
II.1. Grundelemente der Programmierung

- 1. Erste Schritte
- 2. Einfache Datentypen
- 3. Anweisungen und Kontrollstrukturen
- 4. Verifikation
- 5. Reihungen (Arrays)

5. Reihungen (Arrays)

Folge:

14	1	0	8
----	---	---	---

Folge [0] == 14, ..., Folge [3] == 8

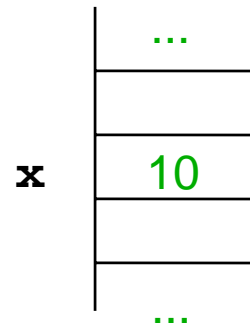
Bestand:

	Ort				
	0	1	2	3	...
0	5	0	10	7	
1	1	3	2	0	
2	2	17	1	1	
3	14	1	0	8	
...					

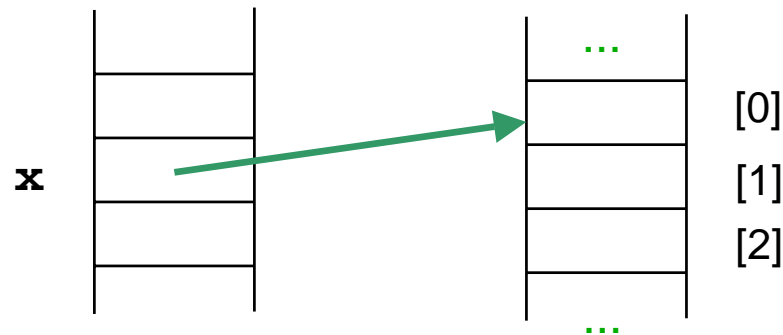
Bestand [0] [0] == 5, Bestand [0] [1] == 0,
Bestand [0] [2] == 10, ...

Wert- und Referenzvariablen

```
int x;  
x = 10;
```



```
int [] x;  
x = new int [3];  
x [0] = 14;  
x [1] = 2;  
x [2] = 5;
```

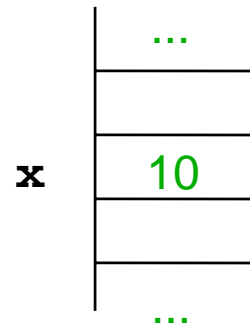


Primitive Datentypen: Variablen speichern Werte

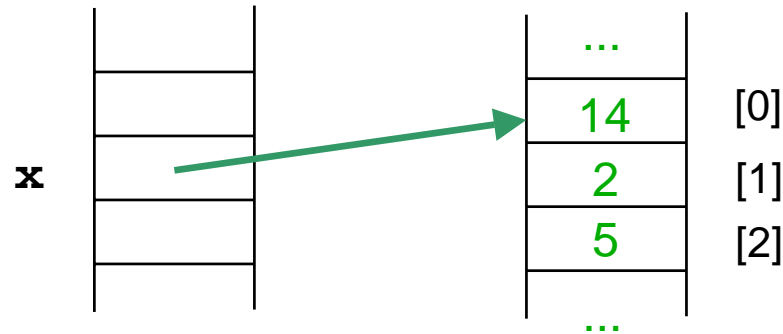
Andere Datentypen (Arrays, Strings, ...): Variablen speichern Verweise

Wert- und Referenzvariablen

```
int x;  
x = 10;
```



```
int [] x;  
x = new int [3];  
x [0] = 14;  
x [1] = 2;  
x [2] = 5;
```



