Theta Notation (Θ)

As we All Discuss About Big O , Omega Notation

Big 0 🡪 Worst Case(Huge on Data)

Omega 🡪 Best Case (Low on Data)

Now we see Theta it is Satisfied both Big O and Omega

Big o 🡪 f(n) <= c\*g(n) C must greater than 0

Omega 🡪f(n) >= c\*g(n) C must Greater than 0

If some condition satisfied both Big o and Omega We called as Theta Notation.

Example 1 :

G(n) =5n

F(n) = n

F(n) = c \* g(n)

First we use Big O

F(n) <= c \* g(n)

If we take c = 1 , now c greater than o

Now Our Condition also Satisfied

F(n) < = c \* g(n)

Now we use Omega :

F(n) > = c \*g(n)

If we take c as 1\5 greater than 0

Now our condition Satisfied

Now we see it Satisfied both big o and omega with c as 1 and 1/5 ,

So it is know Satisfied Theta Notation

Theta 🡪 f(n) = c g(n)

So in General Theta as been said by Average case both worst and best case .

Example 2 :

F(n) = n

G(n) = n

If we take c = 1

F(n) <= c g(n)

Now it Satisfied Big O .

C= 1

n>= c\*g(n)

Now it Satisfied on Omega Also

So It Satisfied Theta Also f(n) = c g(n)

Graph :

