RE3: Sum of first N numbers

parameterized method          functional method

i) Parameterized way :-

$f(i, sum)$ {           3, 0
    if $(i < 1)$ { print (sum);
        return;
    }
    $f(i-1, sum+i)$;
        2, 0+3
}        1, 3+2
        0, 5+1

Ans 6

main ( ) {
    n $\leftarrow$ 3
    $f(n, 0)$
}

$f(3, 0)$

$f(2, 3)$

$f(1, 5)$

$f(0, 6)$

return;

2) functional way :- $\quad n=3 \quad 3 + f(2) \to 2 + f(1) \to 1 + f(0)$

$f(n) \to$ sum of first N numbers

$f(3)$

```
f(n) {
    if (n==0) return 0;
    return n + f(n-1);
}

main () {
    n ← 3
    print (f(n));
}
```

$3 + f(2)$

$3 + 2 + f(1)$

$3 + 2 + 1 + f(0)$

$6 \leftarrow 3 \leftarrow 1$  return 0

value 0

$= \dfrac{6}{\phantom{x}}$

* Factorial of N

$n = 3 \to 3 \times 2 \times 1 = 6$

```
f(int n) {
    if (n==1) return 1;
    return n * f(n-1);
}

main()
{ int n;
    cout << f(n);
}
```