output, the html style should be selected like above. When generating other types of files, such as rtf and tex, they fall under the print style and so the print style should be selected from ldp.dsl. The alternative is to comment out or delete the print or html style in the copy of ldp.dsl in the respective directory. If a dsl file has more than one style-spec in it and none is selected like in the example above, then the first style encountered in the file is selected. For ldp.dsl, the print style-spec is first in the file, so it gets selected by default. So in the example above, without appending "#html" when specifying ldp.dsl as the dsssl stylesheet, the "print" style-spec would be selected and used when generating the html output. It will work, but is intended for when selecting the print/ldp.dsl and the formatting will be different.

To learn more about how the stylesheet customization files are made, read the [documentation for the Modular DocBook Stylesheets](https://www.linuxdoc.org). Customization mainly involves setting boolean option parameters to toggle style features on and off. Completely new style logic can be programmed using the DSSSL language.
The **openjade** option "−t output_type" specifies the output type. The "−d dsssl_spec" option is the path to the dsssl stylesheet to use. In the example above, the output type specified is sgml, which is for SGML to SGML transformations. HTML, defined by the **HTML Document Type Definition (DTD)**, is an SGML document type just as DocBook is, so "sgml" is the correct output_type option. The other two output types commonly used are "rtf" and "tex". The tex output_type will be used later as an intermediate format for the generation of pdf and ps formats. The dsssl_spec must specify a dsl file, not a directory.

### 4.2. Generating rtf and tex

```
bash$ ls −l
−rw−r−−r−−   1 reaster  users        1143 Dec 31 18:18 test.sgml
bash$ openjade −t rtf −d $SGML_SHARE/dsssl/docbook/print/ldp.dsl#print test.sgml
bash$ openjade −t tex −d $SGML_SHARE/dsssl/docbook/print/ldp.dsl#print test.sgml
bash$ ls −l
−rw−r−−r−−   1 reaster  users        4584 Dec 31 20:51 test.rtf
−rw−r−−r−−   1 reaster  users        1143 Dec 31 18:18 test.sgml
−rw−r−−r−−   1 reaster  users       18719 Dec 31 20:51 test.tex
```

### 4.3. Generating dvi and ps

Figure 4. Running jadetex to generate a Device Independent (dvi) file.

```
bash$ jadetex test.tex
This is TeX, Version 3.14159 (Web2C 7.3.1)
(test.tex
JadeTeX 1999/06/29: 2.7
(/usr/share/texmf/tex/latex/psnfss/t1ptm.fd)
(/usr/share/texmf/tex/jadetex/isoents.tex)
Elements will be labelled
Jade begin document sequence at 19
No file test.aux.
(/usr/share/texmf/tex/latex/cyrillic/ot2cmr.fd)
(/usr/share/texmf/tex/latex/base/ts1cmr.fd)
(/usr/share/texmf/tex/latex/lucidabr/lmrhlcm.fd)
(/usr/share/texmf/tex/latex/hyperref/nameref.sty)
(/usr/share/texmf/tex/latex/psnfss/t1phv.fd)

LaTeX Warning: Reference `TEST1' on page 1 undefined on input line 238.

LaTeX Warning: Reference `20' on page 1 undefined on input line 262.

LaTeX Warning: Reference `23' on page 1 undefined on input line 285.

LaTeX Warning: Reference `TEST2' on page 1 undefined on input line 316.
```

4.2. Generating rtf and tex 17
The first time `jadetex` is run, warnings are printed. They can be ignored. Running it a second time, they do not appear again.

**Figure 5. Running dvips to generate a PostScript (ps) file.**
Figure 6. Running htmldoc to generate a PostScript (ps) file.

If the ps file doesn't appear as expected, it may be due to bugs in htmldoc. Look inside the ldp_print script if you want to use it to make ps.

4.4. Generating pdf

Figure 7. Running pdfjadetex to generate a Portable Document Format (pdf) file.
Figure 8. Running htmldoc to generate a Portable Document Format (pdf) file.

If enabled in the ldpprint script, this would generate a ps file also.

4.5. Using make

Repeating the commands to generate the output files is tedious. The make command works perfectly to automate the process.

Figure 9. Filename: Makefile – automates document generation.
# Generates online and print versions of SGML source file.

