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# II.1. Grundelemente der Programmierung

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

# 5. Reihungen (Arrays)

Folge:

14	1	0	8
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Folge [0] == 14, ..., Folge [3] == 8

Bestand:

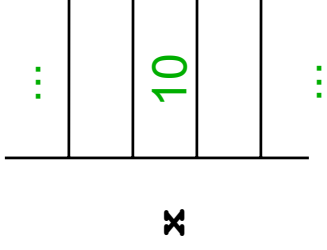
	Ort			
	0	1	2	3
0	5	0	10	7
1	1	3	2	0
2	2	17	1	1
3	14	1	0	8
...				

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

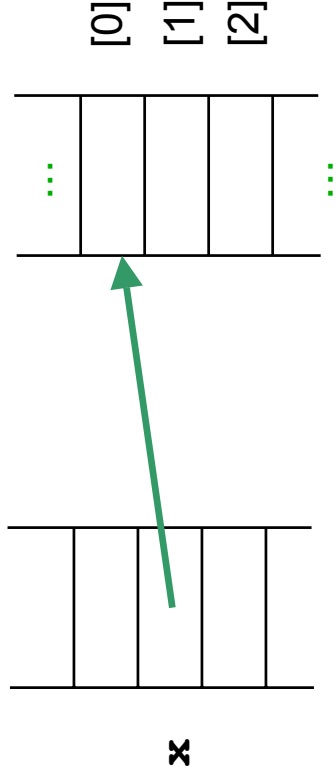
# Wert- und Referenzvariablen

---

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



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



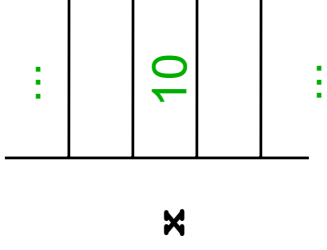
**Primitive Datentypen:** Variablen speichern Werte

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

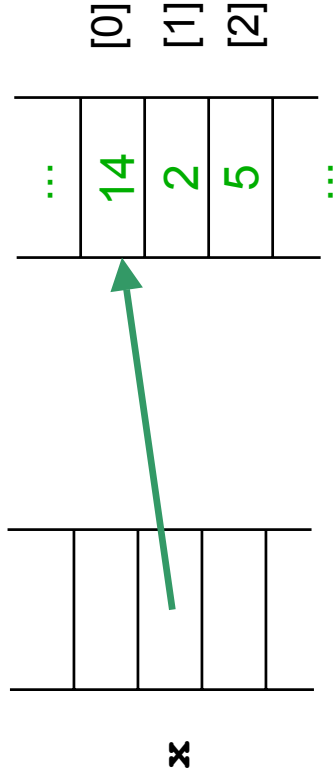
# Wert- und Referenzvariablen

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int x;  
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int [] x;  
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**Primitive Datentypen:** Variablen speichern Werte

