

# Asymptotics Introduction

Give the runtime of the following functions in  $\Theta$  notation. Your answer should be as simple as possible with no unnecessary leading constants or lower order terms.

```
private void f1(int N) {  
    for (int i = 1; i < N; i++) {  
        for (int j = 1; j < i; j++) {  
            System.out.println("hello tony");  
        }  
    }  
}  
  
 $\Theta(\_\_\_)$ 
```

```
private void f2(int N) {  
    for (int i = 1; i < N; i *= 2) {  
        for (int j = 1; j < i; j++) {  
            System.out.println("hello hannah");  
        }  
    }  
}  
  
 $\Theta(\_\_\_)$ 
```