Dataflow in Practice: Computing Recursive Fibonacci in Parallel Using Transparent Dataflow Programming Model for Multicore and Many-core

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Introduction

The number of cores in modern Multicore/ Many-core computer systems grows and will continue to grow in the future up to hundreds and thousands. The parallel multithreading programming for multiple cores becomes a great challenge for those who would like to use multiple cores for speeding-up their applications. The community is getting more and more convinced that a revival of dataflow should close the gap between the evolving number of Multicores/ Many-cores and the difficulties of parallel programming for them.

How do we want to program Multicores/ Many-cores with dataflow? We want to program them like this:

1. We do not want to use any unconventional programming paradigm. We want to use a normal traditional control flow, however, a dataflow engine will run our control flow in a different order according to the dataflow principle: **when operands are ready then operators are executed in parallel on the underlying Multicores/ Many-cores hiding all synchronization issues from us**:

```
a = foo0(i);
b = foo1(i+1);
b = b + 1;
c = foo2(b);
```

2. We do not want to be restricted with a single-assignment. **A dataflow engine should be able to create a different instance of a variable when the variable is re-assigned and then handle all instances correctly.**

Is there such a dataflow engine that can do this for us? Yes, BMDFM (Binary Modular Dataflow Machine; http://bmdfm.com) can do this. Further in this document, we provide a comprehensive test application example of recursive Fibonacci on how we program Multicores/ Many-cores using the BMDFM dataflow engine.

What do we want to achieve? We want to program our test application example of recursive Fibonacci sequentially with no special directives for parallel execution. We run our test using the BMDFM single-threaded engine that executes the test on a single processor core. Then we run our test using the BMDFM multithreaded engine that executes the test automatically on all available cores in parallel. **We expect to get a speedup that is almost equal to the number of cores!**

Test Application of Recursive Fibonacci

Fibonacci numbers are the integer sequence produced by the following recursive relationship:

```
Recursive Fibonacci Algorithm (Pseudo-Code)

Fibonacci(0)  = 0;
Fibonacci(1)  = 1;
Fibonacci(N)  = Fibonacci(N - 1) + Fibonacci(N - 2);
```

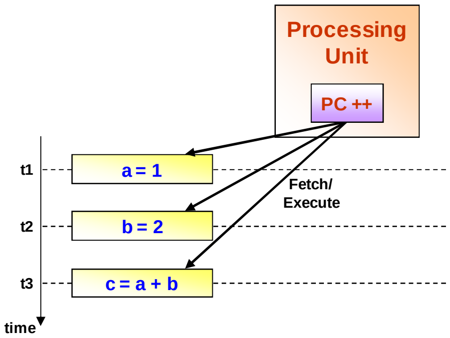
Thus, the Fibonacci sequence is: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, . . . The next number in the sequence is found by adding up the two numbers before it. Our Fibonacci function receives one argument, which is a number in the sequence, and returns the Fibonacci value for this number in the sequence.

We program our test application of recursive Fibonacci sequentially with conventional control flow and let the BMDFM dataflow engine run everything (what is possible) in parallel on Multicores/ Many-cores.

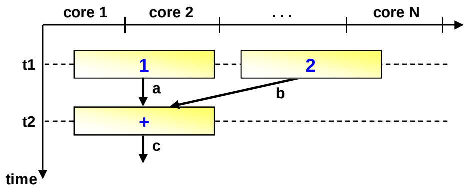
Background (experts may skip this chapter)

1. **Control flow vs. dataflow:** control flow assumes that a processing unit has a Program Counter (PC) register pointing to executing instruction. The processing unit increments PC, fetches instruction that is pointed by PC and executes the instruction. Contrarily, dataflow tags operands with a token when they are ready. Operators of the dataflow graph process operands with ready-tokens.

Control Flow



Dataflow



2. **Transparent dataflow semantics:** an assignment ***<variable>*** **=** ***<expression_of_operators_constants_variables>*** creates a new instance of the variable and adds new nodes with dependencies to the dataflow graph dynamically at runtime (later on, variable instances and nodes will be garbage collected from the dataflow graph).

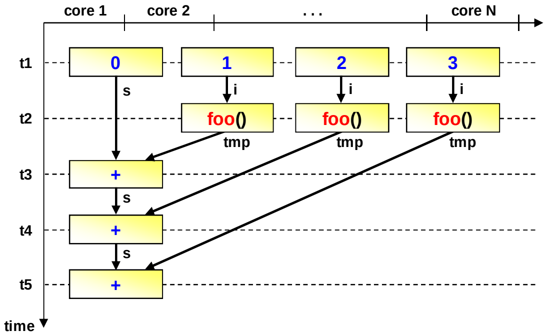
Transparent Dataflow Semantics

```
s = 0;
for(i = 1; i <= 3; i++)
  s += foo(i);

will be automatically reorganized to:

s = 0;
for(i = 1; i <= 3; i++){
  tmp = foo(i);  // coarse-grain processing
                 // can be done in parallel
  s += tmp;
}
```

Dataflow Graph



3. **C vs. LISP:** we program our applications in C and in a tiny subset of LISP in sake of convenience. We program our seamless helper functions in C. These are low-level coarse-grain functions. A dataflow engine does not apply any parallelization techniques to them. We program the rest of the code in LISP. This code is loaded into the dataflow engine for automatic parallelization. LISP programs are written in a prefix-form that is easy to understand from the following example (refer to the BMDFM comprehensive manual for more information; http://bmdfm.com/download.html).

C

```
for(i = 1; i <= N; i++){
  a = foo0(i);
  b = foo1(i + 1);
  b++;
  printf("a = %d\n", a);
  printf("b = %d\n", b);
}
```

LISP

```
(for i 1 1 N (progn
  (setq a (foo0 i))
  (setq b (foo1 (+ i 1)))
  (setq b (++ b))
  (outf "a = %d\n" a)
  (outf "b = %d\n" b)
))
```

Implementation of Recursive Fibonacci

We can implement our recursive Fibonacci seamless helper function in LISP or in pure C. However, we use implementation in pure C for our tests due to better performance. We keep our helper functions away from the dataflow engine (they are seamless for the dataflow engine) in order to avoid unnecessary dataflow scheduling:

Recursive Fibonacci Seamless Helper Function (LISP)

```
# Refer to the BMDFM comprehensive manual for more information.

(defun FibonacciSeamless
  (progn
    (setq n (+ 0 $1))
    (if (< n 2)
      n
      (+ (FibonacciSeamless (-- n))
         (FibonacciSeamless (- n 2))
      )
    )
  )
)
```

Recursive Fibonacci Seamless Helper Function (Pure C)

```
#include <cflp_udf.h>  /* BMDFM C-interface */
/* Refer to the BMDFM comprehensive manual for more information. */

#define ULO unsigned long int
#define SLO signed long int
#define UCH unsigned char

SLO _dffib_FibonacciSeamless(SLO n){
  return noterror()&&n>1?_dffib_FibonacciSeamless(n-1)+_dffib_FibonacciSeamless(n-2):n;
}

void dffib_FibonacciSeamless(const ULO *dat_ptr, struct fastlisp_data *ret_dat){
  SLO n;
  ret_ival(dat_ptr,&n);  /* read argument from the stack */
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    ret_dat->value.ival=_dffib_FibonacciSeamless(n);
  }
  return;
}

/* Register function. */
INSTRUCTION_STRU INSTRUCTION_SET[]={
  {"FIBONACCISEAMLESS",1,'I',(UCH*)"I",&dffib_FibonacciSeamless}
};
const ULO INSTRUCTIONS=sizeof(INSTRUCTION_SET)/sizeof(INSTRUCTION_STRU);
```

Using transparent dataflow semantics, we write a simple trivial implementation of our parallel multithreaded recursive Fibonacci function into the ***fib.flp*** file. Note that we need neither special parallelization directives nor special reserved function names. We have “wrapped” the ***FibonacciSeamless*** function with the ***FibonacciCoordinator*** function in order to limit “unlimited parallelism”:

Implementation of Parallel Multithreaded Recursive Fibonacci Using Transparent Dataflow Semantics

```
# fib.flp
# Refer to the BMDFM comprehensive manual for more information.

(defun FibonacciCoordinator
  (progn
    (setq n (+ 0 $1))
    (setq spawn (+ 0 $2))
    (if (< n 2)
      n
      (if (> spawn 0)
        (+ (FibonacciCoordinator (-- n) (>> spawn 1))
           (FibonacciCoordinator (- n 2) (>> spawn 1))
        )
        (+ (FibonacciSeamless (-- n))
           (FibonacciSeamless (- n 2))
        )
      )
    )
  )
)

(defun Fibonacci
  (progn
    (setq n (+ 0 $1))
    (setq spawn (n_cpuproc))
    (FibonacciCoordinator n spawn)
  )
)

# main() begins here
(setq n (+ 0 $1))
(Fibonacci n)
```

Running the Tests

We run our tests using the BMDFM single-threaded engine and multithreaded dataflow engine with the following batch shell-script:

```
#!/bin/sh

# Run fib.flp with single-threaded engine and log
fastlisp fib.flp 50 >fib.fastlisp

# Run fib.flp with multithreaded dataflow engine and log
BMDFMldr fib.flp 50 >fib.BMDFMldr
```

We tested our recursive Fibonacci on an affordable 16-way SMP x86-64 machine. The Linux OS reported in total 16 3.3GHz available processors (that actually are <***processors_on_dies***> multiplied by <***cores_per_processor_die***> multiplied by <***simultaneous_threads_per_core***>):

Test Application	Single-threaded Control Flow	Multithreaded Dataflow
Recursive Fibonacci (fib.flp 50)	**137sec.**	**10sec.**

We also tested our recursive Fibonacci on the 192-way SMP IBM Power System S822L (8247-22L) based on IBM POWER8 processors. The Linux OS reported in total 192 3.7GHz available processors (that actually are <***processors_on_dies***> multiplied by <***cores_per_processor_die***> multiplied by <***simultaneous_threads_per_core***>):

Test Application	Single-threaded Control Flow	Multithreaded Dataflow
Recursive Fibonacci (fib.flp 50)	**242sec.**	**1.6sec.**

And finally, in sake of political correctness, we tested our recursive Fibonacci on older parallel hardware too. We took the 64-way SMP Sun SPARC Enterprise T5120 Server based on UltraSparc T2 (Niagara2) processor. The Linux OS reported in total 64 1.4GHz available processors (that actually are <***processors_on_dies***> multiplied by <***cores_per_processor_die***> multiplied by <***simultaneous_threads_per_core***>):

Test Application	Single-threaded Control Flow	Multithreaded Dataflow
Recursive Fibonacci (fib.flp 50)	**1352sec.**	**44sec.**

Appendix: Log Files

The log files are provided in this document for those who are interested in automatic control-flow-to-dataflow code transformations and time measurements:

cat /proc/cpuinfo

```
processor       : 0
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 0
siblings        : 8
core id         : 0
cpu cores       : 4
apicid          : 0
initial apicid  : 0
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.82
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 1
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 0
siblings        : 8
core id         : 1
cpu cores       : 4
apicid          : 2
initial apicid  : 2
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.82
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 2
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 0
siblings        : 8
core id         : 2
cpu cores       : 4
apicid          : 4
initial apicid  : 4
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.82
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 3
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 0
siblings        : 8
core id         : 3
cpu cores       : 4
apicid          : 6
initial apicid  : 6
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.82
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 4
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 1
siblings        : 8
core id         : 0
cpu cores       : 4
apicid          : 32
initial apicid  : 32
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.09
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 5
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 1
siblings        : 8
core id         : 1
cpu cores       : 4
apicid          : 34
initial apicid  : 34
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.09
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 6
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 1
siblings        : 8
core id         : 2
cpu cores       : 4
apicid          : 36
initial apicid  : 36
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.09
```

```
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 7
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 1
siblings        : 8
core id         : 3
cpu cores       : 4
apicid          : 38
initial apicid  : 38
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.09
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 8
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 0
siblings        : 8
core id         : 0
cpu cores       : 4
apicid          : 1
initial apicid  : 1
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.82
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 9
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 0
siblings        : 8
core id         : 1
cpu cores       : 4
apicid          : 3
initial apicid  : 3
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.82
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 10
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 0
siblings        : 8
core id         : 2
cpu cores       : 4
apicid          : 5
initial apicid  : 5
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.82
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 11
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 0
siblings        : 8
core id         : 3
cpu cores       : 4
apicid          : 7
initial apicid  : 7
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.82
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 12
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 1
siblings        : 8
core id         : 0
cpu cores       : 4
apicid          : 33
initial apicid  : 33
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.09
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 13
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 1
siblings        : 8
core id         : 1
cpu cores       : 4
apicid          : 35
initial apicid  : 35
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.09
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 14
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 1
siblings        : 8
core id         : 2
cpu cores       : 4
apicid          : 37
initial apicid  : 37
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
```

```
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.09
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 15
vendor_id       : GenuineIntel
cpu family      : 6
model           : 45
model name      : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
stepping        : 7
microcode       : 1805
cpu MHz         : 3301.000
cache size      : 10240 KB
physical id     : 1
siblings        : 8
core id         : 3
cpu cores       : 4
apicid          : 39
initial apicid  : 39
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc arch_perfmon pebs bts rep_good xtopology nonstop_tsc
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtpr
pdcm pcid dca sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes xsave avx
lahf_lm ida arat epb xsaveopt pln pts dts tpr_shadow vnmi flexpriority ept vpid
bogomips        : 6599.09
clflush size    : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:
```

