- We return to our original caller function. In line 13, tval[0] is assigned false and again the similar process as above is repeated.
- The total no. of combinations for n=1 is $2^1=2$, which is correct.

Inductive hypothesis: for a particular K=n, the function all_comb() prints all possible combinations of truth values of n arbitrary boolean variables. Suppose for the sake of convention, we name them $x_1, x_2, \ldots, x_n$. There a total of 2^n possible truth assignments.

Induction Step: Let, K=n+1. Let us name the Boolean variables $x_1, x_2, \ldots, x_n, x_{n+1}$, wlog. Initially, begin=0.

- Since, begin≠n, we evaluate the else block in line 9.
- We assign tval[0]=true on Line 11. all_comb(tval, 1, n+1) correctly computes all possible truth value assignments of the n variables $x_2, x_3, \ldots, x_{n+1}$ by the induction hypothesis. We get 2^n such truth assignments

On line 13, we assign false to tval[0]. Similarly, by induction hypothesis, all_comb(tval, 1, n+1) correctly computes the 2^n truth value assignments of $x_2, \ldots, x_{n+1}$

- ∴ Including x_1, the total no. of possible truth value assignments: $2^n+2^n=2^{n+1}$, which is correct. □

4) Write a C program that prints out the integer values of x, y, z in ascending order.

- The full program is on my P.C.

```
1.  void sort_three (int x, int y, int z)
2.  {
3.      if(x>=y)
4.      {  if(z>=x)
5.          printf("x,y,z in ascending order is %d %d %d", y,z,x);
6.      }
7.      else
8.      {  if(z>=y)
9.          printf("x,y,z in ascending order is %d %d %d", y,z,x);
10.     else
```