

EXIFutils

Image Metadata Utilities

Getting Started Guide

for
Microsoft Windows

V2.7

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1 Introduction

1.1 *Structure of this Manual*

The sections in this manual cover three areas:

Section 1 provides an overview of this manual.

Section 2 describes concepts common to all EXIFutils commands.

Section 3 describes how the EXIFutils can be used to perform a number of tasks commonly required by digital image users.

1.2 *Intended Audience*

This manual is intended for new users of the EXIFutils who wish to understand basic image Meta data concepts, how to install the EXIFutils, and how to perform basic operations. It assumes that the reader has a working knowledge of the use of Windows systems. In particular it is assumed that the reader understands:

- The use of the MS-DOS command language and .BAT files,
- How to redirect the output of a command into a file,
- How to pipe the output of one command into another command,
- The use of quotes and wildcards on the command line.

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1.3 Conventions Used in this Manual

The following conventions are used in this manual.

<code>myphoto.jpg</code>	Text in the <i>Courier New</i> font represent examples that must be typed exactly as shown.
<code>field-list.txt</code>	Text in <i>Italicized Courier New</i> font represent text for which you must substitute an appropriate value, for example in the following code fragment: <pre>/u "your name"</pre> you should replace <i>"your name"</i> with your own name.
<code>[]</code>	Square brackets surrounding text in a command description indicate that the text is optional. For example, if a command is shown as having the following option: <pre>[/t]</pre> then the <code>/t</code> option is optional and need not be entered.
<code>[a b]</code>	Indicates that you must enter either <code>a</code> or <code>b</code> . For example, if a command is shown as having the option: <pre>/t [a r]</pre> then you must enter either <pre>/t a</pre> or <pre>/t r</pre>
<code>...</code>	The ellipse symbol <code>"..."</code> indicates that the item preceding it can be repeated multiple of times. The example below indicates that multiple file names can be entered separated by commas: <pre>filename,...</pre>
<code>\</code>	A backslash character at the end of a line indicates that whatever follows on the next line is a continuation of the same command. Example: <pre>exiflist /o 1 /f make,model \ my-file.jpg</pre> is the same as: <pre>exiflist /o 1 /f make,model my-file.jpg</pre>

1.4 Feedback

If you have any feedback on the content or structure of this manual, or if you have any suggestions on how the EXIFutils can be improved, please send email to: support@hugsan.com.

2 Overview of EXIFutils

2.1 Introduction

The EXIFutils are a suite of utilities that extract and manipulate Meta data in image files. Image Meta data is information that describes an image. It can include information store in the image file by the camera or scanning device that created the image, as well as information added later to assist in the cataloguing or distribution of the image file.

There are several standards for the format and content of Meta data stored in image files. EXIFutils supports five Meta data formats:

- EXIF
- IPTC
- Flashpix
- Canon Raw (.CRW files)
- Ricoh RMETA

These are described in more detail in the following subsections.

2.1.1 What is EXIF Data?

EXIF (EXchangeable Image file Format) is a standard created by Japanese Electronic Industry Development Association (JEIDA) for the storage of camera and image information within JPEG and TIFF image files. The standard is described in the document “JEITA CP-3451, Exchangeable image file format for digital still cameras: Exif Version 2.2”.

Most modern digital cameras now use this standard format to store information in the image files they create. The information stored can include:

- Information about the camera that took the image (eg: make, model)
- The camera settings at the time the image was taken
- The picture taking conditions at the time a image was taken.
- The location and orientation of the camera
- Descriptive comments or audio recording added by the photographer.

EXIF fields are described in more detail in Section 2.3.3.

2.1.2 What is IPTC Data?

The International Press Telecommunications Council (IPTC) defined a standard for information describing News images. This standard is described in the document “IPTC - NAA Information Interchange Model, Version No. 4, October 1997”. The information that can be stored in IPTC fields includes:

- Headline associated with image
- By Line of the author
- Location at which the image was taken
- Caption associated with the image
- Keywords and categories for filing the image
- An indication of the urgency of the image
- Image distribution information

Adobe Photoshop was the first application to include IPTC information in JPG and TIFF files (using the Photoshop “File Info” menu). The format developed by Adobe has become the de facto standard for storing IPTC information within image files.

IPTC fields are described in more detail in Section 2.3.4.

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2.1.3 What is Flashpix Data?

The Flashpix format definition is a cooperative endeavor that included the Digital Imaging Group, Microsoft Corporation, the Hewlett-Packard Company, and Live Picture, Inc. The definition is described in the document “Flashpix Format Specification, Version 1.0.2”.

The Flashpix format allows the storage of streams of data in the image file. EXIFutils supports two types of operations on Flashpix data:

1. Copying of all Flashpix data from one JPEG file to another (using the `exifcopy` utility).
2. Extracting a Flashpix audio stream into a separate file (using the `exiflist` utility).