BASENAME=DocBook−Install

# SGML source file.
SGML_FILE=$(BASENAME).sgml

# Stylesheets
DSL_PRINT=$(SGML_SHARE)/dsssl/docbook/print/ldp.dsl
DSL_HTML=$(SGML_SHARE)/dsssl/docbook/html/ldp.dsl

# Generated files.
HTML_FILE=index.html
HTM_FILE=$(BASENAME).htm
TEX_FILE=$(BASENAME).tex
RTF_FILE=$(BASENAME).rtf
PDF_FILE=$(BASENAME).pdf
DVI_FILE=$(BASENAME).dvi
PS_FILE=$(BASENAME).ps

# Build rules.
html: $(HTML_FILE)
htm: $(HTM_FILE)
tex: $(TEX_FILE)
rtf: $(RTF_FILE)
pdf: $(PDF_FILE)
dvi: $(DVI_FILE)
ps: $(PS_FILE)
all: html htm tex rtf pdf dvi ps
clean:
    rm -f $(BASENAME).{htm,log,aux,ps,pdf,tex,dvi,rtf,fot}
    rm -f *.html
distclean: clean
clean
dist: clean package
package:
rmm $(BASENAME).tgz
tar C . . . -czf /tmp/$(BASENAME).tgz $(BASENAME)
mv /tmp/$(BASENAME).tgz .
distall: all package

# Compile rules.
$(HTML_FILE): $(SGML_FILE)
    openjade −t sgml −d $(DSL_HTML) $(SGML_FILE)
$(HTM_FILE): $(SGML_FILE)
Usage is just like for most projects:

**Figure 10. Invoking make to run Makefile**

```
    -- generate html (default)
    make
    -- generate just pdf
    make pdf
    -- generate all files
    make all
    -- delete all generated files
    make clean
    -- create tgz distribution
    make dist
    -- with no generated files
    make dist
    -- containing all generated files
    make distall
```

Notice the commented compile rules for `pdf` and `ps` which provide alternative means of generating those files.

4.5. Using make
4.6. Generating a man page

During the section on installing everything, we installed the perl version 5 module SGMLS.pm. Then we installed Docbook2X which provides the spec.pl files for transforming DocBook <refentry> documents into nroff (man page) format with sgmlsp.

An example Docbook <refentry> document, for the foo command, is given below.

```
<!DOCTYPE refentry PUBLIC "-//OASIS//DTD DocBook V4.1//EN">
<refentry>
  <refentryinfo>
    <date>2001-01-01</date>
  </refentryinfo>
  <refmeta>
    <refentrytitle>
      <application>foo</application>
    </refentrytitle>
    <manvolnum>1</manvolnum>
    <refmiscinfo>foo 1.0</refmiscinfo>
  </refmeta>
  <refnamediv>
    <refname>
      <application>foo</application>
    </refname>
    <refpurpose>
      Does nothing useful.
    </refpurpose>
  </refnamediv>
  <refsynopsisdiv>
    <refsynopsisdivinfo>
      <date>2001-01-01</date>
    </refsynopsisdivinfo>
    <cmdsynopsis>
      foo
      <arg><option>-f</option><replaceable class="parameter">bar</replaceable></arg>
      <arg><option>-d<replaceable class="parameter">n</replaceable></option></arg>
      <arg rep="repeat"><replaceable class="parameter">file</replaceable></arg>
    </cmdsynopsis>
  </refsynopsisdiv>
  <refsect1>
    <refsect1info>
      <date>2001-01-01</date>
    </refsect1info>
    <title>DESCRIPTION</title>
    <para>
      foo does nothing useful.
    </para>
  </refsect1>
  <refsect1>
    <title>OPTIONS</title>
    <variablelist>
      <varlistentry>
        <term>-f <replaceable class="parameter">bar</replaceable></term>
      </varlistentry>
    </variablelist>
  </refsect1>
</refentry>
```

Figure 11. foo command man page, docbook <refentry> source (foo-ref.sgml)
<listitem>
  <para>
  Takes <filename>bar</filename> as its run control file. If this were a real program, there might be more to say here about what bar is and how it will be used.
  </para>
</listitem>
</varlistentry>

<varlistentry>
  <term>−d<replaceable class="parameter">n</replaceable></term>
  <listitem>
    <para>
    Do something, where integer <replaceable class="parameter">n</replaceable> specifies how many times.
    </para>
  </listitem>
</varlistentry>

