
pyhwp Documentation

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Contents:

HWP Document Format v5 parser & processor.

1.1 Features

- Analyze and extract internal streams out from a HWP Document Format v5 file
- (*Experimental*) Conversion to OpenDocument format (.odt) or plain text (.txt)

1.2 Installation

from `pypi`:

```
virtualenv pyhwp
pyhwp/bin/pip install --pre pyhwp # Install pyhwp into a virtualenv directory
```

Or:

```
pip install --user --pre pyhwp # Install pyhwp into user's home directory
```

1.3 Requirements

- CPython 2.7, Jython 2.7 or PyPy >= 2.0.2
- `lxml` (optional)
- `pycrypto` (optional)

1.4 Documentation & Development

- Documentation: <http://pythonhosted.org/pyhwp/> [한국/조선어] [develop branch]
- Distribution: <http://pypi.python.org/pypi/pyhwp>

- Development: <https://github.com/mete0r/pyhwp>
- Issue tracker: <https://github.com/mete0r/pyhwp/issues>
- Feedbacks & contributions are welcome!

1.5 Contributors

Maintainer: [mete0r](#)

1.6 License

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1.7 Disclosure

This program has been developed in accordance with a public document named “HWP Binary Specification 1.1” published by [Hancom Inc.](#)

CHAPTER 2

hwp5proc: HWPv5 processor

Do various operations on HWPv5 files.

Usage:

```
hwp5proc <command> [<args>...]  
hwp5proc [--version]  
hwp5proc [--help]  
hwp5proc [--help-commands]  
  
    --version          Show version and copyright information.  
-h --help             Show help messages.  
    --help-commands   Show available commands.
```

2.1 command: version

Print HWP file format version of <hwp5file>.

Usage:

```
hwp5proc version [options] <hwp5file>  
hwp5proc version --help
```

Options:

```
-h --help          Show this screen  
    --loglevel=<level> Set log level.  
    --logfile=<file>   Set log file.
```

2.2 command: header

Print HWP file header.

Usage:

```
hwp5proc header [options] <hwp5file>
hwp5proc header -h
```

Options:

```
-h --help          Show this screen
--loglevel=<level> Set log level.
--logfile=<file>   Set log file.
```

2.3 command: summaryinfo

Print summary information of <hwp5file>.

Usage:

```
hwp5proc summaryinfo [options] <hwp5file>
hwp5proc summaryinfo --help
```

Options:

```
-h --help          Show this screen
--loglevel=<level> Set log level.
--logfile=<file>   Set log file.
```

2.4 command: ls

List streams in the <hwp5file>.

Usage:

```
hwp5proc ls [--loglevel=<loglevel>] [--logfile=<logfile>]
             [--vstreams | --ole]
             <hwp5file>
hwp5proc ls --help
```

Options:

```
-h --help          Show this screen
--loglevel=<level> Set log level.
--logfile=<file>   Set log file.

--vstreams         Process with virtual streams (i.e. parsed/converted
                    form of real streams)
--ole              Treat <hwpfile> as an OLE Compound File. As a
                    result, some streams will be presented as-is. (i.e.
                    not decompressed)
```

Example: List without virtual streams:

```
$ hwp5proc ls sample/sample-5017.hwp

\x05HwpSummaryInformation
BinData/BIN0002.jpg
BinData/BIN0002.png
BinData/BIN0003.png
BodyText/Section0
DocInfo
```

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```
DocOptions/_LinkDoc
FileHeader
PrvImage
PrvText
Scripts/DefaultJScript
Scripts/JScriptVersion
```

Example: List virtual streams too:

```
$ hwp5proc ls --vstreams sample/sample-5017.hwp

\x05HwpSummaryInformation
\x05HwpSummaryInformation.txt
BinData/BIN0002.jpg
BinData/BIN0002.png
BinData/BIN0003.png
BodyText/Section0
BodyText/Section0.models
BodyText/Section0.records
BodyText/Section0.xml
BodyText.xml
DocInfo
DocInfo.models
DocInfo.records
DocInfo.xml
DocOptions/_LinkDoc
FileHeader
FileHeader.txt
PrvImage
PrvText
PrvText.utf8
Scripts/DefaultJScript
Scripts/JScriptVersion
```

2.5 command: cat

Extract out the specified stream in the <hwp5file> to the standard output.

Usage:

