

ucsd-psystem-fs
UCSD p-System Filesystem

Reference Manual

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This document describes ucsd-psystem-fs version 1.1
and was prepared 11 May 2006.

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	The README file	1
	Release Notes	2
	How to build ucsd-psystem-fs	3
ucsdpsys_charset(1)	UCSD p-System font builder	6
ucsdpsys_disk(1)	manipulate files on a UCSD p-System filesystem image	7
ucsdpsys_fsck(1)	verify and repair UCSD p-System filesystem images	8
ucsdpsys_fs_license(1)	GNU General Public License	9
ucsdpsys_interleave(1)	decode interleaved UCSD p-System filesystem image	14
ucsdpsys_mkfs(1)	create new UCSD p-System filesystem disk images	15
ucsdpsys_mount(1)	mount UCSD p-System filesystems	16
ucsdpsys_text(1)	translate UCSD p-System text files	18
ucsdpsys_umount(1)	unmount UCSD p-System filesystems	20

Table of Contents(ucsd-psystem-fs)

ucsdpsys_charset(1)	6	ucsdpsys charset - UCSD p-System font
ucsdpsys_charset(1)	6	ucsdpsys
ucsdpsys_mkfs(1)	15	ucsdpsys mkfs -
ucsdpsys_interleave(1)	14	ucsdpsys interleave -
ucsdpsys_mkfs(1)	15	ucsdpsys mkfs - create new UCSD p-System
ucsdpsys_disk(1)	7	ucsdpsys
ucsdpsys_text(1)	18	ucsdpsys text - translate UCSD p-System
ucsdpsys_disk(1)	7	ucsdpsys disk - manipulate
ucsdpsys_mkfs(1)	15	ucsdpsys mkfs - create new UCSD p-System
ucsdpsys_disk(1)	7	ucsdpsys disk - manipulate files on a UCSD
ucsdpsys_interleave(1)	14	ucsdpsys interleave - decode interleaved
ucsdpsys_fsck(1)	8	ucsdpsys fsck - verify and repair UCSD p-
ucsdpsys_mount(1)	16	ucsdpsys mount - mount UCSD p-System
ucsdpsys_umount(1)	20	ucsdpsys umount - unmount UCSD p-
ucsdpsys_charset(1)	6	ucsdpsys charset - UCSD p-System
ucsdpsys_fsck(1)	8	ucsdpsys
ucsdpsys_disk(1)	7	ucsdpsys disk - manipulate files on a UCSD
ucsdpsys_interleave(1)	14	ucsdpsys interleave - decode interleaved
ucsdpsys_fsck(1)	8	ucsdpsys fsck - verify and repair UCSD p-
ucsdpsys_mkfs(1)	15	ucsdpsys mkfs - create new UCSD p-System
ucsdpsys_interleave(1)	14	ucsdpsys
ucsdpsys_interleave(1)	14	ucsdpsys interleave - decode
ucsdpsys_disk(1)	7	ucsdpsys disk -
ucsdpsys_mkfs(1)	15	ucsdpsys
ucsdpsys_mount(1)	16	ucsdpsys
ucsdpsys_mount(1)	16	ucsdpsys mount -
ucsdpsys_mkfs(1)	15	ucsdpsys mkfs - create
ucsdpsys_disk(1)	7	ucsdpsys disk - manipulate files
ucsdpsys_mkfs(1)	15	ucsdpsys mkfs - create new UCSD
ucsdpsys_disk(1)	7	ucsdpsys disk - manipulate files on a UCSD
ucsdpsys_interleave(1)	14	ucsdpsys interleave - decode interleaved
ucsdpsys_fsck(1)	8	ucsdpsys fsck - verify and repair UCSD
ucsdpsys_mount(1)	16	ucsdpsys mount - mount UCSD
ucsdpsys_umount(1)	20	ucsdpsys umount - unmount UCSD

