

# Lisp Metadata Importer, a Spotlight Plugin.

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## What does it do?

This importer plugin indexes files with `.lisp`, `.lsp` and `.cl` extensions using the Spotlight search engine that was introduced by Apple in OS X 10.4.

You might notice that even before you install this plugin that some of your Lisp files have already been indexed by Spotlight. It is possible that something on your system set the type of some files as “TEXT”, in which case the default Spotlight text indexer will process the files. This only happens on a file-by-file basis, though, whereas the Lisp Metadata Importer instructs the system to index all files with the extensions listed above, regardless of whether or not the system already thinks they’re text files. The Lisp importer also does some Lisp-specific indexing that you might find more useful than the default text indexing.

## How do I install it?

Copy the Lisp Metadata Importer.mdimporter file into the `/Library/Spotlight` folder.

## How do I uninstall it?

Remove the Lisp Metadata Importer.mdimporter file from the `/Library/Spotlight` folder.

## How do I test it once it is installed?

Try indexing a single Lisp file using the `mdimport` command. When you run `mdimport` with the `-dl` flag it will tell you which plugin it’s using, if any, to index the file. You should see a reference to the Lisp Metadata Importer.mdimporter file.

```
lem:~ $ mdimport -dl variables.lisp
2005-09-15 12:05:55.493 mdimport[6962] Import '/Users/wiseman/variables.lisp' type
'com.lemonodor.lisp-source' using
'file:///localhost/Library/Spotlight/Lisp%20Metadata%20Importer.mdimporter/'
```

Once you’ve run `mdimport`, use the `mdls` command to look at the metadata associated with the file. The important things to look for are that the `kMDItemContentType` is “com.lemonodor.lisp-source”, and that there are some attributes with names that begin with “org\_lisp”, like “org\_lisp\_defmacros” or “org\_lisp\_defuns”.

```
lem:~ $ mdls variables.lisp
variables.lisp -----
kMDItemAttributeChangeDate    = 2005-09-08 11:30:18 -0700
kMDItemContentCreationDate    = 2005-09-02 17:41:07 -0700
kMDItemContentModificationDate = 2005-09-02 17:41:08 -0700
kMDItemContentType            = "com.lemonodor.lisp-source"
kMDItemContentTypeTree        = (
    "com.lemonodor.lisp-source",
    "public.source-code",
    "public.plain-text",
    "public.text",
    "public.data",
    "public.item",
```

```

    "public.content"
)
kMDItemDisplayName          = "variables.lisp"

# and on and on, until finally...

org_lisp_defclasses         = ("i-dont-think-so")
org_lisp_defgenerics        = (attack, "(setf mood)", "(setf mood)")
org_lisp_definitions        = (
    foo,
    "(setf foo)",
    "oh-noe",
    "*oh-no*",
    "*hee-ho*",
    "+thing+",
    "i-dont-think-so",
    "BRAIN-CELL",
    "RAT-BRAIN-CELL",
    attack,
    attack,
    "(setf mood)",
    "(setf mood)"
)
org_lisp_defmacros          = ("oh-noe")
org_lisp_defmethods         = (attack, "(setf mood)")
org_lisp_defstructs         = ("BRAIN-CELL", "RAT-BRAIN-CELL")
org_lisp_defuns             = (foo, "(setf foo)")
org_lisp_defvars            = ("*oh-no*", "*hee-ho*", "+thing+")

```

If you see those attributes then the importer is working correctly.

If the importer doesn't seem to be working and you've double checked to make sure you copied it to the correct folder, try the `mdimport -r` trick in the next question & answer; it's the equivalent of kicking a malfunctioning jukebox.

