

Racket Cheat Sheet

Version 8.16.0.2

Jay McCarthy

March 11, 2025

```
Essentials Sites main download docs gitCommunity packages Discourse Disc-
cord more... RunningPut #lang racket "Hello, world!" in hello.rkt
and run racket hello.rkt Primitives Numbers Literals integer 1 rational 1/2
complex 1+2i floating 3.14 double 6.02e+23 hex #x29 octal #o32 binary
#b010101 Arithmetic + - * / quotient remainder modulo add1 sub1 max min
round floor ceiling sqrt expt exp log sin ... atan Compare = < <= >
>= Bitwise bitwise-ior bitwise-and bitwise-xor bitwise-not arithmetic-
shift integer-length Format number->string string->number real->decimal-
string Test number? complex? ... exact-nonnegative-integer? ... zero?
positive? negative? even? odd? exact? inexact? Misc random Match Pattern(?
number? n) 42 Strings Literals "Racket" quoting "a \" approaches!" unicode
"λx:(μα.α→α).xx" Create make-string string string-append build-string
string-join Observe string-length string-ref substring string-split
in-string Modify string-downcase string-upcase string-trim Test string?
string=? string<=? string-ci<=? Regexp #rx"a|b" #rx"^c(a|d)+r$" regexp-
quote regexp-match regexp-split regexp-replace regexp-replace* Match
Pattern(? string? s) "Banana?" Bytes Literals #"rawbytes\0" Create make-
bytes bytes Numbers integer->integer-bytes real->floating-point-
bytes Observe bytes-length bytes-ref subbytes in-bytes Modify bytes-set!
bytes-copy! bytes-fill! Conversion bytes->string/utf-8
string->bytes/utf-8 Test bytes? bytes=? Match Pattern(? bytes? b) #0xDEAD-
BEEF" Other Booleans #t #f not equal? Characters #\a #\tab #\λ char? char-
>integer integer->char char<=? ... char-alphabetic? ... Symbols 'Racket
symbol? eq? string->symbol gensym Boxes box? box unbox set-box!
box-cas! Procedures procedure? apply compose compose1 keyword-apply
procedure-rename procedure-arity curry arity-includes? Void void?
void Undefined undefined Data Lists Create empty list list* build-list
for/list Observe empty? list? pair? length list-ref member count argmin
argmax Use append reverse map andmap ormap foldr in-list Modify filter
remove ... sort take drop split-at partition remove-duplicates
shuffle Match Pattern(list a b c) (list* a b more) (list top more
```

```

...)Immutable HashCreatehash hasheqObservehash? hash-ref hash-has-key?
hash-count in-hash in-hash-keys in-hash-valuesModifyhash-set hash-
update hash-removeVectorCreatebuild-vector vector make-vector list-
>vectorObservevector? vector-length vector-ref in-vectorModifyvector-
set! vector-fill! vector-copy! vector-map!Match Pattern(vector x y
z) (vector x y calabi-yau ...)StreamsCreatestream stream* empty-
streamObservestream-empty? stream-first stream-rest in-streamMutable
HashCreatemake-hash make-hasheqObservehash? hash-ref hash-has-key?
hash-count in-hash in-hash-keys in-hash-valuesModifyhash-set! hash-
ref! hash-update! hash-remove!SystemsInput/OutputFormatting~a ~v ~s
~e ~r pretty-formatInputread read-bytes peek-byteOutputwrite write-
bytes display displayln pretty-printPorts and Fileswith-input-from-
file with-output-to-file flush-output file-position make-pipe with-
output-to-string with-input-from-string port->bytes port->lines
...FilesPathsbuild-path bytes->path path->bytes path-replace-suffix
...Filesfile-exists? rename-file-or-directory copy-directory/files
current-directory make-directory delete-directory/files directory-
list filesystem-change-evt file->bytes file->lines make-temporary-
fileMiscellaneousTimecurrent-seconds current-inexact-milliseconds date-
>string date-display-formatCommand-Line Parsingcommand-lineFFiffi-
lib _uint32 ... _fun malloc freeNetworkingTCPTcp-listen tcp-connect
tcp-accept tcp-closeHTTPhttp-conn http-conn-open! http-conn-send!
http-conn-recv! http-conn-sendrecv! http-sendrecvURLsstring->url
url->string url-queryEmailsmtp-send-message imap-connect ...JSONwrite-
json read-jsonXMLread-xml write-xml write-xexprDatabasespostgresql-
connect mysql-connect sqlite3-connect query-exec query-rows pre-
pare start-transaction ...SecurityCustodiansmake-custodian custodian-
shutdown-all current-custodianSandboxesmake-evaluator make-module-
evaluatorConcurrencyThreadsthread kill-thread thread-wait make-thread-
groupEventssync choice-evt wrap-evt handle-evt alarm-evt ...Channelsmake-
channel channel-get channel-putSemaphoresmake-semaphore semaphore-post
semaphore-waitAsync Channelsmake-async-channel async-channel-get async-
channel-putParallelismFuturesfuture touch processor-count make-fsemaphore
...Placesdynamic-place place place-wait place-wait place-channel ...Pro-
cessessubprocess system*Syntax (Beginner)BasicsModules(module+ main body
...)
(module+ test body ...)
(require mod-path) (provide id)S-expressionsquote '(a b c) quasiquote
unquote `(1 2 ,(+ 1 2))Procedure Applications(fn arg1 arg2)
keyword args (fn arg1 #:key arg2)
(apply fn arg1 (list arg2))Procedures(lambda (x) x) (λ (x) x)
(λ (x [opt 1]) (+ x opt))
(λ (x #:req key) (+ x key))
(λ (x #:opt [key 1]) (+ x key))Binding(let ([x 1] [y 2]) (+ x y))
(let* ([x 1] [x (+ x 1)]) x)Conditionals(if (zero? x) 0 (/ 1 x))
(cond [(even? x) 0] [(odd? x) 1])