2.1.4 What is Canon Raw (.CRW) Data?

Canon Raw (.CRW files) contain image meta data in a Canon proprietary format. Much of this data is similar to EXIF data, but is stored in a different format. As Canon does not publish the format of .CRW Meta data, the accuracy and completeness of the .CRW Meta data as interpreted by EXIFutils cannot be guaranteed.

Not all EXIFutils functions can be performed on Canon Raw Meta data. The `exiflist` supports the extraction and display of CRW Meta data, and `exifcopy` supports copying of certain Canon Meta data fields into files of other formats. See the EXIFutils Command Reference Manual for details.

NOTE: Canon .CR2 Raw files are formatted are stored in a different format to Canon .CRW. Canon Raw .CR2 files contain EXIF data, and therefore are not subject to the same restrictions as Canon .CRW files.

2.1.5 What is Ricoh RMETA Data?

Some Ricoh cameras (eg, the Ricoh Pro G3 GPS-capable camera) allow the user to define the name and value of up to five “custom” fields. These fields contain text values. They are stored in the image file in an RMETA data block, which is completely separate from the EXIF and IPTC data blocks. EXIFutils provides read only access to these fields.

2.2 What are the EXIFutils?

The EXIFutils are a suite of command line utilities that can be used to extract, modify, copy, or delete Meta data that is embedded within image files. There are six utilities in the suite:

Command	Purpose
<code>exifcopy</code>	<ol style="list-style-type: none">1. Copy EXIF, IPTC, and Flashpix Meta data unmodified from one image JPEG file to another.2. Copy individual EXIF and IPTC fields from one image file to another.
<code>exifdate</code>	Modify the EXIF date fields in an image file.
<code>exifedit</code>	Add, remove, or change the value of EXIF and IPTC fields in an image file. Only files that are <i>editable</i> can be modified. See Section 2.3.6 for an explanation of editable and non-editable fields.
<code>exiffile</code>	<ol style="list-style-type: none">1. Change the “last modified” timestamp of an image file to match the date that the image was taken.2. Rename image files based on the value of EXIF, IPTC, RMETA fields.
<code>exifkey</code>	Install and display EXIFutils license key
<code>exiflist</code>	<ol style="list-style-type: none">1. Extract EXIF, IPTC, and RMETA field values from an image file in a variety of formats.2. List the definitions and valid values of EXIF and IPTC fields

While all EXIFutils commands can be invoked manually from the Windows command prompt, they are primarily intended for invocation as part of a batch script or other automated background process. eg exporting EXIF data into a database for cataloguing.

2.3 EXIFutils Concepts

2.3.1 Image Files

The EXIFutils commands support many common image file formats. Throughout this manual the term *image file* is used to refer to collectively to all of the supported file formats.¹

Unless otherwise stated, the EXIFutils features described in this manual can be used on all supported image file types. Where there are restrictions on the image file types on which a feature can be used, the restrictions are explicitly stated.

Table 1 lists the supported image file types, and the EXIFutils commands that support them. A ✓ in the table indicates that all command features are supported with the corresponding image file type.

Table 1 Supported Image File Types

File Type \ Command	exifcopy	exifdate	exifedit	exiffile	exiflist
JPEG	✓	✓	✓	✓	✓
EXIF .EXI	✓	✓	✓	✓	✓
TIFF	Note 1	✓	✓	✓	✓
Nikon Raw .NEF		✓	✓	✓	✓
Kodak Raw .DCR		✓	✓	✓	✓
Canon Raw .CR2		✓	✓	✓	✓
Minolta Raw .MRW	Note 2	✓	Not Supported	✓	✓
Fujifilm Raw .RAF		✓		✓	✓
Encapsulated Postscript .EPS		Not Supported		✓	✓
Canon Raw .CRW	Note 3	Supported		Note 4	✓

Note 1: Only **editable** fields can be copied to or from these file types. Refer to the EXIFutils Field Reference Guide for more information on which fields are editable. See Section 2.3.6 “Editable and non-Editable Fields” for an explanation of editable fields.

Note 2: Fields can only be copied **from** these files type. These file types cannot be the destination of the copy operation.

Note 3: Fields can only be copied from Canon .CRW fillies. When copying, Canon Raw Meta data fields are translated into the closest equivalent EXIF field. See EXIFutils Command Reference Manual for details.

Note 4: Only the /n (rename file) option is supported.

2.3.1.1 EXIF Save (.exi) Files

An EXIF Save file is a file that contains only Meta data extracted from another image file. .EXI files are used to store Meta data for later copying into another image file.

The .EXI files create by EXIFutils are compatible with the .EXI files created by the *Exifer* application developed by Friedemann Schmidt².

¹ When processing image files in a directory, the EXIFutils do not rely on the file extension (eg .jpg) to determine the image file type. The EXIFutils commands read the beginning of each file to determine if it is a supported image file format.