Table of Contents(ucsd-psystem-fs)

builder
charset - UCSD p-System font builder
create new UCSD p-System filesystem disk
images
decode interleaved UCSD p-System
filesystem image
disk images
disk - manipulate files on a UCSD p-System
filesystem image
files
files on a UCSD p-System filesystem image
filesystem disk images
filesystem image
filesystem image
filesystem images
filesystems
filesystems
font builder
fsck - verify and repair UCSD p-System
filesystem images
image
image
images
images
interleave - decode interleaved UCSD p-
System filesystem image
interleaved UCSD p-System filesystem
image
manipulate files on a UCSD p-System
filesystem image
mkfs - create new UCSD p-System
filesystem disk images
mount - mount UCSD p-System filesystems
mount UCSD p-System filesystems
new UCSD p-System filesystem disk images
on a UCSD p-System filesystem image
p-System filesystem disk images
p-System filesystem image
p-System filesystem image
p-System filesystem images
p-System filesystems
p-System filesystems

Table of Contents(ucsd-psystem-fs)

ucsdpsys_charset(1)	6
ucsdpsys_text(1)	18
ucsdpsys_fsck(1)	8
ucsdpsys_mkfs(1)	15
ucsdpsys_disk(1)	7
ucsdpsys_interleave(1)	14
ucsdpsys_fsck(1)	8
ucsdpsys_mount(1)	16
ucsdpsys_umount(1)	20
ucsdpsys_charset(1)	6
ucsdpsys_text(1)	18
ucsdpsys_charset(1)	6
ucsdpsys_disk(1)	7
ucsdpsys_fsck(1)	8
ucsdpsys_interleave(1)	14
ucsdpsys_mkfs(1)	15
ucsdpsys_mount(1)	16
ucsdpsys_mkfs(1)	15
ucsdpsys_disk(1)	7
ucsdpsys_interleave(1)	14
ucsdpsys_fsck(1)	8
ucsdpsys_mount(1)	16
ucsdpsys_umount(1)	20
ucsdpsys_charset(1)	6
ucsdpsys_text(1)	18
ucsdpsys_text(1)	18
ucsdpsys_umount(1)	20
ucsdpsys_umount(1)	20
ucsdpsys_umount(1)	20
ucsdpsys_fsck(1)	8

ucsdpsys charset - UCSD
ucsdpsys text - translate UCSD
ucsdpsys fsck - verify and
ucsdpsys mkfs - create new UCSD p-
ucsdpsys disk - manipulate files on a UCSD
p-
ucsdpsys interleave - decode interleaved
UCSD p-
ucsdpsys fsck - verify and repair UCSD p-
ucsdpsys mount - mount UCSD p-
ucsdpsys umount - unmount UCSD p-
ucsdpsys charset - UCSD p-
ucsdpsys text - translate UCSD p-
ucsdpsys text - translate UCSD p-System
ucsdpsys
ucsdpsys text -
ucsdpsys disk - manipulate files on a UCSD
p-System filesystem image
ucsdpsys fsck - verify and repair UCSD p-
System filesystem images
ucsdpsys interleave - decode interleaved
UCSD p-System filesystem image
ucsdpsys mkfs - create new UCSD p-System
filesystem disk images
ucsdpsys mount - mount UCSD p-System
filesystems
UCSD p-System filesystem disk images
UCSD p-System filesystem image
UCSD p-System filesystem image
UCSD p-System filesystem images
UCSD p-System filesystems
UCSD p-System filesystems
UCSD p-System font builder
UCSD p-System text files
ucsdpsys text - translate UCSD p-System
text files
ucsdpsys umount - unmount UCSD p-
System filesystems
ucsdpsys
umount - unmount UCSD p-System
filesystems
ucsdpsys umount - unmount UCSD p-System
filesystems
verify and repair UCSD p-System filesystem
images

