Complexity for Bubble Sort:

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

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

$y = n-1 + n-2 + n-3 + n-4 + \cdots + 2 + 1 = n(n-1)/2$

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

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

$= 5n + 3 + n(n+1)/2 - 1 + 13n(n-1)/2$

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

$= 7n^2 - n - 4$

$T(n) \leq 7n^2, \quad n > 0 \quad c = 7 \quad g(n) = n^2$

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