fib.fastlisp

```
Current termcap settings:
  TERM_TYPE=`xterm'; LINES_TERM=`51'; COLUMNS_TERM=`109';
  CLRSCR_TERM=`\e[H\e[2J'; REVERSE_TERM=`\e[7m'; BLINK_TERM=`\e[5m';
  BOLD_TERM=`\e[1m'; NORMAL_TERM=`\e[0m'; HIDECURSOR_TERM=`\e[?25l';
  SHOWCURSOR_TERM=`\e[?12l\e[?25h'; GOTOCURSOR_TERM=`\e[%i%d;%dH'.
Checking whether the `fib.flp' file is already precompiled...
Reading the `fib.flp' source FastLisp file...
*** Resetting time counters (first null assignment)... ***
Modifying the FastLisp code (PATTERN No# 1)...
  (PROGN <FastLisp_prog>)
Checking the syntax of the source FastLisp file...
Modifying the FastLisp code (PATTERN No# 2)...
  (PROGN {(SETQ <termcap_var> <termcap_val>) }<FastLisp_prog>)
Modifying the FastLisp code (PATTERN No# 3)...
  (PROGN {(SETQ $<arg_numb> <arg_val>) }<FastLisp_prog>)
Squeezing the nested source PROGN statements...
  Redundant nested source PROGN statements removed: 2.
Looking for uninitialized variables/arrays in the FastLisp code...
Resolving data types in the FastLisp code...
--------------------------------------------------------------------------------
(PROGN
  (SETQ@I $1 50)
  (SETQ@S TERM_TYPE@S "xterm")
  (SETQ@I LINES_TERM@I 51)
  (SETQ@I COLUMNS_TERM@I 109)
  (SETQ@S CLRSCR_TERM@S "\e[H\e[2J")
  (SETQ@S REVERSE_TERM@S "\e[7m")
  (SETQ@S BLINK_TERM@S "\e[5m")
  (SETQ@S BOLD_TERM@S "\e[1m")
  (SETQ@S NORMAL_TERM@S "\e[0m")
  (SETQ@S HIDECURSOR_TERM@S "\e[?25l")
  (SETQ@S SHOWCURSOR_TERM@S "\e[?12l\e[?25h")
  (SETQ@S GOTOCURSOR_TERM@S "\e[%i%d;%dH")
  (DEFUN
    FIBONACCICOORDINATOR
    (PROGN
      (SETQ@I N@I (+ 0 $1))
      (SETQ@I SPAWN@I (+ 0 $2))
      (IF@J
        (<@I N@I 2)
        N@I
        (IF@J
          (>@I SPAWN@I 0)
          (+@J
            (FIBONACCICOORDINATOR (--@J N@I) (>>@J SPAWN@I 1))
            (FIBONACCICOORDINATOR (-@J N@I 2) (>>@J SPAWN@I 1))
          )
          (+@J
            (FIBONACCISEAMLESS@J (--@J N@I))
            (FIBONACCISEAMLESS@J (-@J N@I 2))
          )
        )
      )
    )
  )
  (DEFUN
    FIBONACCI
    (PROGN
      (SETQ@I N@I (+ 0 $1))
      (SETQ@I SPAWN@I (N_CPUPROC))
      (FIBONACCICOORDINATOR N@I SPAWN@I)
    )
  )
  (SETQ@I N@I (+@J 0 $1))
  (FIBONACCI N@I)
)
```

```
--------------------------------------------------------------------------------
(PROGN (SETQ@I $1 50) (SETQ@S TERM_TYPE@S "xterm") (SETQ@I LINES_TERM@I 51) (SE
TQ@I COLUMNS_TERM@I 109) (SETQ@S CLRSCR_TERM@S "\e[H\e[2J") (SETQ@S REVERSE_TER
M@S "\e[7m") (SETQ@S BLINK_TERM@S "\e[5m") (SETQ@S BOLD_TERM@S "\e[1m") (SETQ@S
 NORMAL_TERM@S "\e[0m") (SETQ@S HIDECURSOR_TERM@S "\e[?25l") (SETQ@S SHOWCURSOR
_TERM@S "\e[?12l\e[?25h") (SETQ@S GOTOCURSOR_TERM@S "\e[%i%d;%dH") (DEFUN FIBON
ACCICOORDINATOR (PROGN (SETQ@I N@I (+ 0 $1)) (SETQ@I SPAWN@I (+ 0 $2)) (IF@J (<
@I N@I 2) N@I (IF@J (>@I SPAWN@I 0) (+@J (FIBONACCICOORDINATOR (--@J N@I) (>>@J
 SPAWN@I 1)) (FIBONACCICOORDINATOR (-@J N@I 2) (>>@J SPAWN@I 1))) (+@J (FIBONAC
CISEAMLESS@J (--@J N@I)) (FIBONACCISEAMLESS@J (-@J N@I 2))))))) (DEFUN FIBONACC
I (PROGN (SETQ@I N@I (+ 0 $1)) (SETQ@I SPAWN@I (N_CPUPROC)) (FIBONACCICOORDINAT
OR N@I SPAWN@I))) (SETQ@I N@I (+@J 0 $1)) (FIBONACCI N@I))
--------------------------------------------------------------------------------
*You may recompile the `fastlisp' with commented `#define _NOISY_MODE_'
 to disable print of the FastLisp code.
Compiling the Global FastLisp function source code (Pass One)...
Compiled Global function bytecode size is 56bytes.
--------------------------------------------------------------------------------
 D5 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  T 00
 00 00 00 00 00 00 01 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00  Z 00 00 00
 00 00 00 00
--------------------------------------------------------------------------------
*You may recompile the `fastlisp' with commented `#define _NOISY_MODE1_'
 to disable print of the compiled Global function bytecode.
Compiling the FastLisp source code (Pass One)...
Compiled bytecode size is 1976bytes.
--------------------------------------------------------------------------------
  U  H 00 00 00 00 00 00 0D 00 00 00 00 00 00 00 02 00 00 00 00 00 00 00 02 00
 00 00 00 00 00 00  m 00 00 00 00 00 00 00 D5 01 00 00 00 00 00 00 04 00 00 00
 00 00 00 00 00 00 00 00 00 00 00 00  T 00 00 00 00 00 00 00 03 00 00 00 00 00
 00 00 03 00 00 00 00 00 00 00 0C 00 00 00 00 00 00 00 15 00 00 00 00 00 00 00
 D4 04 00 00 00 00 00 00 02 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00  T BC
 00 00 00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00  I 00 00 00
 00 00 00 00 00 00 00 00 00 00 00 00  V 00 00 00 00 00 00 00 00 00 00 00 00 00
 00 00 D4 04 00 00 00 00 00 00 03 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00
  T BC 00 00 00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00  I 00
 00 00 00 00 00 00 00 00 00 00 00 00 00 00  V 00 00 00 00 00 00 00 01 00 00 00
 00 00 00 00 D4 1C 00 00 00 00 00 00 03 00 00 00 00 00 00 00 09 00 00 00 00 00
 00 00 0A 00 00 00 00 00 00 00 D4  x 00 00 00 00 00 00 02 00 00 00 00 00 00 00
 03 00 00 00 00 00 00 00  i 00 00 00 00 00 00 00 02 00 00 00 00 00 00 00  I 00
 00 00 00 00 00 00 02 00 00 00 00 00 00 00  i 00 00 00 00 00 00 00 02 00 00 00
 00 00 00 00 D4 1C 00 00 00 00 00 00 03 00 00 00 00 00 00 00 09 00 00 00 00 00
 00 00  . 00 00 00 00 00 00 00 D4 80 00 00 00 00 00 00 02 00 00 00 00 00 00 00
 03 00 00 00 00 00 00 00  i 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00  I 00
 00 00 00 00 00 00 00 00 00 00 00 00 00 00 D4 BC 00 00 00 00 00 00 02 00 00 00
 00 00 00 00 11 00 00 00 00 00 00 00  L 18 00 00 00 00 00 00 00 00 00 00 00 00
 00 00 02 00 00 00 00 00 00 00 02 00 00 00 00 00 00 00 05 00 00 00 00 00 00 00
 D4 F4 00 00 00 00 00 00 01 00 00 00 00 00 00 00  i 00 00 00 00 00 00 00 02 00
 00 00 00 00 00 00 D4 \( 01 00 00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00
 00 00 00 00  i 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00  I 00 00 00 00 00
 00 00 01 00 00 00 00 00 00 00  L 18 00 00 00 00 00 00 00 00 00 00 00 00 00 00
 02 00 00 00 00 00 00 00 02 00 00 00 00 00 00 00 08 00 00 00 00 00 00 00 D4 C4
 00 00 00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00  i 00 00 00
 00 00 00 00 02 00 00 00 00 00 00 00  I 00 00 00 00 00 00 00 02 00 00 00 00 00
 00 00 D4 \( 01 00 00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00
  i 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00  I 00 00 00 00 00 00 00 01 00
 00 00 00 00 00 00 D4 BC 00 00 00 00 00 00 02 00 00 00 00 00 00 00 07 00 00 00
 00 00 00 00  t B4 03 00 00 00 00 00 01 00 00 00 00 00 00 00 D4 F4 00 00 00 00
 00 00 01 00 00 00 00 00 00 00  i 00 00 00 00 00 00 00 02 00 00 00 00 00 00 00
  t B4 03 00 00 00 00 00 01 00 00 00 00 00 00 00 D4 C4 00 00 00 00 00 00 02 00
 00 00 00 00 00 00 03 00 00 00 00 00 00 00  i 00 00 00 00 00 00 00 02 00 00 00
 00 00 00 00  I 00 00 00 00 00 00 00 02 00 00 00 00 00 00 00 D5 01 00 00 00 00
 00 00 03 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  T 00 00 00 00 00 00 00
 03 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00 0C 00 00 00 00 00 00 00 0F 00
 00 00 00 00 00 00 D4 04 00 00 00 00 00 00 01 00 00 00 00 00 00 00 01 00 00 00
 00 00 00 00  T BC 00 00 00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00
 00 00  I 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  V 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00 D4 04 00 00 00 00 00 00 02 00 00 00 00 00 00 00 01 00
 00 00 00 00 00 00  T D0 02 00 00 00 00 00  L 18 00 00 00 00 00 00 00 00 00 00
 00 00 00 00 02 00 00 00 00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00
 00 00  P 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00  P 00 00 00 00 00 00 00
 02 00 00 00 00 00 00 00  T 00 00 00 00 00 00 00 0E 00 00 00 00 00 00 00 0E 00
 00 00 00 00 00 00 12 00 00 00 00 00 00 00 17 00 00 00 00 00 00 00 1B 00 00 00
 00 00 00 00 1F 00 00 00 00 00 00 00  $ 00 00 00 00 00 00 00 \) 00 00 00 00 00
 00 00  . 00 00 00 00 00 00 00  3 00 00 00 00 00 00 00  8 00 00 00 00 00 00 00
  = 00 00 00 00 00 00 00  C 00 00 00 00 00 00 00  I 00 00 00 00 00 00 00  R 00
 00 00 00 00 00 00 D4 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 01 00 00 00
 00 00 00 00  I 00 00 00 00 00 00 00  2 00 00 00 00 00 00 00 D4 05 00 00 00 00
 00 00 01 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00  S 00 00 00 00 00 00 00
 05 00 00 00 00 00 00 00  x  t  e  r  m 00 00 00 D4 04 00 00 00 00 00 00 02 00
 00 00 00 00 00 00 01 00 00 00 00 00 00 00  I 00 00 00 00 00 00 00  3 00 00 00
 00 00 00 00 D4 04 00 00 00 00 00 00 03 00 00 00 00 00 00 00 01 00 00 00 00 00
 00 00  I 00 00 00 00 00 00 00  m 00 00 00 00 00 00 00 D4 05 00 00 00 00 00 00
 04 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00  S 00 00 00 00 00 00 00 07 00
 00 00 00 00 00 00 1B  [  H 1B  [  2  J 00 D4 05 00 00 00 00 00 00 05 00 00 00
 00 00 00 00 01 00 00 00 00 00 00 00  S 00 00 00 00 00 00 00 04 00 00 00 00 00
 00 00 1B  [  7  m 00 00 00 00 D4 05 00 00 00 00 00 00 06 00 00 00 00 00 00 00
 01 00 00 00 00 00 00 00  S 00 00 00 00 00 00 00 04 00 00 00 00 00 00 00 1B  [
  5  m 00 00 00 00 D4 05 00 00 00 00 00 00 07 00 00 00 00 00 00 00 01 00 00 00
 00 00 00 00  S 00 00 00 00 00 00 00 04 00 00 00 00 00 00 00 1B  [  1  m 00 00
 00 00 D4 05 00 00 00 00 00 00 08 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00
  S 00 00 00 00 00 00 00 04 00 00 00 00 00 00 00 1B  [  0  m 00 00 00 00 D4 05
 00 00 00 00 00 00 09 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00  S 00 00 00
 00 00 00 00 06 00 00 00 00 00 00 00 1B  [  ?  2  5  l 00 00 D4 05 00 00 00 00
 00 00 0A 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00  S 00 00 00 00 00 00 00
 0C 00 00 00 00 00 00 00 1B  [  ?  1  2  l 1B  [  ?  2  5  h 00 00 00 00 D4 05
 00 00 00 00 00 00 0B 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00  S 00 00 00
 00 00 00 00 0A 00 00 00 00 00 00 00 1B  [  %  i  %  d  ;  %  d  H 00 00 00 00
 00 00 D4 04 00 00 00 00 00 00 0C 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00
 D4 BC 00 00 00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00  I 00
 00 00 00 00 00 00 00 00 00 00 00 00 00 00  V 00 00 00 00 00 00 00 00 00 00 00
 00 00 00 00  L 18 00 00 00 00 00 00 01 00 00 00 00 00 00 00 01 00 00 00 00 00
 00 00 01 00 00 00 00 00 00 00  P 00 00 00 00 00 00 00 0C 00 00 00 00 00 00 00
--------------------------------------------------------------------------------
*You may recompile the `fastlisp' with commented `#define _NOISY_MODE1_'
 to disable print of the compiled bytecode.
Linking the compiled Global function bytecode (Pass Two)...
--------------------------------------------------------------------------------
  ` DB D2 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  `  ,
  @ 00 00 00 00 00 01 00 00 00 00 00 00 00  x DB D2 00 00 00 00 00  0  ,  @ 00
 00 00 00 00
--------------------------------------------------------------------------------
*You may recompile the `fastlisp' with commented `#define _NOISY_MODE1_'
 to disable print of the linked Global function bytecode.
Linking the compiled bytecode (Pass Two)...
--------------------------------------------------------------------------------
 08 E2 D2 00 00 00 00 00 0D 00 00 00 00 00 00 00 02 00 00 00 00 00 00 00 B0 DD
 D2 00 00 00 00 00 10 E1 D2 00 00 00 00 00 C8 DD D2 00 00 00 00 00 04 00 00 00
 00 00 00 00 00 00 00 00 00 00 00 00  `  ,  @ 00 00 00 00 00 03 00 00 00 00 00
 00 00 F0 DD D2 00 00 00 00 00  @ DE D2 00 00 00 00 00 90 DE D2 00 00 00 00 00
```

```
 @ 84  @ 00 00 00 00 00 02 00 00 00 00 00 00 00 08 DE D2 00 00 00 00 00  p 10
 A 00 00 00 00 00 __ DE D2 00 00 00 00 00  0 DE D2 00 00 00 00 00 E0  +  @ 00
00 00 00 00 00 00 00 00 00 00 00 00 E0 FE  @ 00 00 00 00 00 00 00 00 00 00 00
00 00  @ 84  @ 00 00 00 00 00 03 00 00 00 00 00 00 00  X DE D2 00 00 00 00 00
 p 10  A 00 00 00 00 00  p DE D2 00 00 00 00 00 80 DE D2 00 00 00 00 00 E0  +
 @ 00 00 00 00 00 00 00 00 00 00 00 00 00 E0 FE  @ 00 00 00 00 00 01 00 00 00
00 00 00 00 B0  ,  @ 00 00 00 00 00 B0 DE D2 00 00 00 00 00 E8 DE D2 00 00 00
00 00 F8 DE D2 00 00 00 00 00 00  0  @ 00 00 00 00 00 C8 DE D2 00 00 00 00 00
D8 DE D2 00 00 00 00 00 D0 FD  @ 00 00 00 00 00 02 00 00 00 00 00 00 00 E0  +
 @ 00 00 00 00 00 02 00 00 00 00 00 00 00 D0 FD  @ 00 00 00 00 00 02 00 00 00
00 00 00 00 B0  ,  @ 00 00 00 00 00 18 DF D2 00 00 00 00 00  P DF D2 00 00 00
00 00 80 E0 D2 00 00 00 00 00  P  1  @ 00 00 00 00 00  0 DF D2 00 00 00 00 00
 @ DF D2 00 00 00 00 00 D0 FD  @ 00 00 00 00 00 03 00 00 00 00 00 00 00 E0  +
 @ 00 00 00 00 00 00 00 00 00 00 00 00 00  0  7  @ 00 00 00 00 00  h DF D2 00
00 00 00 00 E8 DF D2 00 00 00 00 00 __  j  @ 00 00 00 00 00 B0 DD D2 00 00 00
00 00 02 00 00 00 00 00 00 00 90 DF D2 00 00 00 00 00 B0 DF D2 00 00 00 00 00
 @  9  @ 00 00 00 00 00 A0 DF D2 00 00 00 00 00 D0 FD  @ 00 00 00 00 00 02 00
00 00 00 00 00 00  `  ;  @ 00 00 00 00 00 C8 DF D2 00 00 00 00 00 D8 DF D2 00
00 00 00 00 D0 FD  @ 00 00 00 00 00 03 00 00 00 00 00 00 00 E0  +  @ 00 00 00
00 00 01 00 00 00 00 00 00 00 __  j  @ 00 00 00 00 00 B0 DD D2 00 00 00 00 00
02 00 00 00 00 00 00 00 10 E0 D2 00 00 00 00 00  H E0 D2 00 00 00 00 00 A0  7
 @ 00 00 00 00 00 \( E0 D2 00 00 00 00 00  8 E0 D2 00 00 00 00 00 D0 FD  @ 00
00 00 00 00 02 00 00 00 00 00 00 00 E0  +  @ 00 00 00 00 00 02 00 00 00 00 00
00 00  `  ;  @ 00 00 00 00 00  ` E0 D2 00 00 00 00 00  p E0 D2 00 00 00 00 00
D0 FD  @ 00 00 00 00 00 03 00 00 00 00 00 00 00 E0  +  @ 00 00 00 00 00 01 00
00 00 00 00 00 00  0  7  @ 00 00 00 00 00 98 E0 D2 00 00 00 00 00 C8 E0 D2 00
00 00 00 00 80  v  D 00 00 00 00 00 A8 E0 D2 00 00 00 00 00  @  9  @ 00 00 00
00 00 B8 E0 D2 00 00 00 00 00 D0 FD  @ 00 00 00 00 00 02 00 00 00 00 00 00 00
80  v  D 00 00 00 00 00 D8 E0 D2 00 00 00 00 00 A0  7  @ 00 00 00 00 00 F0 E0
D2 00 00 00 00 00 00 E1 D2 00 00 00 00 00 D0 FD  @ 00 00 00 00 00 02 00 00 00
00 00 00 00 E0  +  @ 00 00 00 00 00 02 00 00 00 00 00 00 00 \( E1 D2 00 00 00
00 00 03 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  `  ,  @ 00 00 00 00 00
03 00 00 00 00 00 00 00  P E1 D2 00 00 00 00 00 A0 E1 D2 00 00 00 00 00 C0 E1
D2 00 00 00 00 00  @ 84  @ 00 00 00 00 00 01 00 00 00 00 00 00 00  h E1 D2 00
00 00 00 00  p 10  A 00 00 00 00 00 80 E1 D2 00 00 00 00 00 90 E1 D2 00 00 00
00 00 E0  +  @ 00 00 00 00 00 00 00 00 00 00 00 00 00 E0 FE  @ 00 00 00 00 00
00 00 00 00 00 00 00 00  @ 84  @ 00 00 00 00 00 02 00 00 00 00 00 00 00 B8 E1
D2 00 00 00 00 00 A0  @  @ 00 00 00 00 00 __  j  @ 00 00 00 00 00 B0 DD D2 00
00 00 00 00 02 00 00 00 00 00 00 00 E8 E1 D2 00 00 00 00 00 F8 E1 D2 00 00 00
00 00 __ FA  @ 00 00 00 00 00 01 00 00 00 00 00 00 00 __ FA  @ 00 00 00 00 00
02 00 00 00 00 00 00 00  `  ,  @ 00 00 00 00 00 0E 00 00 00 00 00 00 00 88 E2
D2 00 00 00 00 00 B0 E2 D2 00 00 00 00 00 E0 E2 D2 00 00 00 00 00 08 E3 D2 00
00 00 00 00  0 E3 D2 00 00 00 00 00  ` E3 D2 00 00 00 00 00 90 E3 D2 00 00 00
00 00 C0 E3 D2 00 00 00 00 00 F0 E3 D2 00 00 00 00 00 __ E4 D2 00 00 00 00 00
 P E4 D2 00 00 00 00 00 88 E4 D2 00 00 00 00 00 C0 E4 D2 00 00 00 00 00 10 E5
D2 00 00 00 00 00  @ 84  @ 00 00 00 00 00 00 00 00 00 00 00 00 00 A0 E2 D2 00
00 00 00 00 E0  +  @ 00 00 00 00 00  2 00 00 00 00 00 00 00 F0 82  @ 00 00 00
00 00 01 00 00 00 00 00 00 00 C8 E2 D2 00 00 00 00 00 __  s  @ 00 00 00 00 00
05 00 00 00 00 00 00 00  x  t  e  r  m 00 00 00  @ 84  @ 00 00 00 00 00 02 00
00 00 00 00 00 00 F8 E2 D2 00 00 00 00 00 E0  +  @ 00 00 00 00 00  3 00 00 00
00 00 00 00  @ 84  @ 00 00 00 00 00 03 00 00 00 00 00 00 00 __ E3 D2 00 00 00
00 00 E0  +  @ 00 00 00 00 00  m 00 00 00 00 00 00 00 F0 82  @ 00 00 00 00 00
04 00 00 00 00 00 00 00  H E3 D2 00 00 00 00 00 __  s  @ 00 00 00 00 00 07 00
00 00 00 00 00 00 1B  [  H 1B  [  2  J 00 F0 82  @ 00 00 00 00 00 05 00 00 00
00 00 00 00  x E3 D2 00 00 00 00 00 __  s  @ 00 00 00 00 00 04 00 00 00 00 00
00 00 1B  [  7  m 00 00 00 00 F0 82  @ 00 00 00 00 00 06 00 00 00 00 00 00 00
A8 E3 D2 00 00 00 00 00 __  s  @ 00 00 00 00 00 04 00 00 00 00 00 00 00 1B  [
 5  m 00 00 00 00 F0 82  @ 00 00 00 00 00 07 00 00 00 00 00 00 00 D8 E3 D2 00
00 00 00 00 __  s  @ 00 00 00 00 00 04 00 00 00 00 00 00 00 1B  [  1  m 00 00
00 00 F0 82  @ 00 00 00 00 00 08 00 00 00 00 00 00 00 08 E4 D2 00 00 00 00 00
__  s  @ 00 00 00 00 00 04 00 00 00 00 00 00 00 1B  [  0  m 00 00 00 00 F0 82
 @ 00 00 00 00 00 09 00 00 00 00 00 00 00  8 E4 D2 00 00 00 00 00 __  s  @ 00
00 00 00 00 06 00 00 00 00 00 00 00 1B  [  ?  2  5  l 00 00 F0 82  @ 00 00 00
00 00 0A 00 00 00 00 00 00 00  h E4 D2 00 00 00 00 00 __  s  @ 00 00 00 00 00
0C 00 00 00 00 00 00 00 1B  [  ?  1  2  l 1B  [  ?  2  5  h 00 00 00 00 F0 82
 @ 00 00 00 00 00 0B 00 00 00 00 00 00 00 A0 E4 D2 00 00 00 00 00 __  s  @ 00
00 00 00 00 0A 00 00 00 00 00 00 00 1B  [  %  i  %  d  ;  %  d  H 00 00 00 00
00 00  @ 84  @ 00 00 00 00 00 0C 00 00 00 00 00 00 00 D8 E4 D2 00 00 00 00 00
 0  7  @ 00 00 00 00 00 F0 E4 D2 00 00 00 00 00 00 E5 D2 00 00 00 00 00 E0  +
 @ 00 00 00 00 00 00 00 00 00 00 00 00 00 E0 FE  @ 00 00 00 00 00 00 00 00 00
00 00 00 00 __  j  @ 00 00 00 00 00 10 E1 D2 00 00 00 00 00 01 00 00 00 00 00
00 00  0 E5 D2 00 00 00 00 00 __ FA  @ 00 00 00 00 00 0C 00 00 00 00 00 00 00
--------------------------------------------------------------------------------
*You may recompile the `fastlisp' with commented `#define _NOISY_MODE1_'
 to disable print of the linked bytecode.
*** Immediate running of the compiled and linked bytecode will start
    here just after the time report!
Time spent to check and prepare the task approx.:
   Used by process: 0.008999sec.
   Used by  system: 0.000000sec.
   Total used time: 8.999000000000E-03sec.
Real absolute time: 9.927988052368E-03sec.
*** Resetting time counters (second event controlpoint)... ***
================================================================================
12586269025
================================================================================
Time spent to run the task:
   Used by process: 136.332274sec.
   Used by  system: 0.002000sec.
   Total used time: 1.363342740000E+02sec.
Real absolute time: 1.367478320599E+02sec.
```

