# Common Lisp UltraSpec – A Project For Modern Common Lisp Documentation

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# Previously on European Lisp Symposium 2016

# Yet Another Rant About The State Of Common Lisp Documentation

Michał "phoe" Herda

# Presenting the European Lisp Symposium 2017 Exclusive:

# Yet Another Rant About The State Of Common Lisp Documentation, Part 2





Welcome to the Common Lisp HyperSpec. I hope it serves your need.

-- Kent Pitman, X3J13 Project Editor



Here are some useful starting points:



Highlights Contents..... Master M Symbol S Glossary, n. Chapter 2...... Index N Index T Index of terms.



A text-only version of this cover sheet is available.

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```
Plik Edycja Widok Wyszukiwanie Terminal Pomoc
```

```
Common Lisp, the #1=(programmable . #1#) programming language <http://cliki.net
06:59 < nyef> Aww... not going to set the last six to NIL?
```

- 06:59 < aeth> The arrays will probably be numbers or characters
- 07:01 < aeth> Hmm... Is printing of arrays implementation-specific? I'm a bit disappointed that SBCL doesn't print it like #2A("^@^@^@^@^@^@..." ...) when it's character
- 07:01 < aeth> e.g. (type-of (make-array '(4 100) :element-type 'character))
- 07:01 < White\_Flame> #A formatting is part of the spec, so it'd be a bit breaky to extend that syntax
- 07:01 < aeth> ah, that's unfortunate
- 07:02 < White\_Flame> of course, print-object is extensible
- 07:02 < aeth> I'm using 2D array rows like database table columns.
- 07:02 < aeth> It's funny/sad when I get a type error, and it spams 1500 or so lines, whatever the limit is.
- 07:02 < aeth> And I never find out what type it was expecting!
- 08:25 < phoe> clhs adjoin
- 08:25 < specbot> http://www.lispworks.com/reference/HyperSpec/Body/f\_adjoin.htm
  - 08:25 | phoe(+i) | 2:freenode/#lisp(+Ccnz) | Act: **4**,**5**,6,**8**,**9**

[#lisp]





Wszystko Grafika Mapy Filmy Wiadomości Więcej ▼ Narzędzia wyszukiwania

Około 6 490 wyników (0,17 s)

### CLHS: Function MAKE-ARRAY - LispWorks

www.lispworks.com/.../lw51/CLHS/.../f\_mk\_ar.htm ▼ Tłumaczenie strony Syntax: make-array dimensions &key element-type initial-element initial-contents adjustable fill-pointer displaced-to displaced-index-offset. => new-array.

### CLHS: Section The Arrays Dictionary - LispWorks

www.lispworks.com/documentation/.../c\_arrays.htm ▼ Tłumaczenie strony
15.2 The Arrays Dictionary. System Class ARRAY · Type SIMPLE-ARRAY · System Class VECTOR · Type SIMPLE-VECTOR · System Class BIT-VECTOR.

### CLHS: System Class ARRAY

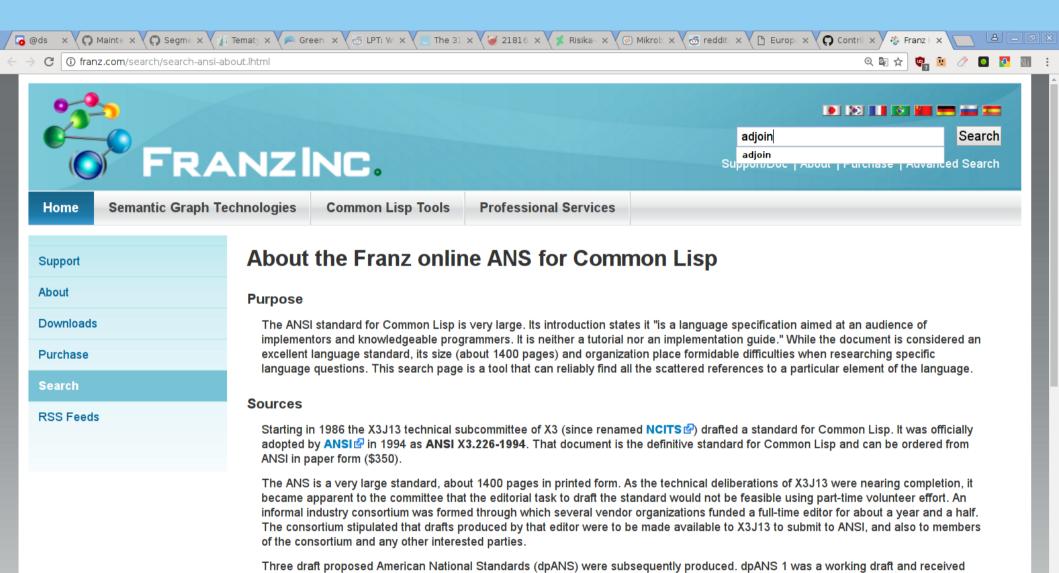
clhs.lisp.se/Body/t\_array.htm ▼ Tłumaczenie strony

