i) 귀납 전제 : n=1이면, $\lfloor \lg n \rfloor + 1 = \lfloor \lg 1 \rfloor + 1 = 0 + 1 = 1 = W(1)$ 이 성립

ii) 귀납 가정 : n>1이고, $1 < k < n$인 모든 k에 대해

$W(k) = \lfloor \lg k \rfloor + 1$가 성립한다고 가정

iii) 귀납단계 (1) : n이 짝수일 때, $\lfloor \frac{n}{2} \rfloor = \frac{n}{2}$

$$
\begin{aligned}
W(n) &= 1 + W(\lfloor \tfrac{n}{2} \rfloor) \\
&= 1 + \lfloor \lg \lfloor \tfrac{n}{2} \rfloor \rfloor + 1 \\
&= 2 + \lfloor \lg \lfloor \tfrac{n}{2} \rfloor \rfloor \\
&= 2 + \lfloor \lg \tfrac{n}{2} \rfloor \\
&= 2 + \lfloor \lg n - 1 \rfloor \\
&= 2 + \lfloor \lg n \rfloor - 1 \\
&= 1 + \lfloor \lg n \rfloor
\end{aligned}
$$

귀납단계 (2) : n이 홀수일 때, $\lfloor \frac{n}{2} \rfloor = \frac{n-1}{2}$

$$
\begin{aligned}
W(n) &= 1 + W(\lfloor \tfrac{n}{2} \rfloor) \\
&= 1 + \lfloor \lg \lfloor \tfrac{n}{2} \rfloor \rfloor + 1 \\
&= 2 + \lfloor \lg \lfloor \tfrac{n}{2} \rfloor \rfloor \\
&= 2 + \lfloor \lg \tfrac{n-1}{2} \rfloor \\
&= 2 + \lfloor \lg (n-1) - 1 \rfloor \\
&= 2 + \lfloor \lg (n-1) \rfloor - 1 \\
&= 1 + \lfloor \lg (n-1) \rfloor \\
&= 1 + \lfloor \lg n \rfloor
\end{aligned}
$$

따라서, $W(n) = \lfloor \lg n \rfloor + 1 \in \Theta(\lg n)$