BMDFMsrv.cfg

```
# BMDFMsrv.cfg

SHMEM_POOL_SIZE     =8000000000 # Shared memory pool size              [Bytes]
SHMEM_POOL_MNTADDR  = 999999999 # ShMemPool mount address (0=auto)
SHMEM_POOL_PERMS    =       432 # ShMemPool permissions (0660=="rw-rw----")
SHMEM_POOL_BANKS    =        50 # Number of banks in pool
POSIX_SEMA4_SYNC    =  RW+Count # Replace None/RW/RW+Count SVR4 with POSIX sema4
ARRAYBLOCK_SIZE     =        80 # Array block size                     [Entities]
OQ_FUNC_ARG_COUNT   =        80 # OQ function argument count           [Entities]

Q_OQ                =      1000 # Operation Queue (OQ) size            [Entities]
Q_DB                =       500 # Data Buffer (DB) size                [Entities]
Q_IORBP             =       100 # I/O Ring Buffer Port (IORBP) size    [Entities]
N_IORBP             =        10 # Number of the IORBPs
N_TRACEPORT         =         5 # Number of the Trace Ports (TPs)

N_CPUPROC           =        32 # Number of the CPU PROCs
N_OQPROC            =        32 # Number of the OQ PROCs
N_IORBPPROC         =        32 # Number of the IORBP PROCs

CPUPROC_MTHREAD     =       Yes # CPU PROC is multithreaded
OQPROC_MTHREAD      =       Yes # OQ PROC is multithreaded
IORBPPROC_MTHREAD   =       Yes # IORBP PROC is multithreaded
BMDFMLDR_MTHREAD    =       Yes # BMDFMldr is multithreaded

T_STATISTIC         =         1 # Time to scan DFM for statistic     [Seconds]
PROC_HEARTBEATS     =       Yes # Heartbeats for the CPU, OQ && IORBP PROCs
DFSTLHAZARD_DETECT  =       Yes # Detection of dataflow stall hazards
ALLOW_DROP_NONPROD  =        No # Allow dropping nonproductive instructions
PROC_CPU_LOGS       =        No # Logs registration for the CPU && IORBP PROCs
HARD_ARRAY_SYNCHRO  =        No # Hard synchronization of the arrays
EXT_IN_OUT_SYNCHRO  =       Yes # I/O synchronization of external task
OQ_DB_SEM_LIMIT     =         0 # Max number of OQ&&DB semaphores (0=unlim.)

# <EOF>
```

