Atividade 2 Estrutura de Dados

Instruções:

- Para rodar o programa usando o Makefile, basta rodar:
  make run METHOD=Metodo N=Numero
- Os métodos são:
  - fibonacciRec - Método fibonacci Recursivo
  - fibonacceInt - Método fibonacci Interativo
  - fatorialRec - Método fatorial recursivo
  - fatorialInt - Método fatorial interativo

- O N deve pertencer ao intervalo [0, 20]

Para N = 12:

fibonacciRec:

Each sample counts as 0.01 seconds.

% time	cumulative seconds	self seconds	calls	self ms/call	total ms/call	name
65.66	0.47	0.47	465000000	0.00	0.00	__gnu_cxx::__enable_if<std::__is_integer<int>::__value, double>::__type std::sin<int>(int)
25.15	0.65	0.18	1	181.06	181.06	_GLOBAL__sub_I__Z12fibonacciReci
9.78	0.72	0.07	1	70.41	543.18	fibonacciRec(int)
0.00	0.72	0.00	4	0.00	0.00	bool std::operator==<char, std::char_traits<char>, std::allocator<char> >(std::__cxx11::basic_string<char, std::char_traits<char>, std::allocator<char> > const&, char const*)
0.00	0.72	0.00	1	0.00	0.00	__static_initialization_and_destruction_0(int, int)

Call graph (explanation follows)

granularity: each sample hit covers 2 byte(s) for 1.38% of 0.72 seconds

index	% time	self	children	called	name
					<spontaneous>
[1]	75.0	0.00	0.54		main [1]

```
             0.07    0.47       1/1          fibonacciRec(int) [2]
             0.00    0.00       4/4          bool std::operator==<char,
std::char_traits<char>, std::allocator<char> >(std::__cxx11::basic_string<char,
std::char_traits<char>, std::allocator<char> > const&, char const*) [12]
-----------------------------------------------
                           464            fibonacciRec(int) [2]
             0.07    0.47       1/1          main [1]
[2]     75.0    0.07    0.47       1+464     fibonacciRec(int) [2]
             0.47    0.00 465000000/465000000
__gnu_cxx::__enable_if<std::__is_integer<int>::__value, double>::__type
std::sin<int>(int) [3]
                           464            fibonacciRec(int) [2]
-----------------------------------------------
             0.47    0.00 465000000/465000000     fibonacciRec(int) [2]
[3]     65.3    0.47    0.00 465000000
__gnu_cxx::__enable_if<std::__is_integer<int>::__value, double>::__type
std::sin<int>(int) [3]
-----------------------------------------------
             0.18    0.00       1/1          __libc_csu_init [5]
[4]     25.0    0.18    0.00       1         _GLOBAL__sub_I__Z12fibonacciReci [4]
             0.00    0.00       1/1          __static_initialization_and_destruction_0(int, int)
[13]
-----------------------------------------------
                                  <spontaneous>
[5]     25.0    0.00    0.18                 __libc_csu_init [5]
             0.18    0.00       1/1          _GLOBAL__sub_I__Z12fibonacciReci [4]
-----------------------------------------------
             0.00    0.00       4/4          main [1]
[12]     0.0    0.00    0.00       4         bool std::operator==<char, std::char_traits<char>,
std::allocator<char> >(std::__cxx11::basic_string<char, std::char_traits<char>,
std::allocator<char> > const&, char const*) [12]
-----------------------------------------------
             0.00    0.00       1/1          _GLOBAL__sub_I__Z12fibonacciReci [4]
[13]     0.0    0.00    0.00       1         __static_initialization_and_destruction_0(int, int)
[13]
```

fibonacciInt:

```
Each sample counts as 0.01 seconds.
 no time accumulated

  %   cumulative   self              self     total
```

```
 time   seconds   seconds    calls  Ts/call  Ts/call  name
  0.00      0.00     0.00        4     0.00     0.00  bool std::operator==<char,
std::char_traits<char>, std::allocator<char> >(std::__cxx11::basic_string<char,
std::char_traits<char>, std::allocator<char> > const&, char const*)
  0.00      0.00     0.00        1     0.00     0.00  _GLOBAL__sub_I__Z12fibonacciReci
  0.00      0.00     0.00        1     0.00     0.00  fibonacciInt(int)
  0.00      0.00     0.00        1     0.00     0.00
__static_initialization_and_destruction_0(int, int)

                     Call graph (explanation follows)


granularity: each sample hit covers 2 byte(s) no time propagated

index % time    self  children    called     name
                0.00    0.00       4/4           main [6]
[8]      0.0    0.00    0.00       4         bool std::operator==<char, std::char_traits<char>,
std::allocator<char> >(std::__cxx11::basic_string<char, std::char_traits<char>,
std::allocator<char> > const&, char const*) [8]
-----------------------------------------------
                0.00    0.00       1/1           __libc_csu_init [19]
[9]      0.0    0.00    0.00       1         _GLOBAL__sub_I__Z12fibonacciReci [9]
                0.00    0.00       1/1           __static_initialization_and_destruction_0(int, int)
[11]
-----------------------------------------------
                0.00    0.00       1/1           main [6]
[10]     0.0    0.00    0.00       1         fibonacciInt(int) [10]
-----------------------------------------------
                0.00    0.00       1/1           _GLOBAL__sub_I__Z12fibonacciReci [9]
[11]     0.0    0.00    0.00       1         __static_initialization_and_destruction_0(int, int)
[11]
```