## How do I index all my Lisp files?

Use `mdimport` again, this time with the `-r` flag, and passing it the path to the Lisp plugin.

```

lem:~ $ mdimport -r /Library/Spotlight/Lisp\ Metadata\ Importer.mdimporter/
2005-09-15 12:41:38.650 mdimport[7169] Asking server to reimport files with UTIs: (
    "dyn.ah62d4rv4ge8024pxsa",
    "com.lemonodor.lisp-source",
    "dyn.ah62d4rv4gg81k3p2su1luppqr31appxr741e25f",
    "dyn.ah62d4rv4ge80265u",
    "dyn.ah62d4rv4ge80g5a"
)

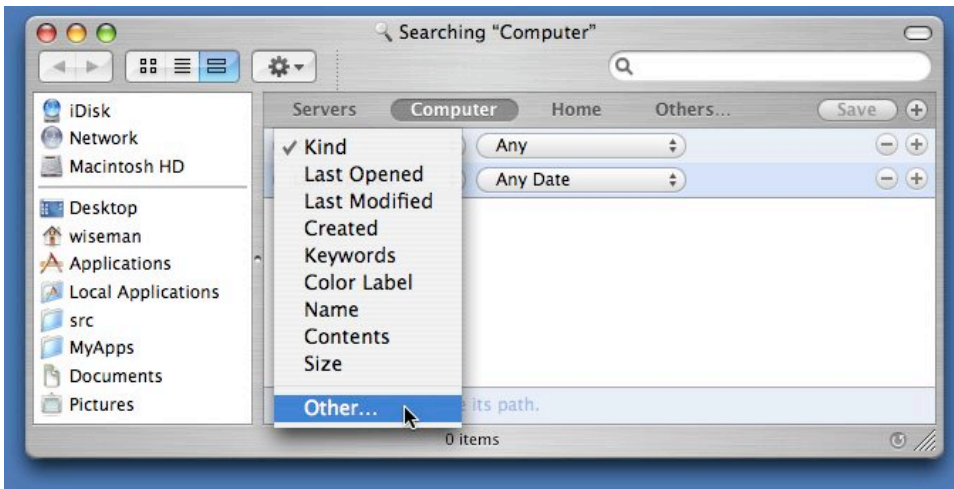
```

## What exactly is being indexed?

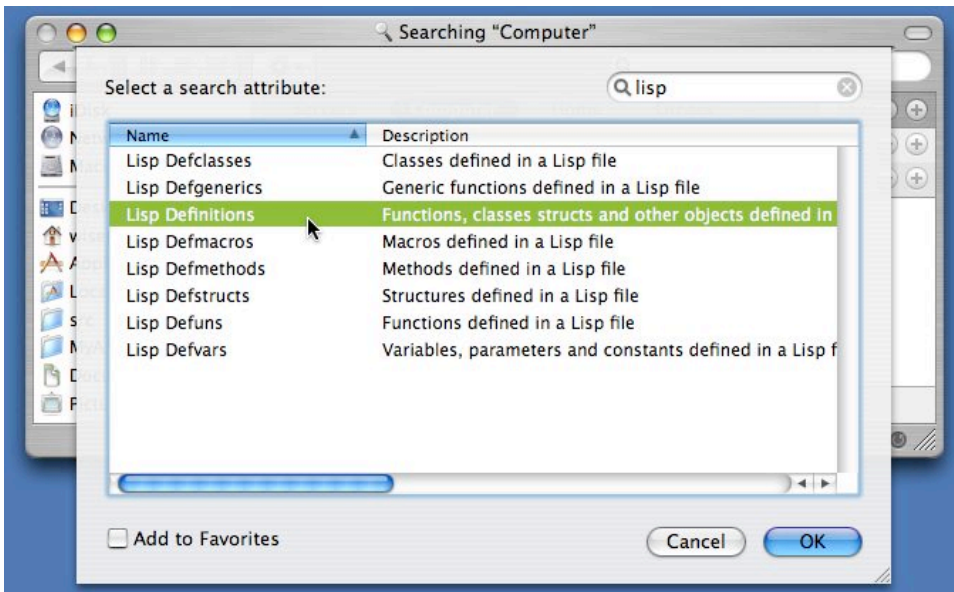
The Lisp metadata importer indexes the definitions contained in a file. This includes functions, macros, classes, methods, generic functions, structures, defvars, defparameters and defconstants. It also includes any object FOO defined by a form that looks like (“defsomething FOO ...”). In addition to definitions, the entire contents of the file are indexed for full text queries.