Primitive Datentypen: Variablen speichern Werte

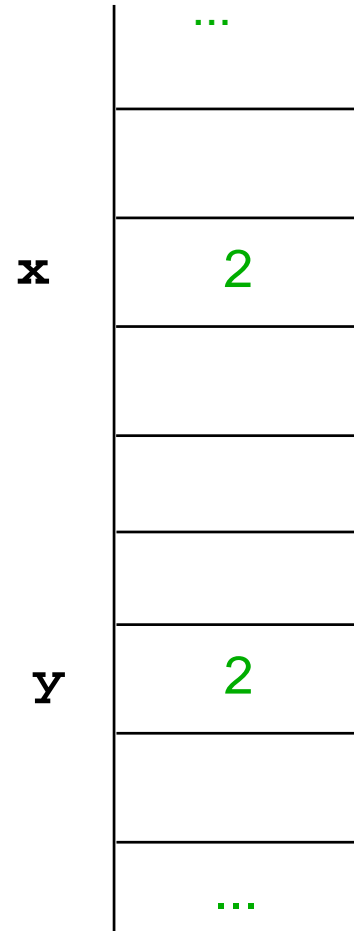
Andere Datentypen (Arrays, Strings, ...): Variablen speichern Verweise

Zuweisung bei Wertvariablen

```
int x = 2;
```

```
int y = x;
```

```
y = 8;
```

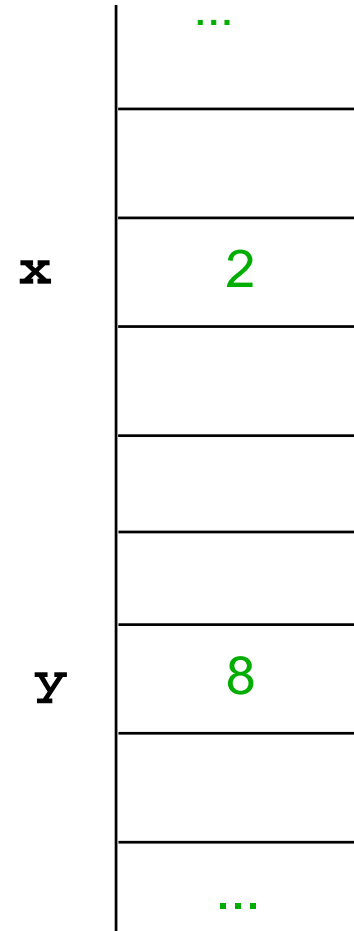


Zuweisung bei Wertvariablen

```
int x = 2;
```

```
int y = x;
```

```
y = 8;
```



Zum Schluss: **x == 2**

Zuweisung bei Referenzvariablen

```
int [] x = new int [3];
```

```
x [0] = 14;
```

```
x [1] = 2;
```

```
x [2] = 5;
```

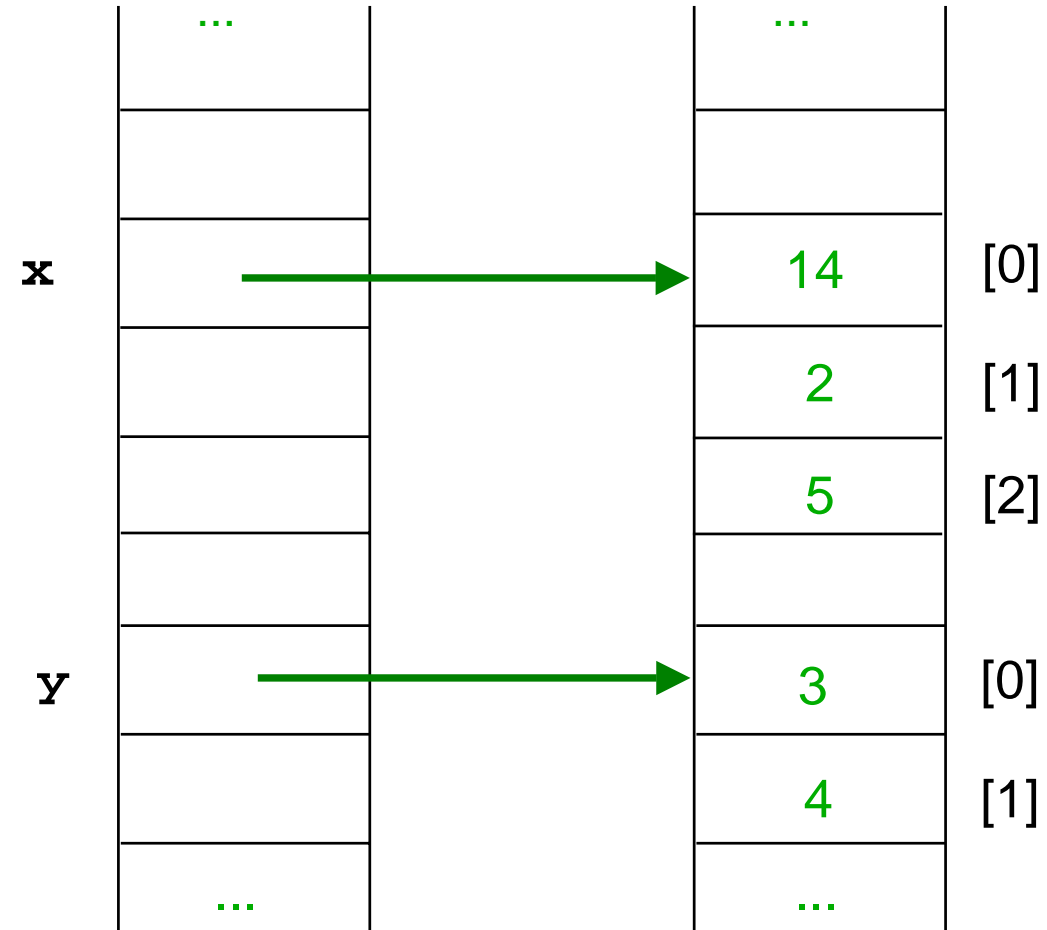
```
int [] y = new int [2];
```

```
y [0] = 3;
```

```
y [1] = 4;
```

```
y = x;
```

```
y [1] = 8;
```