Table of Contents(ucsd-psystem-fs)

p-System font builder
p-System text files
repair UCSD p-System filesystem images
System filesystem disk images
System filesystem image
System filesystem image
System filesystem images
System filesystems
System filesystems
System font builder
System text files
text files
text - translate UCSD p-System text files
translate UCSD p-System text files
ucsdpsys charset - UCSD p-System font
builder
ucsdpsys disk - manipulate files on a UCSD
p-System filesystem image
ucsdpsys fsck - verify and repair UCSD p-
System filesystem images
ucsdpsys interleave - decode interleaved
UCSD p-System filesystem image
ucsdpsys mkfs - create new UCSD p-System
filesystem disk images
ucsdpsys mount - mount UCSD p-System
filesystems
UCSD p-System filesystem disk images
UCSD p-System filesystem image
UCSD p-System filesystem image
UCSD p-System filesystem images
UCSD p-System filesystems
UCSD p-System filesystems
UCSD p-System font builder
UCSD p-System text files
ucsdpsys text - translate UCSD p-System
text files
ucsdpsys umount - unmount UCSD p-
System filesystems
ucsdpsys
umount - unmount UCSD p-System
filesystems
ucsdpsys umount - unmount UCSD p-System
filesystems
verify and repair UCSD p-System filesystem
images

NAME

ucsd-psystem-fs – UCSD p-System file system

DESCRIPTION

The *ucsd-psystem-fs* package is a collection of tools for manipulating and mounting UCSD p-System disk images.

ARCHIVE SITE

The latest version of *ucsd-psystem-fs* is available on the Web from:

URL:	http://ucsd-psystem-fs.sourceforge.net/	
File:	ucsd-psystem-fs.html	# the ucsd-psystem-fs page
File:	ucsd-psystem-fs-1.1.README	# Description, from the tar file
File:	ucsd-psystem-fs-1.1.lsm	# Description, LSM format
File:	ucsd-psystem-fs-1.1.spec	# RedHat package specification
File:	ucsd-psystem-fs-1.1.tar.gz	# the complete source
File:	ucsd-psystem-fs-1.1.pdf	# Reference Manual

BUILDING ucsd-psystem-fs

Full instructions for building *ucsd-psystem-fs* may be found in the *BUILDING* file included in this distribution.

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ucsd-psystem-fs version 1.1

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RELEASE NOTES

This section details the various features and bug fixes of the various releases.

Version 1.1 (2006-Apr-11)

- The *ucsdpsys_mount(1)* is used to mount a UCSD p-System filesystem disk image as a Linux file system. See *ucsdpsys_mount(1)* for more information.
- The *ucsdpsys_umount(1)* is used to unmount a filesystem mounted by the *ucsdpsys_mount(1)* command. See *ucsdpsys_umount(1)* for more information.
- The *ucsdpsys_mkfs(1)* is used to create a new empty UCSD p-System filesystem disk image. See *ucsdpsys_mkfs(1)* for more information.
- The *ucsdpsys_fsck(1)* is used to verify and repair a UCSD p-System filesystem disk image. See *ucsdpsys_fsck(1)* for more information.
- The *ucsdpsys_disk(1)* is used to list, extract, insert and remove files from a UCSD p-System filesystem disk image, without mounting it. See *ucsdpsys_disk(1)* for more information.
- The *ucsdpsys_text(1)* is used to convert text files from the UCSD p-System format to a Unix text file, and back again. See *ucsdpsys_text(1)* for more information.

NAME

How to build ucsd-psystem-fs

BEFORE YOU START

There are a few pieces of software you may want to fetch and install before you proceed with your installation of ucsd-psystem-fs.

FUSE The *ucsd-psystem-fs* package depends on the FUSE (file syetem in user space) package. If it is not available on your system, ucsd-psystem-fs will not work on your system. At the moment, that means Linux only.
<http://fuse.sourceforge.net/>

GNU Groff

The documentation for the *ucsd-psystem-fs* package was prepared using the GNU Groff package (version 1.14 or later). This distribution includes full documentation, which may be processed into PostScript or DVI files at install time – if GNU Groff has been installed.

SITE CONFIGURATION

The **ucsd-psystem-fs** package is configured using the *configure* program included in this distribution.

The *configure* shell script attempts to guess correct values for various system-dependent variables used during compilation, and creates the *Makefile* and *lib/config.h* files. It also creates a shell script *config.status* that you can run in the future to recreate the current configuration.

