Clojure Cheat Sheet (Clojure 1.3, sheet v1.4a1)

Documentation

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

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 biginteger`
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 format` See also IO/to string
Use	`count get subs compare` (clojure.string/) `join escape split split-lines replace replace-first reverse` (String) `.indexOf .lastIndexOf`
Regex	`#"pattern" re-find re-seq re-matches re-pattern re-matcher re-groups` (clojure.string/) `replace replace-first`
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`
Content tests	`distinct? empty? every? not-every? some not-any?`
Capabilities	`sequential? associative? sorted? counted? reversible?`
Type tests	`coll? list? vector? set? map? seq?`

Lists

Create	`'() list list*`
Examine	`first nth peek`
'Change'	`cons conj rest pop`

Vectors

Create	`[] vector vec vector-of`
Examine	`(my-vec idx)` → `( nth my-vec idx) get peek`
'Change'	`assoc pop subvec replace conj rseq`

Sets

Create	`#{} set hash-set sorted-set sorted-set-by`
Examine	`(my-set item)` → `( get my-set item) contains?`
'Change'	`conj disj`
Rel algebra	(clojure.set/) `join select project union difference intersection`
Get map	(clojure.set/) `index rename-keys rename map-invert`
Test	(clojure.set/) `subset? superset?`

Maps

Create	`{} hash-map array-map zipmap sorted-map sorted-map-by bean frequencies`
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`
Entry	`key val`
Sorted maps	`rseq subseq rsubseq`

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? 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 take-last for`
Head-items	`take take-nth 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, URI, 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 read`
from reader	`line-seq` also: `(binding [*in* reader] ...) java.io.Reader`
from string	`read-string with-in-str`
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` GitHub: `fs`

Functions

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

Abstractions

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] ...))`

Records (clojure.org/datatypes)

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

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 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, local-vars, open, out-str, precision, redefs, 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 ^:static {:doc "str"}`
Examples	`(defn ^:private ^:static ^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 quote var fn loop recur throw try monitor-enter monitor-exit`

Destructuring	`(examples) let fn defn defmacro loop for doseq if-let when-let`

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?`
Var validators	`set-validator! get-validator`

Namespace

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

Loading

Load libs	`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, done?, cancel, cancelled?} future?`
Threads	`bound-fn bound-fn* {get, push, 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, max}-history`

Agents and Asynchronous Actions (clojure.org/agents)

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 (clojure.org/java_interop)

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 biginteger`
Exceptions	`throw try catch finally pst`

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, 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*`