

How many times the following codes print? How would you order them by running time?

a)

```
for i in range(n):  
    for k in range(0, n):  
        print("Hi")
```

b)

```
for i in range(n):  
    for k in range(0, n, 2):  
        print("Hi")
```

c)

```
for i in range(n):  
    k = n  
    while k > 1:  
        print("Hi")  
        k = k/2
```

Why is the worst case scenario of quicksort  $O(N^2)$ ? What is that scenario?

Probably the best visualization of quicksort you can get:

<https://www.youtube.com/watch?v=ywWBy6J5gz8>

Other sorting algorithms are also available in the same style.

Selectionsort, bubble sort, quicksort shown in debugger

Recursion

factorial (mergesort?) shown in debugger