Examples
Iterative Time Complexity

Disclaimer : These examples are from popular internet sources!

```
for (int i = 0; i < n; i++) {
    // regular statements running in
    // constant time
}
```

```
for i in range(0, n):
    // regular statements running in
    // constant time
```

O(n)

```
for (int i = n; i > 0; i--) {
        // regular statements running in constant time
}
```

O(n)

```
for (int i = 0; i < n; i++) {
        for (int j = 0; j < n; j++) {
                // regular statements running in constant time
}
```

$O(n^2)$

```
for (int i = 0; i < n; i++) {
        for (int j = 0; j < i; j++) {
                // regular statements running in constant time
}
```

$O(n^2)$

```
for (int i = 0; i < n; i++) {
        // regular statement running in constant time
}
```

```
  for (int j = 0; j < n; j++) {
          // regular statement running in constant time
  }
```

O(n)

```
q=0;
for (int i = 1; q <= n; i++) {
        q=q+i;
}
```

$O(\sqrt{n})$

```
for (int i = 1; i < n; i=i*2) {
      // regular statements running in constant time
}
```

Hint : $\log_a x = (\log_b x) / (\log_b a)$

$O(\log_2 n)$

```
for (int i = n; i >= 1; i=i/2) {
      // regular statement running in constant time
}
```

Hint : $\log_a x = (\log_b x) / (\log_b a)$

$O(\log_2 n)$

```
q=0;
for (int i = 1; i < n; i=i*2) {
        q++;
}


 for (int j = 1; j < q; j=j*2) {
         // regular statement running in constant time
 }
```

$O(\log \log_2 n)$

```
for (i=n, i>=1; i=i/3){
        p=2;
        while(p<n){
            p=p*2;
        }
}
```

$O(\log_3 n * \log_2 n)$

```
for (i=n/2, i<= n; i++){
    for (j=1; j+n/2 <=n; j++){
        for (k=1; k <=n; k = k*2){
            // regular statement running in constant time
        }
    }
}
```

$O(n^2 * \log_2 n)$