

Introduction to Algorithms

Analyze the time complexity of following algorithms and describe it using the big-O notation. Give a brief explanation of your answer.

- A.

```
if (k < j) {  
    for (k = 0; k < N; k++)  
        X = X + k;  
}  
else  
    X = 0;
```
- B. An algorithm that determines the smallest of the given list of N numbers.
- C.

```
k = 0;  
while (k < N) {  
    X = X + Y;  
    result = function(X); // function(X) takes N steps to compute  
    k++;  
}
```