

Video No.: 84

Topic Name: Recursion Problem 05

Question:

What will be the output of the flowing C program.

```
#include<stdio.h>
void count(int n){
    static int d = 1;
    printf("%d ", n);
    printf("%d ", d);
    d++;
    if(n>1){
        count(n-1);
    }
    printf("%d ", d);
}
int main(){
    count(3);
}
```

a)	3	1	2	2	1	3	4	4	4
b)	3	1	2	1	1	1	2	2	2
c)	3	1	2	2	1	3	4		
d)	3	1	2	1	1	1	2		

Solution:

Lets find the flow of the recursive program:

Count(3)

*** d = 1 is initialized in static which means it will remember the value of d even after the function is done

print = 3

print = 1

d = 2

if satisfies and goes to count(3-1) = count(2)

print = 2

print = 2 [as d was updated to 2 and variable will remember this value because of static memory]

d = 3

if satisfies and goes to count(2-1) = count(1)

print = 1

print = 3

d = 4

if does not satisfy and goes to last printf

and **print = 4**

back to count(2), where left

print = 4

back to count(3), where left

print = 4

Answer: 3 1 2 2 1 3 4 4 4