## How do I search for something?

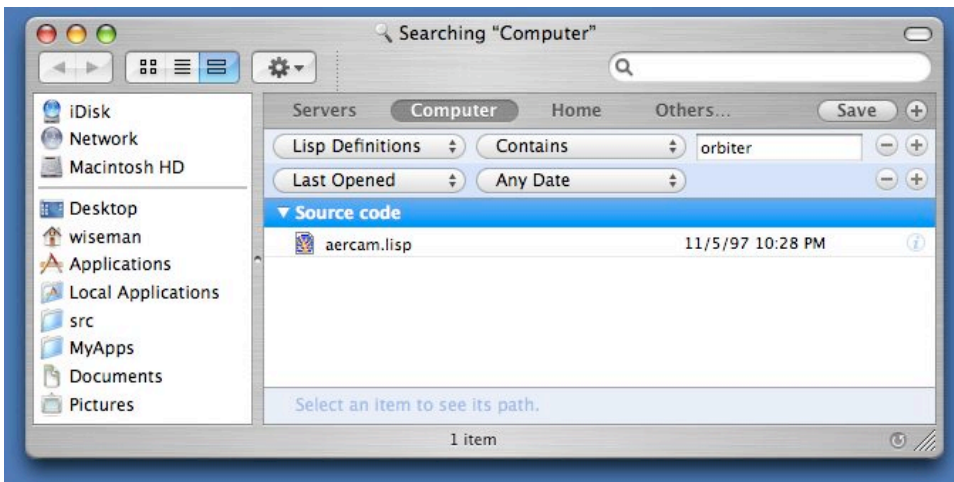
The GUI way is to hit Command-F in the finder to bring up a Find window. Click on one of the attributes and select “Other...”. to see a list of other attributes:



Choose one of the Lisp importer's attributes from the list that comes up (you can type "lisp" into the search field on the upper right to filter out the non-Lisp attributes):



Now enter the text you'd like to search for and watch the matching files appear:



Some people have reported that the Lisp-specific attributes weren't available in the Find dialog until they re-launched the Finder (to re-launch the finder, hit Command-Option-Esc and then select the Finder in the "Force Quit Applications" dialog that pops up).

The non-GUI way to do Spotlight searches is to use the `mdfind` command. I did this the other day when someone on IRC asked how to do search-and-replace on a string. I knew I had written a function to do that, but I couldn't remember which project the code was in.

```
heavymeta:~ $ mdfind "org_lisp_defuns == '*search*replace*'"
/Users/wiseman/inet-projects/echo/server/xml-rpc.lisp
/Users/wiseman/inet-projects/il/utilities/xml-rpc/regex-util.lisp
/Users/wiseman/John/src/www-link-validator/link-validator.lisp
```

(It turned out I had a couple implementations lying around.)

The Spotlight query language used by `mdfind` is documented [online by Apple](#).

## What are the attributes I can search on and where do they come from in the Lisp file?

The following metadata attributes are defined by the Lisp Metadata Importer:

Metadata Attribute	Defining Forms
<code>org_lisp_defuns</code>	<code>defun</code>
<code>org_lisp_defmacros</code>	<code>defmacro</code>
<code>org_lisp_defclasses</code>	<code>defclass</code>
<code>org_lisp_defgeneric</code>	<code>defgeneric</code>
<code>org_lisp_defmethod</code>	<code>defmethod</code>
<code>org_lisp_defstructs</code>	<code>defstruct</code>
<code>org_lisp_defvars</code>	<code>defvar</code> , <code>defparameter</code> , <code>defconstant</code>
<code>org_lisp_definitions</code>	Anything defined with a "(def..." form.

In addition, the importer sets the `kMDItemTextContent` attribute to be the entire contents of the file, so you can do full text searches.

## Is the source code available?

Yes it is. Look in the Source Code folder. You'll see that the Lisp Metadata Importer is written in Objective C and is covered under the MIT License.

## What shortcuts did you take?

Here are a few I can think of:

- The importer only indexes definition forms that are at the beginning of a line.
- It has a very simple, limited concept of symbol names and Lisp reader syntax, so it can easily become confused.
- I shouldn't really use the `org_lisp` prefix for attribute names.
- I should try to coordinate with the people writing plugins for Ruby, Python and other languages so we can come up with a common set of source code metadata attributes.

**Who should you thank?**

Justin Wight, Pierre Mai, Ralph Richard Cook and Bryan O'Connor all helped me to some extent.  
Thanks, guys!