Normally, you just *cd* to the directory containing *ucsd-psystem-fs*'s source code and then type

```
% ./configure
...lots of output...
%
```

Running *configure* takes a minute or two. While it is running, it prints some messages that tell what it is doing. If you don't want to see the messages, run *configure* using the quiet option; for example,

```
% ./configure --quiet
%
```

To compile the **ucsd-psystem-fs** package in a different directory from the one containing the source code, you must use a version of *make* that supports the *VPATH* variable, such as *GNU make*. Change directory to the directory where you want the object files and executables to go and run the *configure* script. The *configure* script automatically checks for the source code in the directory that *configure* is in and in .. (the parent directory). If for some reason *configure* is not in the source code directory that you are configuring, then it will report that it can't find the source code. In that case, run *configure* with the option *--srcdir=DIR*, where *DIR* is the directory that contains the source code.

By default, *configure* will arrange for the *make install* command to install the **ucsd-psystem-fs** package's files in */usr/local/bin*, and */usr/local/man*. There are options which allow you to control the placement of these files.

--prefix=PATH

This specifies the path prefix to be used in the installation. Defaults to */usr/local* unless otherwise specified.

--exec-prefix=PATH

You can specify separate installation prefixes for architecture-specific files files. Defaults to *{prefix}* unless otherwise specified.

--bindir=PATH

This directory contains executable programs. On a network, this directory may be shared between machines with identical hardware and operating systems; it may be mounted read-only. Defaults to *{exec_prefix}/bin* unless otherwise specified.

--mandir=PATH

This directory contains the on-line manual entries. On a network, this directory may be shared between all machines; it may be mounted read-only. Defaults to *{prefix}/man* unless otherwise

specified.

The *configure* script ignores most other arguments that you give it; use the `--help` option for a complete list.

On systems that require unusual options for compilation or linking that the *ucsd-psystem-fs* package's *configure* script does not know about, you can give *configure* initial values for variables by setting them in the environment. In Bourne-compatible shells, you can do that on the command line like this:

```
$ CXX='g++ -traditional' LIBS=-lposix ./configure
...lots of output...
$
```

Here are the *make* variables that you might want to override with environment variables when running *configure*.

Variable: CXX

C++ compiler program. The default is *c++*.

Variable: CPPFLAGS

Preprocessor flags, commonly defines and include search paths. Defaults to empty. It is common to use `CPPFLAGS=-I/usr/local/include` to access other installed packages.

Variable: INSTALL

Program to use to install files. The default is *install* if you have it, *cp* otherwise.

Variable: LIBS

Libraries to link with, in the form `-lfoo -lbar`. The *configure* script will append to this, rather than replace it. It is common to use `LIBS=-L/usr/local/lib` to access other installed packages.

If you need to do unusual things to compile the package, the author encourages you to figure out how *configure* could check whether to do them, and mail diffs or instructions to the author so that they can be included in the next release.

BUILDING UCSD-PSYSTEM-FS

All you should need to do is use the

```
% make
...lots of output...
%
```

command and wait. When this finishes you should see a directory called *bin* containing several programs.

If you have GNU Groff installed, the build will also create a *etc/reference.ps* file. This contains the README file, this BUILDING file, and all of the man pages.

You can remove the program binaries and object files from the source directory by using the

```
% make clean
...lots of output...
%
```

command. To remove all of the above files, and also remove the *Makefile* and *lib/config.h* and *config.status* files, use the

```
% make distclean
...lots of output...
%
```

command.

The file *etc/configure.in* is used to create *configure* by a GNU program called *autoconf*. You only need to know this if you want to regenerate *configure* using a newer version of *autoconf*.

TESTING UCSD-PSYSTEM-FS

The *ucsd-psystem-fs* package comes with a test suite. To run this test suite, use the command

```
% make sure
...lots of output...
Passed All Tests
%
```

The tests take a few seconds each, with a few very fast, and a couple very slow, but it varies greatly depending on your CPU.

If all went well, the message

```
Passed All Tests
```

should appear at the end of the make.

INSTALLING UCSD-PSYSTEM-FS

As explained in the *SITE CONFIGURATION* section, above, the *ucsd-psystem-fs* package is installed under the */usr/local* tree by default. Use the `--prefix=PATH` option to *configure* if you want some other path. More specific installation locations are assignable, use the `--help` option to *configure* for details.