An **array** contains objects arranged according to a Cartesian coordinate system. An **array** provides mappings from a set of fixnums {i0,i1,...,ir-1} to corresponding ... Ta strona była przez Ciebie odwiedzana.

### CLHS: Function ADJUST-ARRAY

clhs.lisp.se/Body/f\_adjust.htm ▼ Tłumaczenie strony

Syntax: adjust-array array new-dimensions &key element-type initial-element initialcontents fill-pointer displaced-to displaced-index-offset. => adjusted-array.



extensive review and revision by X3J13. dpANS 2 was then created to resolve all remaining technical issues; X3J13 made no intentional changes in technical content after dpANS 2. dpANS 3 improved wording in a few places and extensively reworked the **Credits** section, not a normative part of the standard. Further formatting changes and boilerplate additions were executed by ANSI in their process of



### adjoin - Franz Inc.

franz.com/support/documentation/8.1/ansicl/dictentr/adjoin.htm ▼ Tłumaczenie strony 21 lip 2009 - If the item is not an existing element, adjoin adds it to list (as if by cons) and returns the resulting list; otherwise, nothing is added and the ...

### pushnew - Franz Inc.

franz.com/support/documentation/8.2/ansicl/.../pushnew.htm ▼ Tłumaczenie strony

If :key is supplied, it is used to extract the part to be tested from both item and the list element, as for adjoin. The argument to the :key function is an element of the ...

#### Deprecated Argument Conventions - Franz Inc.

ftp.franz.com/support/documentation/8.1/ansicl/.../depreca1.htm ▼ Tłumaczenie strony
21 lip 2009 - adjoin, nset-difference, search. assoc, nset-exclusive-or, set-difference. count, nsublis, set-exclusive-or. delete, nsubst, sublis. delete-duplicates ...

### Dictionary of Conses - Franz Inc.

franz.com/support/documentation/6.0/ansicl/.../dictio10.htm ▼ Tłumaczenie strony

14 2 44 adioin 14 2 45 pushnew 14 2 46 set-difference nset-difference 14 2 47 set-exclusive-or nset-

### L1sp.org

L1sp.org is a redirect service for Common Lisp documentation. For example, try these links:

- http://l1sp.org/ccl/@selector
- http://l1sp.org/cl/11.1.2.1.2
- http://l1sp.org/cl/defpackage
- http://l1sp.org/cl/glossary/binding
- http://l1sp.org/cl/~/
- http://l1sp.org/clim/present
- http://l1sp.org/clisp/ext:run-program
- http://l1sp.org/clx/open-display
- http://l1sp.org/mop/compute-slots
- http://l1sp.org/pcl/loop
- http://l1sp.org/sbcl/sb-ext:save-lisp-and-die

You can also search for symbols:

adjoin Search
---------------

Symbol redirects are available for alexandria, asdf, ccl, cffi, cl, cl-fad, cl-gd, clim, clisp, cl-ppcre, cl-unicode, cl-webdav, cl-who, clx, documentation-template, drakma, flexi-streams, hunchentoot, lisp, mop, pcl, and sbcl.

Questions or comments? Email me.