² Exifer is available from <http://www.friedemann-schmidt.com/software/exifer>

2.3.2 Main and Thumbnail Images

The EXIF Specification allows two versions of an image to be present in a JPEG file. The first, called the *main image*, is the fully resolution image that is the main content of the file. The second, called a *thumbnail image*, is a reduced resolution copy of the main image. The thumbnail image is used by applications reading the JPEG file to quickly display the image without reading the full resolution main image. The thumbnail image is optional.

The TIFF file Specification allows for many images to be present in a single TIFF file. These include multiple main images, thumbnails, and transparency mask images. The EXIFutils will correctly display details of all images in a TIFF file, however if the same EXIF field is present in more than one image, only the first occurrence of each field in the TIFF file can be explicitly referenced (see Section 2.3.5 “Using Nicknames to Select Fields”).

2.3.3 EXIF Fields

EXIF data consists of a collection of fields. Each field has a *tag*, which identifies the field, and one or more data *values*. A field tag is a four digit hexadecimal number (eg A101), but for ease of use the EXIFutils also assign a *nickname*, which can be used to uniquely identify each field. For example, the Exposure Time field (tag 829a) has a nickname of `exp-time`. See Section 2.3.5 “Using Nicknames to Select Fields” for more information about nicknames. A complete list of field nicknames is provided in the EXIFutils Command Reference Manual.

The field value can contain a variety of different types of information, and may have more than one value. For example, the value of the Reference Black and White field (nickname `ref-bw`) consists of six numbers. The types of data values that can be present in a field are shown in Table 2 “Field Data Types”³.

Table 2 Field Data Types

Data Type	Description
Integer	A positive or negative whole number (eg 20).
Rational Number	A Positive or negative rational number, (eg 2.8)
Text String	A text string. For some fields the string may be any length up to a maximum of 999 characters ⁴ , while other fields are limited to a specific length.
Defined Value	The field can contain one of a defined set of field values. eg the “Flash” field can have a value of “Fired” or “Not Fired”
Date/Time	A date/time in the format YYYY:MM:DD HH:MM:SS. eg 2001:03:16 10:58:01
Special	A range of values that must conform to a set of rules specific to that field. For example, the shutter speed field can must be specified as either a whole number of seconds (eg “30”) or as a fractional number specified as a numerator and denominator (eg. “1/125”)
Binary Data	One or more bytes of binary data, respresented as a hexadedecimal string.

2.3.3.1 EXIF Image File Directories (IFDs)

Related EXIF fields are grouped into collections called Image Field Directories (IFDs).

Table 3 lists the types of IFDs defined in the EXIF specification.

Not all IFDs will be present in all images, and not all IFDs will contain all the possible fields that can be included within that type of IFD. Each camera manufacturer chooses the set of fields each of their camera models will include. The fields recognized by the EXIFutils are listed in the EXIFutils Command Reference Manual grouped by IFD.

³ The EXIF Specification defines thirteen data types. The EXIFutils provide a simplified view of these data types to the user.

⁴ This limitation is imposed by the EXIFutils, not by the EXIF Specification. When running an unregistered version of EXIFutils, the maximum length to which a string can be set is 99.

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Table 3 IFD Types

IFD	Description
Camera	Information about the camera that took the photo, and the picture taking conditions at the time the picture was taken
Image	Camera settings used to take the image
Thumbnail	Information about the thumbnail image
Interoperability	Information about the version of the EXIF Specification used to create the image file
GPS	Information about the location and orientation of the camera at the time the image was taken (using the satellite Global Positioning System)
Maker Note	Information specific to the make and model of camera used

The Maker Note is unique among the IFDs in that the EXIF Specification does not define its format. Each camera manufacturer develops its own format for the Maker Note field, and they do not always publish this format. Through experimentation, individuals on the Internet have “reverse engineered” many of the formats used. All Maker Note information provided by the EXIFutils is based on these unofficial sources, and therefore the correctness and completeness of this information cannot be guaranteed. Table 4 lists the camera makes for which EXIFutils provides some level of interpretation of the Maker Note fields. The EXIFutils Command Reference Manual lists the Maker Note fields that EXIFutils supports.

Table 4 Camera Makes for which the Maker Note is Interpreted

Manufacturer
Canon
Casio
Epson
Fujifilm
Minolta / Konica Minolta
Nikon
Olympus
Pentax
Panasonic
Ricoh

2.3.4 IPTC Fields

IPTC fields provide additional information about the content and origin of the image, identification of the copyright holder, and information to assist in cataloguing and distribution of the image. The fields are grouped into *datasets*, which are shown in Table 5.