All that is required to install the *ucsd-psystem-fs* package is to use the

```
% make install
...lots of output...
%
```

command. Control of the directories used may be found in the first few lines of the *Makefile* file and the other files written by the *configure* script; it is best to reconfigure using the *configure* script, rather than attempting to do this by hand.

GETTING HELP

If you need assistance with the *ucsd-psystem-fs* package, please do not hesitate to contact the author at

```
Peter Miller <millerp@canb.auug.org.au>
```

Any and all feedback is welcome.

When reporting problems, please include the version number given by the

```
% ucsdpsys_mount -V
ucsdpsys_mount version 1.1.D001
...warranty disclaimer...
%
```

command. Please do not send this example; run the program for the exact version number.

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NAME

ucsdpsys_charset – UCSD p-System font builder

SYNOPSIS

```
ucsdpsys_charset -d [ input.binary.file [ output.text.fileP ]]
ucsdpsys_charset -e [ input.text.file [ output.binary.fileP ]]
ucsdpsys_charset -V
```

DESCRIPTION

The *ucsdpsys_charset* program is used to decode and encode font characters for use as the *[CW]SYSTEM.CHARSET* file.

OPTIONS

The following options are understood:

- d Decode the binary font file into a text file which can be edited.
- e Encode a text file representation of the glyphs of the font into the binary for used for the *SYSTEM.CHARSET* file.
- V Print the version of the *ucsdpsys_charset* program being executed.

All other options will produce a diagnostic error.

EXIT STATUS

The *ucsdpsys_charset* command will exit with a status of 1 on any error. The *ucsdpsys_charset* command will only exit with a status of 0 if there are no errors.

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NAME

ucsdpsys_disk – manipulate files on a UCSD p-System filesystem image

SYNOPSIS

```
ucsdpsys_disk -f disk-image -l
ucsdpsys_disk -f disk-image -g files.to.get...
ucsdpsys_disk -f disk-image -p files.to.put...
ucsdpsys_disk -f disk-image -r files.to.remove...
ucsdpsys_disk -f disk-image -V
```

DESCRIPTION

The *ucsdpsys_disk* program is used to manipulate the contents of a UCSD p-System filesystem disk image.

OPTIONS

The following options are understood:

-f filename

The name of the file containing the UCSD p-System filesystem disk image.

-g filename...

Get the named files from the disk image and write them to Unix, using the same file name. Note that text file formats will *not* be translated.

-p filename...

Put the named files into the disk image, reading from the Unix file of the same name. Note that text file formats will *not* be translated.

-r filename...

Remove the named files from the filesystem image.

-V

Print the version of the *ucsdpsys_disk* program being executed.

All other options will produce a diagnostic error.

EXIT STATUS

The *ucsdpsys_disk* command will exit with a status of 1 on any error. The *ucsdpsys_disk* command will only exit with a status of 0 if there are no errors.

SEE ALSO

ucsdpsys_mkfs(1)
create a new disk image

ucsdpsys_mount(1)
mount a disk image

ucsdpsys_text(1)
translate text file formats

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NAME

ucsdpsys_fsck – verify and repair UCSD p-System filesystem images

SYNOPSIS

ucsdpsys_fsck [*option...*] *disk-image*
ucsdpsys_fsck -V

DESCRIPTION

The *ucsdpsys_fsck* program is used to verify and repair UCSD p-System filesystem disk images.

OPTIONS

The following options are understood:

-V Print the version of the *ucsdpsys_fsck* program being executed.

All other options will produce a diagnostic error.

EXIT STATUS

The *ucsdpsys_fsck* command will exit with a status of 1 on any error. The *ucsdpsys_fsck* command will only exit with a status of 0 if there are no errors.

