Bubble sort

```
Void bubble (int a[], int n){          ⟶ 0
                                       ⟶ 0
int pass, j, flag ;
for(pass=1 ; pass<n ; pass++)          ⟶ 1+n+n-1
{                                      ⟶ 1×n-1
 flag = 0 ;
for (j= 0; j<(n-pass) ; j++) {         ⟶ 1×n-1+x+y
if (a[j]>a[j+1]){                      ⟶ 4y
SWAP (a[j+1], &a[j] ; flag = 1; }      ⟶ 8y
}
 if (flag = = 0) break ;               ⟶ n-1
}
}
```

$x = n+n-1+n-2+n-3+\dots+3+2 = \frac{n(n+1)}{2} - 1$

$y = n-1+n-2+n-3+n-4+\dots+2+1 = \frac{n(n-1)}{2}$

$T(n) = 2n+n-1+n-1+x+y+4y+8y+n-1$

$= 5n-3+x+13y$

$= 5n-3+\frac{n(n+1)}{2}-1+\frac{13n(n-1)}{2}$

$= 5n-3+0.5n^2+0.5n-1+6.5n^2-6.5n$

$= 7n^2-n-4$

$T(n) = 7n^2-n-4$

$T(n) < 7n^2 ; n>0 , c=7, g(n)=n^2$

So, $T(n)$ is $O(n^2)$