Table 5 IPTC Field Datasets

Dataset Number	Description
1	Addressing
2	Editorial Information
3	Newsphoto Parameters
6	Abstract Relationship
7	Subfile Size
8	Subfile Data
9	Confirmed Object Size

Most IPTC fields can appear only once in an image file. There are two exceptions: the keyword field (`ip-keyword`) and Supplemental Categories field (`ip-supcat`) can be repeated multiple times, limited only by the amount of available memory.

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The EXIFutils Command Reference Manual lists the IPTC fields supported by EXIFutils, including an indication of the fields that can be edited by EXIFutils.

2.3.5 Using Nicknames to Select Fields

Several of the EXIFutils commands allow you to specify a list of fields to display, edit, copy, or delete. To provide an easy way of referring to EXIF fields, the EXIFutils assign a *nickname* to each EXIF and IPTC field. A complete list of field nicknames is provided in the EXIFutils Command Reference Manual.

In addition to the fields defined by the EXIF and IPTC Specifications, the EXIFutils provide nicknames that represent other information of use to the user. There include:

- File attribute information (see Table 6 File Attribute Nicknames)
- Individual parts of the EXIF Date Taken field (see Table 7 EXIF Date Taken Subfield Nicknames)
- The names of files created by the EXIFutils (see Table 8 Created File Nicknames)

Table 6 File Attribute Nicknames

Nickname	Description
file-name	The name of the image file <i>excluding</i> the directory path, eg <code>myphoto.jpg</code>
file-name-full	The name of the image file <i>including</i> the directory path, eg <code>\HolidayPhotos\myphoto.jpg</code>
file-base	The part of the image file name that precedes the last dot '.'. For example, if the file-name is 'myphoto.jpg', then file-base will contain 'myphoto'.
file-ext	The file name extension, i.e. the part of the file name that follows the last dot '.'. For example, if the file-name is 'myphoto.jpg', then file-ext will contain 'jpg'.
file-dir	The directory in which the image file is located, eg <code>\HolidayPhotos</code>
file-size	The size of the file in bytes
file-date-mod	The date/time that the file was last modified. The date is in EXIF standard format, i.e. "YYYY:MM:DD HH:MM:SS"
file-date-created ⁵	The date the file was created. The date is in EXIF standard format, i.e. "YYYY:MM:DD HH:MM:SS"

Table 7 EXIF Date Taken Subfield Nicknames

Nickname	Description
yyyy	Year part of date-taken field. Four digits. eg: "2005"
yy	Year part of date-taken field. Two digits. eg: "05"
mm	Month part of date-taken field. Two digits. eg: "12"
mmm	Month part of date-taken field. Three letters. eg: "dec"
dd	Day part of date-taken field. Two digits. eg: "31"
hr	Hour part of date-taken field. Two digits, using 24 hour clock. eg: "23"
min	Minute part of date-taken field. Two digits. eg: "59"
sec	Seconds part of date-taken field. Two digits. eg: "45"

NOTE: If the `date-taken` field is not present in a file, then the above nicknames will contain an empty string.

⁵ `file-date-created` is only available on Windows systems. On MacOS X, Linux, and Solaris systems this field will contain the date of last state change of the file.

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Table 8 Created File Nicknames

Nickname	Description
file-name-audio	The default name of the audio file that will be created by the <code>exiflist /w</code> command
file-name-backup	The name of the backup file that will be created by the <code>exifcopy</code> and <code>exifedit</code> commands.
file-name-exi	The default name of the EXIF Save file that will be created by the <code>exiflist /e</code> command
file-name-thumb	The default name of the thumbnail file that will be created by the <code>exiflist /t</code> command

2.3.5.1 Selecting Multiple Fields

In addition to specifying individual field names, the `exiflist` command provides two quick ways to select multiple EXIF and IPTC fields:

- o **Wildcards:** a wildcard character can be used to select all fields whose nickname start with a certain string. For example `'gps-*` will select all GPS related fields because the nicknames of all GPS related fields start with `'gps-'`. The wildcard character `'*'` can only appear at the end of the string.
- o **Special Nicknames:** There are two special nicknames that can be used to select commonly used groups of fields:
 - o `exif-common:` `'exif-common'` is predefined to select the most commonly used EXIF fields. Refer to the EXIFutils Command Reference Manual for a list of fields that are included by `exif-common`.
 - o `iptc:` `'iptc'` is predefined to select all IPTC Editorial (Dataset 2) fields. Refer to EXIFutils Field Reference Guide for a complete list of IPTC fields.

2.3.6 Editable and non-Editable Fields

Editable fields are fields that EXIFutils allows to be set to a new value. Not all EXIF and IPTC fields are editable by users. There are a number of reasons for this:

1. The value of the field must be generated by EXIFutils to ensure correct formatting of the EXIF and IPTC data structure.
2. EXIFutils does not yet support formatting of the data type used by the field.
3. The field is a non-standard field that EXIFutils does not know how to correctly format. This is most often the case with Maker Note fields, which are defined by each camera manufacturers and for which the correct format definitions are not published.