fatorialRec:

```
Each sample counts as 0.01 seconds.
  %   cumulative   self              self     total
 time   seconds   seconds    calls  ms/call  ms/call  name
100.59      0.01     0.01 12000000     0.00     0.00
__gnu_cxx::__enable_if<std::__is_integer<int>::__value, double>::__type
std::sin<int>(int)
```

```
  0.00      0.01     0.00        4     0.00     0.00  bool std::operator==<char,
std::char_traits<char>, std::allocator<char> >(std::__cxx11::basic_string<char,
std::char_traits<char>, std::allocator<char> > const&, char const*)
  0.00      0.01     0.00        1     0.00     0.00  _GLOBAL__sub_I__Z12fibonacciReci
  0.00      0.01     0.00        1     0.00    10.06  fatorialRec(int)
  0.00      0.01     0.00        1     0.00     0.00
__static_initialization_and_destruction_0(int, int)

                     Call graph (explanation follows)


granularity: each sample hit covers 2 byte(s) for 99.41% of 0.01 seconds

index % time    self  children    called     name
                                  <spontaneous>
[1]    100.0    0.00    0.01                 main [1]
             0.00    0.01       1/1           fatorialRec(int) [3]
             0.00    0.00       4/4           bool std::operator==<char,
std::char_traits<char>, std::allocator<char> >(std::__cxx11::basic_string<char,
std::char_traits<char>, std::allocator<char> > const&, char const*) [10]
-----------------------------------------------
             0.01    0.00 12000000/12000000     fatorialRec(int) [3]
[2]    100.0    0.01    0.00 12000000
__gnu_cxx::__enable_if<std::__is_integer<int>::__value, double>::__type
std::sin<int>(int) [2]
-----------------------------------------------
                            11              fatorialRec(int) [3]
             0.00    0.01       1/1           main [1]
[3]    100.0    0.00    0.01       1+11      fatorialRec(int) [3]
             0.01    0.00 12000000/12000000
__gnu_cxx::__enable_if<std::__is_integer<int>::__value, double>::__type
std::sin<int>(int) [2]
                            11              fatorialRec(int) [3]
-----------------------------------------------
             0.00    0.00       4/4           main [1]
[10]     0.0    0.00    0.00       4         bool std::operator==<char, std::char_traits<char>,
std::allocator<char> >(std::__cxx11::basic_string<char, std::char_traits<char>,
std::allocator<char> > const&, char const*) [10]
-----------------------------------------------
             0.00    0.00       1/1           __libc_csu_init [19]
[11]     0.0    0.00    0.00       1         _GLOBAL__sub_I__Z12fibonacciReci [11]
             0.00    0.00       1/1           __static_initialization_and_destruction_0(int, int)
[12]
-----------------------------------------------
```

```
                0.00    0.00       1/1          _GLOBAL__sub_I__Z12fibonacciReci [11]
[12]     0.0    0.00    0.00       1          __static_initialization_and_destruction_0(int, int)
[12]
```

fatorialInt:

```
Each sample counts as 0.01 seconds.
 no time accumulated

  %   cumulative   self              self     total
 time   seconds   seconds    calls  Ts/call  Ts/call  name
  0.00      0.00     0.00        4     0.00     0.00  bool std::operator==<char,
std::char_traits<char>, std::allocator<char> >(std::__cxx11::basic_string<char,
std::char_traits<char>, std::allocator<char> > const&, char const*)
  0.00      0.00     0.00        1     0.00     0.00  _GLOBAL__sub_I__Z12fibonacciReci
  0.00      0.00     0.00        1     0.00     0.00  fatorialInt(int)
  0.00      0.00     0.00        1     0.00     0.00
__static_initialization_and_destruction_0(int, int)


                     Call graph (explanation follows)


granularity: each sample hit covers 2 byte(s) no time propagated

index % time    self  children    called     name
                0.00    0.00       4/4          main [6]
[8]      0.0    0.00    0.00       4          bool std::operator==<char, std::char_traits<char>,
std::allocator<char> >(std::__cxx11::basic_string<char, std::char_traits<char>,
std::allocator<char> > const&, char const*) [8]
-----------------------------------------------
                0.00    0.00       1/1          __libc_csu_init [19]
[9]      0.0    0.00    0.00       1          _GLOBAL__sub_I__Z12fibonacciReci [9]
                0.00    0.00       1/1          __static_initialization_and_destruction_0(int, int)
[11]
-----------------------------------------------
                0.00    0.00       1/1          main [6]
[10]     0.0    0.00    0.00       1          fatorialInt(int) [10]
-----------------------------------------------
                0.00    0.00       1/1          _GLOBAL__sub_I__Z12fibonacciReci [9]
[11]     0.0    0.00    0.00       1          __static_initialization_and_destruction_0(int, int)
[11]
```
