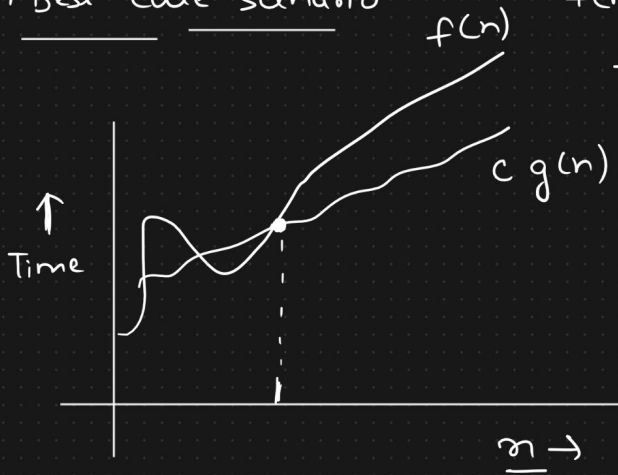


Omega Notation (Ω)

→ Best case scenario



$$f(n) = \Omega(g(n))$$

$$f(n) \geq c \cdot g(n)$$

$$\begin{cases} c > 0 \\ n_0 \geq 1 \end{cases} \quad n \geq n_0$$

Constant

Example 1

$$f(n) = n \quad g(n) = 5n$$

$$f(n) = \Omega(g(n))$$

$$f(n) \geq c \cdot g(n)$$

$$n \geq c \cdot 5n \leftarrow \text{True}$$

$$c = \frac{1}{5}$$

True

$$n \geq \frac{1}{5} \cdot 5n$$

Example 2

$$f(n) = n^2$$

$$g(n) = n^2 + n + 10$$

$$f(n) = \Omega(g(n)) \leftarrow \text{True}$$

$$f(n) \geq c \cdot g(n)$$

$$n^2 \geq c \cdot (n^2 + n + 10)$$

$$c = \frac{1}{2}$$

$$n \rightarrow 100000$$

Example 3

$$f(n) = n$$
$$g(n) = n^2$$

True

$$f(n) = \Omega(g(n))$$

$$f(n) \geq c \cdot g(n)$$

$$n \geq c \cdot n^2 \rightarrow$$

$$f(n) \neq \Omega(g(n))$$

$$c = \frac{1}{n}$$

Not constant

(Inversely)

$$n \geq \frac{1}{n} \cdot n^2$$

$$\underline{n \geq n}$$