MzScheme: Legacy Language

Version 9.4.0.5

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`(require mzscheme)` package: `compatibility-lib`

The `mzscheme` language provides nearly the same bindings as the `mzscheme` module of PLT Scheme version 372 and earlier.

Unlike version 372, the `mzscheme` language does not include `set-car!` or `set-cdr!`, and `cons` makes immutable pairs, as in `scheme/base`; those changes make modules built on `mzscheme` reasonably compatible with modules built on `scheme/base`.

Otherwise, the `mzscheme` language shares many bindings with `scheme/base`. It renames a few bindings, such as `syntax-object->datum` instead of `syntax->datum`, and it provides old versions of some syntactic forms, such as `lambda` without support for keyword and optional arguments. In addition, `mzscheme` includes all of the exports of `racket/tcp` and `racket/udp`.

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1 Old Syntactic Forms

```
(#%module-begin form ...)
```

Like #%plain-module-begin from scheme/base, but (require-for-syntax mzscheme) is added to the beginning of the *form* sequence, thus importing mzscheme into the transformer environment for the module body. (In contrast, scheme/base exports for-syntax minimal transformer support, while scheme exports all of scheme/base for-syntax.)

```
(#%plain-module-begin form ...)
```

The same binding as #%plain-module-begin from scheme/base.

```
(#%plain-lambda formals body ...+)
```

The same binding as #%plain-lambda in scheme/base. (This binding was not present in version 372 and earlier.)

```
(lambda formals body ...+)
(λ formals body ...+)
```

The same bindings as #%plain-lambda.

```
(#%app proc-expr arg-expr ...)
(#%app)
```

The same binding as #%plain-app from scheme/base.

```
(#%plain-app proc-expr arg-expr ...)
(#%plain-app)
```

The same binding as #%app. (This binding was not present in version 372 and earlier.)

```
(define id expr)
(define (head args) body ...+)

head = id
     | (head args)

args = arg-id ...
     | arg-id ... . rest-id
```

Like define in scheme/base, but without support for keyword arguments or optional arguments.

```
(define-syntax id expr)
(define-syntax (head args) body ...+)
(define-for-syntax id expr)
(define-for-syntax (head args) body ...+)
```

Like `define-syntax` and `define-for-syntax` in `scheme/base`, but without support for keyword arguments or optional arguments (i.e., *head* is as for `define`).

```
(if test-expr then-expr else-expr)
(if test-expr then-expr)
```

Like `if` in `scheme/base`, but *else-expr* defaults to `(void)`.

```
(cond cond-clause ...)
(case val-expr case-clause ...)
```

Like `cond` and `case` in `scheme/base`, but `else` and `=>` are recognized as unbound identifiers, instead of as the `scheme/base` bindings.

```
(fluid-let ([id expr] ...) body ...+)
```

Provides a kind of dynamic binding via mutation of the *id*s.

The `fluid-let` form first evaluates each *expr* to obtain an *entry value* for each *id*. As evaluation moves into *body*, either though normal evaluation or a continuation jump, the current value of each *id* is swapped with the entry value. On exit from *body*, then the current value and entry value are swapped again.

```
(define-struct id-maybe-super (field-id ...) maybe-inspector-expr)

maybe-inspector-expr =
                     | expr
```

Like `define-struct` from `scheme/base`, but with fewer options. Each field is implicitly mutable, and the optional *expr* is analogous to supplying an `#:inspector` expression.

```
(let-struct id-maybe-super (field-id ...) body ...+)
```

Expands to

```
(let ()
  (define-struct id-maybe-super (field-id ...))
  body ...+)
```

```
(require raw-require-spec)
(require-for-syntax raw-require-spec)
(require-for-template raw-require-spec)
(require-for-label raw-require-spec)
(provide raw-provide-spec)
(provide-for-syntax raw-provide-spec)
(provide-for-label raw-provide-spec)
```

Like `#%require` and `#%provide`. The `-for-syntax`, `-for-template`, and `-for-label` forms are translated to `#%require` and `#%provide` using `for-syntax`, `for-template`, and `for-label` sub-forms, respectively.

```
(#%datum . datum)
```

Expands to `'datum`, even if *datum* is a keyword.

```
(#%top-interaction . form)
```

The same as `#%top-interaction` in `scheme/base`.