Zuweisung bei Referenzvariablen

```
int [] x = new int [3];
```

```
x [0] = 14;
```

```
x [1] = 2;
```

```
x [2] = 5;
```

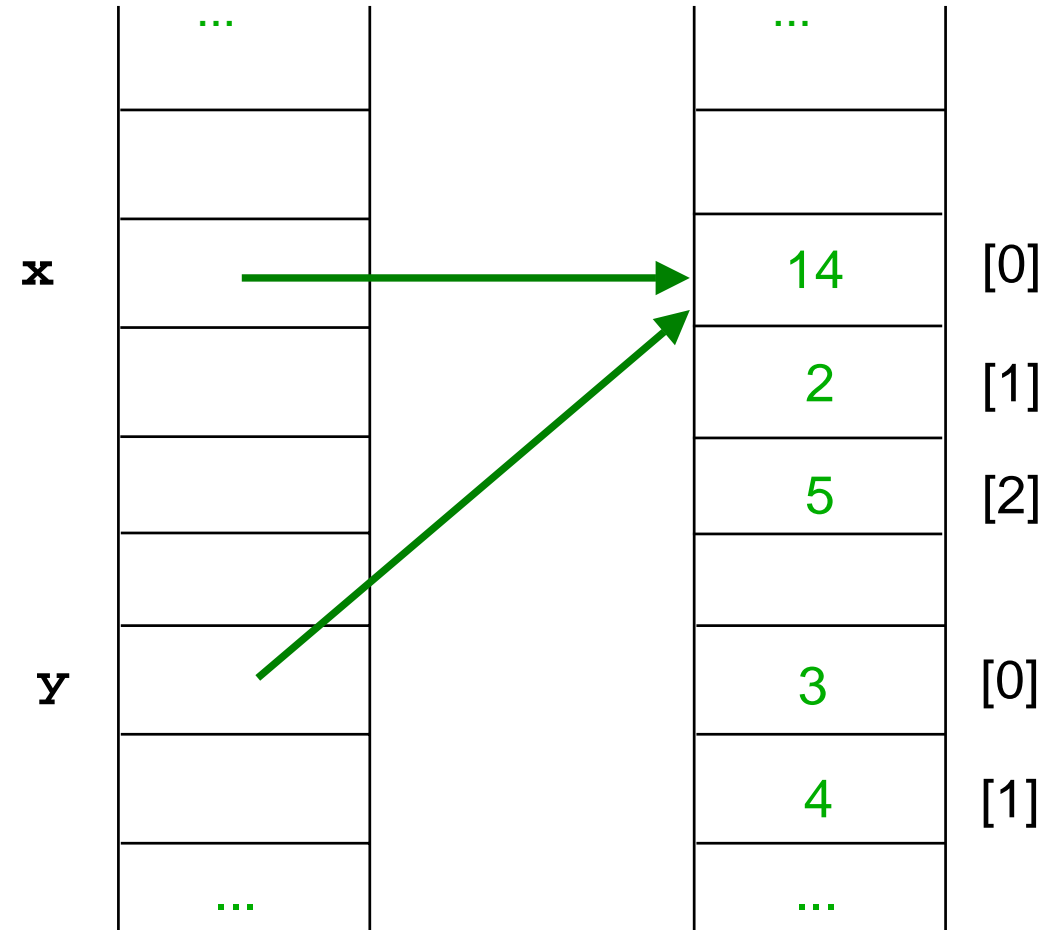
```
int [] y = new int [2];
```

```
y [0] = 3;
```

```
y [1] = 4;
```

```
y = x;
```

```
y [1] = 8;
```