A complete list of all fields, with an indication of whether they are editable by EXIFutils is available in the EXIFutils Command Reference Manual and the EXIFutils Field Reference Guide.

2.4 Installation

2.4.1 Windows/95/98/ME/2000/XP

To install the EXIFutils on a Windows system:

1. Download the EXIFutils installation program into a directory on your hard disk.
2. If your system requires you to log on, log on as a user who has sufficient privilege to install software.
3. Double-click on the installation program to start the installation process.
4. Follow the instructions displayed by the installation process
5. When asked to do so, reboot your system (this is necessary to add the EXIFutils to your PATH so that Windows knows where to find them)

NOTE: If you are using Windows2000 it is not necessary to reboot your system. Logging off then logging on again is sufficient to complete the EXIFutils installation process.

6. If you have purchased a Full Use license for the EXIFutils, run `exifkey` to install the license:
 - a. Open an MS-DOS Command Prompt window.
 - b. Run `exifkey` to install the license, eg:

```
exifkey /k 1234567890123 /u "John Smith" /e john@smith.com
```

The license key, user name, and email address must be entered **exactly** as shown in the registration information you received when you purchased the license.

3 Common Scenarios

This section describes how to use the EXIFutils to perform a number of common tasks. These are grouped into five categories:

Section 3.1 “Finding out about EXIF, IPTC, and RMETA fields, and what you can do with them” gives examples that show how to find out what EXIF and IPTC fields you can work with, and what operations you can perform on them.

Section 3.2 “Listing and Extracting Field Values” gives examples of how to extract field values for print or use by other programs, and how to extract thumbnails and audio data from an image.

Section 3.3 “Adding/Removing/Changing Individual EXIF, IPTC, and RMETA fields” gives examples of adding, changing, and deleting individual EXIF and IPTC fields.

Section 3.4 “Copying or Removing all Meta data in a JPEG file” gives examples of how to copy meta data unchanged from one file to another, and removing all meta data from a file.

Section 3.5 “Changing File Dates and Names” gives examples renaming image files based on Meta data field values, and setting file dates based on EXIF data values.

3.1 Finding out about EXIF, IPTC, and RMETA fields, and what you can do with them

3.1.1 How do I find the nickname of a particular EXIF or IPTC field?

A complete list of Meta data fields (eg: EXIF, IPTC) and the nicknames assigned to them is included in the EXIFutils Command Reference Manual.

If you do not want to refer to the manual you can use the command:

```
exiflist /l n
```

This command produces a complete list of all fields known to the EXIFutils, and the nicknames that have been assigned to them.

Refer to the EXIFutils Command Reference Manual for more information on the use of the `exiflist` command to list field information.

3.1.2 Which EXIF and IPTC fields can I edit?

A complete list of EXIF and IPTC fields, with an indication of which can be edited, is included in the EXIFutils Field Reference Guide.

If you do not wish to refer to the reference guide, the same information can be obtained by entering the following command:

```
exiflist /l f | more
```

This will list all of the EXIF and IPTC fields. For each field it will show either a description of the values to which the field can be set, or will show “Not Editable” if the value of the field cannot be changed.

Refer to the EXIFutils Command Reference Manual for more information on the use of the `exiflist` command.

3.1.3 What are the valid values to which I can set a particular EXIF or IPTC field?

A complete list of EXIF fields, along with details of the valid values to which each can be set, can be found in the EXIFutils Field Reference Guide. If you do not want to refer to the Field Reference Guide, you can display the same information using the `exiflist` command, as described below.

If you do not know the nickname of the field you want to edit, see Section 3.1.1 "How do I find the nickname of a particular EXIF or IPTC field?" for instructions on how to find it.

Once you know the nickname of the field you want to edit, enter the command:

```
exiflist /l nickname
```

Where *nickname* is the nickname of the field you want to edit. The output of this command tells you the valid values to which that field can be set. If the value is shown as "Not Editable" then you cannot set the value of that field.

If you want to list more than one field, you can include a list of fields to be displayed. For example:

```
exiflist /l make,model,ip-caption,gps* | more
```

This command lists details of the `make`, `model`, and `ip-caption` fields, and all GPS related fields.

See also Section 3.1.2 "Which EXIF and IPTC fields can I edit?".

3.1.4 How do I find out which EXIFutils commands will work with the type of image file I am using.

Some EXIFutils commands and options can only be used on certain types of image files. Section 2.3.1 "Image Files" explains which EXIFutils operations are supported for each file type. See also the EXIFutils Command Reference Manual for details of the file types supported by specific command options.

