

## Structures of data sd\_listr8 and sd\_listis

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### Summary:

One describes the structures of data here:

- sd\_listr8 : list of realities created by DEFI\_LIST\_REEL [U4.21.04].
- sd\_listis : list of entreties created by DEFI\_LIST\_ENTI [U4.21.05].

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## 1 Structures of data `sd_listr8` and `sd_listis` in short

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The structure of data `sd_listr8` contains a list of realities.

The structure of data `sd_listis` contains a list of entreties.

## 2 Tree structure

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```
sd_listr8 (k19) ::= record
  ♦ \.BINT' : S V R8
  ♦ \.LPAS' : S V R8
  ♦ \.NBPA' : S V I
  ♦ \.VALE' : S V R8

sd_listis (k19) ::= record
  ♦ \.BINT' : S V I
  ♦ \.LPAS' : S V I
  ♦ \.NBPA' : S V I
  ♦ \.VALE' : S V I
```

## 3 Contents of the objects

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We detail the contents of the objects of the structure of data `sd_listr8`, those of the structure of data `sd_listis` are identical in all points to the only difference of the "objects.BINT", ".LPAS" and ".VALE" which contains entreties instead of realities. The structure can seem complicated to store a list of realities. L' "object.VALE" would be enough. It contains indeed the list. The structure is conceived to benefit owing to the fact that the numbers of the list can be regularly spaced: list "with constant step" per pieces. In this case, certain algorithms use this concept of constant step. The description of the list in fact is doubled:

- '.VALE' : the list of the values contains,
- '.BINT', '.LPAS' and '.NBPA' : information equivalent to this list contains.

Let us suppose that one wants to store the list of 8 realities:

1	$a0 = a0$
2	$a1 = a0 + 1 * dt1$
3	$a2 = a0 + 2 * dt1$
4	$a3 = a2 + 1 * dt2$
5	$a4 = a2 + 2 * dt2$
6	$a5 = a2 + 3 * dt2$
7	$a6 = a5 + 1 * dt3$
8	$a7 = a5 + 2 * dt3$

Contents of the objects ".VALE" and ".BINT" will be:

```
\.VALE' : S V R8 dim = 8  
  
v (1) = a0  
v (2) = a1  
...  
v (8) = a7
```

This object contains the values of the list.

```
\.BINT' : S V R8 dim = 4  
  
v (1) = a0  
v (2) = a2  
v (3) = a5  
v (4) = a7
```

This object contains the ends of the zones where the step is constant.

Objects ".LPAS" and ".NBPA" will contain:

```
\.LPAS' : S V R8 dim = 3 (This object contains the values of the "steps")  
v(1)=d1 value of the 1st step  
v(2)=d2 value of the 2nd  
step  
v(3)=d3 value of the 3rd step  
  
\.NBPA' : S V I dim = 3 (This object contains the number of "steps" for each interval)  
v(1)=2 many intervals length d1  
v(2)=3 many intervals length d2  
v(3)=2 many intervals length d3
```

In the case (general) where the list has several elements:

- length (LPAS) = long (NBPA)
- length (BINT) = long (NBPA) + 1

#### Notice

*For the lists of realities, it can happen that the value of the "step constant" ("object.LPAS") is not an exact divider length of the "zones" ("object.BINT"). The consequence is that the last "step" of a zone can be slightly different from the others not zone. This difference cannot be higher than  $10^{-3}$  (in relative value).*

Typical case of the list having 1 only element:

If the list has only one element:

```
length (VALE) = long (BINT) = long (LPAS) = long (NBPA) = 1  
VALE (1) =  
BINT (1)
```

## 4 Examples

### 4.1 Command file

```
LISTR8 = DEFI_LIST_REEL (BEGINNING = 1. ,  
                        INTERVAL = (_F (JUSQU_A=5., PAS=2.),  
                                     _F (JUSQU_A=7., NOMBRE=2)))  
  
LISTIS = DEFI_LIST_ENTI (VALE = (1,3,5,6,7))  
  
IMPR_CO (CONCEPT=_F (NOM= (LISTR8, LISTIS)) )
```

### 4.2 Contents of the objects

STRUCTURE OF DATA: LISTR8:

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IMPRESSION OF THE CONTENTS OF THE LOST PROPERTY:

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SEGMENT IMPRESSION OF VALUES >LISTR8 .BINT<  
1 - 1.00000E+00 5.00000E+00 7.00000E+00

-----

SEGMENT IMPRESSION OF VALUES >LISTR8 .LPAS<  
1 - 2.00000E+00 1.00000E+00

-----

SEGMENT IMPRESSION OF VALUES >LISTR8 .NBPA<  
1 - 2 2

-----

SEGMENT IMPRESSION OF VALUES >LISTR8 .VALE<  
1 - 1.00000E+00 3.00000E+00 5.00000E+00 6.00000E+00  
7.00000E+00

=====> IMPR\_CO OF THE STRUCTURE OF DATA: LISTIS :

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IMPRESSION OF THE CONTENTS OF THE LOST PROPERTY:

-----

SEGMENT IMPRESSION OF VALUES >LISTIS .BINT<  
1 - 1 3 5 6 7

-----

SEGMENT IMPRESSION OF VALUES >LISTIS .LPAS<  
1 - 2 2 1 1

-----

SEGMENT IMPRESSION OF VALUES >LISTIS .NBPA<  
1 - 1 1 1 1

-----

SEGMENT IMPRESSION OF VALUES >LISTIS .VALE<  
1 - 1 3 5 6 7