Zuweisung bei Referenzvariablen

```
int [] x = new int [3];
```

```
x [0] = 14;
```

```
x [1] = 2;
```

```
x [2] = 5;
```

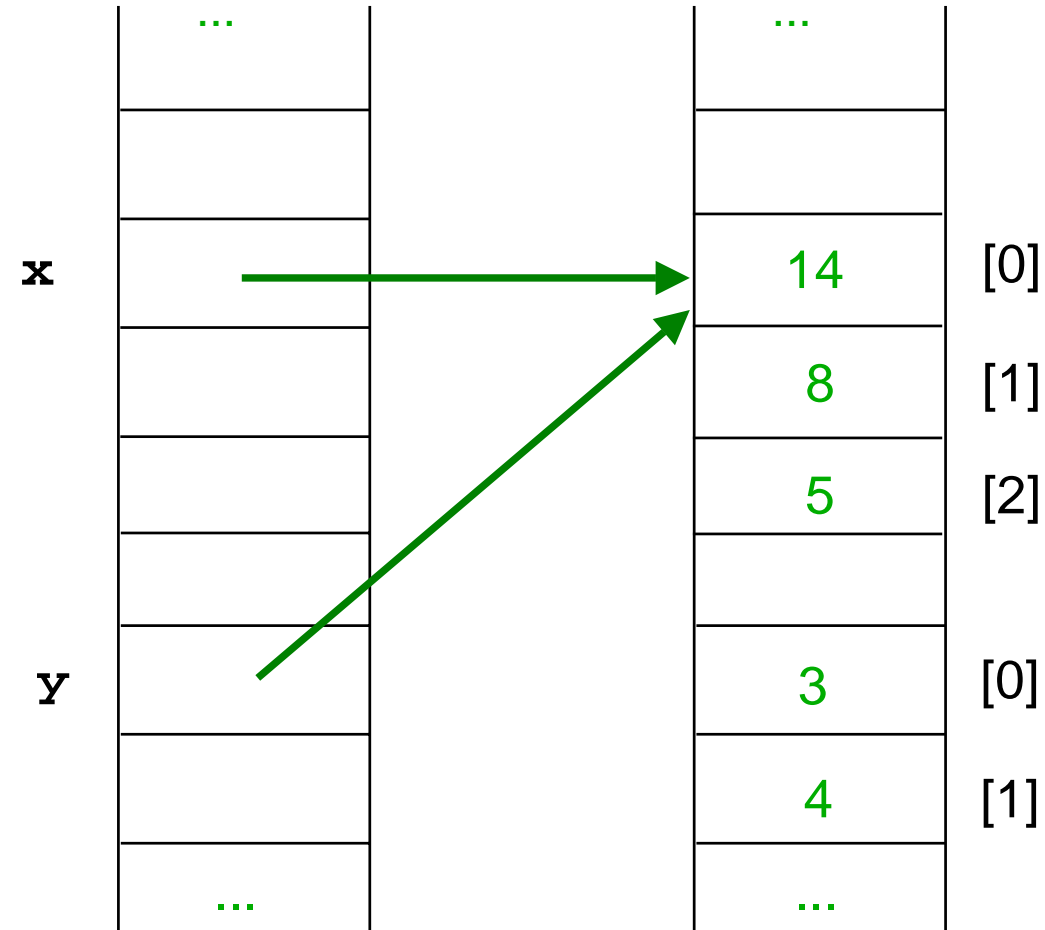
```
int [] y = new int [2];
```

```
y [0] = 3;
```

```
y [1] = 4;
```

```
y = x;
```