fib.BMDFMldr

```
Current termcap settings:
  TERM_TYPE=`xterm'; LINES_TERM=`51'; COLUMNS_TERM=`109';
  CLRSCR_TERM=`\e[H\e[2J'; REVERSE_TERM=`\e[7m'; BLINK_TERM=`\e[5m';
  BOLD_TERM=`\e[1m'; NORMAL_TERM=`\e[0m'; HIDECURSOR_TERM=`\e[?25l';
  SHOWCURSOR_TERM=`\e[?12l\e[?25h'; GOTOCURSOR_TERM=`\e[%i%d;%dH'.
Reading the `/tmp/.BMDFMsrv' BM_DFM connection file...
Opening the `/tmp/.BMDFMsrv_npipe' BM_DFM named FIFO pipe...
Accessing the BM_DFM Server...
Receiving the Global FastLisp function set from the BM_DFM Server...
Linked Global function bytecode size is 64bytes.
--------------------------------------------------------------------------------
  h  w  [ BC 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  P  U
 @ 00 00 00 00 00 01 00 00 00 00 00 00 00 80  w  [ BC 00 00 00 00 D0  T  @ 00
 00 00 00 00 01 00 00 00 00 00 00 00
--------------------------------------------------------------------------------
*You may recompile the `BMDFMldr' with commented `#define _NOISY_MODE1_'
 to disable print of the linked Global function bytecode.
Connection with the BM_DFM Server has been established but not yet registered.
Checking whether the `fib.flp' file is already precompiled...
Reading the `fib.flp' source FastLisp file...
*** Resetting time counters (first null assignment)... ***
Modifying the FastLisp code (PATTERN No# 1)...
  (PROGN <Global_FastLisp_function_set> <FastLisp_prog>)
Checking the syntax of the source FastLisp file...
Modifying the FastLisp code (PATTERN No# 3)...
  (PROGN {(SETQ <termcap_var> <termcap_val>) }<FastLisp_prog>)
Looking for uninitialized variables/arrays in the FastLisp code...
Checking the CODE STYLE RESTRICTIONS for the BM_DFM parallel processing...
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                           *
*  Summary of the BM_DFM CODE STYLE RESTRICTIONS:           *
*  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~            *
*                                                           *
*  o Variable names within the inclusive range of           *
*    [`TMP__000000000'; `TMP__999999999'] are reserved.     *
*  o `SHADOW' is the reserved name for a UDF.               *
*  o Array names should differ from ordinary variable names.*
*  o Every variable should be initialized before use.       *
*    The following is an example of how to copy an array:   *
*      ...                                                  *
*      (arsetq a 0 1)                                       *
*      (arsetq a 1 5)                                       *
*      (alsetq b (alindex a 2))    # instead of `(setq b a)' *
*      ...                                                  *
*  o The <step> and <limit> values of a <for> loop should be *
*    the integer numeric constants, function arguments or   *
*    initialized variables which are not changed inside this *
*    <for> loop.                                            *
*  o Second argument of the booleans <or> and <and> should  *
*    not include any assignments, I/O, conditional/         *
*    iteration processing and UDF calls.                    *
*                                                           *
*  NOTE: Any conventional program can be converted by a     *
*        formal procedure to the program that is compliant  *
*        with the above mentioned code style restrictions.  *
*                                                           *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*You may recompile BMDFMldr module with commented `#define EXPLAIN_RULE'
 to disable print of the code style restriction rule summary.
Modifying the FastLisp code (PATTERN No# 4)...
  (PROGN {(SETQ $<arg_numb> <arg_val>) }<FastLisp_prog>)
Squeezing the nested source PROGN statements...
  Redundant nested source PROGN statements removed: 2.
Modifying the FastLisp code (PATTERN No# 5)...
  (PROGN (OUTF (PRN_STRING_FMT) (CAT "" <FastLisp_prog>)) "")
Reorganizing the FastLisp code...
Resolving data types in the FastLisp code...
Registering in the BM_DFM Server Task Connection Zone...
Forking up the message queue listener...
Listener engine has been commenced.
The Loader/Listener pair is fully attached by the BM_DFM Server:
  Loader PID=9523, Listener PID=9523, SocketN# is 0.
--------------------------------------------------------------------------------
(PROGN
  (SETQ@I MAIN:$1 50)
  (SETQ@S MAIN:TERM_TYPE@S "xterm")
  (SETQ@I MAIN:LINES_TERM@I 51)
  (SETQ@I MAIN:COLUMNS_TERM@I 109)
  (SETQ@S MAIN:CLRSCR_TERM@S "\e[H\e[2J")
  (SETQ@S MAIN:REVERSE_TERM@S "\e[7m")
  (SETQ@S MAIN:BLINK_TERM@S "\e[5m")
  (SETQ@S MAIN:BOLD_TERM@S "\e[1m")
  (SETQ@S MAIN:NORMAL_TERM@S "\e[0m")
  (SETQ@S MAIN:HIDECURSOR_TERM@S "\e[?25l")
  (SETQ@S MAIN:SHOWCURSOR_TERM@S "\e[?12l\e[?25h")
  (SETQ@S MAIN:GOTOCURSOR_TERM@S "\e[%i%d;%dH")
  (DEFUN
    MAIN:FIBONACCICOORDINATOR
    (PROGN
      (DEFUN
        MAIN:FIBONACCICOORDINATOR:SHADOW
        (PROGN
```

```
          (SETQ@I
            MAIN:FIBONACCICOORDINATOR:SHADOW:N@I
            (+ 0 MAIN:FIBONACCICOORDINATOR:SHADOW:$1)
          )
          (SETQ@I
            MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I
            (+ 0 MAIN:FIBONACCICOORDINATOR:SHADOW:$2)
          )
          (SETQ@I
            MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000004@I
            (<@I MAIN:FIBONACCICOORDINATOR:SHADOW:N@I 2)
          )
          (IF@J
            MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000004@I
            (SETQ@I
              MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I
              MAIN:FIBONACCICOORDINATOR:SHADOW:N@I
            )
            (PROGN
              (SETQ@I
                MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000003@I
                (>@I MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I 0)
              )
              (IF@J
                MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000003@I
                (PROGN
                  (SETQ@I
                    MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I
                    (MAIN:FIBONACCICOORDINATOR
                      (--@J MAIN:FIBONACCICOORDINATOR:SHADOW:N@I)
                      (>>@J MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I 1)
                    )
                  )
                  (SETQ@I
                    MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000002@I
                    (MAIN:FIBONACCICOORDINATOR
                      (-@J MAIN:FIBONACCICOORDINATOR:SHADOW:N@I 2)
                      (>>@J MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I 1)
                    )
                  )
                  (SETQ@I
                    MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I
                    (+@J
                      MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I
                      MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000002@I
                    )
                  )
                )
                (PROGN
                  (SETQ@I
                    MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I
                    (FIBONACCISEAMLESS@J
                      (--@J MAIN:FIBONACCICOORDINATOR:SHADOW:N@I)
                    )
                  )
                  (SETQ@I
                    MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000002@I
                    (FIBONACCISEAMLESS@J
                      (-@J MAIN:FIBONACCICOORDINATOR:SHADOW:N@I 2)
                    )
                  )
                  (SETQ@I
                    MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I
                    (+@J
                      MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I
                      MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000002@I
                    )
                  )
                )
              )
            )
          )
        )
      )
      (SETQ@I MAIN:FIBONACCICOORDINATOR:N@I (+ 0 MAIN:FIBONACCICOORDINATOR:$1))
      (SETQ@I
        MAIN:FIBONACCICOORDINATOR:SPAWN@I
        (+ 0 MAIN:FIBONACCICOORDINATOR:$2)
      )
      (SETQ@I
        MAIN:FIBONACCICOORDINATOR:TMP__000000004@I
        (<@I MAIN:FIBONACCICOORDINATOR:N@I 2)
      )
      (IF@J
        MAIN:FIBONACCICOORDINATOR:TMP__000000004@I
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:TMP__000000000@I
          MAIN:FIBONACCICOORDINATOR:N@I
        )
        (PROGN
          (SETQ@I
            MAIN:FIBONACCICOORDINATOR:TMP__000000003@I
            (>@I MAIN:FIBONACCICOORDINATOR:SPAWN@I 0)
          )
          (IF@J
            MAIN:FIBONACCICOORDINATOR:TMP__000000003@I
            (PROGN
              (SETQ@I
                MAIN:FIBONACCICOORDINATOR:TMP__000000001@I
                (MAIN:FIBONACCICOORDINATOR:SHADOW
                  (--@J MAIN:FIBONACCICOORDINATOR:N@I)
                  (>>@J MAIN:FIBONACCICOORDINATOR:SPAWN@I 1)
                )
              )
              (SETQ@I
                MAIN:FIBONACCICOORDINATOR:TMP__000000002@I
                (MAIN:FIBONACCICOORDINATOR:SHADOW
                  (-@J MAIN:FIBONACCICOORDINATOR:N@I 2)
                  (>>@J MAIN:FIBONACCICOORDINATOR:SPAWN@I 1)
                )
              )
              (SETQ@I
                MAIN:FIBONACCICOORDINATOR:TMP__000000000@I
                (+@J
                  MAIN:FIBONACCICOORDINATOR:TMP__000000001@I
                  MAIN:FIBONACCICOORDINATOR:TMP__000000002@I
                )
              )
            )
            (PROGN
              (SETQ@I
                MAIN:FIBONACCICOORDINATOR:TMP__000000001@I
                (FIBONACCISEAMLESS@J (--@J MAIN:FIBONACCICOORDINATOR:N@I))
              )
              (SETQ@I
                MAIN:FIBONACCICOORDINATOR:TMP__000000002@I
                (FIBONACCISEAMLESS@J (-@J MAIN:FIBONACCICOORDINATOR:N@I 2))
              )
              (SETQ@I
                MAIN:FIBONACCICOORDINATOR:TMP__000000000@I
                (+@J
                  MAIN:FIBONACCICOORDINATOR:TMP__000000001@I
                  MAIN:FIBONACCICOORDINATOR:TMP__000000002@I
                )
              )
            )
          )
        )
      )
    )
  )
  (DEFUN
    MAIN:FIBONACCI
    (PROGN
      (SETQ@I MAIN:FIBONACCI:N@I (+ 0 MAIN:FIBONACCI:$1))
      (SETQ@I MAIN:FIBONACCI:SPAWN@I (N_CPUPROC))
      (SETQ@I
        MAIN:FIBONACCI:TMP__000000000@I
        (MAIN:FIBONACCICOORDINATOR MAIN:FIBONACCI:N@I MAIN:FIBONACCI:SPAWN@I)
      )
    )
  )
  (SETQ@I MAIN:N@I (+@J 0 MAIN:$1))
  (SETQ@I MAIN:TMP__000000001 (MAIN:FIBONACCI MAIN:N@I))
  (SETQ@S
    MAIN:TMP__000000001
    (OUTF (PRN_STRING_FMT) (CAT "" MAIN:TMP__000000001))
  )
  (SETQ@S MAIN:TMP__000000000@S "")
)
--------------------------------------------------------------------------------
(PROGN (SETQ@I MAIN:$1 50) (SETQ@S MAIN:TERM_TYPE@S "xterm") (SETQ@I MAIN:LINES
_TERM@I 51) (SETQ@I MAIN:COLUMNS_TERM@I 109) (SETQ@S MAIN:CLRSCR_TERM@S "\e[H\e
[2J") (SETQ@S MAIN:REVERSE_TERM@S "\e[7m") (SETQ@S MAIN:BLINK_TERM@S "\e[5m") (
SETQ@S MAIN:BOLD_TERM@S "\e[1m") (SETQ@S MAIN:NORMAL_TERM@S "\e[0m") (SETQ@S MA
IN:HIDECURSOR_TERM@S "\e[?25l") (SETQ@S MAIN:SHOWCURSOR_TERM@S "\e[?12l\e[?25h"
) (SETQ@S MAIN:GOTOCURSOR_TERM@S "\e[%i%d;%dH") (DEFUN MAIN:FIBONACCICOORDINATO
R (PROGN (DEFUN MAIN:FIBONACCICOORDINATOR:SHADOW (PROGN (SETQ@I MAIN:FIBONACCIC
OORDINATOR:SHADOW:N@I (+ 0 MAIN:FIBONACCICOORDINATOR:SHADOW:$1)) (SETQ@I MAIN:F
IBONACCICOORDINATOR:SHADOW:SPAWN@I (+ 0 MAIN:FIBONACCICOORDINATOR:SHADOW:$2)) (
SETQ@I MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000004@I (<@I MAIN:FIBONACCICOO
RDINATOR:SHADOW:N@I 2)) (IF@J MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000004@I
 (SETQ@I MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I MAIN:FIBONACCICOORDI
NATOR:SHADOW:N@I) (PROGN (SETQ@I MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__00000000
3@I (>@I MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I 0)) (IF@J MAIN:FIBONACCICOORD
INATOR:SHADOW:TMP__000000003@I (PROGN (SETQ@I MAIN:FIBONACCICOORDINATOR:SHADOW:
TMP__000000001@I (MAIN:FIBONACCICOORDINATOR (--@J MAIN:FIBONACCICOORDINATOR:SHA
DOW:N@I) (>>@J MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I 1))) (SETQ@I MAIN:FIBON
ACCICOORDINATOR:SHADOW:TMP__000000002@I (MAIN:FIBONACCICOORDINATOR (-@J MAIN:FI
BONACCICOORDINATOR:SHADOW:N@I 2) (>>@J MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I
 1))) (SETQ@I MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I (+@J MAIN:FIBON
ACCICOORDINATOR:SHADOW:TMP__000000001@I MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__0
00000002@I))) (PROGN (SETQ@I MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I
(FIBONACCISEAMLESS@J (--@J MAIN:FIBONACCICOORDINATOR:SHADOW:N@I))) (SETQ@I MAIN
:FIBONACCICOORDINATOR:SHADOW:TMP__000000002@I (FIBONACCISEAMLESS@J (-@J MAIN:FI
BONACCICOORDINATOR:SHADOW:N@I 2))) (SETQ@I MAIN:FIBONACCICOORDINATOR:SHADOW:TMP
__000000000@I (+@J MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I MAIN:FIBON
ACCICOORDINATOR:SHADOW:TMP__000000002@I)))))))) (SETQ@I MAIN:FIBONACCICOORDINAT
OR:N@I (+ 0 MAIN:FIBONACCICOORDINATOR:$1)) (SETQ@I MAIN:FIBONACCICOORDINATOR:SP
AWN@I (+ 0 MAIN:FIBONACCICOORDINATOR:$2)) (SETQ@I MAIN:FIBONACCICOORDINATOR:TMP
__000000004@I (<@I MAIN:FIBONACCICOORDINATOR:N@I 2)) (IF@J MAIN:FIBONACCICOORDI
NATOR:TMP__000000004@I (SETQ@I MAIN:FIBONACCICOORDINATOR:TMP__000000000@I MAIN:
FIBONACCICOORDINATOR:N@I) (PROGN (SETQ@I MAIN:FIBONACCICOORDINATOR:TMP__0000000
03@I (>@I MAIN:FIBONACCICOORDINATOR:SPAWN@I 0)) (IF@J MAIN:FIBONACCICOORDINATOR
:TMP__000000003@I (PROGN (SETQ@I MAIN:FIBONACCICOORDINATOR:TMP__000000001@I (MA
IN:FIBONACCICOORDINATOR:SHADOW (--@J MAIN:FIBONACCICOORDINATOR:N@I) (>>@J MAIN:
FIBONACCICOORDINATOR:SPAWN@I 1))) (SETQ@I MAIN:FIBONACCICOORDINATOR:TMP__000000
002@I (MAIN:FIBONACCICOORDINATOR:SHADOW (-@J MAIN:FIBONACCICOORDINATOR:N@I 2) (
>>@J MAIN:FIBONACCICOORDINATOR:SPAWN@I 1))) (SETQ@I MAIN:FIBONACCICOORDINATOR:T
MP__000000000@I (+@J MAIN:FIBONACCICOORDINATOR:TMP__000000001@I MAIN:FIBONACCIC
OORDINATOR:TMP__000000002@I))) (PROGN (SETQ@I MAIN:FIBONACCICOORDINATOR:TMP__00
0000001@I (FIBONACCISEAMLESS@J (--@J MAIN:FIBONACCICOORDINATOR:N@I))) (SETQ@I M
AIN:FIBONACCICOORDINATOR:TMP__000000002@I (FIBONACCISEAMLESS@J (-@J MAIN:FIBONA
CCICOORDINATOR:N@I 2))) (SETQ@I MAIN:FIBONACCICOORDINATOR:TMP__000000000@I (+@J
 MAIN:FIBONACCICOORDINATOR:TMP__000000001@I MAIN:FIBONACCICOORDINATOR:TMP__0000
00002@I)))))))) (DEFUN MAIN:FIBONACCI (PROGN (SETQ@I MAIN:FIBONACCI:N@I (+ 0 MA
IN:FIBONACCI:$1)) (SETQ@I MAIN:FIBONACCI:SPAWN@I (N_CPUPROC)) (SETQ@I MAIN:FIBO
NACCI:TMP__000000000@I (MAIN:FIBONACCICOORDINATOR MAIN:FIBONACCI:N@I MAIN:FIBON
ACCI:SPAWN@I)))) (SETQ@I MAIN:N@I (+@J 0 MAIN:$1)) (SETQ@I MAIN:TMP__000000001
(MAIN:FIBONACCI MAIN:N@I)) (SETQ@S MAIN:TMP__000000001 (OUTF (PRN_STRING_FMT) (
CAT "" MAIN:TMP__000000001))) (SETQ@S MAIN:TMP__000000000@S ""))
