1. Function $x = f(n)$

```
x = 1;
for i = 1:n
    for j = 1:n
        x = x + 1
```

1. find the runtime of algo mathematically (Summa)

Ans Outer loop runs from $i = 1$ to n ('n' iteration)

Inner loop runs from $j = 1$ to n ('n' iterations)

Constant operation in Inner loop. $= x + 1$

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

$$= \sum_{i=1}^{n} n \cdot 1$$

$$= n \cdot n \cdot 1$$

$$\therefore T(n) = n^2$$

$\therefore$ Runtime of algorithm is $O(n^2)$