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

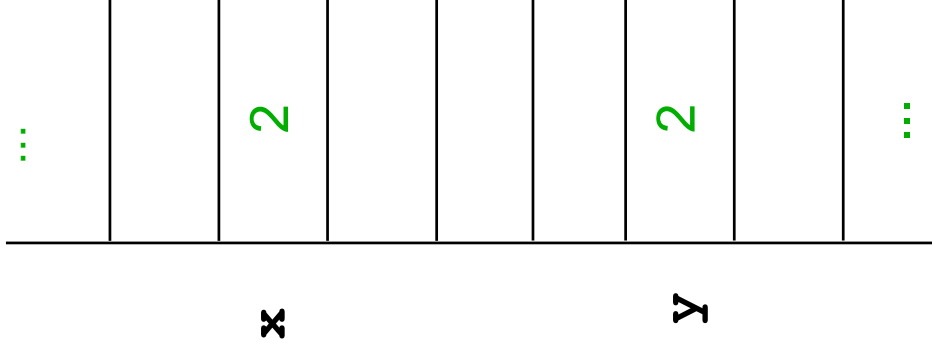
# Zuweisung bei Wertvariablen

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```
int x = 2;
```

```
int y = x;
```

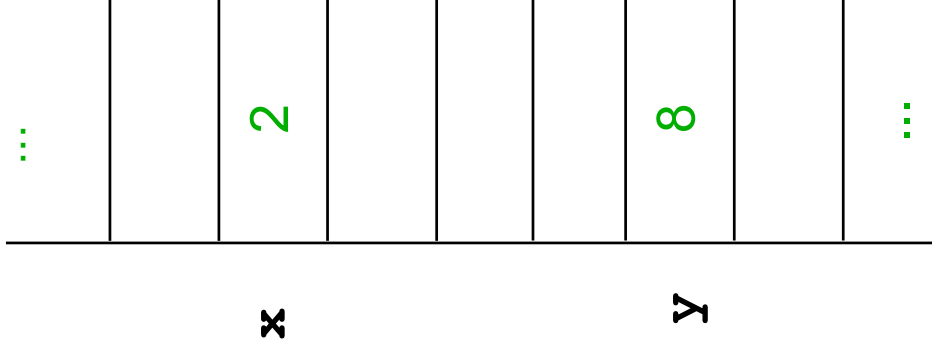
```
y = 8;
```



# 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;
```