--------------------------------------------------------------------------------
*You may recompile BMDFMldr module with commented `#define _NOISY_MODE_'
 to disable print of the FastLisp code.
Performing preliminary STATIC SCHEDULING (HARD_ARRAY_SYNCHRO=NO,
  EXT_IN_OUT_SYNCHRO=YES)...
Progress: *S*U*U*i*i*i*i*U
The translator module has finished the static scheduling.
The translator has returned the following exit code: 0(Success).
The following generated control sequence (so-called `BM_DFM UNICODE')
will be transferred to the BM_DFM kernel:
--------------------------------------------------------------------------------
(CTRL
  (N# 0)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 0 "MAIN:$1")
      (1 34 "MAIN:TERM_TYPE@S")
      (2 29 "MAIN:LINES_TERM@I")
      (3 4 "MAIN:COLUMNS_TERM@I")
      (4 3 "MAIN:CLRSCR_TERM@S")
      (5 32 "MAIN:REVERSE_TERM@S")
      (6 1 "MAIN:BLINK_TERM@S")
      (7 2 "MAIN:BOLD_TERM@S")
      (8 31 "MAIN:NORMAL_TERM@S")
      (9 28 "MAIN:HIDECURSOR_TERM@S")
      (10 33 "MAIN:SHOWCURSOR_TERM@S")
      (11 27 "MAIN:GOTOCURSOR_TERM@S")
```

```
    )
    (Fnc
      (N# 0)
      (FLP (SETQ@I MAIN:$1 50))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " I 00 00 00 00 00 00 00" " 2 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 0)
    )
    (Fnc
      (N# 1)
      (FLP (SETQ@S MAIN:TERM_TYPE@S "xterm"))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " S 00 00 00 00 00 00 00" "05 00 00 00 00 00 00 00"
        " x  t  e  r  m 00 00 00"
      )
      (Var_Ptrs 1)
    )
    (Fnc
      (N# 2)
      (FLP (SETQ@I MAIN:LINES_TERM@I 51))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " I 00 00 00 00 00 00 00" " 3 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 2)
    )
    (Fnc
      (N# 3)
      (FLP (SETQ@I MAIN:COLUMNS_TERM@I 109))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " I 00 00 00 00 00 00 00" " m 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 3)
    )
    (Fnc
      (N# 4)
      (FLP (SETQ@S MAIN:CLRSCR_TERM@S "\e[H\e[2J"))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " S 00 00 00 00 00 00 00" "07 00 00 00 00 00 00 00"
        "1B  [  H 1B  [  2  J 00"
      )
      (Var_Ptrs 4)
    )
    (Fnc
      (N# 5)
      (FLP (SETQ@S MAIN:REVERSE_TERM@S "\e[7m"))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " S 00 00 00 00 00 00 00" "04 00 00 00 00 00 00 00"
        "1B  [  7  m 00 00 00 00"
      )
      (Var_Ptrs 5)
    )
    (Fnc
      (N# 6)
      (FLP (SETQ@S MAIN:BLINK_TERM@S "\e[5m"))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " S 00 00 00 00 00 00 00" "04 00 00 00 00 00 00 00"
        "1B  [  5  m 00 00 00 00"
      )
      (Var_Ptrs 6)
    )
    (Fnc
      (N# 7)
      (FLP (SETQ@S MAIN:BOLD_TERM@S "\e[1m"))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " S 00 00 00 00 00 00 00" "04 00 00 00 00 00 00 00"
        "1B  [  1  m 00 00 00 00"
      )
      (Var_Ptrs 7)
    )
    (Fnc
      (N# 8)
      (FLP (SETQ@S MAIN:NORMAL_TERM@S "\e[0m"))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " S 00 00 00 00 00 00 00" "04 00 00 00 00 00 00 00"
        "1B  [  0  m 00 00 00 00"
      )
      (Var_Ptrs 8)
    )
    (Fnc
      (N# 9)
      (FLP (SETQ@S MAIN:HIDECURSOR_TERM@S "\e[?25l"))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " S 00 00 00 00 00 00 00" "06 00 00 00 00 00 00 00"
        "1B  [  ?  2  5  l 00 00"
      )
      (Var_Ptrs 9)
    )
    (Fnc
      (N# 10)
      (FLP (SETQ@S MAIN:SHOWCURSOR_TERM@S "\e[?12l\e[?25h"))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " S 00 00 00 00 00 00 00" "0C 00 00 00 00 00 00 00"
        "1B  [  ?  1  2  l 1B  [" " ?  2  5  h 00 00 00 00"
      )
      (Var_Ptrs 10)
    )
    (Fnc
      (N# 11)
      (FLP (SETQ@S MAIN:GOTOCURSOR_TERM@S "\e[%i%d;%dH"))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " S 00 00 00 00 00 00 00" "0A 00 00 00 00 00 00 00"
        "1B  [  %  i  %  d  ;  %" " d  H 00 00 00 00 00 00"
      )
      (Var_Ptrs 11)
    )
  )
)
(CTRL
  (N# 1)
  (OpGroup 2)
  (COP 14)
  (GOTO 51)
  (REM "Pass over UDF `MAIN:FIBONACCICOORDINATOR' body")
)
(CTRL
  (N# 2)
  (OpGroup 2)
  (COP 14)
  (GOTO 27)
  (REM "Pass over UDF `MAIN:FIBONACCICOORDINATOR:SHADOW' body")
)
(CTRL
  (N# 3)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 12 "MAIN:FIBONACCICOORDINATOR:SHADOW:$1")
      (1 14 "MAIN:FIBONACCICOORDINATOR:SHADOW:N@I")
      (2 13 "MAIN:FIBONACCICOORDINATOR:SHADOW:$2")
      (3 15 "MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I")
      (4 20 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000004@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:SHADOW:N@I
          (+ 0 MAIN:FIBONACCICOORDINATOR:SHADOW:$1)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " T BC 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " V 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 1 0)
    )
    (Fnc
      (N# 1)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I
          (+ 0 MAIN:FIBONACCICOORDINATOR:SHADOW:$2)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " T BC 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " V 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 3 2)
    )
    (Fnc
      (N# 2)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000004@I
          (<@I MAIN:FIBONACCICOORDINATOR:SHADOW:N@I 2)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4  x 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 4 1)
    )
  )
)
(CTRL
  (N# 4)
  (OpGroup 1)
  (COP 70)
  (dfmput_zdata
    (VarRef 20)
    (VarName "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000004@I")
    (Inq_Dest Ld)
  )
)
(CTRL (N# 5) (OpGroup 1) (COP 81) (<accum_slo> (dfmget_idata)))
```

```
(CTRL
  (N# 6)
  (OpGroup 2)
  (COP 17)
  (IF_NOT <accum_slo> (GOTO 9))
  (REM
    "Pass over `MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000004@I' <if>
conditional branch"
  )
)
(CTRL
  (N# 7)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 14 "MAIN:FIBONACCICOORDINATOR:SHADOW:N@I")
      (1 16 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I
          MAIN:FIBONACCICOORDINATOR:SHADOW:N@I
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 1 0)
    )
  )
)
(CTRL
  (N# 8)
  (OpGroup 2)
  (COP 14)
  (GOTO 26)
  (REM
    "Pass over `MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000004@I' <else>
conditional branch"
  )
)
(CTRL
  (N# 9)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 15 "MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I")
      (1 19 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000003@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000003@I
          (>@I MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I 0)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 80 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 1 0)
    )
  )
)
(CTRL
  (N# 10)
  (OpGroup 1)
  (COP 70)
  (dfmput_zdata
    (VarRef 19)
    (VarName "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000003@I")
    (Inq_Dest Ld)
  )
)
(CTRL (N# 11) (OpGroup 1) (COP 81) (<accum_slo> (dfmget_idata)))
(CTRL
  (N# 12)
  (OpGroup 2)
  (COP 17)
  (IF_NOT <accum_slo> (GOTO 25))
  (REM
    "Pass over `MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000003@I' <if>
conditional branch"
  )
)
(CTRL
  (N# 13)
  (OpGroup 2)
  (COP 12)
  (ENTER_RECURSION)
  (Vars_N#_Ref_Name_[Array]
    (0 11 "MAIN:FIBONACCICOORDINATOR:N@I")
    (1 9 "MAIN:FIBONACCICOORDINATOR:$1")
    (2 21 "MAIN:FIBONACCICOORDINATOR:SPAWN@I")
    (3 10 "MAIN:FIBONACCICOORDINATOR:$2")
    (4 26 "MAIN:FIBONACCICOORDINATOR:TMP__000000004@I")
    (5 22 "MAIN:FIBONACCICOORDINATOR:TMP__000000000@I")
    (6 25 "MAIN:FIBONACCICOORDINATOR:TMP__000000003@I")
    (7 23 "MAIN:FIBONACCICOORDINATOR:TMP__000000001@I")
    (8 24 "MAIN:FIBONACCICOORDINATOR:TMP__000000002@I")
  )
)
(CTRL
  (N# 14)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 9 "MAIN:FIBONACCICOORDINATOR:$1")
      (1 14 "MAIN:FIBONACCICOORDINATOR:SHADOW:N@I")
      (2 10 "MAIN:FIBONACCICOORDINATOR:$2")
      (3 15 "MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (ALSETQ
          MAIN:FIBONACCICOORDINATOR:$1
          (--@J MAIN:FIBONACCICOORDINATOR:SHADOW:N@I)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 F4 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 0 1)
    )
    (Fnc
      (N# 1)
      (FLP
        (ALSETQ
          MAIN:FIBONACCICOORDINATOR:$2
          (>>@J MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I 1)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 \( 01 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 2 3)
    )
  )
  (REM
    "UDF `MAIN:FIBONACCICOORDINATOR' invoke initialization (passing the
arguments)"
  )
)
(CTRL
  (N# 15)
  (OpGroup 2)
  (COP 15)
  (GOSUB 2)
  (REM "UDF `MAIN:FIBONACCICOORDINATOR' call")
)
(CTRL
  (N# 16)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 17 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I")
      (1 22 "MAIN:FIBONACCICOORDINATOR:TMP__000000000@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (ALSETQ
          MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I
          MAIN:FIBONACCICOORDINATOR:TMP__000000000@I
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 0 1)
    )
  )
  (REM "UDF `MAIN:FIBONACCICOORDINATOR' returned value")
)
(CTRL (N# 17) (OpGroup 2) (COP 13) (LEAVE_RECURSION))
(CTRL
  (N# 18)
  (OpGroup 2)
  (COP 12)
  (ENTER_RECURSION)
  (Vars_N#_Ref_Name_[Array]
    (0 11 "MAIN:FIBONACCICOORDINATOR:N@I")
    (1 9 "MAIN:FIBONACCICOORDINATOR:$1")
    (2 21 "MAIN:FIBONACCICOORDINATOR:SPAWN@I")
    (3 10 "MAIN:FIBONACCICOORDINATOR:$2")
    (4 26 "MAIN:FIBONACCICOORDINATOR:TMP__000000004@I")
    (5 22 "MAIN:FIBONACCICOORDINATOR:TMP__000000000@I")
    (6 25 "MAIN:FIBONACCICOORDINATOR:TMP__000000003@I")
    (7 23 "MAIN:FIBONACCICOORDINATOR:TMP__000000001@I")
    (8 24 "MAIN:FIBONACCICOORDINATOR:TMP__000000002@I")
  )
)
(CTRL
  (N# 19)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 9 "MAIN:FIBONACCICOORDINATOR:$1")
      (1 14 "MAIN:FIBONACCICOORDINATOR:SHADOW:N@I")
      (2 10 "MAIN:FIBONACCICOORDINATOR:$2")
      (3 15 "MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (ALSETQ
          MAIN:FIBONACCICOORDINATOR:$1
          (-@J MAIN:FIBONACCICOORDINATOR:SHADOW:N@I 2)
        )
      )
```

```
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 C4 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 0 1)
    )
    (Fnc
      (N# 1)
      (FLP
        (ALSETQ
          MAIN:FIBONACCICOORDINATOR:$2
          (>>@J MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I 1)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 \( 01 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 2 3)
    )
  )
  (REM
    "UDF `MAIN:FIBONACCICOORDINATOR' invoke initialization (passing the
arguments)"
  )
)
(CTRL
  (N# 20)
  (OpGroup 2)
  (COP 15)
  (GOSUB 2)
  (REM "UDF `MAIN:FIBONACCICOORDINATOR' call")
)
(CTRL
  (N# 21)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 18 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000002@I")
      (1 22 "MAIN:FIBONACCICOORDINATOR:TMP__000000000@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (ALSETQ
          MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000002@I
          MAIN:FIBONACCICOORDINATOR:TMP__000000000@I
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 0 1)
    )
  )
  (REM "UDF `MAIN:FIBONACCICOORDINATOR' returned value")
)
(CTRL (N# 22) (OpGroup 2) (COP 13) (LEAVE_RECURSION))
(CTRL
  (N# 23)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 17 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I")
      (1 18 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000002@I")
      (2 16 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I
          (+@J
            MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I
            MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000002@I
          )
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "03 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 BC 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 2 0 1)
    )
  )
)
(CTRL
  (N# 24)
  (OpGroup 2)
  (COP 14)
  (GOTO 26)
  (REM
    "Pass over `MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000003@I' <else>
conditional branch"
  )
)
(CTRL
  (N# 25)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 14 "MAIN:FIBONACCICOORDINATOR:SHADOW:N@I")
      (1 17 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I")
      (2 18 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000002@I")
      (3 16 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I
          (FIBONACCISEAMLESS@J (--@J MAIN:FIBONACCICOORDINATOR:SHADOW:N@I))
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " t B4 03 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 F4 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 1 0)
    )
    (Fnc
      (N# 1)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000002@I
          (FIBONACCISEAMLESS@J (-@J MAIN:FIBONACCICOORDINATOR:SHADOW:N@I 2))
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " t B4 03 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 C4 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 2 0)
    )
    (Fnc
      (N# 2)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I
          (+@J
            MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I
            MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000002@I
          )
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "03 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 BC 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 3 1 2)
    )
  )
)
(CTRL
  (N# 26)
  (OpGroup 2)
  (COP 16)
  (RETURN)
  (REM "End of UDF `MAIN:FIBONACCICOORDINATOR:SHADOW' body")
)
(CTRL
  (N# 27)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 9 "MAIN:FIBONACCICOORDINATOR:$1")
      (1 11 "MAIN:FIBONACCICOORDINATOR:N@I")
      (2 10 "MAIN:FIBONACCICOORDINATOR:$2")
      (3 21 "MAIN:FIBONACCICOORDINATOR:SPAWN@I")
      (4 26 "MAIN:FIBONACCICOORDINATOR:TMP__000000004@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:N@I
          (+ 0 MAIN:FIBONACCICOORDINATOR:$1)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " T BC 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " V 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 1 0)
    )
    (Fnc
      (N# 1)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:SPAWN@I
          (+ 0 MAIN:FIBONACCICOORDINATOR:$2)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " T BC 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
```

```
        "03 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " V 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 3 2)
    )
    (Fnc
      (N# 2)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:TMP__000000004@I
          (<@I MAIN:FIBONACCICOORDINATOR:N@I 2)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4  x 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 4 1)
    )
  )
)
(CTRL
  (N# 28)
