① Find the runtime of algorithm Mathematically:-

The given function

```
function x = f(n)
    X=1;
    for i=1;n
    for j=1;n
        X=X+1;
```

In this inner loop runs $j=1$ to n
In this outer loop runs $i=1$ to n

Here, Total no. of executions is $X = X + 1$;
from the above one we can expressed as;

$$\sum_{i=1}^{n}\sum_{j=1}^{n} 1 = \sum_{i=1}^{n} n = n \times n = n^2$$

∴ The function runs $\oplus (n^2)$