```

```

    [else "impossible!"])
and orDefinitions(define x 1)
(define (f y) (+ x y))Iterationfor for/list for*Blocksbegin when un-
lessRequire Sub-formsprefix-in only-in except-in rename-in for-syntax
for-label ...Provide Sub-formsall-defined-out all-from-out rename-out ...
contract-outStructuresDefinition(struct dillo (weight color))Create(define
danny (dillo 17.5 'purple))Observe(dillo? danny) (dillo-weight
danny) (dillo-color danny)Modify(struct-copy dillo danny ([weight
18.0]))Match Pattern(dillo w c)Pattern MatchingBasics(match value [pat
body] ...)Definitions(match-define pat value)Patterns(quote datum)
(list lvp ...) (list-no-order pat ...) (vector lvp ...) (struct-
id pat ...) (regexp rx-expr pat) (or pat ...) (and pat ...) (?
expr pat ...)Syntax (Intermediate)BasicsMutationset!Exceptionserror with-
handlers raise exitPromisepromise? delay forceContinuationslet/cc
let/ec dynamic-wind call-with-continuation-prompt abort-current-
continuation call-with-composable-continuationParametersmake-parameter
parameterizeExternal Files Needed at Runtimedefine-runtime-pathContinuation
Markscontinuation-marks with-continuation-mark continuation-mark-
set->listMultiple Valuesvalues let-values define-values call-with-
valuesContractsBasicsany/c or/c and/c false/c integer-in vector/c listof
list/c ...Functions-> ->* ->iApplicationcontract-out recontract-out with-
contract define/contractIterationSequencesin-range in-naturals in-list
in-vector in-port in-lines in-hash in-hash-keys in-hash-values in-
directory in-cycle stop-before stop-after in-streamGeneratorsgenerator
yield in-generatorStructuresSub-structures(struct 2d (x y)) (struct 3d 2d
(z)) (2d-x (3d 1 2 3))Mutation(struct monster (type [hp #:mutable]))
(define healie (monster 'slime 10)) (set-monster-hp! healie 0)Trans-
parency(struct cash ($ φ) #:transparent) (struct->vector (cash 5
95))Printing(struct nickname [n v] #:methods gen:custom-write [(de-
fine (write-proc nn p mode) (fprintf p (nickname-n nn))))] (dis-
playln (nickname "evens" (in-range 0 100 2)))Serialization(struct
txn (who what where) #:prefab) (write (txn "Mustard" "Spatula"
"Observatory"))GenericsDefinitiondefine-genericsInstantiation(struct
even-set () #:methods gen:set [(define (set-member? st i) (even?
i))])ClassesDefinitioninterface class*Instantiationmake-object new instan-
tiateMethodssend send/apply send/keyword-apply send* send+Fieldsget-
field set-field!MixinsmixinTraitstrait trait-sum trait-exclude trait-
rename ...Contractsclass/c instanceof/c is-a?/c implementation?/c
subclass?/cSyntactic AbstractionsDefinitiondefine-syntax define-simple-
macro begin-for-syntax for-syntaxTemplatessyntax syntax/loc with-
syntaxParsing (-)Syntaxsyntax-parse define-syntax-class patternSyntax
Objectsyntax-source syntax-line ... syntax->datum datum->syntax
generate-temporaries format-idTransformersmake-set!-transformer make-
rename-transformer local-expand syntax-local-value syntax-local-name
syntax-local-lift-expression ...Syntax Parametersdefine-syntax-parameter
syntax-parameterize syntax-parameter-valueParsing Raw Syntaxlexer

```

parser cfg-parserToolsPackagesInspectionraco pkg showFindingpkgs.racket-
lang.orgInstallingraco pkg installUpdatingraco pkg updateRemovingraco
pkg removeMiscellaneousCompilingraco make program.rktTestingraco test
program.rkt a-directoryBuilding Executablesraco exe program.rktExtending
DrRacketdracket:language:simple-module-based-language->module-based-
language-mixinSlidesslide standard-fish code