```
hwp5proc cat [--loglevel=<loglevel>] [--logfile=<logfile>]
             [--vstreams | --ole]
             <hwp5file> <stream>
hwp5proc cat --help
```

Options:

-h --help	Show this screen
--loglevel=<level>	Set log level.
--logfile=<file>	Set log file.
--vstreams	Process with virtual streams (i.e. parsed/converted form of real streams)
--ole	Treat <hwpfile> as an OLE Compound File. As a result, some streams will be presented as-is . (i.e. not decompressed)

Example:

```
$ hwp5proc cat samples/sample-5017.hwp BinData/BIN0002.jpg | file -
$ hwp5proc cat samples/sample-5017.hwp BinData/BIN0002.jpg > BIN0002.jpg
$ hwp5proc cat samples/sample-5017.hwp PrvText | iconv -f utf-16le -t utf-8
$ hwp5proc cat --vstreams samples/sample-5017.hwp PrvText.utf8
$ hwp5proc cat --vstreams samples/sample-5017.hwp FileHeader.txt

ccl: 0
cert_drm: 0
cert_encrypted: 0
cert_signature_extra: 0
cert_signed: 0
compressed: 1
distributable: 0
drm: 0
history: 0
password: 0
script: 0
signature: HWP Document File
version: 5.0.1.7
xmltemplate_storage: 0
```

2.6 command: unpack

Extract out streams in the specified <hwp5file> to a directory.

Usage:

```
hwp5proc unpack [--loglevel=<loglevel>] [--logfile=<logfile>]
                [--vstreams | --ole]
                <hwp5file> [<out-directory>]
hwp5proc unpack --help
```

Options:

-h --help	Show this screen
--loglevel=<level>	Set log level.
--logfile=<file>	Set log file.
--vstreams	Process with virtual streams (i.e. parsed/converted form of real streams)
--ole	Treat <hwpfile> as an OLE Compound File. As a result, some streams will be presented as-is . (i.e. not decompressed)

Example:

```
$ hwp5proc unpack samples/sample-5017.hwp
$ ls sample-5017
```

Example:

```
$ hwp5proc unpack --vstreams samples/sample-5017.hwp
$ cat sample-5017/PrvText.utf8
```

2.7 command: records

Print the record structure.

Usage:

```
hwp5proc records [--simple | --json | --raw | --raw-header | --raw-payload]
                  [--treegroup=<treegroup> | --range=<range>]
                  [--loglevel=<loglevel>] [--logfile=<logfile>]
                  <hwp5file> <record-stream>
hwp5proc records [--simple | --json | --raw | --raw-header | --raw-payload]
                  [--treegroup=<treegroup> | --range=<range>]
                  [--loglevel=<loglevel>] [--logfile=<logfile>]
hwp5proc records --help
```

Options:

-h --help	Show this screen
--loglevel=<level>	Set log level.
--logfile=<file>	Set log file.
--simple	Print records as simple tree
--json	Print records as json
--raw	Print records as is
--raw-header	Print record headers as is
--raw-payload	Print record payloads as is
--range=<range>	Print records specified in the <range>.
--treegroup=<treegroup>	Print records specified in the <treegroup>.
<hwp5file>	HWPv5 files (*.hwp)
<record-stream>	Record-structured internal streams. (e.g. DocInfo, BodyText/*)
<range>	Specifies the range of the records. N-M means "from the record N to M-1 (excluding M)" N means just the record N
<treegroup>	Specifies the N-th subtree of the record structure.

Example:

```
$ hwp5proc records samples/sample-5017.hwp DocInfo
```

Example:

```
$ hwp5proc records samples/sample-5017.hwp DocInfo --range=0-2
```

If neither <hwp5file> nor <record-stream> is specified, the record stream is read from the standard input with an assumption that the input is in the format version specified by -V option.

Example:

```
$ hwp5proc records --raw samples/sample-5017.hwp DocInfo --range=0-2 > tmp.rec
$ hwp5proc records < tmp.rec
```

2.8 command: models

Print parsed binary models in the specified <record-stream>.

Usage:

```
hwp5proc models [--simple | --json | --format=<format> | --events]
                [--treegroup=<treegroup> | --seqno=<seqno>]
                [--loglevel=<loglevel>] [--logfile=<logfile>]
                (<hwp5file> <record-stream> | -V <version>)
hwp5proc models --help
```

Options:

```
-h --help          Show this screen
--loglevel=<level> Set log level.
--logfile=<file>   Set log file.

