### Description

`substr(s, b, l)` returns the substring of ASCII string `s` starting at position `b` and continuing for a length of `l` characters.

For non-ASCII strings, `b` and `l` are interpreted as byte positions. To obtain character-based substrings of Unicode strings, see [M-5] `ustr()`. `substr(s, b)` is equivalent to `substr(s, b, .)` for strings that do not contain binary 0. If there is a binary 0 to the right of `b`, the substring from `b` up to but not including the binary 0 is returned.

When arguments are not scalar, `substr()` returns element-by-element results.

### Syntax

```
string matrix  substr(string matrix s, real matrix b, real matrix l)
string matrix  substr(string matrix s, real matrix b)
```

### Remarks and examples

`substr(s, b, l)` returns the substring of ASCII string `s` starting at position `b` and continuing for a length of `l`, where

1. `b` specifies the starting position; the first character of the string is `b = 1`.
2. `b > 0` is interpreted as distance from the start of the string; `b = 2` means starting at the second character.
3. `b < 0` is interpreted as distance from the end of string; `b = −1` means starting at the last character; `b = −2` means starting at the second from the last character.
4. `l` specifies the length; `l = 2` means for two characters.
5. `l < 0` is treated the same as `l = 0`: no characters are copied.
6. `l ≥ .` is interpreted to mean to the end of the string.

`substr(s, b)` is equivalent to `substr(s, b, .)` for strings that do not contain binary 0. If there is a binary 0 to the right of `b`, the substring from `b` up to but not including the binary 0 is returned.

If your string contains Unicode characters, see [M-5] `ustr()` and [M-5] `udsubstr()`.
Conformability

\( \text{substr}(s, b, l) \):

- \( s \): \( r_1 \times c_1 \)
- \( b \): \( r_2 \times c_2 \)
- \( l \): \( r_3 \times c_3 \); \( s, b, \) and \( l \) r-conformable
- \( \text{result} \): \( \max(r_1, r_2, r_3) \times \max(c_1, c_2, c_3) \)

\( \text{substr}(s, b) \):

- \( s \): \( r_1 \times c_1 \)
- \( b \): \( r_2 \times c_2 \); \( s \) and \( b \) r-conformable
- \( \text{result} \): \( \max(r_1, r_2) \times \max(c_1, c_2) \)

Diagnostics

In \( \text{substr}(s, b, l) \) and \( \text{substr}(s, b) \), if \( b \) describes a position before the beginning of the string or after the end, "" is returned. If \( b + l \) describes a position to the right of the end of the string, results are as if a smaller value for \( l \) were specified.

Also see

[M-5] \textbf{subinstr()} — Substitute text

[M-5] \underline{\textbf{substr()}} — Substitute into string

[M-5] \textbf{usubinstr()} — Replace Unicode substring

[M-5] \textbf{usustr()} — Extract Unicode substring

[M-5] \underline{\textbf{usubstr()}} — Substitute into Unicode string

[M-4] \textbf{String} — String manipulation functions

[U] \textbf{12.4.2 Handling Unicode strings}