3.2 Listing and Extracting Field Values

3.2.1 How do I list all of the EXIF, IPTC, and/or RMETA fields in an image file?

The `exiflist` command is used to display EXIF, IPTC, and RMETA field values. When no other formatting option is specified, `exiflist` will display all fields that are present in the image file(s). For example, the following command will display all EXIF, IPTC, and RMETA fields present in the files `photo1.jpg` and `photo2.jpg`:

```
exiflist photo1.jpg photo2.jpg
```

If you only want to display EXIF fields, use the `/o e` option:

```
exiflist /o e photo1.jpg photo2.jpg
```

If you only want to display IPTC fields, use the `/o i` option:

```
exiflist /o i photo1.jpg photo2.jpg
```

If you only want to display RMETA fields, use the `/o r` option:

```
exiflist /o r photo1.jpg photo2.jpg
```


3.2.2 How do I export EXIF, IPTC, and RMETA data to other programs

The `exiflist` command can be used to extract EXIF and IPTC data in a number of formats suitable for importing to other programs. One of the most basic formats used is the comma-separated values list (CSV). In this format the field values are separated by commas. Most spreadsheet programs can import data from a file containing comma-separated value data. For example, if you wanted to create a spreadsheet containing the `file-name`, `date-taken`, `description` and `f-number` fields then you would use the command:

```
exiflist /o lh /f file-name,date-taken,ip-caption,f-number my-dir > my-dir.csv
```

This command extracts the EXIF data from all image files in the directory `my-dir`, and writes them as a comma-separated list of values into the file `my-dir.csv`. An example of the contents of `my-dir.csv` produced by the above command is shown below:

```
file-name,date-taken,ip-caption,f-number
my-photo1.jpg,2002:03:16 10:58:00,This is a photo of Loch Ness in Winter,5.6
my-photo2.jpg,2002:03:16 11:07:00,,2.8
my-photo3.jpg,2002:03:16 11:20:00,"Got Nessy that time, for sure",4.0
```

Note that the first line contains the names of the fields that were included. This is because the `/o lh` option was used. If you do not want this first line to appear use the `/o l` option. Also note that `my-photo2.jpg` in the example contained no `ip-caption` field, so there is nothing between the second and third commas in the list for that file. Also note that the `ip-caption` field for file `my-photo3.jpg` has been enclosed in quotes because it contains the separator character `,`.

Refer to the documentation for your spreadsheet program for an explanation of how to import data from a comma separated value file.

Refer to the EXIFutils Command Reference Manual for information about other formats in which data can be extracted by `exiflist`.

3.2.3 How do I list a single EXIF field value for use in a script

The `exiflist` command can be used to extract a single field value, and can be invoked from within scripting languages.

To extract a single field use `exiflist` as follows:

```
exiflist /o l /f nickname filename
```

where `nickname` is the nickname of the field whose value you want to extract, and `filename` is the name of the file from which you want to extract it. For example:

```
C:>exiflist /o l /f shutter myphoto.jpg
1/125
C:>
```

Refer to Section 3.1.1 “How do I find the nickname of a particular EXIF or IPTC field?” for more information about determining field nicknames.

Refer to the EXIFutils Command Reference Manual for information about extracting fields using `exiflist`.

3.2.4 How do I extract the Thumbnail image from an Image file?

Many image files contain a thumbnail image, which is a small version of the main image in the file. The `exiflist` command can be used to extract the thumbnail image from an image file and store it in a separate file.

The basic command to extract the thumbnail image is:

```
exiflist /t . filename
```

where *filename* is the name of the file from which the thumbnail is to be extracted. The thumbnail will be written to a file whose name is generated from the filename from which it was extracted. For example, if the thumbnail were extracted from a file called `myphoto.jpg`, then the thumbnail file would be called `myphoto-th.jpg`.

Refer to the EXIFutils Command Reference Manual for information about extracting thumbnails using `exiflist`.

3.2.5 How do I extract the Flashpix audio stream from an image file?

Some image files contain a Flashpix audio recording. The `exiflist` command can be used to extract the audio data from an image file and store it in a separate file.

The basic command to extract the thumbnail image is:

```
exiflist /w . filename
```

where *filename* is the name of the file from which the audio stream is to be extracted. The thumbnail will be written to a file whose name is generated from the filename from which it was extracted. For example, if the audio stream were extracted from a file called `myphoto.jpg`, then the audio file would be called `myphoto.wav`.

Refer to the EXIFutils Command Reference Manual for information about extracting audio data using `exiflist`.

3.3 Adding/Removing/Changing Individual EXIF, IPTC, and RMETA fields

3.3.1 How do I add EXIF fields to an image file that doesn't already contain any EXIF fields?

The `exifedit` command is used to add EXIF fields to an image file that does not already contain EXIF data. To use `exifedit` you need to know the nickname of the field you want to add, and the value to which you want to set it. See Section 3.1.1 "How do I find the nickname of a particular EXIF or IPTC field?" for an explanation of how to find the nickname of the field. See Section 3.1.3 "What are the valid values to which I can set a particular EXIF or IPTC field?" for an explanation of how to find out the value to which you can set that field.