```
http://www.lispworks.com/documentation/HyperSpec/...
http://www.sbcl.org/manual/...
http://ccl.clozure.com/manual/...
http://www.clisp.org/...
http://bauhh.dyndns.org:8000/clim-spec/...
http://bauhh.de/clxman/...
http://metamodular.com/CLOS-MOP/...
```

### Quicklisp beta

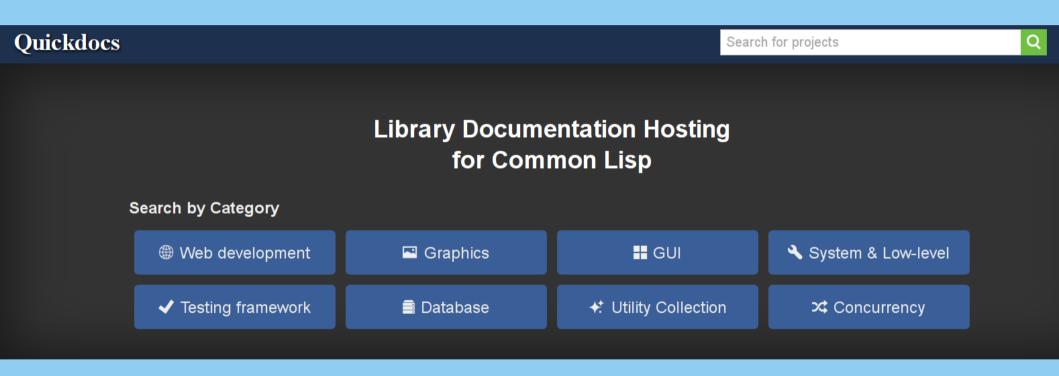
Quicklisp is a library manager for Common Lisp. It works with your existing Common Lisp implementation to download, install, and load any of <u>over 1,400</u> <u>libraries</u> with a few simple commands.

Quicklisp is easy to install and works with <u>ABCL</u>, <u>Allegro CL</u>, <u>Clasp</u>, <u>Clozure CL</u>, <u>CLISP</u>, <u>CMUCL</u>, <u>ECL</u>, <u>LispWorks</u>, <u>MKCL</u>, <u>SBCL</u>, and <u>Scieneer CL</u>, on Linux, Mac OS X, and Windows. The <u>libraries</u> were last updated on February 27, 2017.

To get started with the Quicklisp beta, download and load <a href="https://beta.quicklisp.org/quicklisp.lisp">https://beta.quicklisp.org/quicklisp.lisp</a>

PGP signature of quicklisp.lisp
sha256 of quicklisp.lisp =
4a7a5c2aebe0716417047854267397e24a44d0cce096127411e9ce9ccfeb2c17

Quicklisp is provided as-is <u>without warranty of any kind</u>. See the <u>release notes</u> for known problems.



### alexandria 2017-02-27





Alexandria is a collection of portable public domain utilities that meet the following constraints:

- \* Utilities, not extensions: Alexandria will not contain conceptual extensions to Common Lisp, instead limiting itself to tools and utilities that fit well within the framework of standard ANSI Common Lisp. Test-frameworks, system definitions, logging facilities, serialization layers, etc. are all outside the scope of Alexandria as a library, though well within the scope of Alexandria as a project.
- \* Conservative: Alexandria limits itself to what project members consider conservative utilities. Alexandria does not and will not include anaphoric constructs, loop-like binding macros, etc.
- \* Portable: Alexandria limits itself to portable parts of Common Lisp. Even apparently conservative and useful functions remain outside the scope of Alexandria if they cannot be implemented portably. Portability is here defined as portable within a conforming implementation: implementation bugs are not considered portability issues.

### bordeaux-threads 2016-03-18

Source Code

♣ Download

You can find API documentation on the project's wiki: http://trac.common-lisp.net/bordeaux-threads/wiki/ApiDocumentation

#### Function LASTCAR (list)

Returns the last element of LIST. Signals a type-error if LIST is not a proper list.

#### Function (setf LASTCAR) (object list)

Sets the last element of LIST. Signals a type-error if LIST is not a proper list.

#### Function MAKE-CIRCULAR-LIST

(length &key initial-element)

Creates a circular list of LENGTH with the given INITIAL-ELEMENT.

#### Type CIRCULAR-LIST

Type designator for circular lists. Implemented as a SATISFIES type, so not recommended for performance intensive use. Main usefullness as the expected-type designator of a TYPE-ERROR.

#### Function ENSURE-CAR (thing)

If THING is a CONS, its CAR is returned. Otherwise THING is returned.

#### Function ENSURE-CONS (cons)

If CONS is a cons, it is returned. Otherwise returns a fresh cons with CONS in the car, and NIL in the cdr.

#### Function ENSURE-LIST (list)

If LIST is a list, it is returned. Otherwise returns the list designated by LIST.

#### Function REMOVE-FROM-PLIST (plist &rest keys)

Returns a propery-list with same keys and values as PLIST, except that keys in the list designated by KEYS and values corresponding to them are removed. The returned property-list may share structure with the PLIST, but PLIST is not destructively modified. Keys are compared using EQ.

