Basic Clojure Cheat Sheet

by melbatoast via cheatography.com/59474/cs/15589/

General Info

```
;Everything is a function
that means everything is
enclosed in brackets
;multiple pieces of data often
need to be passed in a vector
(get-in myFunc [:ok :go])
;commas are considered
whitespace in clojure
```

Primitives

Integer

• corres ponds to long int

Float

• corres ponds to double

String

• Always enclosed by double quotes

• "My big dog"

Boolean

• true or false

nil

• is used as the NULL value

Binding

```
; general form
; similar to type variab le_name
= value
(def name value)
; or int x = 4
(def x 4)
```

IF (Control Flow)

```
; general syntax
(if boolea n-form
  the n-form
  opt ion al- els e-form)
; an example (if else)
(if (> 5 0)
  "po sitive"
```

IF (Control Flow) (cont)

```
> "negative")
; -> "positive"
; optional else
(if (> 5 0)
 "positive")
; -> "positive"
(if (< 5 0)
 "negative")
; -> nil
; Maximum of two terms per if. The
following is an invalid form
(if (> 5 0)
 "positive" ; then 1
 "good" ; then 2
 "negative") ; else
```

Arity (or Number of Arguments)

```
; basic arity overloading
(defn func_name
  ([arg1] ; one parm version
  (ex pre ssion))
  ([arg1 arg2] ; two parm
version
  (ex pre ssi on)))
; using other arities
; similar to constr uctors in
java
( defn func_name
  ([arg1]
  (ex pre ssion))
  ([arg1 arg2]
  ( func_name arg1 ) ; call the
with one arg
  (ex pre ssion) ))
```

Lists (Composite Data Strucutres)

```
;basic strucutre is '(elem1
elem2 elem3)
(1 2 3) ; => error: 1 is not a
function
'(1 2 3) ; => valid list
(+ 2 2) ; => function call
'(+ 2 2) ; => valid list
;very similar to vectors, but
have to use nth instead of get
(nth '(1 2 3) 1)  ; => 2
(nth '(1 2 3) 10)  ; error
```

Basic Maths & Logic

```
; simple Math
(+ 1 1)
(- 2 1)
(* 1 2)
(/ 2 1)
; Equality testing
(= 1 1) ; => true
(= 2 1) ; => false
; Negation
(not true) ; => false
```

Function Syntax

```
;best way to bind functions
(defn hello [] "hello world")
;anonymous function
(fn [parm list] body)
;example
(fn [] "hello world")
;without the defn keyword have
to do this
(def hello (fn [] "hello
world"))
```


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DO (Control Flow)

```
;used for executing more than one line
;will return the last value of the line
(if (> 5 0)
 (do
  (pr intln "looks good")
  "po sit ive")
 (do
  (pr intln "looks bad")
  "ne gat ive"))
;-> " pos iti ve"
```

When (Control Flow)

```
;when is a combination of IF and DO
(when (> 5 0)
  (pr intln "looks good")
  "po sit ive")
;-> " pos iti ve"
;always returns nil on false
```

Immutability and Adding

```
;Clojure data structures are immutable.
;That means once you assign data to a variable, you can't change it
(def foo1 '(1 2 3))
(conj foo1 0) ; => (0 1 2 3)
 foo1 ; => (1 2 3), no change
(def foo2 (conj foo1 0))
 foo1 ; => (1 2 3)
 foo2 ; => (0 1 2 3)
(def foo [1 2 3])
 foo ; => [1 2 3]
(assoc foo 1 "dog") ; => [1 "dog" 3]
foo ; => [1 2 3]
```

Vectors (Composite Data Structure)

```
;Vectors are essentially arrays indexed at 0
;two forms are
(def myVec [1 2 3])
(def myVec (vector 1 2 3))
;again can put functions inside
(def things [
  "dog"
 2
 (fn [] "do someth ing")
])
;and of course we can use get to access the data
(get things 0) ; => "dog"
(get things 1) : => 2
(get things 10) : => nil
```

Truthey, Falsey & Nil

```
;Can test for nil
- (nil? "boo") ; => false
- (nil? nil) ; => true
;false and nil are considered falsey
;every thing else is considered truthey
```

Printing

```
(print "woo")
; => "woo"
(print "woo" "hoo")
; => "woo hoo"
(print "Number:" 4)
; => "Number: 4"
```

Nested Maps (Composite Data Structure)

```
can nest a map in a map
(def nest {
 :a "eh"
 :b {:dog "fido" :cat "fluffy"}
})
(get nest :a) ; => "eh"
(get nest :b) ; => {:dog "fido", :cat "fluffy"}
use the get-in function to access inner maps
(get-in nest [:b :cat]) ; => "fluffy"
```

Set (Composite Data Structure)

```
;like in Python, the Clojure set maintains a collection of unique values
#{1 2 "dog" "cat"}
(hash-set 1 2 "dog" :c)
;sets will automa tically discard duplicates
#{1 2 "dog" 2} ; => #{1 2 "dog"}
;can also create sets from lists and vectors
;use the set keyword
(set '( 1 1 2 2)) ; => #{1 2}
(set ["dog" "cat" "dog"]) ; => #{"dog" "cat"}
;searching the set
;can use get, a keyword (:john) or contains?
(def foo #{ 1 2 3 :a} )
(get foo 3) ; => 3
(get foo 4) ; => nil
(:a foo) ; =>:a, returns itself
(contains? foo 2) ; => true
```


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Maps (Composite Data Structures)

```
; maps are key value pairs
; like dictio naries from python
(def jobs {
  :john "profe sso r"
 :sue "doctor"
  :ahmed "astro naut"
})
;keywords
; :john is a keyword, which is
basically a string
; it just has faster internal
lookup
;the get function
;returns the value associated /w
a key
(get jobs :sue) ; => "doctor"
(get jobs :Sue) ; => nil
; function lookup table
(def funcs {
  :func1 (fn [] (println
"func1"))
  :func2 (fn [] (println
"func2"))
  :func3 (fn [] (println
"func3"))
})
; execute the third function
((get funcs :func3)) ; => func3
```


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