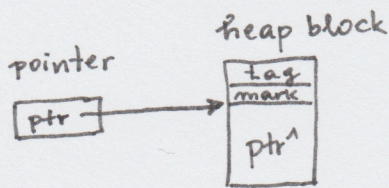


# HEAP BLOCKS IN EXPERIMENTAL OBERON

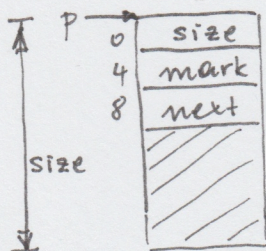
## (RECORDS AND ARRAYS)



$$\text{blktyp} := \text{tag} \text{ MOD } 4$$

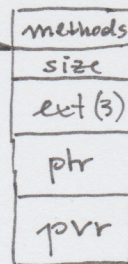
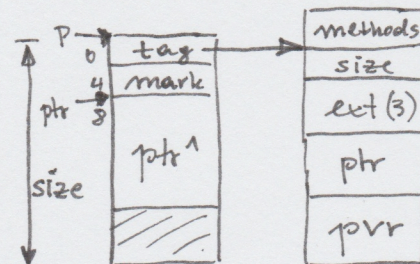
tag field		blktyp	heap blk type		
<table><tr><td>&gt; 0</td><td>00</td></tr></table>	> 0	00	any	0	Record
> 0	00				
<table><tr><td>&gt; 0</td><td>101</td></tr></table>	> 0	101	any	1	Array of record
> 0	101				
<table><tr><td>0</td><td>110</td></tr></table>	0	110	2	2	Array of pointer
0	110				
<table><tr><td>0</td><td>111</td></tr></table>	0	111	3	3	Array of basic type
0	111				
<table><tr><td>0</td><td>111</td></tr></table>	0	111	7	3	Array of procedure
0	111				

### Free heap block (mark < 0)



- mark = -1
- next points to next free heap block of this size (32, 64, 128, n \* 256)
- free blocks are typed (i.e. have fields)

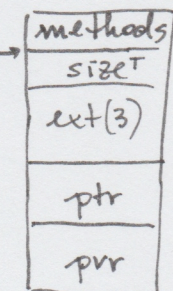
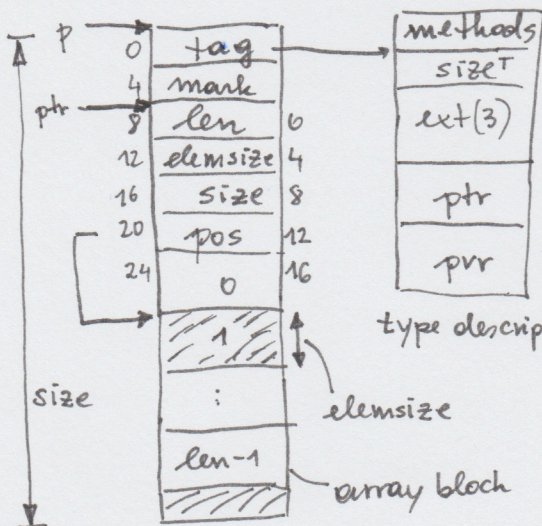
### Record (blktyp=0, tag=any)



type descriptor

- mark ≥ 0
- tag = any
- blktyp = 0
- size stored in type descriptor

### Array of record (blktyp=1, tag=any)



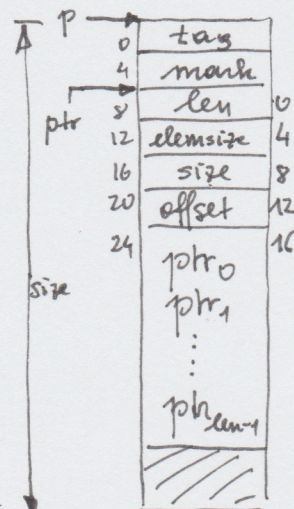
type descriptor

elemsize

array block

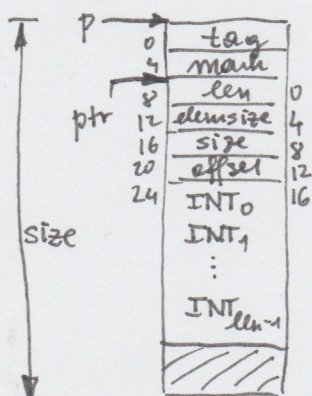
- mark ≥ 0
- tag = any
- blktyp = 1
- len = # of array elems
- size stored in array block (size in type desc ignored)
- pos = current element during mark phase

### Array of pointer (blktyp=2, tag=2)



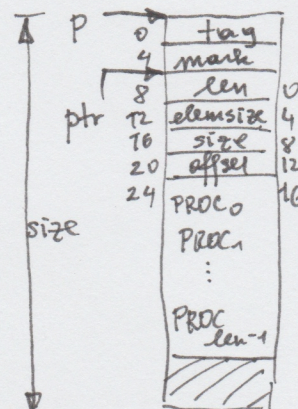
- mark ≥ 0
- tag = 2
- blktyp = 2
- len = # of pointers
- offset = current pointer during mark phase
- no type descriptor

### Array of basic type (blktyp=3, tag=3)



- mark ≥ 0
- tag = 3
- blktyp = 3
- len = # of array elems
- elemsize = 1, 2 or 4
- offset = -1
- no type descriptor
- ≙ "sysblk" in Ceres-Oberon

### Array of procedure (blktyp=3, tag=7)



- mark ≥ 0
- tag = 7
- blktyp = 3
- len = # of procedures
- elemsize = 4
- offset = -1
- Traversed during reference checking
- No type descriptor