```
Function CURRENT-THREAD
Function THREADP (object)
Function THREAD-NAME (thread)
Function MAKE-LOCK (&optional name)
Function ACQUIRE-LOCK (lock &optional (wait-p t))
Function RELEASE-LOCK (lock)
Macro WITH-LOCK-HELD ((place) &body body)
Function MAKE-RECURSIVE-LOCK (&optional name)
Macro WITH-RECURSIVE-LOCK-HELD ((place) &body body)
Function MAKE-CONDITION-VARIABLE (&key name)
Function CONDITION-WAIT
(condition-variable lock &key timeout)
Function CONDITION-NOTIFY (condition-variable)
Function THREAD-YIELD
Type TIMEOUT
Macro WITH-TIMEOUT ((timeout) &body body)
Function ALL-THREADS
Function INTERRUPT-THREAD (thread function &rest args)
```

### **Authorship Information**

The Common Lisp HyperSpec is *not* the ANSI Common Lisp standard, but is based on that standard (with permission from ANSI and X3).

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Programming Language—Common Lisp

ANSI X3.226-1994

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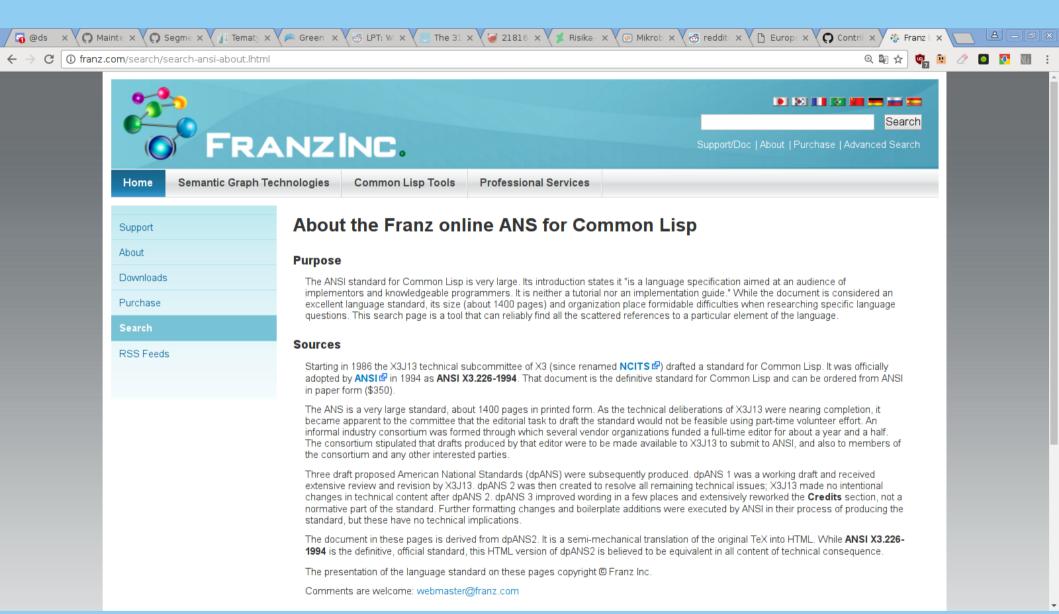
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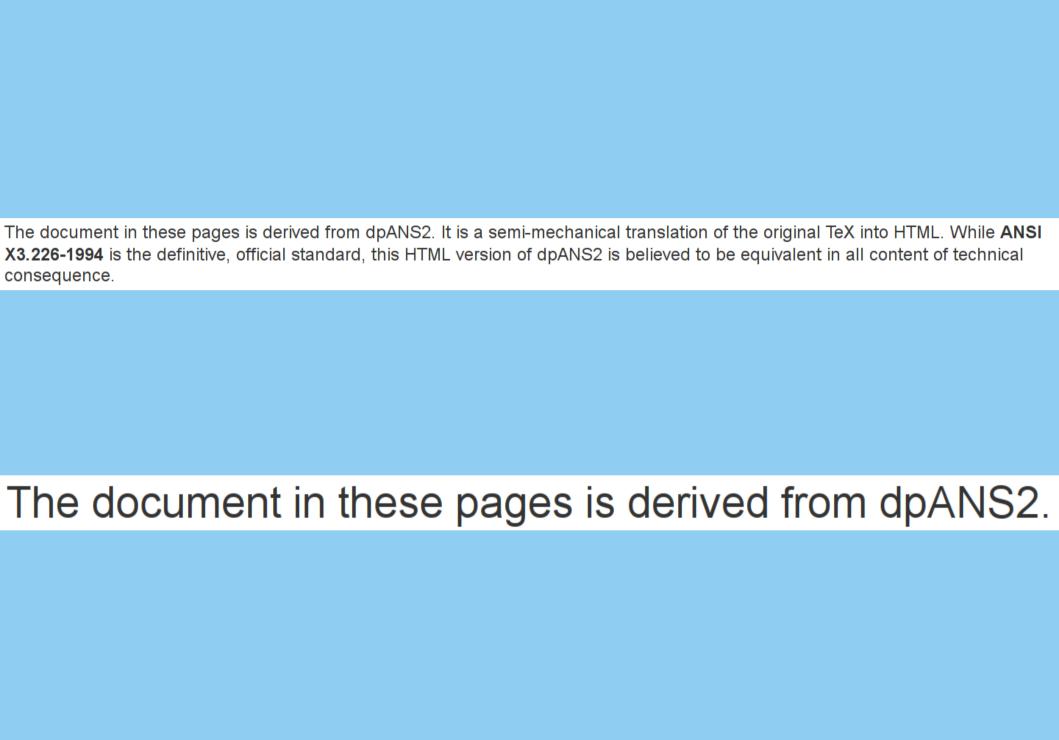
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Fin, Part 2 (...except it's not)

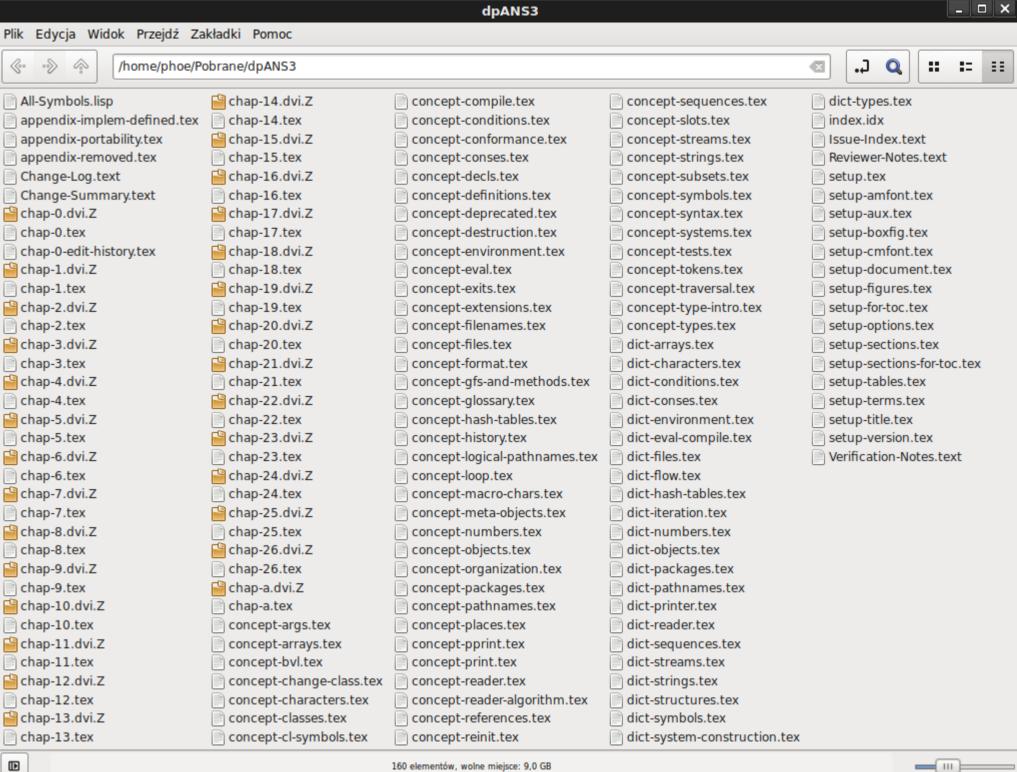




# A Possible Solution To The State Of Common Lisp Documentation, Part 2

### Common Lisp UltraSpec

Michał "phoe" Herda



