PERFECT
PROVE THAT A ~~COMPLETE~~ BINARY TREE ~~OF~~ HAS 2^d NODES AT DEPTH d.

BASE CASE: When $d=0$, $2^d = 2^0 = 1$ node
AND A TREE WITH DEPTH $\emptyset$ ONLY CONTAINS A ROOT WHICH IS 1 NODE

$1=1$ base case has been shown.

INDUCTION HYPOTHESIS:
Assume: In a perfect binary tree the number of nodes @ depth $d-1$ is 2^{d-1}.

Now we show that @ depth d, # of nodes is 2^d.

The # of nodes @ depth d = $2 * (\#$ of nodes @ depth $d-1)$

$2 * 2^{d-1} = 2^d$

Q.E.D.