

# Εργαστήριο 7

Fibonacci

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```
1 // Fig. 5.19: fig05_19.c
2 // Recursive fibonacci function
3 #include <stdio.h>
4
5 unsigned long long int fibonacci(unsigned int n); // function prototype
6
7 int main(void)
8 {
9     unsigned int number; // number input by user
10
11     // obtain integer from user
12     printf("%s", "Enter an integer: ");
13     scanf("%u", &number);
14
15     // calculate fibonacci value for number input by user
16     unsigned long long int result = fibonacci(number);
17
18     // display result
19     printf("Fibonacci(%u) = %llu\n", number, result);
20 }
21
22 // Recursive definition of function fibonacci
23 unsigned long long int fibonacci(unsigned int n)
24 {
25     // base case
26     if (0 == n || 1 == n) {
27         return n;
28     }
29     else { // recursive step
30         return fibonacci(n - 1) + fibonacci(n - 2);
31     }
32 }
```

Enter an integer: **0**  
Fibonacci(0) = 0

Enter an integer: **1**  
Fibonacci(1) = 1

Enter an integer: **2**  
Fibonacci(2) = 1

Enter an integer: **3**  
Fibonacci(3) = 2

Enter an integer: **10**  
Fibonacci(10) = 55

Enter an integer: **20**  
Fibonacci(20) = 6765

Enter an integer: **30**  
Fibonacci(30) = 832040

Enter an integer: **40**  
Fibonacci(40) = 102334155