Naur
Perlis
+ ?

Naur
16

Types of expressions.
Assignments.

The following definition of the meaning of expressions makes use of the following abbreviations :

i1, i2, i3, i4 stands for identifiers declared to be integer

r1, r2 stands for identifiers declared to be real

realfrominteger is the identifier of a transfer function having integer declared argument and real declared value.

The words " is of type integer " or " is of type real " indicate that combinations so described may be used anywhere where identifiers i respectively r are permitted, if suitably enclosed in brackets.

1.1 i1 + i2 is of type integer

1.2 i1 x i2 " " " "

1.3.1 i1/i2 For i2 = 0, undefined.
Otherwise :
Possibility 1 : Always undefined
" 2 : " of type real

Possibility 3a recommended :

Value is
entier (realfrominteger (i1)/ realfrominteger (i2) + 0.5)
of type integer

1.3.2 Possibility 3b

Value is
entier (realfrominteger (i1)/ realfrominteger (i2))
of type integer

Possibility 4 : value is integer or real according to context (mathematical properties)

1.4 i1 ↑ i2 For i2 > 0, of type integer
For i2 < 0, the effect is as though there were
i3 : = 1
i4 : = i1 x i1 x ... x i1
- i2 times
then i3/i4 (see 1.3)

For i2 = 0 : 1 of type integer

.../.

1.5 i1 : = i2 Always defined directly.

2.1. i1 + r 2 is of type real
2.2. i1 x r 2 " " " "
2.3. i1/r2 for r2 = 0 undefined
otherwise of type real
2.4. i1↑r2 for i1 > 0 :

Value is exp (r2 x ln (i1)) of type real

for i1 = 0 :

If r2 > 0 value is 0 of type real
otherwise undefined

for i1 < 0
Always undefined

2.5. i1 : = r2

~~Possibility 1 : undefined~~
Possibility 2a. To be equivalent to

i1 : = entier (r2 + 0.5)

Possibility 2b. To be equivalent to

i1 : = entier (r2)

Possibility 3. Defined or undefined according to context (mathematical properties)

3.1. r1 + i2 is of type real
3.2. r1 x i2 " " " "
3.3. r1 / i2 for i2 = 0 undefined
otherwise of type real

3.4. r1↑i2 If i2 > 0
Value is r1 x r1 x ..... r1 (i2 times)
of type real

If i2 = 0
Value is 1.0 of type real

If i2 < 0
If r1 = 0 value is undefined
otherwise the value is

1.0 / (r1 x r1 x ... r1) of type real
- i2 times

.../.

| | | | |
|---|---|---|---|
| ✓ | 3.5. | r1 := i2. | To be equivalent to r1 := realfrominteger (i2) |
| ✓ | 4.1. | r1 + r2 | is of type real |
| ✓ | 4.2. | r1 x̄ r2 | " " " " |
| ✓ | 4.3. | r1 / r2 | for r2 = 0 undefined otherwise of type real |
| ✓ | 4.4. | r1 ↑ r2 | As case 2.4. with r1 for i1. |
| ✓ | 4.5. | r1 := r2 | Always defined directly |

NB

## Numbers

Possibility 1

Unsigned integers are of type integer or real according to context

Possibility 2

NB Unsigned integers are of type integer (example: 3).

NB Proper decimal numbers (defined as below) are of type real. (example : 3.0)

⟨proper decimal number⟩ :: =

⟨unsigned integer⟩.⟨unsigned integer⟩ |

. ⟨unsigned integer⟩

## Transfer functions

It is understood that transfer functions between any pair of recognized entities may be defined.

PN/js
1?13.60