

BIG O NOTATION

DAVE ROBINSON (1700479)

```
PUBLIC INT GCD (INT X, INT Y) {  
(LOG N) WHILE (Y! = 0) {
```

```
    (1) IF (X > Y && x! = 0) {
```

```
        (1) INT TEMP = X;
```

```
        (1) X = Y;
```

```
        (1) Y = TEMP % Y;
```

```
    }
```

```
}
```

```
(1) RETURN X;
```

```
}
```

$\text{LOG } N (1+(1+1+1)) + 1$

$\text{LOG } N (1+1+1+) + 1$

$3 \text{ LOG } N + 1$

$3 \text{ LOG } N + 0$

$= (\text{LOG } N) = \text{Logarithm}$

```
PUBLIC INT HANOI (INT N) {
```

```
(1) INT Y = 0;
```

```
(N) WHILE (N > 0) {
```

```
(1) IF (N == 1) {
```

```
(1) Y = 1;
```

```
(1) N + 1;
```

```
}
```

```
(1) ELSE {
```

```
(1) Y = 2 * (2* N - 1) + 1;
```

```
}
```

```
}
```

```
(1) RETURN Y;
```

```
}
```

```
O (HANOI) = 1 + N (1+1+1+) 1+(1+1)) +1
```

```
= N (3) 1+(1+1)) +1
```

```
= N (3) +1 +2 + 1
```

```
= 3N + 4
```

```
= 3N + 0
```

```
= (N) = Linear
```