  (OpGroup 1)
  (COP 70)
  (dfmput_zdata
    (VarRef 26)
    (VarName "MAIN:FIBONACCICOORDINATOR:TMP__000000004@I")
    (Inq_Dest Ld)
  )
)
(CTRL (N# 29) (OpGroup 1) (COP 81) (<accum_slo> (dfmget_idata)))
(CTRL
  (N# 30)
  (OpGroup 2)
  (COP 17)
  (IF_NOT <accum_slo> (GOTO 33))
  (REM
    "Pass over `MAIN:FIBONACCICOORDINATOR:TMP__000000004@I' <if> conditional
branch"
  )
)
(CTRL
  (N# 31)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 11 "MAIN:FIBONACCICOORDINATOR:N@I")
      (1 22 "MAIN:FIBONACCICOORDINATOR:TMP__000000000@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:TMP__000000000@I
          MAIN:FIBONACCICOORDINATOR:N@I
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 1 0)
    )
  )
)
(CTRL
  (N# 32)
  (OpGroup 2)
  (COP 14)
  (GOTO 50)
  (REM
    "Pass over `MAIN:FIBONACCICOORDINATOR:TMP__000000004@I' <else> conditional
branch"
  )
)
(CTRL
  (N# 33)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 21 "MAIN:FIBONACCICOORDINATOR:SPAWN@I")
      (1 25 "MAIN:FIBONACCICOORDINATOR:TMP__000000003@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:TMP__000000003@I
          (>@I MAIN:FIBONACCICOORDINATOR:SPAWN@I 0)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 80 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 1 0)
    )
  )
)
(CTRL
  (N# 34)
  (OpGroup 1)
  (COP 70)
  (dfmput_zdata
```

```
    (VarRef 25)
    (VarName "MAIN:FIBONACCICOORDINATOR:TMP__000000003@I")
    (Inq_Dest Ld)
  )
)
(CTRL (N# 35) (OpGroup 1) (COP 81) (<accum_slo> (dfmget_idata)))
(CTRL
  (N# 36)
  (OpGroup 2)
  (COP 17)
  (IF_NOT <accum_slo> (GOTO 49))
  (REM
    "Pass over `MAIN:FIBONACCICOORDINATOR:TMP__000000003@I' <if> conditional
branch"
  )
)
(CTRL
  (N# 37)
  (OpGroup 2)
  (COP 12)
  (ENTER_RECURSION)
  (Vars_N#_Ref_Name_[Array]
    (0 14 "MAIN:FIBONACCICOORDINATOR:SHADOW:N@I")
    (1 12 "MAIN:FIBONACCICOORDINATOR:SHADOW:$1")
    (2 15 "MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I")
    (3 13 "MAIN:FIBONACCICOORDINATOR:SHADOW:$2")
    (4 20 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000004@I")
    (5 16 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I")
    (6 19 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000003@I")
    (7 17 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I")
    (8 18 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000002@I")
  )
)
(CTRL
  (N# 38)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 12 "MAIN:FIBONACCICOORDINATOR:SHADOW:$1")
      (1 11 "MAIN:FIBONACCICOORDINATOR:N@I")
      (2 13 "MAIN:FIBONACCICOORDINATOR:SHADOW:$2")
      (3 21 "MAIN:FIBONACCICOORDINATOR:SPAWN@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (ALSETQ
          MAIN:FIBONACCICOORDINATOR:SHADOW:$1
          (--@J MAIN:FIBONACCICOORDINATOR:N@I)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 F4 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 0 1)
    )
    (Fnc
      (N# 1)
      (FLP
        (ALSETQ
          MAIN:FIBONACCICOORDINATOR:SHADOW:$2
          (>>@J MAIN:FIBONACCICOORDINATOR:SPAWN@I 1)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 \( 01 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 2 3)
    )
  )
  (REM
    "UDF `MAIN:FIBONACCICOORDINATOR:SHADOW' invoke initialization (passing the
arguments)"
  )
)
(CTRL
  (N# 39)
  (OpGroup 2)
  (COP 15)
  (GOSUB 3)
  (REM "UDF `MAIN:FIBONACCICOORDINATOR:SHADOW' call")
)
(CTRL
  (N# 40)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 23 "MAIN:FIBONACCICOORDINATOR:TMP__000000001@I")
      (1 16 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (ALSETQ
          MAIN:FIBONACCICOORDINATOR:TMP__000000001@I
          MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 0 1)
    )
  )
  (REM "UDF `MAIN:FIBONACCICOORDINATOR:SHADOW' returned value")
```

```
)
(CTRL (N# 41) (OpGroup 2) (COP 13) (LEAVE_RECURSION))
(CTRL
  (N# 42)
  (OpGroup 2)
  (COP 12)
  (ENTER_RECURSION)
  (Vars_N#_Ref_Name_[Array]
    (0 14 "MAIN:FIBONACCICOORDINATOR:SHADOW:N@I")
    (1 12 "MAIN:FIBONACCICOORDINATOR:SHADOW:$1")
    (2 15 "MAIN:FIBONACCICOORDINATOR:SHADOW:SPAWN@I")
    (3 13 "MAIN:FIBONACCICOORDINATOR:SHADOW:$2")
    (4 20 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000004@I")
    (5 16 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I")
    (6 19 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000003@I")
    (7 17 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000001@I")
    (8 18 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000002@I")
  )
)
(CTRL
  (N# 43)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 12 "MAIN:FIBONACCICOORDINATOR:SHADOW:$1")
      (1 11 "MAIN:FIBONACCICOORDINATOR:N@I")
      (2 13 "MAIN:FIBONACCICOORDINATOR:SHADOW:$2")
      (3 21 "MAIN:FIBONACCICOORDINATOR:SPAWN@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (ALSETQ
          MAIN:FIBONACCICOORDINATOR:SHADOW:$1
          (-@J MAIN:FIBONACCICOORDINATOR:N@I 2)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 C4 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 0 1)
    )
    (Fnc
      (N# 1)
      (FLP
        (ALSETQ
          MAIN:FIBONACCICOORDINATOR:SHADOW:$2
          (>>@J MAIN:FIBONACCICOORDINATOR:SPAWN@I 1)
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 \( 01 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 2 3)
    )
  )
  (REM
    "UDF `MAIN:FIBONACCICOORDINATOR:SHADOW' invoke initialization (passing the
arguments)"
  )
)
(CTRL
  (N# 44)
  (OpGroup 2)
  (COP 15)
  (GOSUB 3)
  (REM "UDF `MAIN:FIBONACCICOORDINATOR:SHADOW' call")
)
(CTRL
  (N# 45)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 24 "MAIN:FIBONACCICOORDINATOR:TMP__000000002@I")
      (1 16 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (ALSETQ
          MAIN:FIBONACCICOORDINATOR:TMP__000000002@I
          MAIN:FIBONACCICOORDINATOR:SHADOW:TMP__000000000@I
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 0 1)
    )
  )
  (REM "UDF `MAIN:FIBONACCICOORDINATOR:SHADOW' returned value")
)
(CTRL (N# 46) (OpGroup 2) (COP 13) (LEAVE_RECURSION))
(CTRL
  (N# 47)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 23 "MAIN:FIBONACCICOORDINATOR:TMP__000000001@I")
      (1 24 "MAIN:FIBONACCICOORDINATOR:TMP__000000002@I")
      (2 22 "MAIN:FIBONACCICOORDINATOR:TMP__000000000@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:TMP__000000000@I
          (+@J
            MAIN:FIBONACCICOORDINATOR:TMP__000000001@I
            MAIN:FIBONACCICOORDINATOR:TMP__000000002@I
          )
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "03 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 BC 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 2 0 1)
    )
  )
)
(CTRL
  (N# 48)
  (OpGroup 2)
  (COP 14)
  (GOTO 50)
  (REM
    "Pass over `MAIN:FIBONACCICOORDINATOR:TMP__000000003@I' <else> conditional
branch"
  )
)
(CTRL
  (N# 49)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 11 "MAIN:FIBONACCICOORDINATOR:N@I")
      (1 23 "MAIN:FIBONACCICOORDINATOR:TMP__000000001@I")
      (2 24 "MAIN:FIBONACCICOORDINATOR:TMP__000000002@I")
      (3 22 "MAIN:FIBONACCICOORDINATOR:TMP__000000000@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:TMP__000000001@I
          (FIBONACCISEAMLESS@J (--@J MAIN:FIBONACCICOORDINATOR:N@I))
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " t B4 03 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 F4 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 1 0)
    )
    (Fnc
      (N# 1)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:TMP__000000002@I
          (FIBONACCISEAMLESS@J (-@J MAIN:FIBONACCICOORDINATOR:N@I 2))
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " t B4 03 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 C4 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 2 0)
    )
    (Fnc
      (N# 2)
      (FLP
        (SETQ@I
          MAIN:FIBONACCICOORDINATOR:TMP__000000000@I
          (+@J
            MAIN:FIBONACCICOORDINATOR:TMP__000000001@I
            MAIN:FIBONACCICOORDINATOR:TMP__000000002@I
          )
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "03 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 BC 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " i 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 3 1 2)
    )
  )
)
(CTRL
  (N# 50)
  (OpGroup 2)
  (COP 16)
  (RETURN)
  (REM "End of UDF `MAIN:FIBONACCICOORDINATOR' body")
)
(CTRL
  (N# 51)
  (OpGroup 2)
  (COP 14)
  (GOTO 59)
  (REM "Pass over UDF `MAIN:FIBONACCI' body")
```

```
)
(CTRL
  (N# 52)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 5 "MAIN:FIBONACCI:$1")
      (1 6 "MAIN:FIBONACCI:N@I")
      (2 7 "MAIN:FIBONACCI:SPAWN@I")
    )
    (Fnc
      (N# 0)
      (FLP (SETQ@I MAIN:FIBONACCI:N@I (+ 0 MAIN:FIBONACCI:$1)))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " T BC 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " V 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 1 0)
    )
    (Fnc
      (N# 1)
      (FLP (SETQ@I MAIN:FIBONACCI:SPAWN@I (N_CPUPROC)))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " T D0 02 00 00 00 00 00"
      )
      (Var_Ptrs 2)
    )
  )
)
(CTRL
  (N# 53)
  (OpGroup 2)
  (COP 12)
  (ENTER_RECURSION)
  (Vars_N#_Ref_Name_[Array]
    (0 11 "MAIN:FIBONACCICOORDINATOR:N@I")
    (1 9 "MAIN:FIBONACCICOORDINATOR:$1")
    (2 21 "MAIN:FIBONACCICOORDINATOR:SPAWN@I")
    (3 10 "MAIN:FIBONACCICOORDINATOR:$2")
    (4 26 "MAIN:FIBONACCICOORDINATOR:TMP__000000004@I")
    (5 22 "MAIN:FIBONACCICOORDINATOR:TMP__000000000@I")
    (6 25 "MAIN:FIBONACCICOORDINATOR:TMP__000000003@I")
    (7 23 "MAIN:FIBONACCICOORDINATOR:TMP__000000001@I")
    (8 24 "MAIN:FIBONACCICOORDINATOR:TMP__000000002@I")
  )
)
(CTRL
  (N# 54)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 9 "MAIN:FIBONACCICOORDINATOR:$1")
      (1 6 "MAIN:FIBONACCI:N@I")
      (2 10 "MAIN:FIBONACCICOORDINATOR:$2")
      (3 7 "MAIN:FIBONACCI:SPAWN@I")
    )
    (Fnc
      (N# 0)
      (FLP (ALSETQ MAIN:FIBONACCICOORDINATOR:$1 MAIN:FIBONACCI:N@I))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 0 1)
    )
    (Fnc
      (N# 1)
      (FLP (ALSETQ MAIN:FIBONACCICOORDINATOR:$2 MAIN:FIBONACCI:SPAWN@I))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 2 3)
    )
  )
  (REM
    "UDF `MAIN:FIBONACCICOORDINATOR' invoke initialization (passing the
arguments)"
  )
)
(CTRL
  (N# 55)
  (OpGroup 2)
  (COP 15)
  (GOSUB 2)
  (REM "UDF `MAIN:FIBONACCICOORDINATOR' call")
)
(CTRL
  (N# 56)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 8 "MAIN:FIBONACCI:TMP__000000000@I")
      (1 22 "MAIN:FIBONACCICOORDINATOR:TMP__000000000@I")
    )
    (Fnc
      (N# 0)
      (FLP
        (ALSETQ
          MAIN:FIBONACCI:TMP__000000000@I
          MAIN:FIBONACCICOORDINATOR:TMP__000000000@I
        )
      )
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 0 1)
    )
  )
  (REM "UDF `MAIN:FIBONACCICOORDINATOR' returned value")
)
(CTRL (N# 57) (OpGroup 2) (COP 13) (LEAVE_RECURSION))
(CTRL
  (N# 58)
  (OpGroup 2)
  (COP 16)
  (RETURN)
  (REM "End of UDF `MAIN:FIBONACCI' body")
)
(CTRL
  (N# 59)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array] (0 0 "MAIN:$1") (1 30 "MAIN:N@I"))
    (Fnc
      (N# 0)
      (FLP (SETQ@I MAIN:N@I (+@J 0 MAIN:$1)))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 04 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 BC 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " V 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 1 0)
    )
  )
)
(CTRL
  (N# 60)
  (OpGroup 2)
  (COP 12)
  (ENTER_RECURSION)
  (Vars_N#_Ref_Name_[Array]
    (0 6 "MAIN:FIBONACCI:N@I")
    (1 5 "MAIN:FIBONACCI:$1")
    (2 7 "MAIN:FIBONACCI:SPAWN@I")
    (3 8 "MAIN:FIBONACCI:TMP__000000000@I")
  )
)
(CTRL
  (N# 61)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array] (0 5 "MAIN:FIBONACCI:$1") (1 30 "MAIN:N@I"))
    (Fnc
      (N# 0)
      (FLP (ALSETQ MAIN:FIBONACCI:$1 MAIN:N@I))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 0 1)
    )
  )
  (REM "UDF `MAIN:FIBONACCI' invoke initialization (passing the arguments)")
)
(CTRL
  (N# 62)
  (OpGroup 2)
  (COP 15)
  (GOSUB 52)
  (REM "UDF `MAIN:FIBONACCI' call")
)
(CTRL
  (N# 63)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 36 "MAIN:TMP__000000001")
      (1 8 "MAIN:FIBONACCI:TMP__000000000@I")
    )
    (Fnc
      (N# 0)
      (FLP (ALSETQ MAIN:TMP__000000001 MAIN:FIBONACCI:TMP__000000000@I))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" " T 08 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 0 1)
    )
  )
  (REM "UDF `MAIN:FIBONACCI' returned value")
)
(CTRL (N# 64) (OpGroup 2) (COP 13) (LEAVE_RECURSION))
(CTRL
  (N# 65)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 36 "MAIN:TMP__000000001")
      (1 36 "MAIN:TMP__000000001")
      (2 35 "MAIN:TMP__000000000@S")
    )
    (Fnc
      (N# 0)
      (FLP
        (SETQ@S
          MAIN:TMP__000000001
          (OUTF (PRN_STRING_FMT) (CAT "" MAIN:TMP__000000001))
        )
      )
```

```
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " T  8 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00" " T 80 02 00 00 00 00 00"
        " T F4 01 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "04 00 00 00 00 00 00 00" " S 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "00 00 00 00 00 00 00 00"
        " V 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Inq_Dest Ls)
      (Var_Ptrs 1 0)
    )
    (Fnc
      (N# 1)
      (FLP (SETQ@S MAIN:TMP__000000000@S ""))
      (FLP_COMPILED
        "D5 01 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "D4 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " S 00 00 00 00 00 00 00" "00 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 2)
    )
  )
)
(CTRL (N# 66) (OpGroup 4) (COP 200) (END) (REM "End of the control sequence"))
--------------------------------------------------------------------------------
*You may recompile BMDFMldr module with commented `#define _NOISY_MODE1_'
 to disable print of the BM_DFM control sequence.
*** Uploading and immediate running of the BM_DFM control sequence by
    the BM_DFM kernel will start here just after the time report!
Time spent to check and prepare the task approx.:
   Used by process: 0.019996sec.
   Used by  system: 0.003000sec.
   Total used time: 2.299600000000E-02sec.
Real absolute time: 2.221202850342E-02sec.
*** Resetting time counters (second event controlpoint)... ***
================================================================================
The task is being carried out on SocketN# 0.
================================================================================
12586269025
================================================================================
Time spent to run the task (by PARENT loader and CHILD listener):
   Used by process: 0.006999sec.
   Used by  system: 0.007999sec.
   Total used time: 1.499800000000E-02sec.
Real absolute time: 1.000260011673E+01sec.
Task has been detached (logged out) from the BM_DFM Server.
The BM_DFM Task Loader/Listener pair has done its job decently and gracefully.
```

