

Clojure Cheat Sheet (Clojure 1.3 - 1.6, sheet v16)

Documentation

clojure.repl/ doc find-doc apropos source pst javadoc (foo.bar/ is namespace for later syms)

Primitives

Numbers

Literals

Long: 7, hex 0xff, oct 017, base 2 2r1011, base 36 36rCRAZY BigInt: 7N Ratio: -22/7 Double: 2.78 -1.2e-5 BigDecimal: 4.2M

Arithmetic

+ - * / quot rem mod inc dec max min +’ -’ *’ inc’ dec’

Compare

= == not= < > <= >= compare

Bitwise

bit-and bit-or bit-xor bit-not bit-flip bit-set bit-shift-right bit-shift-left bit-and-not bit-clear bit-test (1.6) unsigned-bit-shift-right

Cast

byte short int long float double bigdec bigint num rationalize biginteger

Test

zero? pos? neg? even? odd? number? rational? integer? ratio? decimal? float?

Random

rand rand-int

BigDecimal

with-precision

Unchecked

unchecked-math unchecked-add unchecked-dec unchecked-inc unchecked-multiply unchecked-negate unchecked-subtract

Strings

Create

str format See also IO/to string

Use

count get subs compare (clojure.string/) join escape split split-lines replace replace-first reverse (1.5) re-quote-replacement (String) .indexOf .lastIndexOf

Regex

#"pattern" re-find re-seq re-matches re-pattern re-matcher re-groups (clojure.string/) replace replace-first (1.5) re-quote-replacement

Letters

(clojure.string/) capitalize lower-case upper-case

Trim

(clojure.string/) trim trim-newline triml trimr

Test

char char? string? (clojure.string/) blank?

Other

Characters

char char-name-string char-escape-string

Keywords

keyword keyword? find-keyword

Symbols

symbol symbol? gensym

Collections

Collections

Generic ops

count empty not-empty into conj (clojure.walk/) walk prewalk prewalk-demo prewalk-replace postwalk postwalk-demo postwalk-replace

Content tests

distinct? empty? every? not-every? some not-any?

Capabilities

sequential? associative? sorted? counted? reversible?

Type tests

coll? list? vector? set? map? seq? (1.6) record?

Lists

Create

’() list list*

Examine

first nth peek .indexOf .lastIndexOf

‘Change’

cons conj rest pop

Vectors

Create

[] vector vec vector-of

Examine

(my-vec idx) → (nth my-vec idx) get peek .indexOf .lastIndexOf

‘Change’

assoc pop subvec replace conj rseq

Ops

(1.4) mapv filterv reduce-kv

Sets

Create

#{} set hash-set sorted-set sorted-set-by

Examine

(my-set item) → (get my-set item) contains?

‘Change’

conj disj

Set ops

(clojure.set/) union difference intersection select See also Relations

Test

(clojure.set/) subset? superset?

Maps

Create

{ } hash-map array-map zipmap sorted-map sorted-map-by bean frequencies group-by (clojure.set/) index

Examine

(:key my-map) → (get my-map :key) get-in contains? find keys vals

‘Change’

assoc assoc-in dissoc merge merge-with select-keys update-in (clojure.set/) rename-keys map-invert GitHub: Medley

Entry

key val

Sorted maps

rseq subseq rsubseq

Relations (set of maps, each with same keys, aka rels)

Rel algebra (clojure.set/) join select project union difference intersection index rename

Transients (clojure.org/transients)

Create transient persistent!

Change conj! pop! assoc! dissoc! disj! Note: always use return value for later changes, never original!

Misc

Compare = == identical? not= not compare clojure.data/diff

Test true? false? instance? nil? (1.6) some?

