```
#include<bits/stdc++.h>
using namespace std;

// Linear Recursion
/*
The Recursive Function call one time only

    fun( n )
    {
        if( n > 0 )
        {
            ------
            -------
            ---------
            fun( n - 1 );
            ----------
            --------
            -------
        }
    }

*/

// Tree Recusion
/*
The Recursive Function call Two time then it is call Tree Recursion

        fun( n )
        {
            if( n > 0 )
            {
                ------
                -------
                --------
                fun( n - 1 );
                -------------------
                -------------------
                fun( n - 1 );
                ---------
                ------
                ----
            }
        }

*/
//Tree Recursion
/*
    fun( n )
    {
        if( n > 0 )
        {
            printf( n )

```

```
54          fun( n -1 );
55          fun( n -1 );
56      }
57  }
58  ____________________________
59
60      fun( 3 );
61
62  ____________________________________________________
63              Tree Create
64                  fun(3)              call => 1
65                 /     \
66                /       \
67               /         \
68            f(2)         f(2)                2
69            /  \         /  \
70           /    \       /    \
71          /      \     /      \
72       f(1)      f(1)  f(1)     f(1)         4
73       /  \      /  \  /  \     /  \
74    f(0)  f(0) f(0) f(0) f(0) f(0) f(0) f(0)    8
75                                  ---------
76                                  1 + 2 + 4 + 8 = 15 call
77
78                                  This is a GP Serise:
79                                  2^0 + 2^1 + 2^2 + 2^3 = 2^(3+1) -1 = 2^4 -1 = 15
80
81                                  if n = 2^n+1 - 1 = [ ] number of call
82
83
84  */
85
86  void fun(int n)
87  {
88      if(n > 0)
89      {
90          cout << n << " "; //3 2 1 1 2 1 1
91          fun(n - 1);
92          fun(n - 1);
93      }
94  }
95
96
97  int main()
98  {
99      int x = 3;
100     fun(x);
101
102 }
```