*Mu* *Namespace*

*dyad* mu version *0.0.9*

***Type keywords***

*T*  type superclass

**:t** **:nil** *boolean*

**:char** *char*

**:cons** *cons*

**:fixnum** 61 bit signed *integer, fix*

**:float** 32 bit IEEE *float*

**:func** function*, fn*

**:ns** *symbol* bindings

**:stream** file, string

**:struct** struct *vector*

**:symbol** LISP-1 binding, *symbol*

**:vector** *vector*, **:t** **:byte** **:char**

**:fixnum** **:float**

***Heap***

**hp-info** heap values association *list*

**hp-type** *type of* type occupancy:

*type*: type keyword

*of*: **:all :in-use :free :size**

***Frame***

**:fr-ref** *fix* *fix’* ref frame variable

**fr-lexv** *fn* *vector* from frame

**fr-pop** *fn*  pop frame binding

**fr-push** *vector* push frame binding

***Functions***

**fn-prop** *prop* *fn* function property

*prop:* **:nreq** **:lambda:frame :form**

***Reader/Printer***

**read** *stream* *bool* *T* read stream object

**write** *T* *bool stream* write object with escapes

***Symbols***

**boundp** s*ymbol* *symbol* bound?

**keyp** s*ymbol* *keyword* predicate

**keyword** *string* *keyword* from *string*

**symbol** *string* uninterned *symbol*

**sy-ns** *symbol* *symbol* *ns* binding

**sy-name** *symbol symbol* name binding

**sy-val** *symbol* *symbol* value binding

***Special*** ***Forms***

**:lambda** *list* . *body* anonymous *function*

***:*quote** *T* *quote* form

***:*if** *T T’ T’’*  conditional

***Core***

**coerce** *T :type keyword, coerce* totype

**eval** *T* *T*, evaluate form

**eq** *T* *T’* *bool,* are *T* and *T’* identical?

**type-of** *T* *keyword*

**apply** *fn* *list* apply *function* to arg *list*

**compile** *T* library form compiler

**\*:context** active frame list

**with-ex** *fn fn’* catchexception

**raise** *:condition* *T* *struct*, raise exception

**tag-of** *T* *fixnum* of object tag

**\*gc**  *bool,* garbage collection

**view** *T* *struct,* vector of object

**fix** *fn T* *T,* fixpoint of *function*

**:if** *T fn fn’* **:if** implementation

***Fixnums***

**fx-mul** *fix* *fix’* product of *fix* and *fix’*

**fx-add** *fix* *fix’* sum of *fix* and *fix’*

**fx-sub** *fix* *fix’* difference of *fix* and *fix’*

**fx-lt** *fix* *fix’* is *fix* less than *fix’?*

**fx-div** *fix* *fix* *fix* divided by *fix’*

**logand** *fix* *fix’* bitwise *and* of *fix* and *fix’*

**logor** fix fix’ bitwise *or* fix and fix’

***Floats***

**fl-mul** *float* *float’* product of *float* and *float’*

**fl-add** *float* *float’* sum of *float* and *float’*

**fl-sub** *float* *float’* difference of *float* and *float’*

**fl-lt** *float* *float’* is *float* less than *float’?*

**fl-div** *float* *float’* *float* divided by *float’*

***Lists***

**car** *list* head of *list*

**cdr** *list* tail of *list*

**cons** *T* *T’* *cons* from *T* and *T’*

**length** *list* length of *list*

**nth** *fix* *list* nth *car* of *list*

**nthcdr** *fix* *list* nth *cdr* of *list*

***Vectors***

**vector** *type* *list* typed vector from list

**sv-len** *vector* length of *vector*

**sv-ref** *vector* *fix* *nth* element

**sv-type** *vector* type of *vector*

***Structs***

**struct** *type* *list struct* from list

**st-type** *vector* *struct type*

**st-vec** *vector* *fix* *vector* of members

**sv-type** *vector* type of *vector* elements

***Condition Keywords***

:**arity :eof :open :read**