SEE ALSO

ucsdpsys_disk(1)
 manipulate a disk image

ucsdpsys_mount(1)
 mount a disk image

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NAME

ucsdpsys_interleave – decode interleaved UCSD p-System filesystem image

SYNOPSIS

ucsdpsys_interleave **-d** **-T***name* *infile* *outfile*

ucsdpsys_interleave **-e** **-T***name* *infile* *outfile*

ucsdpsys_interleave **-V**

DESCRIPTION

The *ucsdpsys_interleave* program is used to read a UCSD p-System filesystem image and decode it into a new uninterleaved filesystem image file. It is also possible to do the reverse.

OPTIONS

The following options are understood:

- D** Increase debug level. Only of interest to developers.
- d** read a UCSD p-System filesystem image and decode it into a new **un**interleaved filesystem image file.
- e** read a UCSD p-System filesystem image and encode it into a new interleaved filesystem image file.
- T** *name*
This option is used to specify the type of interleaving in question. Known formats are:
 - apple** The symmetric interleaving used by the Apple][Pascal system.
 - pdp** The offset and asymmetric interleaved format used by the PDP11 (?) system.
 No interleave format guessing is performed by this program, however the *ucsdpsys_mount*(1) and *ucsdpsys_disk*(1) programs will automatically detect common interleaving formats.
- V** Print the version of the *ucsdpsys_interleave* program being executed.

All other options will produce a diagnostic error.

EXIT STATUS

The *ucsdpsys_interleave* command will exit with a status of 1 on any error. The *ucsdpsys_interleave* command will only exit with a status of 0 if there are no errors.

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NAME

ucsdpsys_mkfs – create new UCSD p-System filesystem disk images

SYNOPSIS

ucsdpsys_mkfs [*option...*] *filename*
ucsdpsys_mkfs -V

DESCRIPTION

The *ucsdpsys_mkfs* program is used to create new UCSD p-System disk image files.

Only Apple][Pascal disks are understood at present. It is simple to add more disk formats.

OPTIONS

The following options are understood:

-B *number*

This option may be used to specify the size of the disk image, in kilobytes (KB = 1024 bytes). Defaults to 140 if not specified.

-D Increase debugging level. Only of interest to developers.**-i** Interleave the sectors on each 16-sector track. The default is a sequential non-interleaved sector layout.**-L** *string*

This option may be used to specify the name of the volume. Defaults to something random, but probably unique, starting with "V". There is a size limit of 7 characters, your label will be truncated if it is longer than this.

-t This option may be used to ask for two copies of the directory meta-data to be stored, not just one. This will not be used by *ucsdpsys_fsck(1)*, but it will be kept up-to-date by all of the disk access methods.**-V** Print the version of the *ucsdpsys_mkfs* program being executed.

All other options will produce a diagnostic error.

EXIT STATUS

The *ucsdpsys_mkfs* command will exit with a status of 1 on any error. The *ucsdpsys_mkfs* command will only exit with a status of 0 if there are no errors.

SEE ALSO

ucsdpsys_fsck(1)
 check a disk image

ucsdpsys_mount(1)
 mount a disk image

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NAME

ucsdpsys_mount – mount UCSD p-System filesystems

SYNOPSIS

ucsdpsys_mount [*option...*] *filename directory*
ucsdpsys_mount -V

DESCRIPTION

The *ucsdpsys_mount* program is used to mount files containing UCSD p-System disk images as Linux file systems.

Disk Formats

At present, only the Apple][Pascal disk format is understood, however it is simple to add more formats in future.

The disk image can be interleaved or non-interleaved, and the code will automatically adjust.

Umount When Finish

To umount the file system when you are done with it, use the
`fusermount -u directory`
 command.

Concurrent Writes

The original p-System had difficulty writing to more than one file at a time. This file system uses the Buffer Gap algorithm (a common implementation for text editors) to establish a gap for a write to be performed within, compacting the file automatically when necessary. While you have a single file open for writing, this is very efficient.

If you have two files open for writing, this file system can cope, but the constant block shuffling to obtain gaps in which to write two (or more) files simultaneously will affect performance.