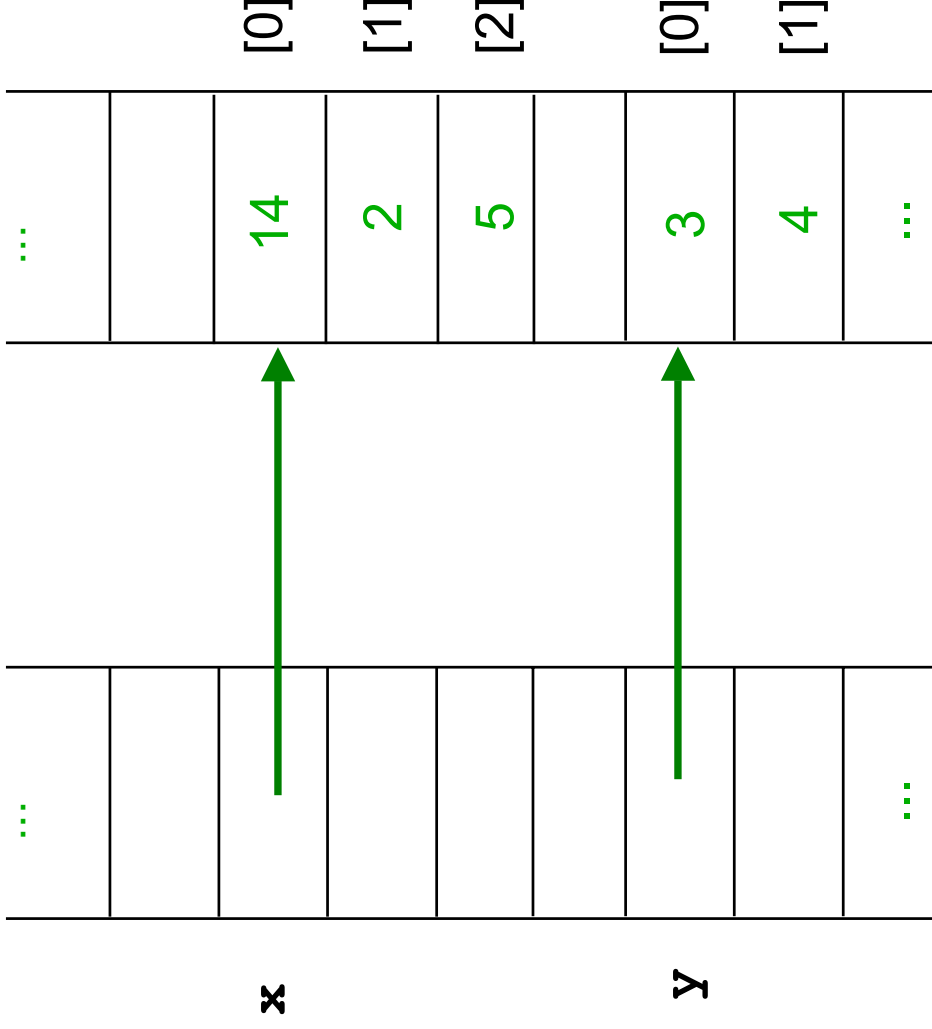
```
int [] y = new int [2];
```

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

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

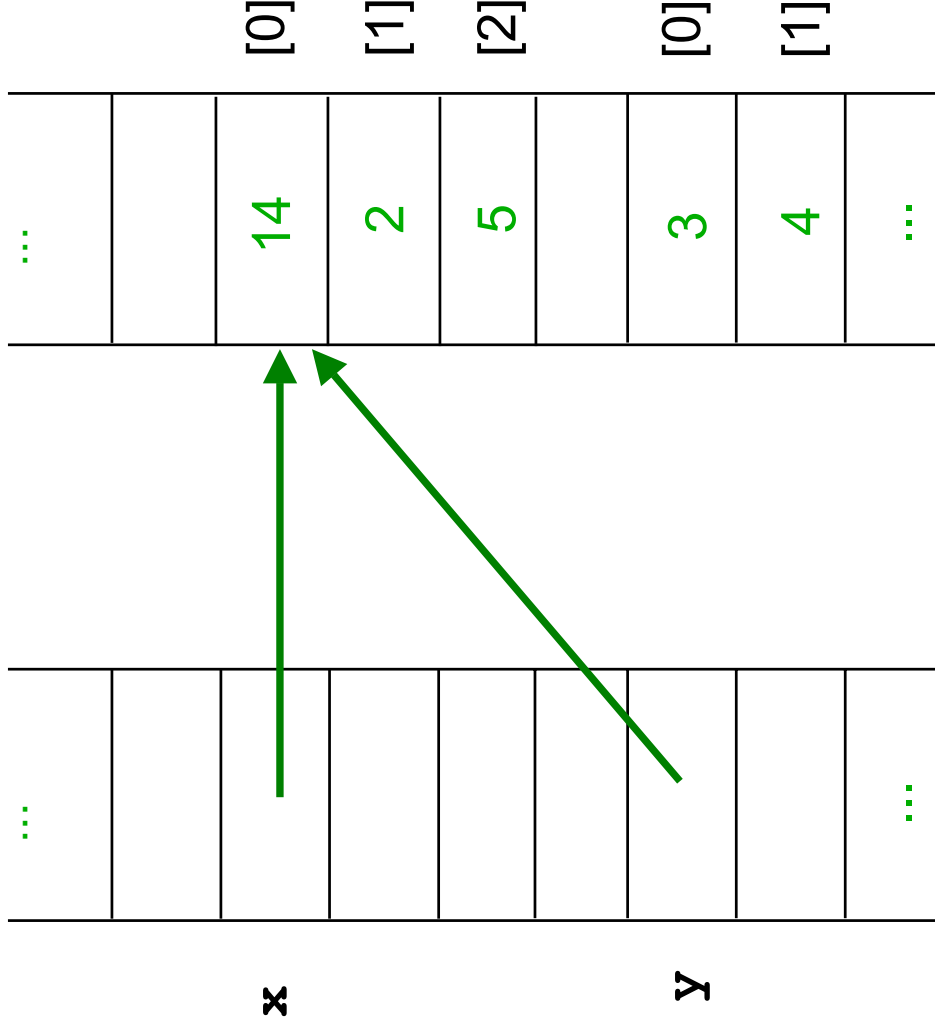
```
y = x;
```

```
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;
```

