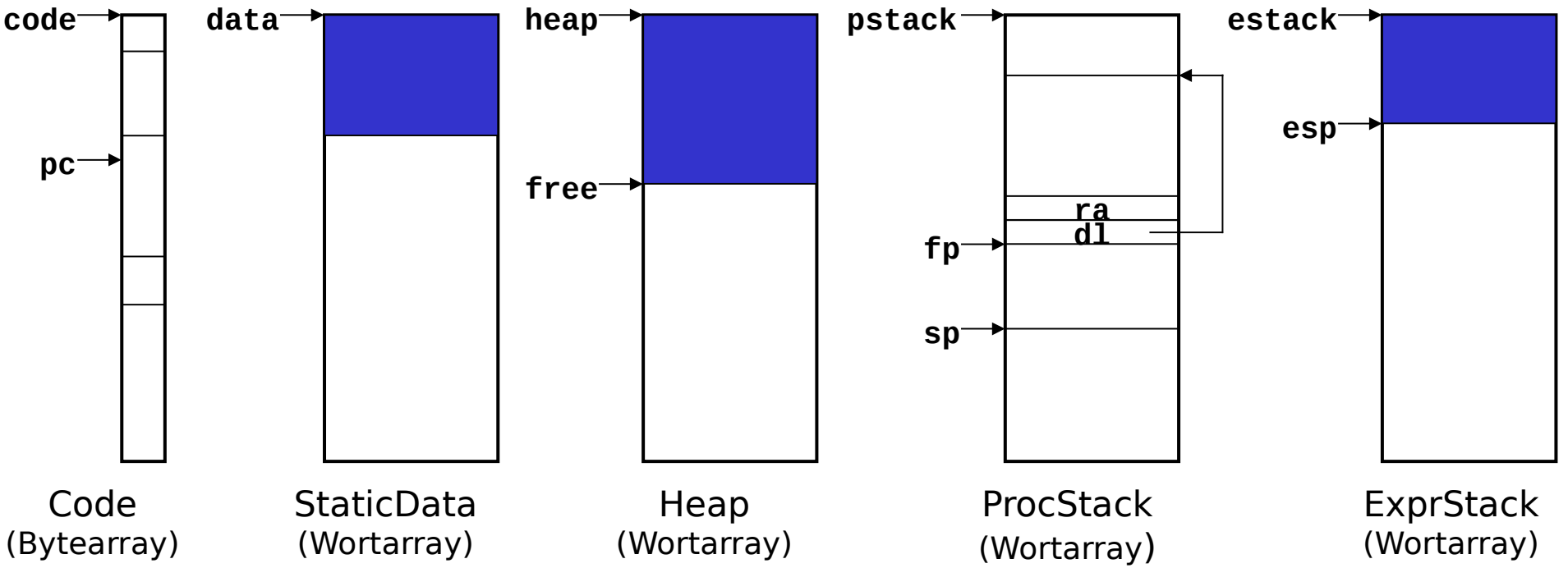
MicroJava VM: Speicher-Layout

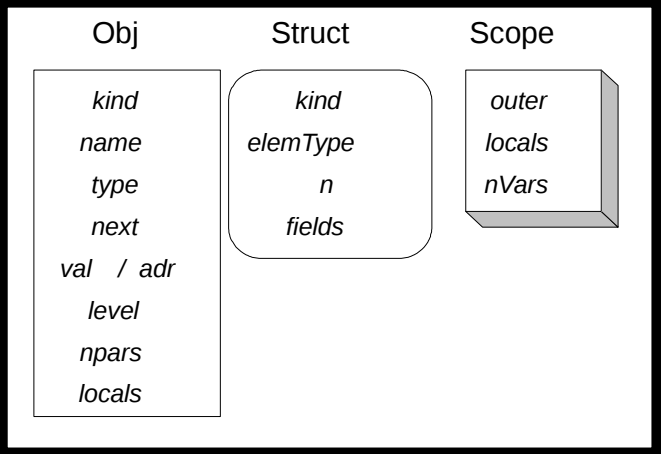


Symboltabelle

Deklaration:

```
program A
    final int max = 12;     // Konstante
    char c; int i;              // globale Variablen
    class B { int x, y; }       // innere Klasse mit Feldern
{   void foo ()   int[] iarr; B b; int n;   {…}    }
```

Struktur der 3 Knotenarten:



