Clojure Cheat Sheet (Clojure 1.3 - 1.6, sheet v14)

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`
Compare	`= == not= < > <= >= compare`
Bitwise	`bit-{and, or, xor, not, flip, set, shift-right, shift-left, and-not, clear, 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, 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 (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`
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 group-by`
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? 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, 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` (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-> 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, 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 ^: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 / Destructuring	(examples) `let fn defn defmacro loop for doseq 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, aliases, map, interns, publics, refers, 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, 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` (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, 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 (Clojure type selection flowchart)

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*`
Browser / Shell	(clojure.java.browse/) `browse-url` (clojure.java.shell/) `sh with-sh-dir with-sh-env`