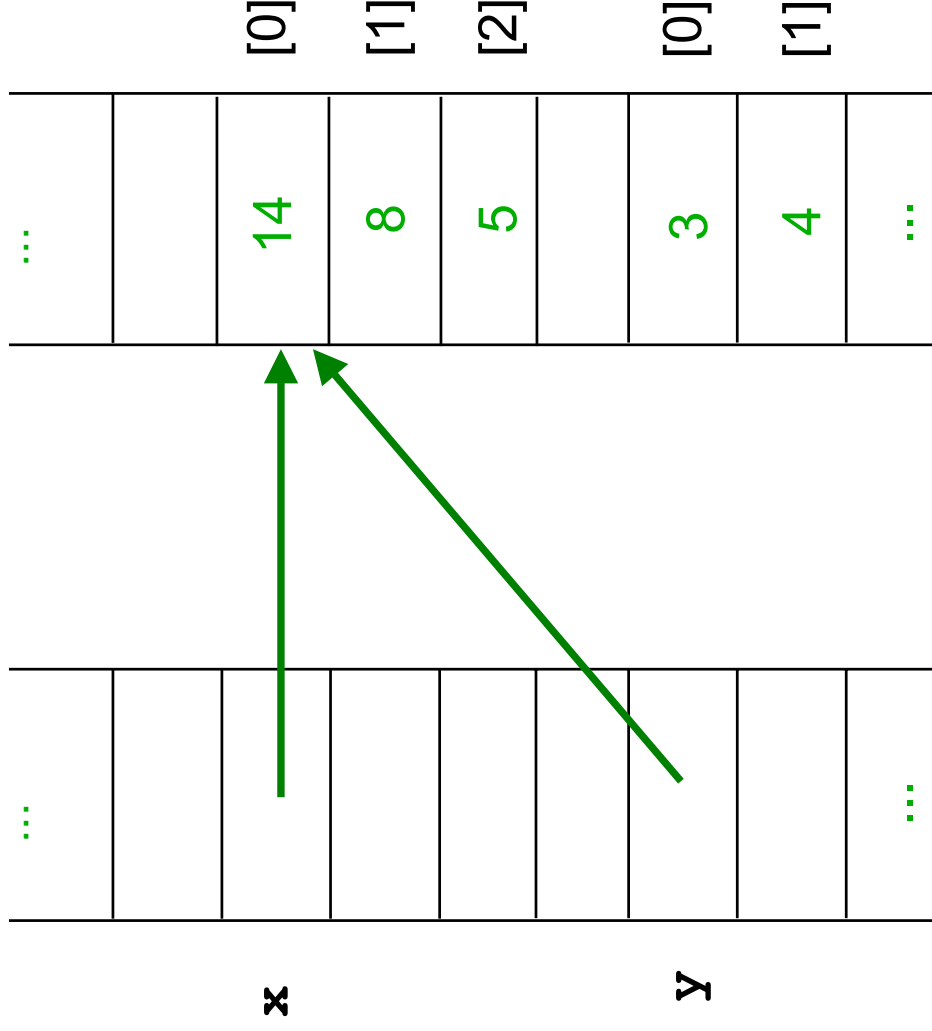
```
int [] y = new int [2];
```

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

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

```
y = x;
```

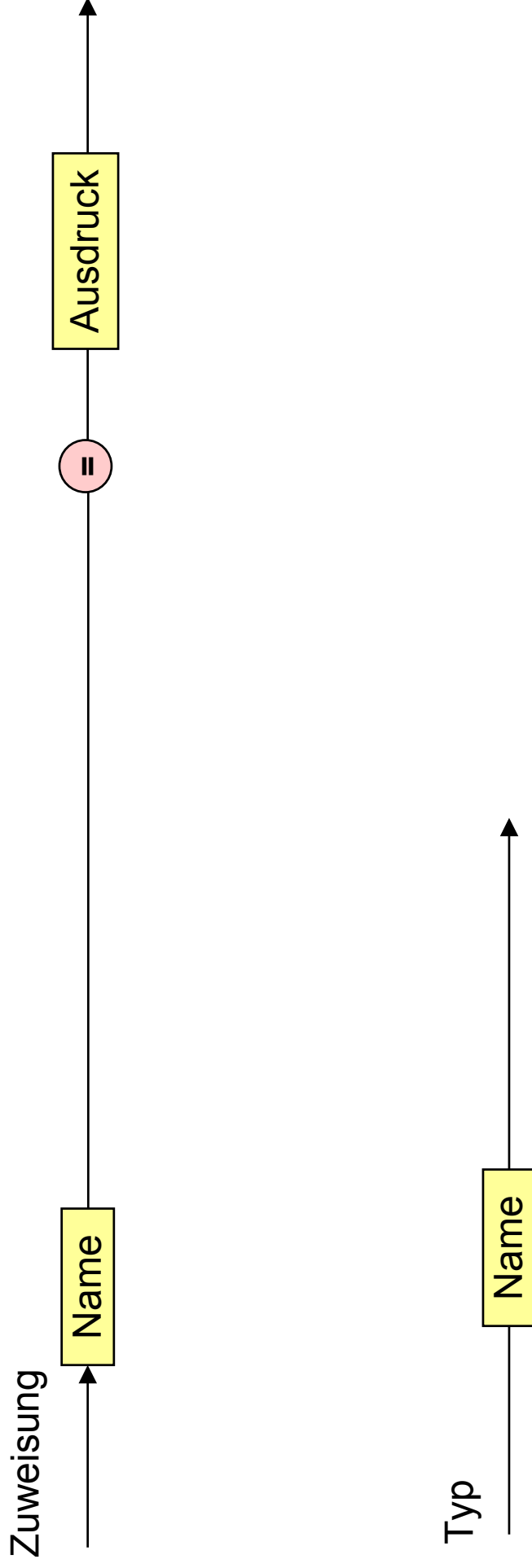
```
y [1] = 8;