**:write :error :syntax :type**

**:unbound :div0 :range :stream**

***Streams***

**std*-*in** standard input *stream* *symbol*

**std*-*out** standard output *stream* *symbol*

**err*-*out** standard error *stream* *symbol*

**open** *type* *dir* *string*

open *stream* from

*type* **:file** | **:string**

*dir* **:input** | **:output**

**close** *stream* close *stream*

**openp** *stream* is *stream* open?

**eof** s*tream* is *stream* at end of file?

**get-str** *stream*

*g*et *vector* from *stream*

**rd-byte** *stream bool T*

read *byte* from *stream*

**un-byte** *byte* *stream* push *byte* onto *stream*

**wr-byte** *byte* *stream* write *byte* to *stream*

**rd-char** *stream bool T*

read *char* from *stream*

**un-char** *char* *stream* push *char* onto *stream*

**wr*-*char** *char* *stream* write *char* to *stream*

***Namespaces***

**make-ns** *string* *ns*

make *namespace*

**map-ns** *string* map *string* to namespace

**intern** *ns scope string value*

intern bound symbol

*scope* **:intern :extern**

**ns-map** *ns* *string*

map *string* to *symbol*

**ns-imp** *ns* *namespace’s* import

**ns-name** *ns* *namespace’s* name

**ns-int** *ns* *namespace’s* interns

**ns-ext** *ns* *namespace’s* externs

***Rust*** ***API***

**use crate::mu::core::mu::{**

**Exception,**

**Extern,**

**Mu,**

**MuCondition,**

**Tag**

**},**

**<Mu as Extern>::new(config: String) -> Mu**

**config:** comma-separated

list of *name*:*value* pairs:

**heap:*npages***

**gc:*on|off***

**&’static str <Mu as Extern>::VERSION**

**pub trait Export for Mu {**

**fn nil() -> Tag**

**fn eq(tag: Tag, tag1: Tag) -> bool**

**fn apply(&self, func: Tag, args) →**

**Exception::Result<Tag>**

**fn compile(&self, expr: Tag) ->**

**Exception::Result<Tag>**

**fn** **eof(&self, stream: Tag) ->**

**Exception::Result<Tag>**

**fn eval(&self,** **expr: Tag) ->**

**Exception::Result<Tag>**

**fn read\_stream(&self,** **stream: Tag,**

**eof: Tag,**

**eof\_value: Tag) ->**

**Exception::Result<Tag>**

**fn read\_string(&self, expr: String) ->**

**Exception::Result<Tag>**

**fn write(&self, expr: Tag,**

**escape: bool, stream: Tag) ->**

**Exception::Result<()>**

**fn write\_string(&self, string: String,**

**stream: Tag) ->**

**Exception::Result<()>**

**}**

***Reader  Syntax***

**;** comment to end of line

**#|...|#** block comment

**(…)**  constant list

**()** empty list, prints as **:nil**

**‘** quoted form

**“…”**  string/char vector

**#x**  hexadecimal *fixnum*

**#\**  character

**#(:*vector-type*** **…)** *vector*

**#s(:struct*-type*** **…)** *struct*

**#:symbol** uninterned *symbol*

**\** single escape in strings

**“`,;** terminating macro char

**#** non-terminating macro char

**!$%&\*+-.** symbol constituent:

**<>=?@[]|**

**:^\_{}~/**

**A..Za..z**

**0..9**

**backspace**

**rubout**

**0x09 tab** whitespace:

**0x0a linefeed**

**0x0c page**

**0x0d return**

**0x20 space**

*Runtime*

**runtime: 0.0.9: [-h?psvcelq] [file...]**

**?: usage message**

**h: usage message**

**c: [name:value,...]**

**e: eval [form] and print result**

**l: load [path]**

**p: pipe mode**

**q: eval [form] quietly**

**s: script mode**

**v: print version and exit**