```
%------------ List Mapping ------------
%%% ====== MAPCAR
%% ====== MAPLIST
%% ===== MAPC
%% ===== MAPL
%%% ======= MAPCAN
%%% ====== MAPCON
\begincom{mapc, mapcar, mapcan, mapl, maplist, mapcon}\ftype{Function}
\label Syntax::
\DefunWithValues mapc {function {\rest} \plus{lists}} {list-1}
\DefunWithValues mapcar {function {\rest} \plus{lists}} {result-list}
\DefunWithValues mapcan {function {\rest} \plus{lists}} {concatenated-results}
\DefunWithValues mapl {function {\rest} \plus{lists}} {list-1}
\DefunWithValues maplist {function {\rest} \plus{lists}} {result-list}
\DefunWithValues mapcon {function {\rest} \plus{lists}} {concatenated-results}
\label Arguments and Values::
\param{function}---a \term{designator} for a \term{function}
 that must take as many \term{arguments} as there are \param{lists}.
\issue{DOTTED-LIST-ARGUMENTS:CLARIFY}
\param{list}---a \term{proper list}.
\param{list-1}---the first \param{list} (which must be a \term{proper list}).
\endissue{DOTTED-LIST-ARGUMENTS:CLARIFY}
```

```
===== Function MAPC, MAPCAR, MAPCAN, MAPL, MAPLIST, MAPCON ======
The mapping operation involves applying //function// to successive sets of arguments
in which one argument is obtained from each //[[CL:Glossary:sequence]]//. Except for
**mapc** and **mapl**, the result contains the results returned by //function//. In
the cases of **mapc** and **mapl**, the resulting //[[CL:Glossarv:sequence]]// is //
list//.
//function// is called first on all the elements with index ''0'', then on all those
with index ''1'', and so on. //result-type// specifies the //[[CL:Glossary:type]]//
of the resulting //[[CL:Glossary:sequence]]//. If //function// is a //[[
CL:Glossary:symbol]]//, it is **[[CL:Functions:coerce]]**d to a //[[
CL:Glossarv:function]]// as if by **[[CL:Functions:symbol-function]]**.
**mapcar** operates on successive //[[CL:Glossary:element|elements]]// of the //lists
//. //function// is applied to the first //[[CL:Glossary:element]]// of each //list//
, then to the second //[[CL:Glossary:element]]// of each //list//, and so on. The
iteration terminates when the shortest //list// runs out, and excess elements in
other lists are ignored. The value returned by **mapcar** is a //[[CL:Glossary:list]]
// of the results of successive calls to //function//.
**mapc** is like **mapcar** except that the results of applying //function// are not
accumulated. The //list// argument is returned.
**maplist** is like **mapcar** except that //function// is applied to successive
sublists of the //lists//. //function// is first applied to the //lists//
themselves, and then to the //[[CL:Glossary:cdr]]// of each //list//, and then to
the //[[CL:Glossary:cdr]]// of the //[[CL:Glossary:cdr]]// of each //list//, and so
on.
```

\*\*mapl\*\* is like \*\*maplist\*\* except that the results of applying //function// are

not accumulated: //list-1// is returned.

### Function MAPC, MAPCAR, MAPCAN, MAPL, MAPLIST, MAPCON

### Syntax

- mapc function &rest lists+ → list-1
- mapcar function &rest lists+ → result-list
- mapcan function &rest lists+ → concatenated-results
- mapl function &rest lists+ → list-1
- maplist function &rest lists+ → result-list
- mapcon function &rest lists+ → concatenated-results

#### **Arguments and Values**

- function a designator for a function that must take as many arguments as there are lists.
- list a proper list.