Sequences

Creating a Lazy Seq

From collection

seq vals keys rseq subseq rsubseq

From producer fn

lazy-seq repeatedly iterate

From constant

repeat range

From other

file-seq line-seq resultset-seq re-seq tree-seq xml-seq iterator-seq enumeration-seq

From seq

keep keep-indexed

Seq in, Seq out

Get shorter

distinct filter remove take-nth for

Get longer

cons conj concat lazy-cat mapcat cycle interleave interpose

Tail-items

rest nthrest next fnext nnext drop drop-while take-last for

Head-items

take take-while butlast drop-last for

‘Change’

conj concat distinct flatten group-by partition partition-all partition-by split-at split-with filter remove replace shuffle

Rearrange

reverse sort sort-by compare

Process items

map pmap map-indexed mapcat for replace seque

Using a Seq

Extract item

first second last rest next ffirst nfirst fnext nnext nth nthnext rand-nth when-first max-key min-key

Construct coll

zipmap into reduce reductions set vec into-array to-array-2d

Pass to fn

apply

Search

some filter

Force evaluation

doseq dorun doall

Check for forced

realized?

Zippers (clojure.zip/)

Create

zipper seq-zip vector-zip xml-zip

Get loc

up down left right leftmost rightmost

Get seq

lefts rights path children

‘Change’

make-node replace edit insert-child insert-left insert-right append-child remove

Move

next prev

Misc

root node branch? end?

IO

to/from

spit slurp (to writer/from reader, Socket, string with file name, URL, etc.)

to *out*

pr prn print printf println newline (clojure.pprint/) print-table

to writer

(clojure.pprint/) pprint cl-format also: (binding [*out* writer] ...)

to string

format with-out-str pr-str prn-str print-str println-str

from *in*

read-line (clojure.tools.reader.edn/) read

from reader

line-seq (clojure.tools.reader.edn/) read also: (binding [*in* reader] ...) java.io.Reader

from string

with-in-str (clojure.tools.reader.edn/) read-string

Open

with-open (clojure.java.io/) text: reader writer binary: input-stream output-stream

Binary

(.write ostream byte-arr) (.read istream byte-arr) java.io.OutputStream java.io.InputStream GitHub: gloss byte-spec

Misc

flush (.close s) file-seq *in* *out* *err* (clojure.java.io/) file copy delete-file resource as-file as-url as-relative-path GitHub: fs

Data readers

(1.4) *data-readers* default-data-readers (1.5) *default-data-reader-fn*

Functions

Create

fn defn defn- definline identity constantly memfn comp complement partial juxt memoize fnil every-pred some-fn

Call

apply -> ->> trampoline (1.5) as-> cond-> cond->> some->>

Test

fn? ifn?

Abstractions (Clojure type selection flowchart)

Protocols (clojure.org/protocols)

Define	(defprotocol Slicey (slice [at]))
Extend	(extend-type String Slicey (slice [at] ...))
Extend null	(extend-type nil Slicey (slice [_] nil))
Reify	(reify Slicey (slice [at] ...))
Test	satisfies?

Records (clojure.org/datatypes)

Define	(defrecord Pair [h t])
Access	(:h (Pair. 1 2)) → 1
Create	Pair. ->Pair map->Pair
Test	record?

Types (clojure.org/datatypes)

Define	(deftype Pair [h t])
Access	(.h (Pair. 1 2)) → 1
Create	Pair. ->Pair
With methods	(deftype Pair [h t] Object (toString [this] (str "<" h ", " t ">")))

Multimethods (clojure.org/multimethods)

Define	(defmulti my-mm dispatch-fn)
Method define	(defmethod my-mm :dispatch-value [args] ...)
Dispatch	get-method methods
Remove	remove-method remove-all-methods
Prefer	prefer-method prefers
Relation	derive isa? parents ancestors descendants make-hierarchy

Macros

Create	defmacro definline
Debug	macroexpand-1 macroexpand (clojure.walk/) macroexpand-all
Branch	and or when when-not when-let when-first if-not if-let cond condp case (1.6) when-some if-some
Loop	for doseq dotimes while
Arrange	.. doto -> ->> (1.5) as-> cond-> cond->> some-> some->>
Scope	binding locking time with-in-str with-local-vars with-open with-out-str with-precision with-redefs with-redefs-fn
Lazy	lazy-cat lazy-seq delay
Doc.	assert comment doc