```



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

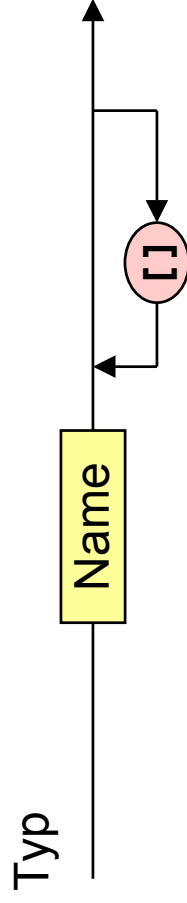
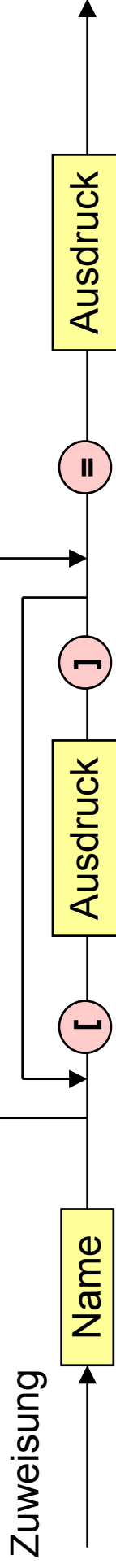
# Zuweisung, Typ

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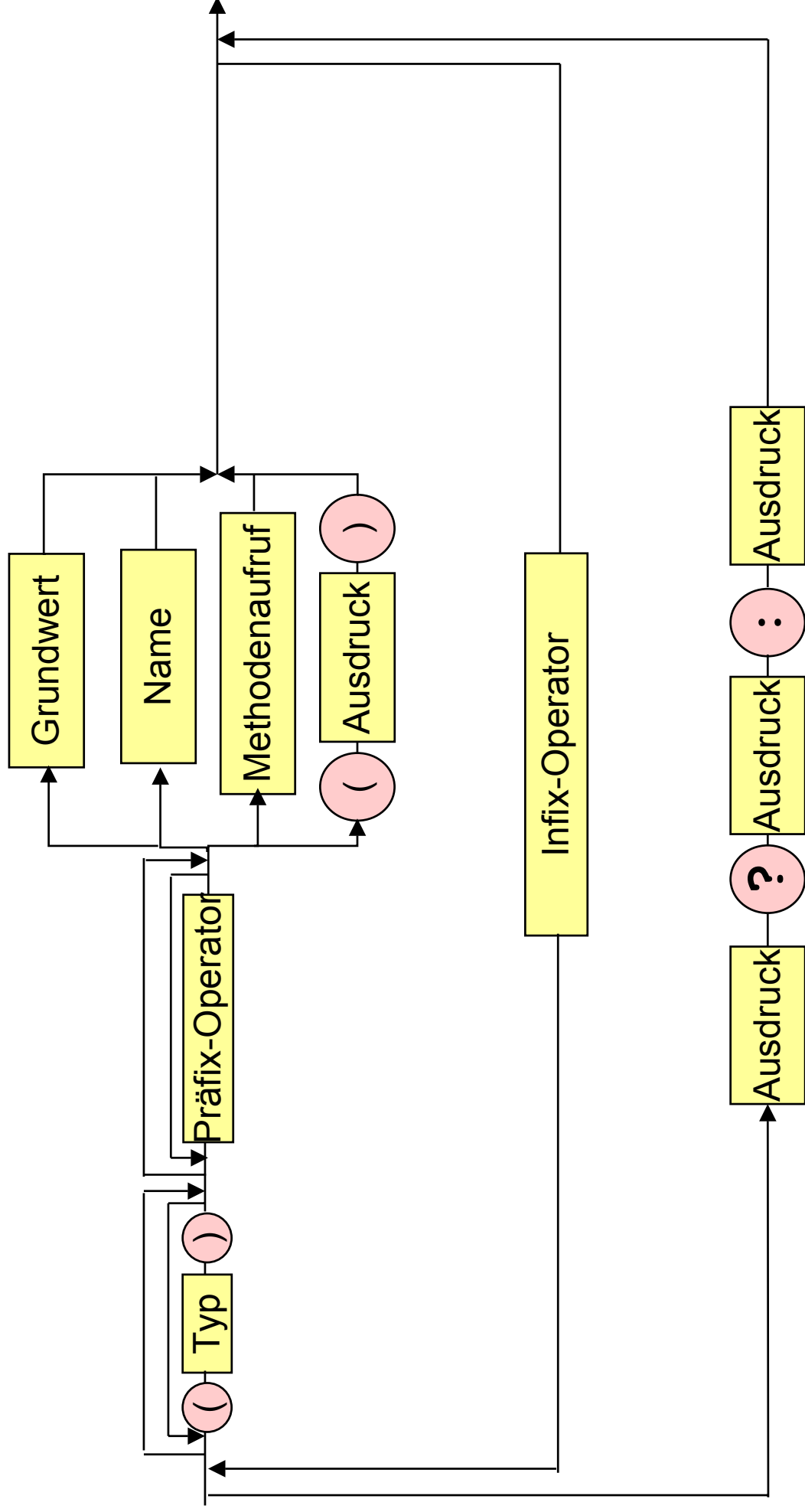