- list-1- the first list (which must be a proper list).
- result-list- a list.
- concatenated-results a list.

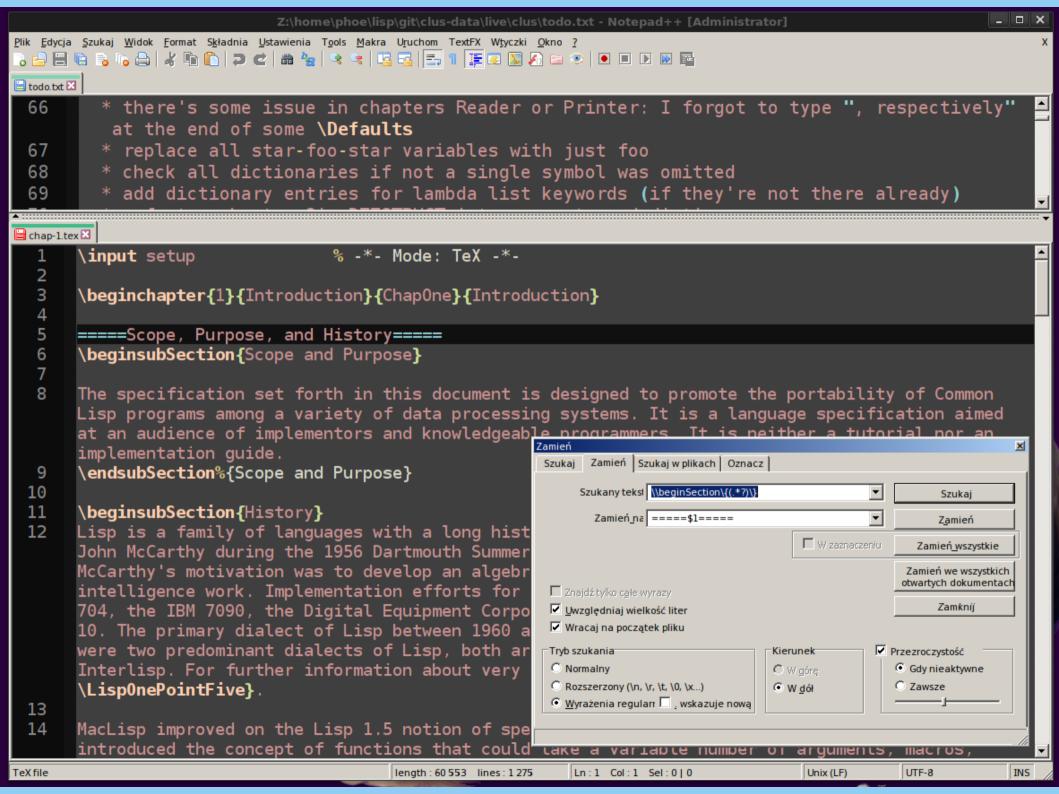
#### Description

The mapping operation involves applying function to successive sets of arguments in which one argument is obtained from each sequence. Except for mapc and mapl, the result contains the results returned by function. In the cases of mapc and mapl, the resulting sequence is list.

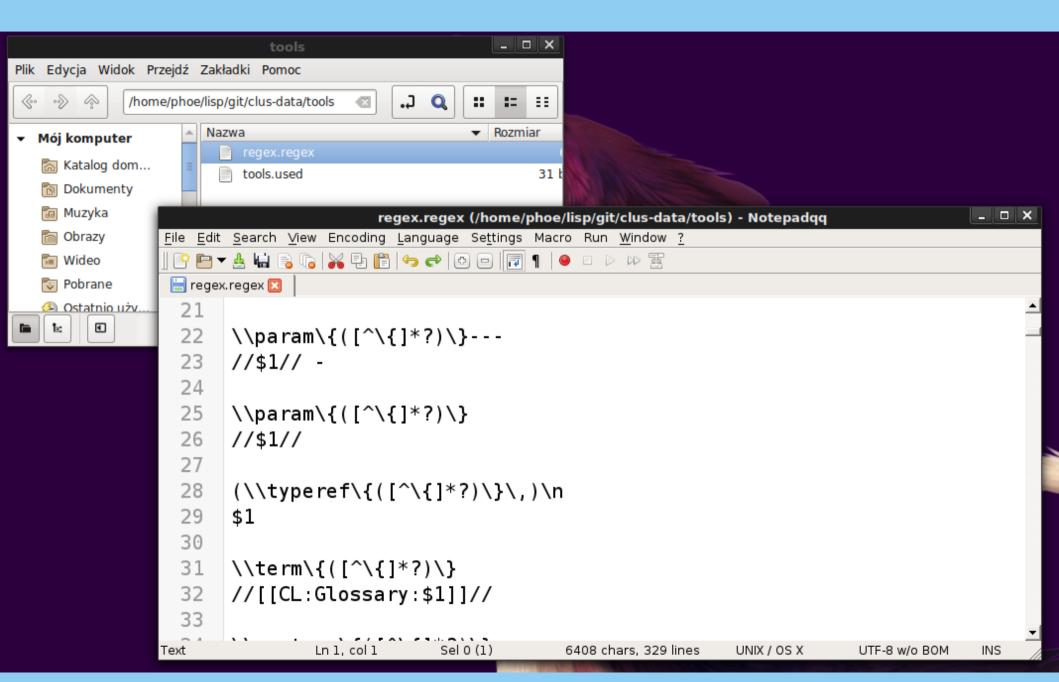
function is called first on all the elements with index 0, then on all those with index 1, and so on. result-type specifies the type of the resulting sequence. If function is a symbol, it is coerced to a function as if by symbol-function.

**mapcar** operates on successive *elements* of the *lists. function* is applied to the first *element* of each *list*, then to the second *element* of each *list*, and so on. The iteration terminates when the shortest *list* runs out, and excess elements in other lists are ignored. The value returned by **mapcar** is a *list* of the results of successive calls to *function*.

mapc is like mapcar except that the results of applying function are not accumulated. The list argument is returned.



### Parsing dpANS with RegEx



# Parsing HTML (context-free grammar) with RegEx (regular grammar):









You can't parse [X]HTML with regex. Because HTML can't be parsed by regex. Regex is not a tool that can be used to correctly parse HTML. As I have answered in HTML-and-regex questions here so many times before, the use of regex will not allow you to consume HTML. Regular expressions are a tool that is insufficiently sophisticated to understand the constructs employed by HTML. HTML is not a regular language and hence cannot be parsed by regular expressions. Regex queries are not equipped to break down HTML into its meaningful parts, so many times but it is not getting to me. Even enhanced irregular regular expressions as used by Perl are not up to the task of parsing HTML. You will never make me crack, HTML is a language of sufficient complexity that it cannot be parsed by regular expressions. Even Jon Skeet cannot parse HTML using regular expressions. Every time you attempt to parse HTML with regular expressions, the unholy child weeps the blood of virgins, and Russian hackers pwn your webapp. Parsing HTML with regex summons tainted souls into the realm of the living. HTML and regex go together like love, marriage, and ritual infanticide. The <center> cannot hold it is too late. The force of regex and HTML together in the same conceptual space will destroy your mind like so much watery putty. If you parse HTML with regex you are giving in to Them and their blasphemous ways which doom us all to inhuman toil for the One whose Name cannot be expressed in the Basic Multilingual Plane, he comes. HTML-plus-regexp will liquify the nerves of the sentient whilst you observe, your psyche withering in the onslaught of horror. Regex-based HTML parsers are the cancer that is killing StackOverflow it is too late it is too late we cannot be saved the trangession of a child ensures regex will consume all living tissue (except for HTML which it cannot, as previously prophesied) dear lord help us how can anyone survive this scourge using regex to parse HTML has doomed humanity to an eternity of dread torture and security holes using regex as a tool to process HTML