Reader Macros

'	Quote 'form → (quote form)
\	Character literal
;	Single line comment
~	Metadata (see Metadata section)
@	Deref @form → (deref form)
`	Syntax-quote
~	Unquote
~@	Unquote-splicing
#"p"	Regex Pattern p
#'	Var quote #'x → (var x)
#()	#{...} → (fn [args] (...))
#_	Ignore next form

Metadata (clojure.org/special_forms)

General	^{:key1 val1 :key2 val2 ...}
Abbrevs	^Type → ^{:tag Type}, ^:key → ^{:key true}
Common	^:dynamic ^:private ^:doc ^:const
Examples	(defn ^:private ^String my-fn ...) (def ^:dynamic *dyn-var* val)
On Vars	meta with-meta vary-meta alter-meta! reset-meta! doc find-doc test

Special Forms (clojure.org/special_forms)

def if do let letfn quote var fn loop recur throw try monitor-enter monitor-exit	
Binding Forms /	(examples) let fn defn defmacro loop for doseq
Destructuring	if-let when-let (1.6) if-some when-some

Vars and global environment (clojure.org/vars)

Def variants	def defn defn- definline defmacro defmethod defmulti defonce defrecord
Interned vars	declare intern binding find-var var
Var objects	with-local-vars var-get var-set alter-var-root var? bound? thread-bound?
Var validators	set-validator! get-validator

Namespace

Current	*ns*
Create/Switch	(tutorial) ns in-ns create-ns
Add	alias def import intern refer
Find	all-ns find-ns
Examine	ns-name ns-aliases ns-map ns-interns ns-publics ns-refers ns-imports
From symbol	resolve ns-resolve namespace the-ns
Remove	ns-unalias ns-unmap remove-ns

Loading

Load libs	(tutorial) require use import refer
List loaded	loaded-libs
Load misc	load load-file load-reader load-string

Concurrency

Atoms	atom swap! reset! compare-and-set!
Futures	future future-call future-done? future-cancel future-cancelled? future?
Threads	bound-fn bound-fn* get-thread-bindings push-thread-bindings pop-thread-bindings thread-bound?
Misc	locking pcalls pvalues pmap seque promise deliver

Refs and Transactions (clojure.org/refs)

Create	ref
Examine	deref @ (@form → (deref form))
Transaction	sync dosync io!
In transaction	ensure ref-set alter commute
Validators	set-validator! get-validator
History	ref-history-count ref-min-history ref-max-history

Agents and Asynchronous Actions (clojure.org/agents)

Create	agent
Examine	agent-error
Change state	send send-off restart-agent (1.5) send-via set-agent-send-executor! set-agent-send-off-executor!
Block waiting	await await-for
Ref validators	set-validator! get-validator
Watchers	add-watch remove-watch
Thread handling	shutdown-agents
Error	error-handler set-error-handler! error-mode set-error-mode!
Misc	*agent* release-pending-sends

Java Interoperation (clojure.org/java_interop)

General	.. doto Classname/ Classname. new bean comparator enumeration-seq import iterator-seq memfn set! class
Cast	boolean byte short char int long float double bigdec bigint num cast biginteger
Exceptions	throw try catch finally pst (1.4) ex-info ex-data

Arrays

Create	make-array object-array boolean-array byte-array short-array char-array int-array long-array float-array double-array aclone to-array to-array-2d into-array
Use	aget aset aset-boolean aset-byte aset-short aset-char aset-int aset-long aset-float aset-double alength amap areduce
Cast	booleans bytes shorts chars ints longs floats doubles

Proxy (Clojure type selection flowchart)

Create	proxy get-proxy-class construct-proxy init-proxy
Misc	proxy-mappings proxy-super update-proxy

Other

XML	clojure.xml/parse xml-seq
REPL	*1 *2 *3 *e *print-dup* *print-length* *print-level* *print-meta* *print-readably*
Code	*compile-files* *compile-path* *file* *warn-on-reflection* compile gen-class gen-interface loaded-libs test
Misc	eval force hash name *clojure-version* clojure-version *command-line-args*
Browser / Shell	(clojure.java.browse/) browse-url (clojure.java.shell/) sh with-sh-dir with-sh-env