# Zuweisung, Typ

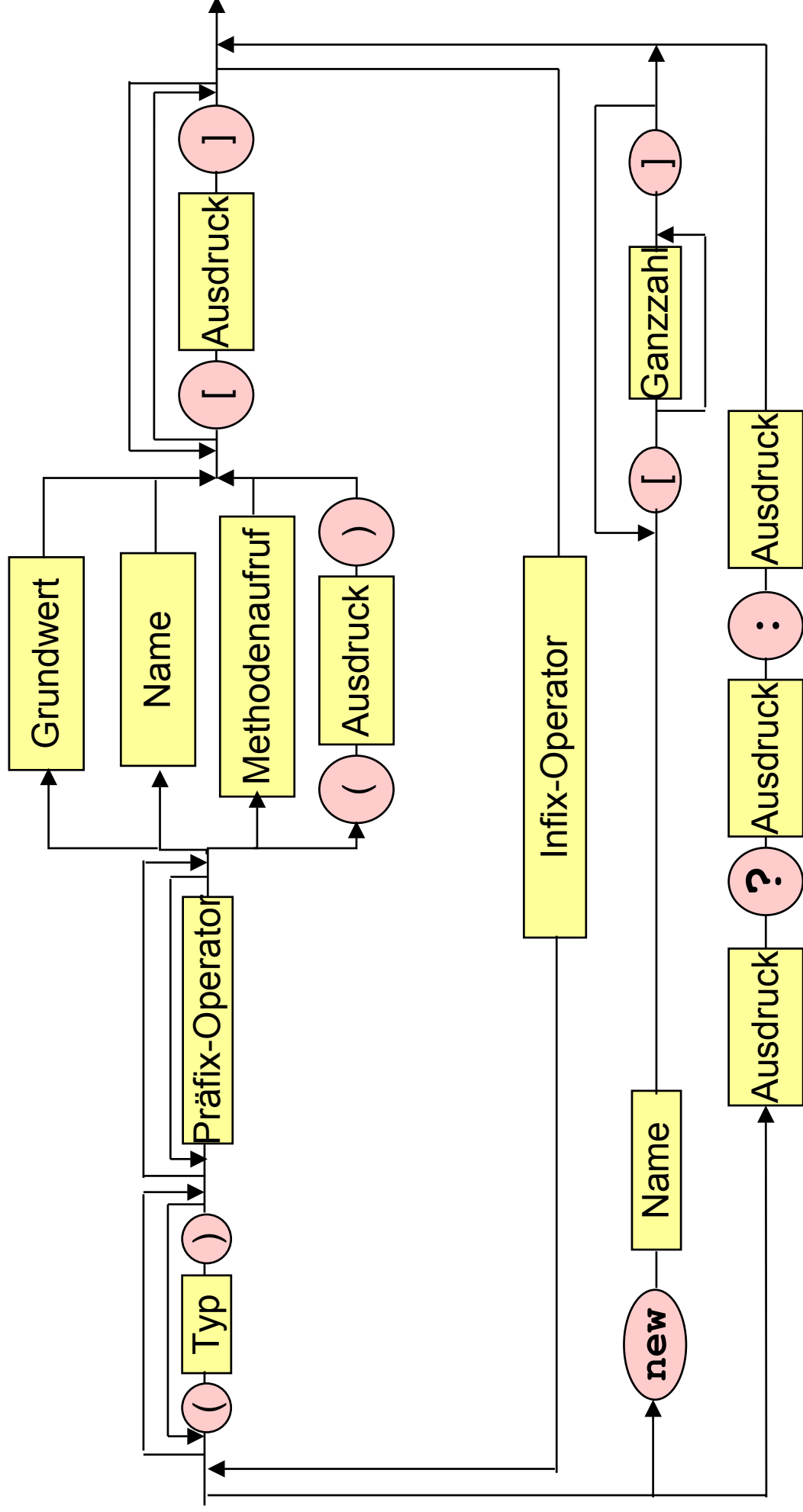
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# Ausdruck



# Ausdruck



# Palindrom-Programm mit Arrays

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```
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] + " ");
        }
    }
}
```