--simple           Print records as simple tree
--json            Print records as json
--format=<format>  Print records as formatted

--treegroup=<treegroup>
                  Print records in the <treegroup>.
                  <treegroup> specifies the N-th subtree of the
                  record structure.
--seqno=<seqno>   Print a model of <seqno>-th record

-V <version>, --file-format-version=<version>
                  Specifies HWPv5 file format version

<hwp5file>       HWPv5 files (*.hwp)
<record-stream> Record-structured internal streams.
                  (e.g. DocInfo, BodyText/*)
```

Example:

```
$ hwp5proc models samples/sample-5017.hwp DocInfo
$ hwp5proc models samples/sample-5017.hwp BodyText/Section0

$ hwp5proc models samples/sample-5017.hwp docinfo
$ hwp5proc models samples/sample-5017.hwp bodytext/0
```

Example:

```
$ hwp5proc models --simple samples/sample-5017.hwp bodytext/0
$ hwp5proc models --format='% (level)s %(tagname)s\n' \
  samples/sample-5017.hwp bodytext/0
```

Example:

```
$ hwp5proc models --simple --treegroup=1 samples/sample-5017.hwp bodytext/0
$ hwp5proc models --simple --seqno=4 samples/sample-5017.hwp bodytext/0
```

If neither <hwp5file> nor <record-stream> is specified, the record stream is read from the standard input with an assumption that the input is in the format version specified by -V option.

Example:

```
$ hwp5proc cat samples/sample-5017.hwp BodyText/Section0 > Section0.bin
$ hwp5proc models -V 5.0.1.7 < Section0.bin
```

2.9 command: find

Find record models with specified predicates.

Usage:

```
hwp5proc find [--model=<model-name> | --tag=<hwptag>]
              [--incomplete] [--dump] [--format=<format>]
              [--loglevel=<loglevel>] [--logfile=<logfile>]
              (--from-stdin | <hwp5files>...)
hwp5proc find --help
```

Options:

```
-h --help          Show this screen
--loglevel=<level> Set log level.
--logfile=<file>   Set log file.

--from-stdin      get filenames fro stdin

--model=<model-name> filter with record model name
--tag=<hwptag>     filter with record HWPTAG
--incomplete      filter with incompletely parsed content

--format=<format>  record output format
                  %(filename)s %(stream)s %(seqno)s %(type)s
--dump            dump record

<hwp5files>...    HWPv5 files (*.hwp)
```

Example: Find paragraphs:

```
$ hwp5proc find --model=Paragraph samples/*.hwp
$ hwp5proc find --tag=HWPTAG_PARA_TEXT samples/*.hwp
$ hwp5proc find --tag=66 samples/*.hwp
```

Example: Find and dump records of HWPTAG_LIST_HEADER which is parsed incompletely:

```
$ hwp5proc find --tag=HWPTAG_LIST_HEADER --incomplete --dump samples/*.hwp
```

2.10 command: `xml` (*Experimental*)

Transform an HWPv5 file into an XML.

Note: This command is experimental. Its output format is subject to change at any time.

Usage:

```
hwp5proc xml [--embedbin]
             [--no-xml-decl]
             [--output=<file>]
             [--format=<format>]
             [--no-validate-wellformed]
             [--loglevel=<loglevel>] [--logfile=<logfile>]
             <hwp5file>
hwp5proc xml --help
```

Options:

```
-h --help          Show this screen
--loglevel=<level> Set log level.
--logfile=<file>   Set log file.

--embedbin        Embed BinData/* streams in the output XML.
```

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<code>--no-xml-decl</code>	Don't output <code><?xml ... ?></code> XML declaration.
<code>--output=<file></code>	Output filename.
<code><hwp5file></code>	HWPv5 files (*.hwp)
<code><format></code>	"flat", "nested" (default: "nested")

Example:

```
$ hwp5proc xml samples/sample-5017.hwp > sample-5017.xml
$ xmllint --format sample-5017.xml
```

With `--embedbin` option, you can embed base64-encoded `BinData/*` files in the output XML.

Example:

```
$ hwp5proc xml --embedbin samples/sample-5017.hwp > sample-5017.xml
$ xmllint --format sample-5017.xml
```

Converters (*Experimental*)

Convert HWPv5 documents into other document formats.

3.1 Requirements

The conversions are performed with [XSLT](#) internally and verified with [Relax NG](#) if possible.

For these processing, the converters requires [lxml](#) ([homepage](#)) or [libxml2](#)'s [xsltproc](#) / [xmllint](#) programs.

For [lxml](#) installation:

```
pip install --user lxml # install to user directory
pip install lxml        # install with virtualenv
```

or see [Installing lxml](#).

(Currently conversions with [lxml 2.3.5](#) is tested and verified to be working. [lxml](#) versions below that may work too, but those are not tested.)

For [xsltproc](#) / [xmllint](#) installation:

```
sudo apt-get install xsltproc libxml2-utils # Debian/Ubuntu
```

Optional environment variables `PYHWP_XSLTPROC` and `PYHWP_XMLLINT` specifies the paths of the each programs. (If not set, [xsltproc](#) and/or [xmllint](#) should be in the one of the directories specified in `PATH`.)

3.2 hwp5odt: ODT conversion

HWPv5 to ODT converter

Usage:

```
hwp5odt [options] [--embed-image] <hwp5file>
hwp5odt [options] --styles <hwp5file>
hwp5odt [options] --content [--embed-image] <hwp5file>
hwp5odt [options] --document [--no-embed-image] <hwp5file>
hwp5odt -h | --help
hwp5odt --version
```

Options:

```
-h --help          Show this screen
--version          Show version
--loglevel=<level> Set log level.
--logfile=<file>   Set log file.

--document          Produce single OpenDocument XML file (.fodt)
--styles            Produce *.styles.xml
--content           Produce *.content.xml

--output=<file>     Output file.
```

3.3 hwp5html: HTML conversion

HWPv5 to HTML converter

Usage:

```
hwp5html [options] <hwp5file>
hwp5html [options] <hwp5file> --html
hwp5html [options] <hwp5file> --css
hwp5html -h | --help
hwp5html --version
```

Options:

```
-h --help          Show this screen
--version          Show version
--loglevel=<level> Set log level.
--logfile=<file>   Set log file.

--output=<output>  Output file / directory
```

3.4 hwp5txt: text conversion

HWPv5 to text converter

Usage:

```
hwp5txt [options] <hwp5file>
hwp5txt -h | --help
hwp5txt --version
```

Options:

```
-h --help          Show this screen
--version          Show version
--loglevel=<level> Set log level.
--logfile=<file>   Set log file.

--output=<file>     Output file
```

Standard procedures to hacking on pyhwp.

Contents:

4.1 Setup development environment

4.1.1 1. Install prerequisites

- CPython 2.7
- *virtualenv*
- GNU *Make*

4.1.2 2. Clone the source repository

```
$ git clone https://github.com/mete0r/pyhwp.git
```

4.1.3 3. Initialize the environment

Bootstrap development environment:

```
$ make bootstrap  
$ . bin/activate
```

4.1.4 4. Check basic stuffs

Run *hwp5proc*:

```
$ hwp5proc --help
```

To run tests:

```
$ tox
```

4.2 Directory Layout

```
pyhwp          Project Root
|
+-- pyhwp/      Source packages root
|   |
|   +-- hwp5/    Source package
|   |
+-- pyhwp-tests/ Test packages root
|   |
|   +-- hwp5_tests/ Test package
|   |
+-- docs/        Documentations, i.e. this document!
|
+-- bin/         hwp5proc, hwp5odt, build/testing scripts, etc.,
|
+-- etc/         development configuration files
|
+-- misc/        development configuration templates / helper scripts
|
+-- tools/       development helper packages
|
.
. (various directories)
.
```

After the initial invocation of `buildout` completes successfully, your directory will have a few more new generated directories, e.g. `bin/`, `develop-eggs/`. These are the standard `buildout` directories, which we will not cover the every details of them here. For general information, see [Directory Structure of a Buildout](#).

Followings are `pyhwp` specific informations:

4.2.1 / - project root directory

The project root directory contains project configuration files.

buildout.cfg `buildout` configuration file.

setup.py, setup.cfg `pyhwp` setup files.

tox.ini `tox` configuration file. This file will be automatically generated from `tox.ini.in` by **bin/buildout**. See `[tox]` parts in `buildout.cfg`.

tox.ini.in `tox` configuration template file. If you want to modify `tox` configuration, edit this file and run **bin/buildout** again.

4.2.2 bin/ - Buildout generated scripts

This directory will be populated with scripts generated from the `pyhwp` package and the various development helper packages/scripts.

`pyhwp` generate following scripts:

hwp5proc HWP format version 5 files processor. See *[hwp5proc: HWPv5 processor](#)*.

hwp5odt, hwp5txt, hwp5html Experimental converters. See *[Converters \(Experimental\)](#)*.

Development helper scripts (incomplete):

buildout (Re)generate the development environment.

test-core Run a quick unit test.

4.2.3 pyhwp/ - the main source code

hwp5/ The main source package. For now, there is not much documentation about the source code.

4.2.4 pyhwp-tests/ - the main test suite

hwp5_tests/ The main test suite.

hwp5_xsl_tests/ XSLT test suite.

hwp5_cli_tests.sh Command-line interface tests.

4.2.5 tools/ - Development helper packages

discover.python/ discover.lxml/ discover.jre/ discover.lo/ install.jython/

Discover multiple python versions, lxml, JRE, Libreoffice to use in the developement environment.
Provides `zc.buildout` recipes.

xsltest/

an XSLT test runner.

oxt.tool/

Build and test `.oxt` packages with the LibreOffice.

4.3 Hack & Test

If you modify some modules in `hwp5` package in the `pyhwp/` directory, you can test the modification with the `hwp5proc` script in the `bin/` directory.

You can test the `hwp5` package by executing `bin/test-core`, but it's just a quick test and not a complete test suite. If you want to run a full-blown test suite, run `tox`, which tries to test `pyhwp` in various `virtualenv`-isolated python platforms, including Python 2.5, 2.6, 2.7, Jython 2.5 and PyPy.

```
$ bin/buildout

(...)

$ vim pyhwp/hwp5/proc/__init__.py

(HACK HACK HACK)

$ bin/test-core

$ bin/hwp5proc ...

$ bin/tox
```


5.1 0.1b10 (2019-03-21)

- Drop support for Python 2.5, 2.6.
- Prefer ‘olefile’ to ‘OleFileIO_PL’.
- Fix ‘Dutmal’ control attribute names.
- hwp5html: represent path names in bytes
- Declare some dependencies with environment markers: olefile, lxml, pycrypto
- Update dependency on hypua2jamo >= 0.4.4

5.2 0.1b9 (2016-02-26)

- hwp5html: serveral improvements - lang-* classes of span elements and associated css font-family - horizontal page layouts - Single page layout - enhance horizontal positioning of TableControl, GShapeObject
- distdoc: fix sha1offset (by Hodong Kim)

5.3 0.1b8 (2014-11-03)

- hwp5view: experimental viewer with webkitgtk+
- hwp5proc: xml –formats (“flat”, “nested”)
- hwp5proc: models –events (experimental)
- hwp5proc: models –seqno –format (incompatible changes)
- hwp5proc: find –from-stdin
- hwp5proc: find –format
- binmodels: GShapeObjectCaption
- olestorage: Gsf implementation through python-gi

- olestorage: use new olefile instead of OleFileIO_PL

5.4 0.1b7 (2014-01-31)

- support distribution docs. (based on [Changwoo Ryu's algorithm](#))

5.5 0.1b6 (2014-01-20)

- binmodel: change type of TableCell dimensions to signed integer
- hwp5odt: fix NCName for style:name (close #140)
- hwp5proc: fix with-statement in 'xml' command for Python 2.5
- hwp5proc: mark 'xml' command experimental

5.6 0.1b5 (2013-10-29)

- close #134
- hwp5html generates .xhtml instead of .html
- hwp5proc: new '--no-xml-decl' option
- hwp5odt: fix to not use '/' in resulting style names
- hwp5proc: IdMappings.memoshape only if version > 5.0.1.6

5.7 0.1b4 (2013-07-03)

- hwp5proc records: new option '--raw-header'
- hwp5odt: new '--document' option produces single ODT XML files (* .fodt)
- hwp5odt: new '--styles', '--content' option produces styles/content XML files
- ODT XSL files restructured

5.8 0.1b3 (2013-06-18)

- Fix IdMappings (#125)
- hwp5proc records: new option '--raw-payload'
- hwp5proc xml: FlagsType as xsd:hexBinary
- Various binary/xml models changes

5.9 0.1b2 (2013-06-08)

- Add PyPy support

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Indices and tables

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