2 Old Functions

```
(apply proc v ... lst) → any
  proc : procedure?
  v : any/c
  lst : list?
```

Like apply from scheme/base, but without support for keyword arguments.

```
prop:procedure : struct-type-property?
```

Like prop:procedure from scheme/base, but even if the property's value for a structure type is a procedure that accepts keyword arguments, then instances of the structure type still do not accept keyword arguments. (In contrast, if the property's value is an integer for a field index, then a keyword-accepting procedure in the field for an instance causes the instance to accept keyword arguments.)

```
(open-input-file file [mode module-mode]) → input-port?
  file : path-string?
  mode : (one-of/c 'text 'binary) = 'binary
  module-mode : (or-of/c 'module 'none) = 'none
(open-output-file file [mode exists]) → input-port?
  file : path-string?
  mode : (one-of/c 'text 'binary) = 'binary
  exists : (one-of/c 'error 'append 'update
                     'replace 'truncate 'truncate/replace)
         = 'error
(open-input-output-file file [mode exists])
 → input-port? output-port?
  file : path-string?
  mode : (one-of/c 'text 'binary) = 'binary
  exists : (one-of/c 'error 'append 'update
                     'replace 'truncate 'truncate/replace)
         = 'error
(with-input-from-file file thunk [mode]) → any
  file : path-string?
  thunk : (-> any)
  mode : (one-of/c 'text 'binary) = 'binary
(with-output-to-file file thunk [mode exists]) → any
  file : path-string?
  thunk : (-> any)
  mode : (one-of/c 'text 'binary) = 'binary
  exists : (one-of/c 'error 'append 'update
                     'replace 'truncate 'truncate/replace)
         = 'error
```

```
(call-with-input-file file proc [mode]) → any
  file : path-string?
  proc : (input-port? -> any)
  mode : (one-of/c 'text 'binary) = 'binary
(call-with-output-file file proc [mode exists]) → any
  file : path-string?
  proc : (output-port? -> any)
  mode : (one-of/c 'text 'binary) = 'binary
  exists : (one-of/c 'error 'append 'update
                     'replace 'truncate 'truncate/replace)
         = 'error
```

Like open-input-file, etc. from scheme/base, but the *mode*, *exists*, and *module-mode* (corresponds to #:for-module?) arguments are not keyword arguments. When both *mode* and *exists* or *module-mode* are accepted, they are accepted in either order.

Changed in version 6.0.1.6 of package compatibility-lib: Added the *module-mode* argument to open-input-file.

```
(syntax-object->datum stx) → any
  stx : syntax?
(datum->syntax-object ctxt v srcloc [prop cert]) → syntax?
  ctxt : (or/c syntax? false/c)
  v : any/c
  srcloc : (or/c syntax? false/c
                 (list/c any/c
                         (or/c exact-positive-integer? false/c)
                         (or/c exact-nonnegative-integer? false/c)
                         (or/c exact-nonnegative-integer? false/c)
                         (or/c exact-positive-integer? false/c))
                 (vector/c any/c
                           (or/c exact-positive-integer? false/c)
                           (or/c exact-nonnegative-integer? false/c)
                           (or/c exact-nonnegative-integer? false/c)
                           (or/c exact-positive-integer? false/c)))
  prop : (or/c syntax? false/c) = #f
  cert : (or/c syntax? false/c) = #f
```

The same as syntax->datum and datum->syntax.

```
(module-identifier=? a-id b-id) → boolean?
  a-id : syntax?
  b-id : syntax?
(module-transformer-identifier=? a-id b-id) → boolean?
  a-id : syntax?
  b-id : syntax?
```

```
(module-template-identifier=? a-id b-id) → boolean?
  a-id : syntax?
  b-id : syntax?
(module-label-identifier=? a-id b-id) → boolean?
  a-id : syntax?
  b-id : syntax?
(free-identifier=? a-id b-id) → boolean?
  a-id : syntax?
  b-id : syntax?
```

The module-identifier=?, etc. functions are the same as free-identifier=?, etc. in scheme/base.

