20.26. LOG LOG N COMPLEXITY

EXAMPLE

$$for(i = 1; i \leq n ; i = i * 2)\{$$
$$c = c + 1;$$
$$\}$$
$$for(j = 1; j \leq c; j = j * 2)\{$$
$$k = k + 1;$$
$$\}$$

ANSWER

$Note: c = c + 1$ $will\ execute\ logn\ times, we\ may\ say:$

$\lfloor logn \rfloor + 1$ $, now\ j\ loop\ will\ execute$ $\log$ of $\lfloor logn \rfloor + 1$ $i.e.$

$which\ generates$ $log(log(n))$ $for\ the$ $2nd\ loop. Hence:$

Time Complexity for the 2nd Loop:

$$for(j = 1; j \leq c; j = j * 2)\{$$
$$k = k + 1;$$
$$\}$$

$$is: O\left(log(log(n))\right)$$