establishes a breach between this world and the dread realm of compute entities (like SGML entities, but more corrupt) a mere glimpse of the world of regex parsers for HTML will instantly transport a programmer's consciousness into a world of ceaseless screaming, he comes, the pestilent slithy regex-infection will devour vour HTML parser, application and existence for all time like Visual Basic only worse he comes he comes do not fight he comes. his unholy radiance destro ying all enlightenment, HTML tags leaking from, your eyes like liquid pain, the song of regular expression parsing will extinguish the voices of mortal man from the sphere I can see it can you see ตั้โสะ is beautiful the final snuffing of the lies of Man ALL IS LOS ัส ALL IS LOST the poศy he comes he comes the ichor permeates all MY FACE MY FACE °h god no NO NO NO stop the an the ichor permeates all MY FACE MY FACE °h god no NO NO NO stop the an the ichor permeates all MY FACE № 1 TONY THẾ (PONY HIỆ VO MES

# Parsing TeX (context-sensitive grammar) with RegEx (regular grammar):



# Parsing a **known subset** of TeX **used in dpANS** with RegEx (regular grammar):



(with proper care)

### What's done so far?

- Done
  - All Dictionaries (e.g. MAPCAR, ADJOIN, ...)
  - Glossary
- Not done / TODO
  - Concepts (e.g. 2.2 Reader Algorithm)
  - Linking (esp. glossary entries)

### Description

Signals a condition of type warning. If the condition is not handled, reports the condition to error output.

The precise mechanism for warning is as follows:

### What's done so far?

- Done
  - All Dictionaries (e.g. MAPCAR, ADJOIN, ...)
  - Glossary
- Not done / TODO
  - Concepts (e.g. 2.2 Reader Algorithm)
  - Linking (esp. glossary entries)
  - Review
  - Diffs to the original dpANS
  - Once it's finished, SHIP IT!

### ▲ TeMPOraL 5 days ago [-]

> Why hasn't anyone made a more eye-frendly version of the Common Lisp Hyper Spec ? Having good, easily-browsable documentation is a core-problem.

A friend of mine is working on that as we speak. The CLUS, or Common Lisp UltraSpec:

https://phoe.tymoon.eu/clus/doku.php

### What am I aiming for?

- Editable
- Complete
- Downloadable
- Mirrorable/Clonable
- Versioned
- Modular
- Updatable
- Portable
- Unified
- Community-based

### "Burning out"

May 15, 2016 – Apr 3, 2017

Contributions to master, excluding merge commits



October

**ELS '16** 

June

Laziness ↑
...or is it?

August

September

July

...I think ELS is coming

December

2017

November

WORK

February

**ELS '17** 

April

Contributions: Commits ▼

Burnout ↑
...or is it?

March

### Thoughts

- A translator, or an editor?
- A scribe, or a programmer?
- dpANS as humanistic material
- If I am a "new" editor of the specification, then who is the "new" X3J13?

### Summing it up:

- Parse the dpANS specification
- Edit it where necessary
- Make it further parsable
- Give it to the community
- Let the community turn it into X
  - Emacs-readable version
  - Web version
  - Printable version
  - S-expression version
  - Community wiki
  - Repository for documents from the whole CL universe
  - Common Lisp the Language 3

### Live demo/manifesto:

http://phoe.tymoon.eu/clus/

Thanks to Shinmera for the hosting!

# The Actual End, Part 2 (...except it's not)

- because CLUS is not yet finished
- because I will be looking for contributors
- because it's questions time

Thanks for listening!