

## Give the Big O time complexity of the following algorithms

1. Give the time complexity of:

None

```
n = INPUT()
WHILE n > 0:
    OUTPUT(n)
    n = n // 2
ENDWHILE
```

Answer:  $O(\log n)$

2. Give the time complexity of:

None

```
FUNCTION recurse(n):
    IF n <= 1:
        RETURN
    ENDIF
    recurse(n // 2)
    recurse(n // 2)
```

Answer:  $O(\log n)$

3. Give the time complexity of:

None

```
n = INPUT()
FOR i in RANGE(n):
    FOR j in RANGE(i, n):
        OUTPUT(i, j)
    ENDFOR
ENDFOR
```

Answer:  $O(n^2)$

4. Give the time complexity of:

None

```
FUNCTION fib(n):
    IF n <= 1:
        return 1
    ENDIF
    fib(n-1) + fib(n-2)
```

Answer:  $O(2^n)$