

# Clojure Cheat Sheet (Clojure 1.3.0, sheet v1.0)

## Documentation

clojure.repl   doc find-doc apropos source pst javadoc

## Primitives

### Numbers

Arithmetic   + - \* / quot rem mod inc dec max min  
Compare   = == not= < > <= >= compare  
Bitwise   bit-{and, or, xor, not, flip, set, shift-right, shift-left, and-not, clear, test}  
Cast   byte short int long float double bigdec bigint num rationalize  
Test   nil? identical? zero? pos? neg? even? odd?  
Random   rand rand-int  
BigInt   with-precision  
Unchecked   unchecked-{add, dec, divide, inc, multiply, negate, remainder, subtract}-int

### Strings

Create   str print-str println-str pr-str prn-str with-out-str  
Use   count get subs format compare  
Cast/Test   char char? string?

### Strings (clojure.string)

Test   blank?  
Letters   capitalize lower-case upper-case  
Use   join escape split split-lines replace replace-first reverse  
Trim   trim trim-newline triml trimr

### 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  
Content tests   distinct? empty? every? not-every? some not-any?  
Capabilities   sequential? associative? sorted? counted? reversible?  
Type tests   coll? seq? vector? list? map? set?

### Lists

Create   '() list list\*  
Stack   peek pop  
Examine   first rest peek list?  
'Change'   cons conj

### Vectors

Create   [] vector vec vector-of  
Examine   get nth peek rseq vector?  
'Change'   assoc pop subvec replace conj

### Sets

Create   #{ } hash-set sorted-set sorted-set-by set conj disj  
Examine   get

### Sets (clojure.set)

Rel. algebra   join select project union difference intersection  
Get map   index rename-keys rename map-invert  
Test   subset? superset?

### Maps

Create   {} hash-map array-map zipmap sorted-map sorted-map-by bean frequencies  
'Change'   assoc assoc-in dissoc zipmap merge merge-with select-keys update-in  
Examine   get get-in contains? find keys vals map?  
Entry   key val  
Sorted maps   rseq subseq rsubseq

## StructMaps

Create   defstruct create-struct accessor  
Individual   struct-map struct  
Use   get assoc

## Transients

Create   transient persistent!  
Change   conj! pop! assoc! dissoc! disj! Remember to bind result to a symbol!

## Misc

Compare   = == identical? not= not compare  
clojure.data/diff  
Test   true? false? nil? instance?

## 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 for  
Get longer   cons conj concat lazy-cat mapcat cycle interleave interpose  
Tail-items   rest nthrest fnext nnext drop drop-while for  
Head-items   take take-nth take-while take-last 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 each item   map pmap map-indexed mapcat for replace seque  
Un-lazy Seq   sequence

### 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 evaluation   realized?

## Zippers (clojure.zip)

Create   zipper  
Get zipper   seq-zip vector-zip xml-zip  
Get location   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?

## Printing

Print to \*out\*   pr prn print printf println newline clojure.pprint/pprint clojure.pprint/print-table  
Print to string   pr-str prn-str print-str println-str with-out-str

## Functions

Create	fn defn defn- definline identity constantly memfn comp complement partial juxt memoize fn! every-pred some-fn
Call	-> -> apply
Test	fn? ifn?

## Multimethods

Create	defmulti defmethod
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 macroexpand-1 macroexpand
Branch	and or when when-not when-let when-first if-not if-let cond condp case
Loop	for doseq dotimes while
Arrange	.. doto ->
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
Document	assert comment doc

## Reader Macros

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

## Vars and global environment

Def variants	defn defn- definline defmacro defmethod defmulti defonce defstruct
Interned vars	declare intern binding find-var var
Var objects	with-local-vars var-get var-set alter-var-root var?
Var validators	set-validator! get-validator
Var metadata	doc find-doc test

## Namespace

Current	*ns*
Create/Switch	in-ns 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
Remove	ns-unalias ns-unmap remove-ns

## Loading

Loading libs	require use import refer
Listing loaded libs	loaded-libs
Loading misc	load load-file load-reader load-string

## Special Forms

def if do let quote var fn loop recur throw try monitor-enter monitor-exit
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## 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

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

## Agents and Asynchronous Actions

Create	agent
Examine	agent-error
Change state	send send-off restart-agent
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

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

## Arrays

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

## Proxy

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

## Other

Regex	"pattern" re-pattern re-matcher re-find re-matches re-groups re-seq
XML	clojure.xml/parse xml-seq
REPL	*1 *2 *3 *e *print-dup* *print-length* *print-level* *print-meta* *print-readably*
IO	*in* *out* *err* flush read-line read read-string slurp spit with-in-str with-out-str with-open
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*