Racket Cheat Sheet

Version 9.4.0.5

Jay McCarthy

November 14, 2026

EssentialsSitesmain download docs gitCommunitypackages Discourse Discord more...RunningPut `#lang racket "Hello, world!"` in `hello.rkt` and run `racket hello.rktPrimitivesNumbersLiteralsinteger 1` rational `1/2` complex `1+2i` floating `3.14` double `6.02e+23` hex `#x29` octal `#o32` binary `#b010101Arithmetic+ - * / quotient remainder modulo add1 sub1 max min round floor ceiling sqrt expt exp log sin` ... `atanCompare= < <= > >=Bitwisebitwise-ior bitwise-and bitwise-xor bitwise-not arithmetic-shift integer-lengthFormatnumber->string string->number real->decimal-stringTestnumber? complex?` ... `exact-nonnegative-integer?` ... `zero? positive? negative? even? odd? exact? inexact?Miscrandom`Match Pattern`(? number? n) 42`StringsLiterals`"Racket"` quoting `"a \" approaches!"` unicode `"λx:(μα.α→α).xx"`Create`make-string string string-append build-string string-joinObservestring-length string-ref substring string-split in-stringModifystring-downcase string-upcase string-trimTeststring? 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?"`BytesLiterals`#"rawbytes\0"`Create`make-bytes bytesNumbersinteger->integer-bytes real->floating-point-bytesObservebytes-length bytes-ref subbytes in-bytesModifybytes-set! bytes-copy! bytes-fill!Conversionbytes->string/utf-8 string->bytes/utf-8Testbytes? bytes=?`Match Pattern`(? bytes? b) #"0xDEAD-BEEF"`OtherBooleans`#t #f not equal?Characters#\a #\tab #\λ char? char->integer integer->char char<=?` ... `char-alphabetic?` ...Symbols`'Racket symbol? eq? string->symbol gensymBoxesbox? box unbox set-box! box-cas!Proceduresprocedure? apply compose compose1 keyword-apply procedure-rename procedure-arity curry arity-includes?Voidvoid? voidUndefinedundefinedDataListsCreateempty list list* build-list for/listObserveempty? list? pair? length list-ref member count argmin argmaxUseappend reverse map andmap ormap foldr in-listModifyfilter 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 exitPromisespromise? 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 ($ ¢) #: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
Objectssyntax-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 DrRacketdrracket:language:simple-module-based-language->module-based-language-mixinSlidesslide standard-fish code