The free-identifier=? procedure returns

```
(and (eq? (syntax-e a) (syntax-e b))
     (module-identifier=? a b))
```

```
(make-namespace [mode]) → namespace?
  mode : (one-of/c 'initial 'empty) = 'initial
```

Creates a namespace with mzscheme attached. If the *mode* is empty, the namespace's top-level environment is left empty. If *mode* is 'initial, then the namespace's top-level environment is initialized with (namespace-require/copy 'mzscheme). See also make-base-empty-namespace.

```
(namespace-transformer-require req) → void?
  req : any/c
```

Equivalent to (namespace-require `(for-syntax ,req)).

```
(transcript-on filename) → any
  filename : any/c
(transcript-off) → any
```

Raises exn:fail, because the operations are not supported.

```
(hash-table? v) → hash-table?
  v : any/c
(hash-table? v flag) → hash-table?
  v : any/c
  flag : (one-of/c 'weak 'equal 'eqv)
(hash-table? v flag flag2) → hash-table?
  v : any/c
  flag : (one-of/c 'weak 'equal 'eqv)
  flag2 : (one-of/c 'weak 'equal 'eqv)
```

Returns `#t` if *v* is a hash table created by `make-hash-table` or `make-immutable-hash-table` with the given *flag*s (or more), `#f` otherwise. If *flag2* is provided, it must be distinct from *flag* and `'equal` cannot be used with `'eqv`, otherwise the `exn:fail:contract` exception is raised.

```
(make-hash-table) → hash-table?
(make-hash-table flag) → hash-table?
  flag : (one-of/c 'weak 'equal 'eqv)
(make-hash-table flag flag2) → hash-table?
  flag : (one-of/c 'weak 'equal 'eqv)
  flag2 : (one-of/c 'weak 'equal 'eqv)
```

Creates and returns a new hash table. If provided, each *flag* must one of the following:

- `'weak` — creates a hash table with weakly-held keys via `make-weak-hash`, `make-weak-hasheq`, or `make-weak-hasheqv`.
- `'equal` — creates a hash table that compares keys using `equal?` instead of `eq?` using `make-hash` or `make-weak-hash`.
- `'eqv` — creates a hash table that compares keys using `eqv?` instead of `eq?` using `make-hasheqv` or `make-weak-hasheqv`.

By default, key comparisons use `eq?` (i.e., the hash table is created with `make-hasheq`). If *flag2* is redundant or `'equal` is provided with `'eqv`, the `exn:fail:contract` exception is raised.

```
(make-immutable-hash-table assocs)
 → (and/c hash-table? immutable?)
  assocs : (listof pair?)
(make-immutable-hash-table assocs flag)
 → (and/c hash-table? immutable?)
  assocs : (listof pair?)
  flag : (one-of/c 'equal 'eqv)
```

Like `make-immutable-hash`, `make-immutable-hasheq`, or `make-immutable-hasheqv`, depending on whether an `'equal` or `'eqv` *flag* is provided.

```
hash-table-get : procedure?
hash-table-put! : procedure?
hash-table-remove! : procedure?
hash-table-count : procedure?
hash-table-copy : procedure?
hash-table-map : procedure?
hash-table-for-each : procedure?
```

```
hash-table-iterate-first : procedure?
hash-table-iterate-next : procedure?
hash-table-iterate-value : procedure?
hash-table-iterate-key : procedure?
```

The same as `hash-ref`, `hash-set!`, `hash-remove!`, `hash-count`,`hash-copy`, `hash-map`, `hash-for-each`, `hash-iterate-first`, `hash-iterate-next`, `hash-iterate-value`, and `hash-iterate-key`, respectively.

```
expand-path : procedure?
```

The same as `cleanse-path`.

```
list-immutable : procedure?
```

The same as `list`.

```
(collection-file-path file collection ...+) → path?
  file : path-string?
  collection : path-string?
(collection-path collection ...+) → path?
  collection : path-string?
```

Like `collection-file-path` and `collection-path`, but without the `#:fail` option.

```
(thread proc [keep]) → thread?
  proc : procedure?
  keep : (or/c #f 'results) = #f
```

Like `thread`, but does not accept a `#:pool` argument, and accepts `#:keep` as by-position instead of as a keyword argument.

Changed in version 1.1 of package `compatibility-lib`: Made binding distinct from `thread` and added the *keep* argument.

3 Extra Libraries

The `mzscheme` library re-exports `racket/promise`, `racket/tcp`, and `racket/udp`.

4 Omitted Forms and Functions

In addition to forms and functions that have replacements listed in §1 “Old Syntactic Forms” and §2 “Old Functions”, the following forms and functions are exported by `racket/base` but not `mzscheme`:

```
compose filter sort foldl foldr
remv remq remove remv* remq* remove* memf assf findf
build-vector build-string build-list
hash-keys hash-values hash->list hash-set* hash-set*!
hash-update hash-update!
vector-copy!
thread-send thread-receive thread-try-receive thread-receive-evt
log-fatal log-error log-warning log-info log-debug
log-message log-level? make-logger logger?
current-logger logger-name make-log-receiver log-receiver?
```