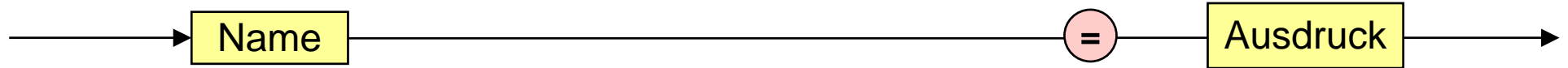
```
y [1] = 8;
```



Zum Schluss: `x [1] == 8`

Zuweisung, Typ

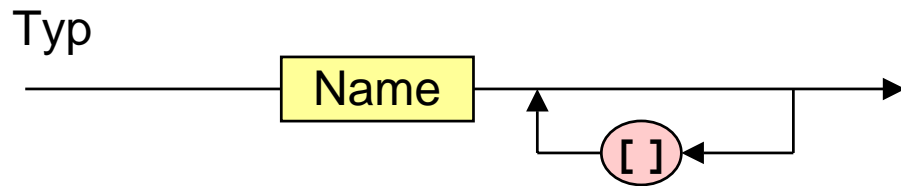
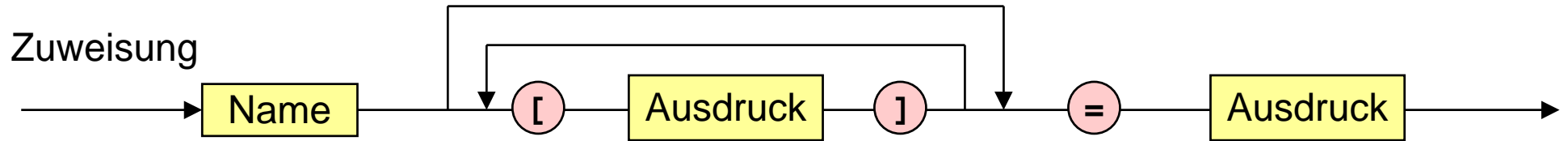
Zuweisung