OPTIONS

The following options are understood:

- D** Turn on internal debugging. Specifying this option more than once increases the verbosity.
- d** Turn on FUSE (libfuse) debugging. Only interesting to *ucsdpsys_mount(1)* developers. Implies the **-f** options.
- f** Execute the filesystem in the foreground. Usually a daemon process is spawned, and the *ucsdpsys_mount(1)* command returns immediately.
- o *string***
One or *mount(1)* options, separated by commas. This option may be given more than once.
- r** Mount the file system read-only.
- V** Print the version of the *ucsdpsys_mount* program being executed.

All other options will produce a diagnostic error.

EXIT STATUS

The *ucsdpsys_mount* command will exit with a status of 1 on any error. The *ucsdpsys_mount* command will only exit with a status of 0 if there are no errors.

SEE ALSO

fusermount(1)

mount FUSE file systems

ucsdpsys_fsck(1)

Check the integrity of UCSD p-System filesystem disk images.

ucsdpsys_mkfs(1)

create new empty UCSD p-System filesystem disk images.

ucsdpsys_umount(1)
unmount UCSD p-System filesystems

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NAME

ucsdpsys_text – translate UCSD p-System text files

SYNOPSIS

ucsdpsys_text -d [*filename...*]

ucsdpsys_text -e [*filename...*]

ucsdpsys_text -V

DESCRIPTION

The *ucsdpsys_text* program is used to translate UCSD p-System text files to and from Unix text files.

If no files are named on the command line, the standard input will be translated and written on the standard output.

Any files named on the command line will be translated *in situ*. A temporary output file will be in the same directory as each file being translated; the file system will need enough extra space to be able to hold the temporary files, until they are moved back over the input files. No backup copies of the inputs are kept.

The results are undefined if you attempt to use this command on binary data files.

OPTIONS

The following options are understood:

-d This option is used to translate files from UCSD p-System text format to Unix text format.

-e This option is used to translate files from Unix text format to UCSD p-System text format.

-V Print the version of the *ucsdpsys_text* program being executed.

All other options will produce a diagnostic error.

EXIT STATUS

The *ucsdpsys_text* command will exit with a status of 1 on any error. The *ucsdpsys_text* command will only exit with a status of 0 if there are no errors.

UCSD P-SYSTEM TEXT FILE FORMAT

The format of a textfile is as follows:

- There are two blocks (1024 bytes) of header information at the beginning of the file. This information is used by the Pascal Editor. The Pascal system creates the header page when a user program opens a textfile. The header page is transferred only during disk-to-disk transfers; transfers to character devices, such as the console or printer, always omit the header page.
- The rest of the file consists of two-block pages. Each page contains lines of text, separated from each other by RETURN characters (ASCII 13). No line ever crosses a page boundary; thus a page contains only whole lines. After the last line on a page, the remainder of the page is filled with NUL characters (ASCII 00). READ and READLN skip the NUL characters, and WRITE and WRITELN provide them automatically. Thus this page formatting is normally invisible to a Pascal program.
- A sequence of leading spaces in a line may be compressed to a DLE-blank code. This code consists of a DLE control character (ASCII 16) followed by one byte containing the number of spaces to indent plus 32 (decimal). Using this code saves a considerable amount of space in files where indentation occurs frequently. The Editor is the main creator of DLE-blank codes; it usually outputs a DLE-blank code where a sequence of spaces occurs at the beginning of a line. However, the DLE-blank code is optional; some lines may have it, and others may have space characters instead. Also, a line with no indentation may or may not be preceded by a DLE character and an indent code value of 32 (meaning 0 indentation).

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NAME

ucsdpsys_umount – unmount UCSD p-System filesystems

SYNOPSIS

ucsdpsys_umount *mount-point*

ucsdpsys_umount **-V**

DESCRIPTION

The *ucsdpsys_umount* program is used to unmount a file system mounted by the *ucsdpsys_mount(1)* command.

OPTIONS

The following options are understood:

-V

Print the version of the *ucsdpsys_umount* program being executed.

All other options will produce a diagnostic error.

EXIT STATUS

The *ucsdpsys_umount* command will exit with a status of 1 on any error. The *ucsdpsys_umount* command will only exit with a status of 0 if there are no errors.

SEE ALSO

fusermount(1)

umount FUSE file systems

ucsdpsys_mount(1)

mount UCSD p-System filesystem disk images.

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