

Funcons-beta: Characters *

The PLaNCompS Project

`Characters.cbs` | PLAIN | PRETTY

OUTLINE

Characters

- Unicode character set
- Unicode basic multilingual plane
- ISO Latin-1 character set
- ASCII character set
- Character point encodings
- Control characters

*Suggestions for improvement: plancomps@gmail.com.
Reports of issues: <https://github.com/plancomps/CBS-beta/issues>.

Characters

[*Type* **characters**
 Alias **chars**
Datatype **unicode-characters**
 Alias **unicode-chars**
 Type **unicode-points**
Funcon **unicode-character**
 Alias **unicode-char**
Funcon **unicode-point**
 Alias **unicode**
 Type **basic-multilingual-plane-characters**
 Alias **bmp-chars**
 Type **basic-multilingual-plane-points**
 Type **iso-latin-1-characters**
 Alias **latin-1-chars**
 Type **iso-latin-1-points**
 Type **ascii-characters**
 Alias **ascii-chars**
 Type **ascii-points**
Funcon **ascii-character**
 Alias **ascii-char**
Funcon **utf-8**
Funcon **utf-16**
Funcon **utf-32**
Funcon **backspace**
Funcon **horizontal-tab**
Funcon **line-feed**
Funcon **form-feed**
Funcon **carriage-return**
Funcon **double-quote**
Funcon **single-quote**
Funcon **backslash**]

Built-in Type **characters** <: **values**

Literal characters can be written 'C' where C is any visible character other than a **single-quote** or **backslash** character, which need to be escaped as '\'' and '\\'.

Alias **chars** = **characters**

Unicode character set The set of Unicode characters and allocated points is open to extension. See [https://en.wikipedia.org/wiki/Plane_\(Unicode\)](https://en.wikipedia.org/wiki/Plane_(Unicode))

Built-in Datatype **unicode-characters** <: **characters**

Alias **unicode-chars** = **unicode-characters**

Built-in Type **unicode-points** <: **bounded-integers**(0, **unsigned-bit-vector-maximum**(21))

Built-in Funcon `unicode-character(_ : unicode-points) : unicode-characters`

Alias `unicode-char = unicode-character`

The values in `unicode-characters` are the values of `unicode-character(UP : unicode-points)`.

Funcon `unicode-point(_ : unicode-characters) : \Rightarrow unicode-points`

Alias `unicode = unicode-point`

Rule `unicode-point(unicode-character(UP : unicode-points)) \rightsquigarrow UP`

Unicode basic multilingual plane The set of Unicode BMP characters and allocated points is open to extension.

Built-in Datatype `basic-multilingual-plane-characters <: unicode-characters`

Alias `bmp-chars = basic-multilingual-plane-characters`

Built-in Type `basic-multilingual-plane-points <: bounded-integers(0, unsigned-bit-vector-maximum(17))`

The values in `basic-multilingual-plane-characters` are the values of `unicode-character(BMPP : basic-multilingual-plane-points)`.

ISO Latin-1 character set

Built-in Datatype `iso-latin-1-characters <: basic-multilingual-plane-characters`

Alias `latin-1-chars = iso-latin-1-characters`

Type `iso-latin-1-points \rightsquigarrow bounded-integers(0, unsigned-bit-vector-maximum(8))`

The values in `iso-latin-1-characters` are the values of `unicode-character(ILP : iso-latin-1-points)`.

ASCII character set

Built-in Type `ascii-characters <: iso-latin-1-characters`

Alias `ascii-chars = ascii-characters`

Type `ascii-points \rightsquigarrow bounded-integers(0, unsigned-bit-vector-maximum(7))`

The values in `ascii-characters` are the values of `unicode-character(AP : ascii-points)`.

Funcon `ascii-character(_ : strings) : \Rightarrow ascii-characters?`

Alias `ascii-char = ascii-character`

`ascii-character` “C” takes a string. When it consists of a single ASCII character *C* it gives the character, otherwise `()`.

Rule `ascii-character [C : ascii-characters] \rightsquigarrow C`

Rule
$$\frac{C : \sim \text{ascii-characters}}{\text{ascii-character } [C : \text{characters}] \rightsquigarrow ()}$$

Rule
$$\frac{\text{length}(C^*) \neq 1}{\text{ascii-character } [C^* : \text{characters}^*] \rightsquigarrow ()}$$

Character point encodings See https://en.wikipedia.org/wiki/Character_encoding

Built-in Funcon `utf-8(_ : unicode-points) : ⇒ (bytes, (bytes, (bytes, bytes?)?)?)`

Built-in Funcon `utf-16(_ : unicode-points) : ⇒ (bit-vectors(16), (bit-vectors(16))?)`

Built-in Funcon `utf-32(_ : unicode-points) : ⇒ bit-vectors(32)`

Control characters

Funcon `backspace : ⇒ ascii-characters`
 `↪ unicode-character(hexadecimal-natural "0008")`

Funcon `horizontal-tab : ⇒ ascii-characters`
 `↪ unicode-character(hexadecimal-natural "0009")`

Funcon `line-feed : ⇒ ascii-characters`
 `↪ unicode-character(hexadecimal-natural "000a")`

Funcon `form-feed : ⇒ ascii-characters`
 `↪ unicode-character(hexadecimal-natural "000c")`

Funcon `carriage-return : ⇒ ascii-characters`
 `↪ unicode-character(hexadecimal-natural "000d")`

Funcon `double-quote : ⇒ ascii-characters`
 `↪ unicode-character(hexadecimal-natural "0022")`

Funcon `single-quote : ⇒ ascii-characters`
 `↪ unicode-character(hexadecimal-natural "0027")`

Funcon `backslash : ⇒ ascii-characters`
 `↪ unicode-character(hexadecimal-natural "005c")`