

MzScheme: Legacy Language

Version 5.2

November 8, 2011

```
(require mzscheme)
```

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.

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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 `ids`.

The `fluid-let` form first evaluates each `expr` to obtain an *entry value* for each `id`. As evaluation moves into `body`, either through 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]) → input-port?
file : path-string?
mode : (one-of/c 'text 'binary) = 'binary
(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 `mode` and `exists` arguments are not keyword arguments. When both `mode` and `exists` are accepted, they are accepted in either order.

```

(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
      (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)))
  srcloc : (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-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 `flags` (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.

3 Extra Libraries

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

4 Omitted Functions

In addition to functions that have replacements listed in §2 “Old Functions”, the following 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*!
```