① $Z_1 = \sum_{j=2}^{n} (1) + 1 = n-1+1 = n$

for(j=2; j ≤ n; j++)

↑ für Abbruch

$n = 4$

2, 3, 4, 5

Abbruch ↑

② $Z_{2,3} = \sum_{j=2}^{n} (1) = n-1$

2, 3, 4

③ $Z_{5,6} = \sum_{j=2}^{n} (j-1)$

$= \sum_{j=2}^{n} (j) - \sum_{j=2}^{n} 1$

$= \sum_{j=1}^{n} (j) - 1 - (n-1)$

$= \frac{n^2+n}{2} \cancel{-1} - n + \cancel{1}$

$= \frac{n^2+n}{2} - \frac{2n}{2}$

$= \frac{n^2-n}{2}$

④ Analyse der innen Schleife

Start : $i = j-1$

While : $i > 0$

(anderes für forst case nicht relevant)

Veränderung $i = i-1$

for(i=j-1; i>0; i--)

Start : $i = 1$

While : $i \leq j-1$

(Veränderung : i++)

$\sum_{i=1}^{j-1} 1 = j-1$

(4) $$Z_4 = \sum_{j=2}^{n} (j)$$

$$= \sum_{j=1}^{n} (j) - 1$$

$$= \frac{n^2+n}{2} - 1$$

(5) $Z_7 = Z_3$

Z) for $(i=0;\ i<n-2;\ i{+}{+})$ $\qquad n=4 \quad$ Abbruch

$$\underbrace{0,1,2,\overset{\downarrow}{3}}_{4\text{-mal}}$$

$$\sum_{i=0}^{n-1} 1+1 = n-1+1 = n$$

Z_3) $$\sum_{i=0}^{n-2} 1 = n-1$$

Z_4) $$\sum_{i=0}^{n-2} (?)$$

for $(j=1;\ j<n-i;\ j{+}{+})$

$$\Downarrow$$

$$\sum_{j=1}^{n-i-1} 1 + 1$$

$$\sum_{i=0}^{n-2}\left(\sum_{j=1}^{n-i} 1\right)$$

$$\sum_{i=0}^{n-2} (n-i)$$

$$\sum_{i=0}^{n-2}(n) - \sum_{i=0}^{n-2}(i) = n\sum_{i=0}^{n-2} 1 - \ldots$$

$$= n(n-1) - \sum_{i=1}^{n-2}(i) = n(n-1) - \left(\frac{(n-2)((n-2)+1)}{2}\right)$$

$$\frac{n^2-3n+2}{2}$$

$$= \frac{2n^2 - 2n - n^2 + 3n - 2}{2} = \frac{n^2+n}{2} - 1$$