<varlistentry>
  <term><replaceable class="parameter">file...</replaceable></term>
  <listitem>
    <para>
    Processes the files in the order listed, sending all output to stdout.
    </para>
  </listitem>
</varlistentry>
</variablelist>
</refsect1>

<refsect1>
  <title>USAGE</title>
  <para>
  <command>foo</command> −f foo.conf −d2 foodata.foo
  </para>
</refsect1>

<refsect1>
  <title>CAVEATS</title>
  <para>
  Other programs named <command>foo</command> may exist and actually do something!
  </para>
</refsect1>

<refsect1>
  <title>BUGS</title>
  <para>
  None. Program does nothing.
  </para>
</refsect1>

<refsect1>
  <title>AUTHOR</title>
  <para>
  <author>
  <firstname>Foo</firstname>
  <othername role="mi">E</othername>
  <surname>Bar</surname>
  <contrib>Original author</contrib>
  </author>
  </para>
</refsect1>

4.6. Generating a man page
Figure 12. Generating a man page with onsgmls, sgmlspl, and docbook2man−spec.pl

bash$ ls −l
−rw−r−−r−−   1 reaster  users        2434 Jan  3 03:51 foo−ref.sgml
bash$ onsgmls foo−ref.sgml | sgmlspl $SGML_SHARE/docbook2X/docbook2man−spec.pl
bash$ ls −l
−rw−r−−r−−   1 reaster  users        2434 Jan  3 03:51 foo−ref.sgml
−rw−r−−r−−   1 reaster  users        1129 Jan  3 04:03 foo.1
−rw−r−−r−−   1 reaster  users           0 Jan  3 04:03 manpage.links
−rw−r−−r−−   1 reaster  users           0 Jan  3 04:03 manpage.log
−rw−r−−r−−   1 reaster  users          15 Jan  3 04:03 manpage.refs
bash$ groff −mandoc −Tascii foo.1

FOO(1)

NAME
   foo − Does nothing useful.

SYNOPSIS
   foo [ −f bar ] [ −dn ] [ file... ]

DESCRIPTION
   foo does nothing useful.

OPTIONS
   −f bar Takes bar as its run control file. If this were a
      real program, there might be more to say here about
      what bar is and how it will be used.
   −dn Do something, where integer n specifies how many
      times.
   file...
      Processes the files in the order listed, sending
      all output to stdout.

USAGE
   foo −f foo.conf −d2 foodata.foo

CAVEATS
   Other programs named foo may exist and actually do some−
   thing!

BUGS
   None. Program does nothing.

AUTHOR
   Foo E Bar (Original author)

[snip − several extra blank lines that man would not show]

bash$ groff −mandoc −Tascii foo.1 | less
bash$ less foo.1

The man page, foo.1, is generated as a Section 1 page. The groff command is used to give a quick look at its formatted appearance.
To **install** this **man** page, it belongs in any **man/man1** directory, where the directory **man/** is added to **$MANPATH** in the environment. The standard location is **/usr/local/man/man1**. The standard sections in the **man** pages system are 1 through 9. Each is for holding specific categories of documentation.

### Table 1. Manual Pages Sections

<table>
<thead>
<tr>
<th>Section</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>man1</td>
<td>User programs</td>
</tr>
<tr>
<td>man2</td>
<td>System calls</td>
</tr>
<tr>
<td>man3</td>
<td>Library functions and subroutines</td>
</tr>
<tr>
<td>man4</td>
<td>Devices</td>
</tr>
<tr>
<td>man5</td>
<td>File formats</td>
</tr>
<tr>
<td>man6</td>
<td>Games</td>
</tr>
<tr>
<td>man7</td>
<td>Miscellaneous</td>
</tr>
<tr>
<td>man8</td>
<td>System administration</td>
</tr>
<tr>
<td>man9</td>
<td>Kernel internal variables and functions</td>
</tr>
</tbody>
</table>

The source file for a **man** page, like **foo-ref.sgml**, can be processed into all the other formats just like any other **DocBook** file. So using the same commands discussed earlier to generate **html** and print output types, a **man** page can be made into **html**, **rtf**, **tex**, **pdf**, **dvi**, and **ps**. This can really save a lot of conversion work!

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