Video No.: 81

Topic Name: Recursion Problem 02

Question:

Determine how many times the number will be printed on the screen.

```
void fun1(int n){
        int i = 0;
        if(n>1){
                fun1(n-1);
        }
        for(i=0; i<n; i++){
                printf("*");
        }
}
```

a) n
b) n(n+1) / 2
c) n*n
d) none

Solution:

Let us assume, **n=2**

fun1(2)

as if condition (2 > 1) satisfied goes to fun1(2-1) = fun1(1)

fun1(1)

here, if condition (1 > 1) not satisfied, so it goes to the for loop

for(i=0; i<1; i++) = print * once (1)

as there is nothing left, so back to fun1(2) where it left previously

Now, goes to for loop

for(i=0; i<2; i++) = print * twice (2)

So, for **n = 2**, total **3 star (*) printed**

Again, let us assume, **n=4**

fun1(4)

as if condition (4 > 1) satisfied goes to fun1(4-1) = fun1(3)

fun1(3)

as if condition (3 > 1) satisfied goes to fun1(3-1) = fun1(2)

fun1(2)

as if condition (2 > 1) satisfied goes to fun1(2-1) = fun1(1)

fun1(1)

here, if condition (1 > 1) not satisfied, so it goes to the for loop

for(i=0; i<1; i++) = print * once (**1**)

as there is nothing left, so back to fun1(2) where it left previously

Now, goes to for loop

for(i=0; i<2; i++) = print * twice (**2**)

as there is nothing left, so back to fun1(3) where it left previously

Now, goes to for loop

for(i=0; i<3; i++) = print * three times (**3**)

as there is nothing left, so back to fun1(4) where it left previously

Now, goes to for loop

for(i=0; i<4; i++) = print * three times (**4**)

so, for **n = 4**, total **10** **star (*) printed**

Here we can see,

when n = 2; * = 4 = 2(2+1)/2

when n = 4; * = 10 = 4(4+1)/2

which can be represented as

when n = n, * = n(n+1)/2 **(Answer)**