Once you know the nickname and the value you want to set, enter the following command:

```
exifedit /a nickname=value file-name
```

For example, if you want to add the shutter speed field (nickname `shutter`) with a value of `1/125` to `myphoto.jpg` enter the following command:

```
exifedit /a shutter=1/125 myphoto.jpg
```

Refer to the EXIFutils Command Reference Manual for more information on the use of the `exifedit` command.

3.3.2 How do I change the value of an EXIF or IPTC field?

The method for changing an EXIF, IPTC, or RMETA field in an image is the same as for adding a new field value. See Section 3.3.1 “How do I add EXIF fields to an image file that doesn’t already contain any EXIF fields?” for more details.

3.3.3 How do I add an EXIF or IPTC field to an image file?

The method for adding an EXIF or IPTC field to an image is the same as for changing an existing EXIF field value. See Section 3.3.2 “How do I change the value of an EXIF or IPTC field?” for more details.

3.3.4 I’ve changed the size of the image, but the EXIF data does not reflect these changes. How do I update these fields?

Many image processing programs do not update the EXIF fields when you edit an image. If you change the dimensions of the image then the EXIF width and height fields are not updated, and the thumbnail image is not changed to match the new image.

The `exifedit` command has two options for updating EXIF fields to match the main image:

1. the `/s` option sets the `width` and `height` EXIF fields to the width and height of the main image.
2. the `/t a` option updates the thumbnail image to match the main image.

Using these options the EXIF data can be updated to match the main image. For example:

```
exifedit /s /t a myphoto.jpg
```

Some image processing programs remove all EXIF information from the image. See Section 3.4.1 for an explanation of how to save and recover EXIF information deleted by photo editing programs.

Refer to the EXIFutils Command Reference Manual for more information on the use of the `exifedit` command.

3.3.5 How do I delete one or more EXIF or IPTC fields from an image file?

The `exifedit` command is used to delete EXIF and IPTC fields from an image. To use `exifedit`, you need to know the nickname of the field(s) you want to delete. If you do not know the nicknames, see Section 3.1.1 “How do I find the nickname of a particular EXIF or IPTC field?” for an explanation of how to find the nicknames of the fields you want to delete.

Once you know the nicknames of the fields you want to delete, enter the following command:

```
exifedit /r nickname,... file-name
```

where *nickname,...* are the nicknames of the fields you want to delete, and *file-name* is the name of the files from which you want to delete them.

For example, if you want to delete the `shutter`, `f-number`, `comment`, and `ip-caption` fields from `myphoto.jpg` enter the following command:

```
exifedit /r shutter,f-number,comment,ip-caption myphoto.jpg
```

Refer to the EXIFutils Command Reference Manual for more information on the use of the `exifedit` command.

3.3.6 The camera's time was set incorrectly, how can I adjust the times in the EXIF data?

If the date/time clock in your camera was set incorrectly (eg because you forgot to change it for daylight saving/summer time), then you can use the `exifdate` command to adjust the values of the date time fields in the EXIF data. `exifdate` can add or subtract a constant value to/from EXIF date time fields, or can set them to a specific value.

For example, if you forgot to set your camera clock forward one hour when traveling to a new time zone, you can use the following `exifdate` command to adjust to EXIF date/time so that they are correct:

```
exifdate /a 01:00:00 my-dir
```

This command adds one hour to the date time fields of every image file in `my-dir`.

Refer to the EXIFutils Command Reference Manual for more information about the `exifdate` command.

3.4 Copying or Removing all Meta data in an JPEG file

3.4.1 How do I replace Meta data (EXIF, IPTC, and Flashpix) removed from a JPEG file by photo editing program?

Many photo editing programs removed the Meta data when you save an image after editing it. You can use `exiflist` and `exifcopy` to save and restore the EXIF information by following these steps:

1. Use the `exiflist` command to extract the EXIF, IPTC, and Flashpix information from the image file into a `.exi` file.

```
exiflist /e . myphoto.jpg
```

This command will extract the meta information from `myphoto.jpg` and copy it into a file called `myphoto.exi`

2. Edit the image file using your photo editing program and save it when you are finished
3. Use `exifcopy` to copy the EXIF, IPTC, and Flashpix data from the `.exi` file into the edited file. For example

```
exifcopy /o myphoto.exi myphoto.jpg
```

4. Delete the `.exi` file if you don't want to keep it.

Refer to the EXIFutils Command Reference Manual for more information of the use of the `exiflist` and `exifcopy` commands.