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```
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    char c; int i;          // globale Variablen
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{   void foo ()   int[] iarr; B b; int n;   {...}    }
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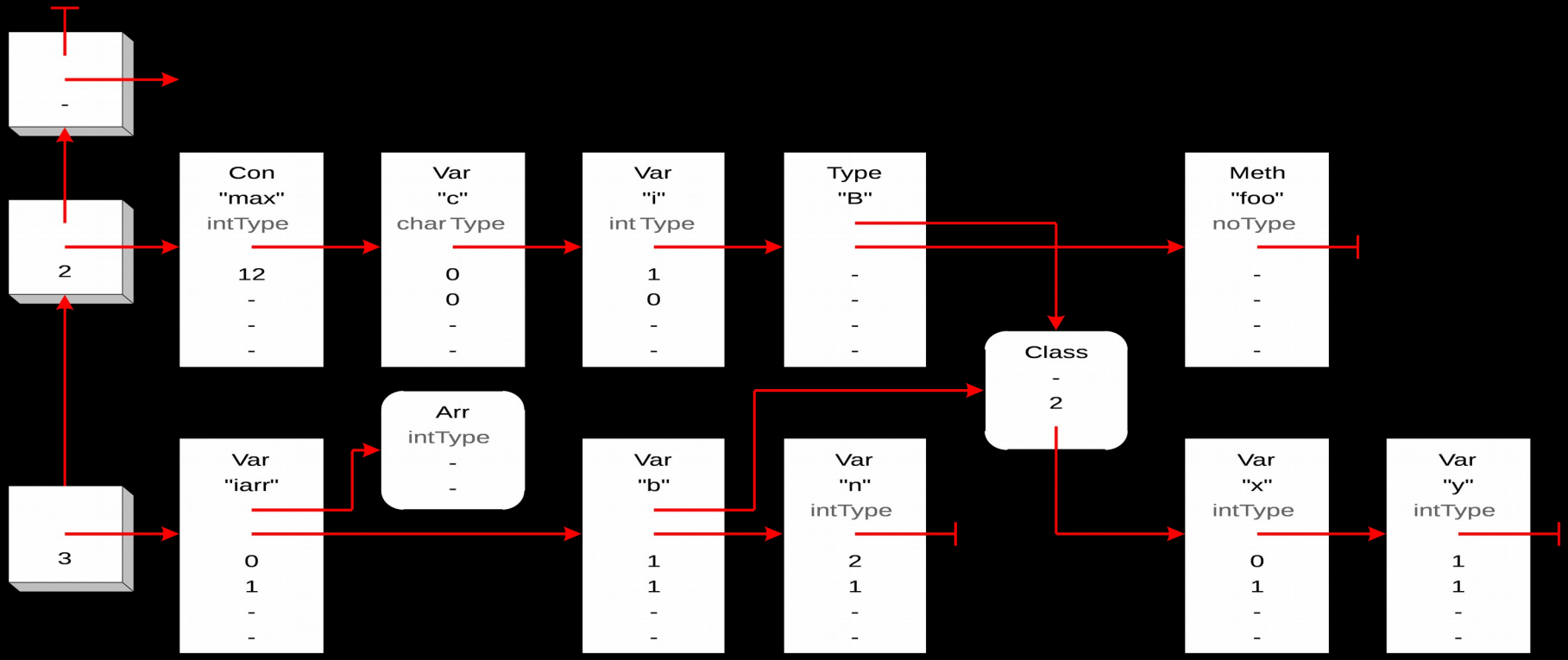

Bsp 1: **n = 3;**

Deklaration:

```
program A
    final int max = 12;     // Konstante
    char c; int i;              // globale Variablen
    class B { int x, y; }       // innere Klasse mit Feldern
{   void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
const_3
store_2
```

= **2** byte

Bsp 2: **i = 10;**

Deklaration:

```
program A
    final int max = 12;     // Konstante
    char c; int i;              // globale Variablen
    class B { int x, y; }       // innere Klasse mit Feldern
{   void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
const   10
putstatic   1
```

= **8** byte

Bsp 3: **n = 3 + i;**

Deklaration:

```
program A
   final int max = 12;     // Konstante
   char c; int i;              // globale Variablen
   class B { int x, y; }       // innere Klasse mit Feldern
{  void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
const_3
getstatic   1
add
store_2
```

= **6** byte

Bsp 4: **n = 3 + i * max - n;**

Deklaration:

```
program A
   final int max = 12;     // Konstante
   char c; int i;                 // globale Variablen
   class B { int x, y; }          // innere Klasse mit Feldern
{  void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
const_3                                    = 14 byte
getstatic   1
const   12
mul
add
load_2
sub
store_2
```

