# Complexities Practise

1.

```
int a = 0, b = 0; for (i
= 0; i < N; i++) { a = a
+ rand();
} for (j = 0; j < M; j++)
{ b = b + rand();
}
```

O(N) + O(M) = O(M+N)

2.

```
int a = 0; for (i = 0; i < N;
i++) { for (j = N; j > i; j--) {
a = a + i + j;
        }
}
```

O(N) + O(N-1) + O(N-2) + … + O(1) = O((N^2+N)/2) ~ O(N^2)

3.

```
int i, j, k = 0; for (i = n / 2; i <= n;
i++) { for (j = 2; j <= n; j = j * 2) {
k = k + n / 2;
        }
}
```

O(N/2) * O(LogN) = O((NLogN)/2) ~ O(NLogN)

4.

```
int a = 0, i = N;
while (i > 0) {
a += i; i /= 2;
}
```

O(LogN)

5.

```
for(var i=0;i<n;i++)
i*=k
```

O(N)

6.

```
var value = 0; for(var
i=0;i<n;i++) for(var
j=0;j<i;j++)
 value += 1;
```

$O(1) + O(2) + \ldots O(N) = O((N^2+N)/2) \sim O(N^2)$