EidI Übungsblatt 7

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Methode1

```
1  static int methode1(int[] arr){
2      int min = 100;
3      int minidx = 0;
4      for (int i = 0; i < arr.length; i++) {
5          if(arr[i]< min ){
6          minidx = i;
7          }
8      }
9      return minidx ;
10 }
```

Zeile	Schritte
2	1
3	1
4	1, arr.length + 1, arr.length
5	arr.length
6	Worst case: arr.length
Summe	$T(\text{arr}) = 4 + 4 * \text{arr.length} = O(\text{arr.length})$

Methode2

```
1  static int methode2(int n) {
2      int count = 2;
3      for (int i = 1; i <= n; i++) {
4          for (int j= n; j > i; j--) {
5              count++;
6          }
7      }
8      return count;
9  }
```

Zeile	Schritte
2	1
3	1, $n+1$, n
4	n, n
5	n^2+1 (1)
Summe	$T(n) = n^2 + 4n + 4 = O(n^2)$

In for schleife:

$$\begin{aligned} n + 2 \cdot \sum_{i=1}^{n} n - i \;\; + 1 &= n + 2 \cdot \left(\sum_{i=1}^{n} n - \sum_{i=1}^{n} i \right) + 1 \\ &= n + 2n^2 - 2 \cdot \left(\frac{n^2}{2} + \frac{n}{2} \right) + 1 \\ &= n^2 + 1 \qquad (1) \end{aligned}$$