Bsp 5: **iarr[5] = 10;**

Deklaration:

```
program A
    final int max = 12;     // Konstante
    char c; int i;                  // globale Variablen
    class B { int x, y; }       // innere Klasse mit Feldern
{   void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
load_0
const_5
const   10
astore
```

= **8** byte

Bsp 6: **b.y = iarr[5] * 3;**

Deklaration:

```
program A
    final int max = 12;     // Konstante
    char c; int i;                  // globale Variablen
    class B { int x, y; }           // innere Klasse mit Feldern
{   void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
load_1                                          = 9 byte
load_0
const_5
aload
const_3
mul
putfield   1
```

Bsp 7: **n--;**

Deklaration:

```
program A
    final int max = 12;     // Konstante
    char c; int i;              // globale Variablen
    class B { int x, y; }       // innere Klasse mit Feldern
{   void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
inc   2   -1
```

= **3** byte

Bsp 8: i--;

Deklaration:

```
program A
   final int max = 12;     // Konstante
   char c; int i;                 // globale Variablen
   class B { int x, y; }          // innere Klasse mit Feldern
{  void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
getstatic   1
const_m1
add
putstatic   1
```

= **8** byte

Bsp 9: **b.y--;**

Deklaration:

```
program A
   final int max = 12;     // Konstante
   char c; int i;              // globale Variablen
   class B { int x, y; }       // innere Klasse mit Feldern
{  void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
load_1
dup
getfield   1
const_m1
add
putfield   1
```

= **10** byte

Bsp 10: iarr[0]--;

Deklaration:

```
program A
   final int max = 12;     // Konstante
   char c; int i;                 // globale Variablen
   class B { int x, y; }          // innere Klasse mit Feldern
{  void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
load_0
const_0
dup2
aload
const_m1
add
astore
```

= **7** byte

Bsp 11: **if (i <= n)** n=0**;**

Deklaration:

```
program A
   final int max = 12;     // Konstante
   char c; int i;                 // globale Variablen
   class B { int x, y; }          // innere Klasse mit Feldern
{  void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
10:   getstatic 1
13:   load_2
14:   jgt 5          (--> 19)
17:   const_0
18:   store_2
19:   ...
```

Bsp 12: **if (i <= n && n < 0)** n=0**;**

Deklaration:

```
program A
   final int max = 12;     // Konstante
   char c; int i;              // globale Variablen
   class B { int x, y; }       // innere Klasse mit Feldern
{  void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
10:   getstatic 1
13:   load_2
14:   jgt 10            (--> 24)
17:   load_2
18:   const_0
19:   jge 5             (--> 24)
22:   const_0
23:   store_2
24:   ...
```

Bsp 13: **if (i <= n || n < 0)** n=0**;**

Deklaration:

```
program A
   final int max = 12;     // Konstante
   char c; int i;                 // globale Variablen
   class B { int x, y; }          // innere Klasse mit Feldern
{  void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
10:   getstatic 1
13:   load_2
14:   jle 8              (--> 22)
17:   load_2
18:   const_0
19:   jge 5              (--> 24)
22:   const_0
23:   store_2
24:   ...
```

Bsp 14: **if (i<=n || n<0 && i>0)** n=0**;**

Deklaration:

```
program A
   final int max = 12;     // Konstante
   char c; int i;                 // globale Variablen
   class B { int x, y; }          // innere Klasse mit Feldern
{  void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
 10:   getstatic 1
 13:   load_2
 14:   jle 15              (--> 29)
 17:   load_2
 18:   const_0
 19:   jge 12              (--> 31)
 22:   getstatic 1
 25:   const_0
 26:   jle 5               (--> 31)
 29:   const_0
 30:   store_2
```

Bsp 15: **while (i<=n)** n++;

Deklaration:

```
program A
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   class B { int x, y; }          // innere Klasse mit Feldern
{  void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
10:   getstatic 1
13:   load_2
14:   jgt 9                (--> 23)
17:   inc 2 1
20:   jmp -10              (--> 10)
23:   ...
```

Bsp 16: **if (i <= n)** n=0 **else** n=1**;**

Deklaration:

```
program A
   final int max = 12;     // Konstante
   char c; int i;                 // globale Variablen
   class B { int x, y; }          // innere Klasse mit Feldern
{  void foo ()   int[] iarr; B b; int n;   {...}    }
```

```
10:   getstatic 1
13:   load_2
14:   jgt 8        (--> 22)
17:   const_0
18:   store_2
19:   jmp 5        (--> 24)
22:   const_1
23:   store_2
24:   ...
```

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```
program A
    final int max = 12;     // Konstante
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