cat /proc/cpuinfo

```
processor       : 0
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 1
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 2
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 3
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 4
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 5
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 6
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 7
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 8
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 9
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 10
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 11
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 12
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 13
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 14
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 15
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 16
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 17
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 18
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 19
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 20
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 21
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 22
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 23
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 24
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 25
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 26
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 27
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 28
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 29
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 30
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 31
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 32
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 33
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 34
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 35
cpu             : POWER8E (raw), altivec supported
```

```
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 36
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 37
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 38
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 39
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 40
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 41
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 42
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 43
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 44
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 45
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 46
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 47
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 48
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 49
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 50
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 51
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 52
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 53
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 54
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 55
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 56
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 57
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 58
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 59
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 60
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 61
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 62
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 63
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 64
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 65
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 66
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 67
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 68
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 69
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 70
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 71
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 72
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 73
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 74
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 75
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 76
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 77
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 78
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 79
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 80
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 81
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 82
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 83
cpu             : POWER8E (raw), altivec supported
```

```
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 84
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 85
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 86
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 87
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 88
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 89
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 90
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 91
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 92
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 93
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 94
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 95
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 96
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 97
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 98
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 99
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 100
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 101
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 102
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 103
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 104
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 105
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 106
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 107
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 108
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 109
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 110
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 111
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 112
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 113
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 114
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 115
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 116
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 117
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 118
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 119
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 120
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 121
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 122
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 123
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 124
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 125
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 126
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 127
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 128
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 129
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 130
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 131
cpu             : POWER8E (raw), altivec supported
```

```
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 132
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 133
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 134
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 135
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 136
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 137
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 138
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 139
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 140
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 141
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 142
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 143
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 144
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 145
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 146
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 147
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 148
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 149
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 150
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 151
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 152
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 153
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 154
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 155
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 156
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 157
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 158
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 159
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 160
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 161
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 162
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 163
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 164
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 165
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 166
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 167
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 168
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 169
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 170
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 171
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 172
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 173
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 174
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 175
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 176
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 177
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 178
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 179
cpu             : POWER8E (raw), altivec supported
```

```
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 180
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 181
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 182
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 183
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 184
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 185
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 186
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 187
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 188
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 189
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 190
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

processor       : 191
cpu             : POWER8E (raw), altivec supported
clock           : 3690.000000MHz
revision        : 2.1 (pvr 004b 0201)

timebase        : 512000000
platform        : PowerNV
model           : 8247-22L
machine         : PowerNV 8247-22L
firmware        : OPAL v3
```