3.4.2 How do I copy Meta data (EXIF, IPTC, and Flashpix) from one JPEG file to another?

To copy Meta data (EXIF, IPTC, and Flashpix) *unchanged* from one JPEG file to another use the `exifcopy` command. For example:

```
exifcopy photo1.jpg photo2.jpg
```

This command copies all Meta data fields unchanged from `photo1.jpg` to `photo2.jpg`. If `photo2.jpg` already contains any EXIF, IPTC, or Flashpix data then a warning will be printed and the EXIF data will not be copied. If you want to overwrite the Meta data in `photo2.jpg`, then you must specify the `/o` (force overwrite)

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option. The following command will overwrite any EXIF, IPTC, or Flashpix data in `photo2.jpg` with the corresponding data from `photo1.jpg`:

```
exifcopy /o photo1.jpg photo2.jpg
```

Refer to the EXIFutils Command Reference Manual for more information on the use of `exifcopy`.

3.4.3 How do I copy EXIF data from one TIFF file to another (or between TIFF and JPEG files)?

The `exifcopy` command is used to copy fields to/from TIFF files. The basic form of the command is:

```
exifcopy /f fieldlist src-file dest-file
```

where *fieldlist* is a comma separated list of the fields you want to copy, *src-file* is the file you are copying fields from, and *dest-file* is the file you are copying fields to. For example:

```
exifcopy /f comment,description,copyright myphoto1.jpg myphoto1.tif
```

This will copy the `comment`, `description`, and `copyright` fields from `myphoto1.jpg` to `myphoto1.tif`. If you omit the field list (`/f` option) then by default all `exif-common` fields will be copied. See Section 2.3.5 “Using Nicknames to Select Fields” for a description of `exif-common`.

Note: If you are running EXIFutils without a registration key then you are limited to copying a maximum of five fields. If the `/f` option is omitted then by default only the fields `width`, `height`, `exp-time`, `f-number`, and `date-taken` will be copied.

Refer to the EXIFutils Command Reference Manual for more information on the use of `exifcopy`.

3.4.4 How do I remove all EXIF, IPTC, and/or Flashpix Meta data from an image file?

The `exifedit` command is used to delete all of one or more types of Meta data from a JPEG file. The types of meta data to be deleted is selected using the `/e` option. The `/e` options takes the following values:

```
/e e - delete all EXIF meta data
/e i - delete all IPTC meta data
/e f - delete all Flashpix meta data
/e a - delete all EXIF, IPTC, and Flashpix meta data
```

For example, the following command will delete all EXIF Meta data from the file `myfile.jpg`, but will leave any IPTC and Flashpix Meta data untouched:

```
exifedit /e e myfile.jpg
```

The `exifedit /e` option can only be used on JPEG files. Refer to the EXIFutils Command Reference Manual for more information on the use of the `exifedit` command.

3.5 Changing File Dates and Names

3.5.1 How do I change the “last modified” date of a file to match the time the image was taken?

The `exiffile` command is used to change the “Last Modified” date of an image file. Specify the `/t` option to change the “Last Modified” date to match the date/time that the photo was taken. For example:

```
exiffile /t pic-dir
```

This command changes the “Last Modified” date/time of all image files in the directory `pic-dir` to match the date/time that each image file was taken.

Refer to the EXIFutils Command Reference Manual for more information on the `exiffile` command.

3.5.2 How do I set the EXIF Date Taken field to be the same as the date/time the image file was last modified?

The `exifedit` command can be used to set any of the EXIF date fields to the date/time an image file was last modified. This is done by setting the EXIF `date-taken` field to the value of the `file-date-mod` field. For example:

```
exifedit /a "date-taken=[file-date-mod]" myphoto.jpg
```

Refer to the EXIFutils Command Reference Manual for more information on the `exiffile` command.

3.5.3 How do I rename an image file using the values of EXIF and IPTC fields?

The `exiffile` command is used to rename an image file based on the value of EXIF and IPTC fields within the file. The name to which the file will be renamed is specified using the `/n` option to set the template that describes the required file name. Refer to the EXIFutils Command Reference Manual for more information about templates.

For example, if `mydir` contains only JPG files and you want to rename them to the date/time that each image was taken, you would use the following command:

```
exiffile /n "[date-taken].jpg" mydir
```

If `mydir` contains a mixture of JPG and TIF files, the following command will rename all image files to the date/time the image was taken, and keep the same file extension as the original file:

```
exiffile /n "[date-taken].[file-ext]" mydir
```

`file-ext` is a special nickname that contains the file extension of the original file. Other file related nicknames are listed in Table 6 in Section 2.3.5 “Using Nicknames to Select Fields”.

You can also use additional EXIFutils fields such as `date-taken` subfields (see 2.3.5). For example, if you want to rename the file using the date the image was taken, but do not want to use the EXIF standard date format, you can construct the field name. For example, if you want to format the date using the American-style year-day-month format:

```
exiffile /n "[yyyy][dd][mm]-[hr][min][sec].[file-ext]" mydir
```

Refer to the EXIFutils Command Reference Manual for more information on the `exiffile` command.

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