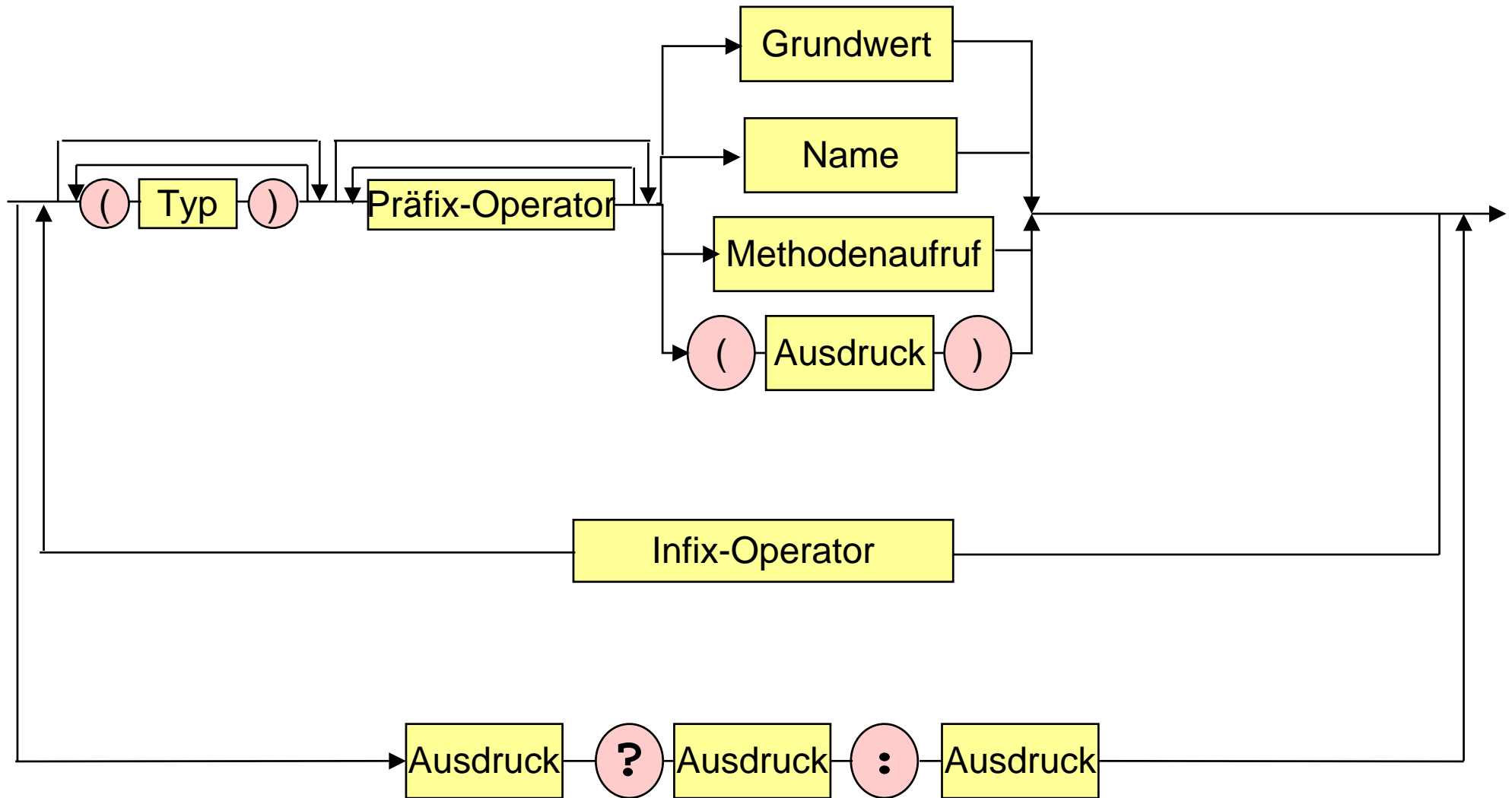
Typ



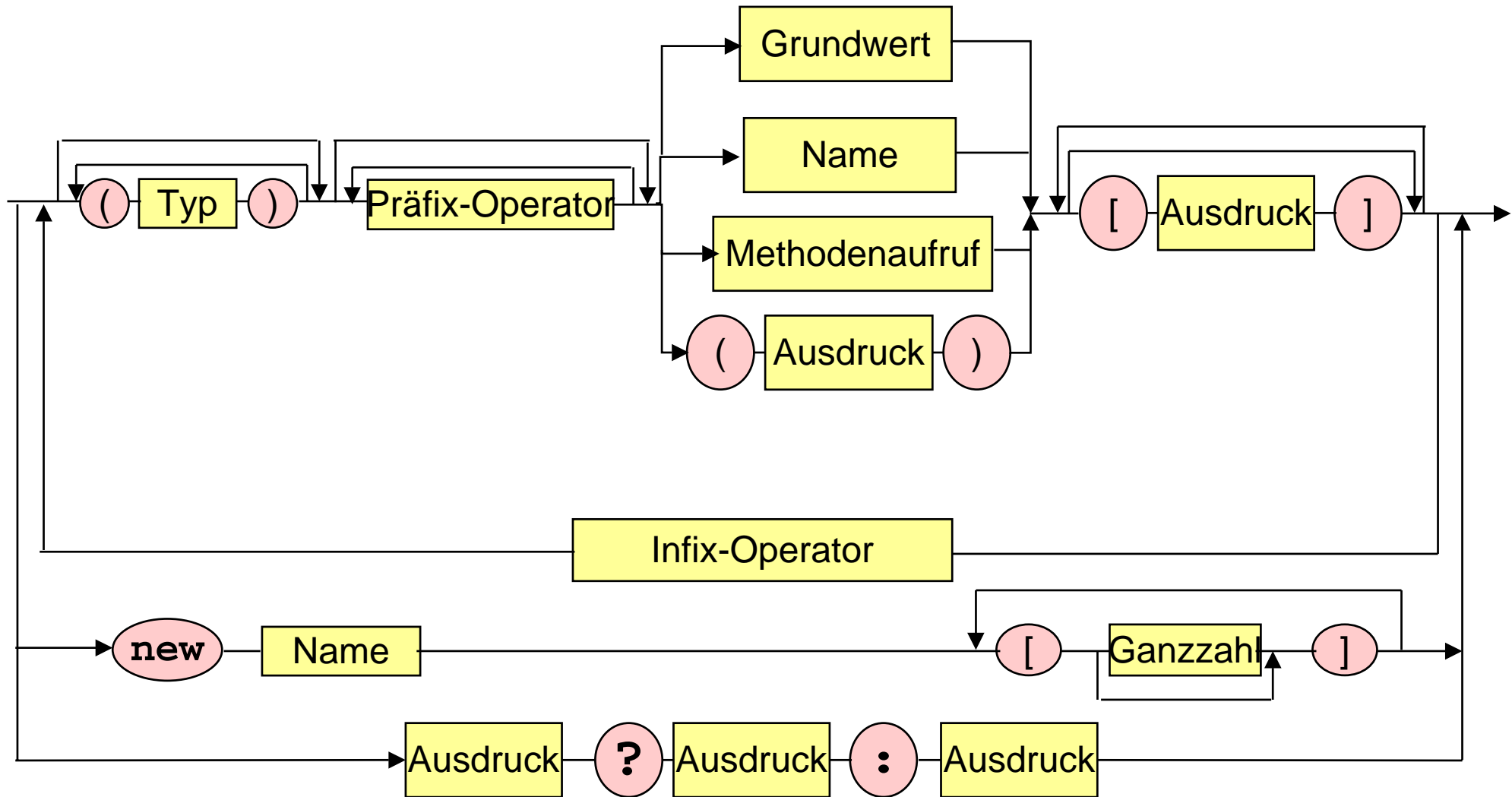
Zuweisung, Typ



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Palindrom-Programm mit Arrays

```
public class Palindrom {  
  
    public static void main (String [] args) {  
  
        char [] wort = args[0].toCharArray();  
        boolean palindrom = true;  
  
        for (int i = 0;  
            i <= (wort.length - 1) / 2 && palindrom;  
            i++)  
  
            palindrom = wort [i] == wort [wort.length - 1 - i];  
  
        System.out.println(palindrom);  
    }  
}
```

Sort-Programm mit Arrays

```
public class Sort {
    public static void main (String [] args) {
        int i,j,z;
        System.out.print("Wieviele Zahlen sortieren? ");
        int n = IO.eingabe(); int [] a = new int[n];

        //Lies Elemente ein
        for (i = 0; i < n; i++) a[i] = IO.eingabe();

        //Sortiere Elemente
        for (i = 0; i < n-1; i++)

            //Vertausche a[i] mit kleinstem Nachfolger
            for (j = i+1; j < n; j++)

                if (a[i] > a[j]) { //Nachfolger kleiner als a[i]?
                    //Vertausche a[i] und a[j]
                    z = a[i]; a[i] = a[j]; a[j] = z;
                }

        //Gib sortierte Elemente aus
        for (i = 0; i < n; i++) System.out.print(a[i] + " ");
    }}
}
```