fib.fastlisp

. . .

```
Time spent to check and prepare the task approx.:
   Used by process: 0.018573sec.
   Used by  system: 0.000000sec.
   Total used time: 1.857300000000E-02sec.
Real absolute time: 1.614522933960E-02sec.
*** Resetting time counters (second event controlpoint)... ***
===============================================================================
12586269025
===============================================================================
Time spent to run the task:
   Used by process: 242.339492sec.
   Used by  system: 0.007174sec.
   Total used time: 2.423466660000E+02sec.
Real absolute time: 2.423509399891E+02sec.
```

BMDFMsrv.cfg

```
# BMDFMsrv.cfg

SHMEM_POOL_SIZE    =8000000000 # Shared memory pool size            [Bytes]
SHMEM_POOL_MNTADDR = 999999999 # ShMemPool mount address (0=auto)
SHMEM_POOL_PERMS   =       432 # ShMemPool permissions (0660=="rw-rw----")
SHMEM_POOL_BANKS   =       400 # Number of banks in pool
POSIX_SEMA4_SYNC   =  RW+Count # Replace None/RW/RW+Count SVR4 with POSIX sema4
ARRAYBLOCK_SIZE    =        80 # Array block size                   [Entities]
OQ_FUNC_ARG_COUNT  =        80 # OQ function argument count         [Entities]

Q_OQ               =      5000 # Operation Queue (OQ) size          [Entities]
Q_DB               =       500 # Data Buffer (DB) size              [Entities]
Q_IORBP            =       100 # I/O Ring Buffer Port (IORBP) size  [Entities]
N_IORBP            =        10 # Number of the IORBPs

N_TRACEPORT        =         5 # Number of the Trace Ports (TPs)

N_CPUPROC          =       400 # Number of the CPU PROCs
N_OQPROC           =       400 # Number of the OQ PROCs
N_IORBPPROC        =       400 # Number of the IORBP PROCs

CPUPROC_MTHREAD    =       Yes # CPU PROC is multithreaded
OQPROC_MTHREAD     =       Yes # OQ PROC is multithreaded
IORBPPROC_MTHREAD  =       Yes # IORBP PROC is multithreaded
BMDFMLDR_MTHREAD   =       Yes # BMDFMldr is multithreaded

T_STATISTIC        =         1 # Time to scan DFM for statistic     [Seconds]
PROC_HEARTBEATS    =       Yes # Heartbeats for the CPU, OQ && IORBP PROCs
DFSTLHAZARD_DETECT =       Yes # Detection of dataflow stall hazards
ALLOW_DROP_NONPROD =        No # Allow dropping nonproductive instructions
PROC_CPU_LOGS      =        No # Logs registration for the CPU && IORBP PROCs
HARD_ARRAY_SYNCHRO =        No # Hard synchronization of the arrays
EXT_IN_OUT_SYNCHRO =       Yes # I/O synchronization of external task
OQ_DB_SEM_LIMIT    =         0 # Max number of OQ&&DB semaphores (0=unlim.)

# <EOF>
```

fib.BMDFMldr

. . .

```
Time spent to check and prepare the task approx.:
   Used by process: 0.018784sec.
   Used by  system: 0.004000sec.
   Total used time: 2.278400000000E-02sec.
Real absolute time: 2.351703960373E-02sec.
*** Resetting time counters (second event controlpoint)... ***
===============================================================================
The task is being carried out on SocketN# 0.
===============================================================================
12586269025
===============================================================================
Time spent to run the task (by PARENT loader and CHILD listener):
   Used by process: 0.009467sec.
   Used by  system: 0.002846sec.
   Total used time: 1.231300000000E-02sec.
Real absolute time: 1.610240067235E+00sec.
Task has been detached (logged out) from the BM_DFM Server.
The BM_DFM Task Loader/Listener pair has done its job decently and gracefully.
```

cat /proc/cpuinfo

```
cpu             : UltraSparc T2 (Niagara2)
fpu             : UltraSparc T2 integrated FPU
pmu             : niagara2
prom            : OBP 4.33.6 2012/03/14 08:07
type            : sun4v
ncpus probed    : 64
ncpus active    : 64
D$ parity tl1   : 0
I$ parity tl1   : 0
cpucaps         : flush,stbar,swap,muldiv,v9,blkinit,n2,mul32,div32,v8plus,
popc,vis,vis2,ASIBlkInit
Cpu0ClkTck      : 000000005458c3a0
Cpu1ClkTck      : 000000005458c3a0
Cpu2ClkTck      : 000000005458c3a0
Cpu3ClkTck      : 000000005458c3a0
Cpu4ClkTck      : 000000005458c3a0
Cpu5ClkTck      : 000000005458c3a0
Cpu6ClkTck      : 000000005458c3a0
Cpu7ClkTck      : 000000005458c3a0
Cpu8ClkTck      : 000000005458c3a0
Cpu9ClkTck      : 000000005458c3a0
Cpu10ClkTck     : 000000005458c3a0
Cpu11ClkTck     : 000000005458c3a0
Cpu12ClkTck     : 000000005458c3a0
Cpu13ClkTck     : 000000005458c3a0
Cpu14ClkTck     : 000000005458c3a0
Cpu15ClkTck     : 000000005458c3a0
Cpu16ClkTck     : 000000005458c3a0
Cpu17ClkTck     : 000000005458c3a0
Cpu18ClkTck     : 000000005458c3a0
Cpu19ClkTck     : 000000005458c3a0
Cpu20ClkTck     : 000000005458c3a0
Cpu21ClkTck     : 000000005458c3a0
Cpu22ClkTck     : 000000005458c3a0
Cpu23ClkTck     : 000000005458c3a0
Cpu24ClkTck     : 000000005458c3a0
Cpu25ClkTck     : 000000005458c3a0
Cpu26ClkTck     : 000000005458c3a0
Cpu27ClkTck     : 000000005458c3a0
Cpu28ClkTck     : 000000005458c3a0
Cpu29ClkTck     : 000000005458c3a0
Cpu30ClkTck     : 000000005458c3a0
Cpu31ClkTck     : 000000005458c3a0
Cpu32ClkTck     : 000000005458c3a0
Cpu33ClkTck     : 000000005458c3a0
Cpu34ClkTck     : 000000005458c3a0
Cpu35ClkTck     : 000000005458c3a0
Cpu36ClkTck     : 000000005458c3a0
Cpu37ClkTck     : 000000005458c3a0
Cpu38ClkTck     : 000000005458c3a0
Cpu39ClkTck     : 000000005458c3a0
Cpu40ClkTck     : 000000005458c3a0
Cpu41ClkTck     : 000000005458c3a0
Cpu42ClkTck     : 000000005458c3a0
Cpu43ClkTck     : 000000005458c3a0
```

```
Cpu44ClkTck     : 000000005458c3a0
Cpu45ClkTck     : 000000005458c3a0
Cpu46ClkTck     : 000000005458c3a0
Cpu47ClkTck     : 000000005458c3a0
Cpu48ClkTck     : 000000005458c3a0
Cpu49ClkTck     : 000000005458c3a0
Cpu50ClkTck     : 000000005458c3a0
Cpu51ClkTck     : 000000005458c3a0
Cpu52ClkTck     : 000000005458c3a0
Cpu53ClkTck     : 000000005458c3a0
Cpu54ClkTck     : 000000005458c3a0
Cpu55ClkTck     : 000000005458c3a0
Cpu56ClkTck     : 000000005458c3a0
Cpu57ClkTck     : 000000005458c3a0
Cpu58ClkTck     : 000000005458c3a0
Cpu59ClkTck     : 000000005458c3a0
Cpu60ClkTck     : 000000005458c3a0
Cpu61ClkTck     : 000000005458c3a0
Cpu62ClkTck     : 000000005458c3a0
Cpu63ClkTck     : 000000005458c3a0
MMU Type        : Hypervisor (sun4v)
MMU PGSZs       : 8K,64K,4MB,256MB
State:
CPU0:           online
CPU1:           online
CPU2:           online
CPU3:           online
CPU4:           online
CPU5:           online
CPU6:           online
CPU7:           online
CPU8:           online
CPU9:           online
CPU10:          online
CPU11:          online
CPU12:          online
CPU13:          online
CPU14:          online
CPU15:          online
CPU16:          online
CPU17:          online
CPU18:          online
CPU19:          online
CPU20:          online
CPU21:          online
CPU22:          online
CPU23:          online
CPU24:          online
CPU25:          online
CPU26:          online
CPU27:          online
CPU28:          online
CPU29:          online
CPU30:          online
CPU31:          online
CPU32:          online
CPU33:          online
CPU34:          online
CPU35:          online
CPU36:          online
CPU37:          online
CPU38:          online
CPU39:          online
CPU40:          online
CPU41:          online
CPU42:          online
CPU43:          online
CPU44:          online
CPU45:          online
CPU46:          online
CPU47:          online
CPU48:          online
CPU49:          online
CPU50:          online
CPU51:          online
CPU52:          online
CPU53:          online
CPU54:          online
CPU55:          online
CPU56:          online
CPU57:          online
CPU58:          online
CPU59:          online
CPU60:          online
CPU61:          online
CPU62:          online
CPU63:          online
```

fib.fastlisp

. . .

```
Time spent to check and prepare the task approx.:
   Used by process: 0.064581sec.
   Used by  system: 0.003759sec.
   Total used time: 6.834000000000E-02sec.
Real absolute time: 6.831002235413E-02sec.
*** Resetting time counters (second event controlpoint)... ***
===============================================================================
12586269025
===============================================================================
Time spent to run the task:
   Used by process: 1352.351024sec.
   Used by  system: 0.000000sec.
   Total used time: 1.352351024000E+03sec.
Real absolute time: 1.351703443050E+03sec.
```

BMDFMsrv.cfg

```
# BMDFMsrv.cfg

SHMEM_POOL_SIZE    =8000000000 # Shared memory pool size            [Bytes]
SHMEM_POOL_MNTADDR = 999999999 # ShMemPool mount address (0=auto)
SHMEM_POOL_PERMS   =       432 # ShMemPool permissions (0660=="rw-rw----")
SHMEM_POOL_BANKS   =       100 # Number of banks in pool
POSIX_SEMA4_SYNC   =  RW+Count # Replace None/RW/RW+Count SVR4 with POSIX sema4
ARRAYBLOCK_SIZE    =        80 # Array block size                   [Entities]
OQ_FUNC_ARG_COUNT  =        80 # OQ function argument count         [Entities]

Q_OQ               =      5000 # Operation Queue (OQ) size          [Entities]
Q_DB               =       500 # Data Buffer (DB) size              [Entities]
Q_IORBP            =       100 # I/O Ring Buffer Port (IORBP) size  [Entities]
N_IORBP            =        10 # Number of the IORBPs
N_TRACEPORT        =         5 # Number of the Trace Ports (TPs)

N_CPUPROC          =       128 # Number of the CPU PROCs
N_OQPROC           =       128 # Number of the OQ PROCs
N_IORBPPROC        =       128 # Number of the IORBP PROCs

CPUPROC_MTHREAD    =       Yes # CPU PROC is multithreaded
OQPROC_MTHREAD     =       Yes # OQ PROC is multithreaded
IORBPPROC_MTHREAD  =       Yes # IORBP PROC is multithreaded
BMDFMLDR_MTHREAD   =       Yes # BMDFMldr is multithreaded

T_STATISTIC        =         1 # Time to scan DFM for statistic     [Seconds]
PROC_HEARTBEATS    =       Yes # Heartbeats for the CPU, OQ && IORBP PROCs
DFSTLHAZARD_DETECT =       Yes # Detection of dataflow stall hazards
ALLOW_DROP_NONPROD =        No # Allow dropping nonproductive instructions
PROC_CPU_LOGS      =        No # Logs registration for the CPU && IORBP PROCs
HARD_ARRAY_SYNCHRO =        No # Hard synchronization of the arrays
EXT_IN_OUT_SYNCHRO =       Yes # I/O synchronization of external task
OQ_DB_SEM_LIMIT    =         0 # Max number of OQ&&DB semaphores (0=unlim.)

# <EOF>
```

fib.BMDFMldr

. . .

```
Time spent to check and prepare the task approx.:
   Used by process: 0.308090sec.
   Used by  system: 0.039575sec.
   Total used time: 3.476650000000E-01sec.
Real absolute time: 3.466250896454E-01sec.
*** Resetting time counters (second event controlpoint)... ***
===============================================================================
The task is being carried out on SocketN# 0.
===============================================================================
12586269025
===============================================================================
Time spent to run the task (by PARENT loader and CHILD listener):
   Used by process: 0.168065sec.
   Used by  system: 0.132273sec.
   Total used time: 3.003380000000E-01sec.
Real absolute time: 4.439354491234E+01sec.
Task has been detached (logged out) from the BM_DFM Server.
The BM_DFM Task Loader/Listener pair has done its job decently and gracefully.
```

<EOF>