

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:

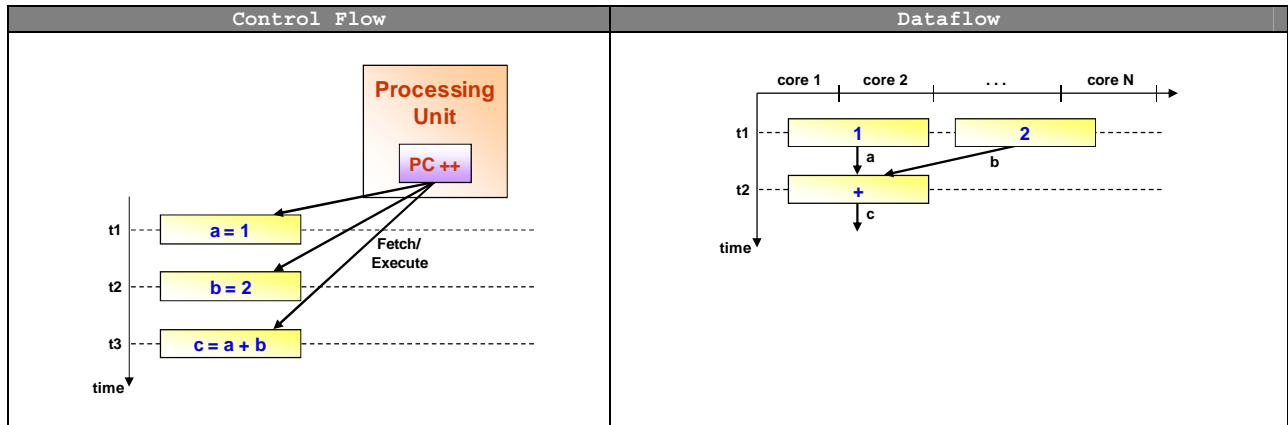
Recursive Fibonacci Algorithm (Pseudo-Code)
<pre>Fibonacci(0) = 0; Fibonacci(1) = 1; Fibonacci(N) = Fibonacci(N - 1) + Fibonacci(N - 2);</pre>

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.

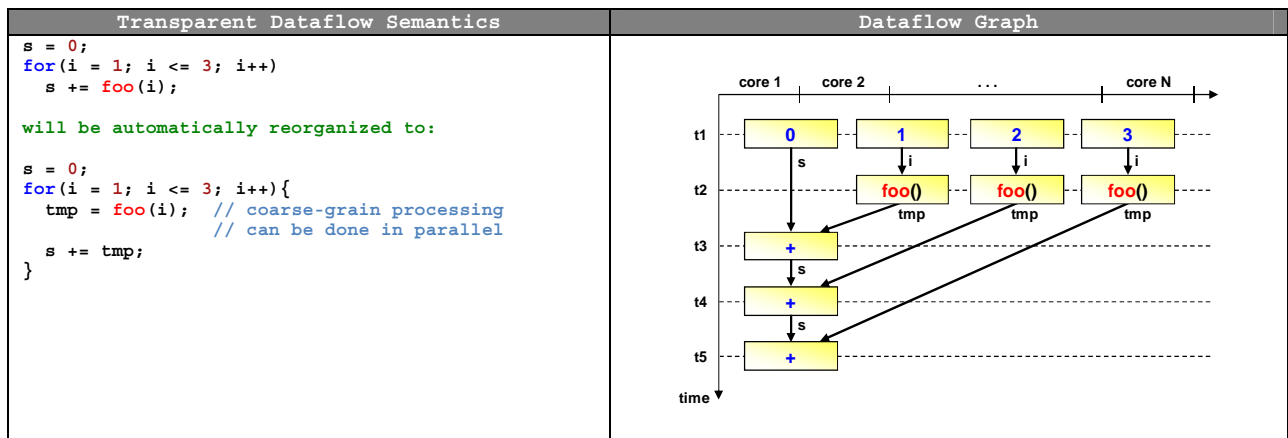
We program our test application of recursive Fibonacci sequentially with conventional control flow and let the BMDFM dataflow engine run everything (what is possible) in parallel on Multicores/ Many-cores.

Background (experts may skip this chapter)

- 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.



- 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).



- 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	LISP
<pre> for(i = 1; i <= N; i++){ a = foo0(i); b = fool(i + 1); b++; printf("a = %d\n", a); printf("b = %d\n", b); } </pre>	<pre> (for i 1 1 N (progn (setq a (foo0 i)) (setq b (fool (+ i 1))) (setq b (++ b)) (outf "a = %d\n" a) (outf "b = %d\n" b))) </pre>

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_cpusproc))
    (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.

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
aperfmpperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 sse3 cx16 xtpr
pdc_m 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 vmmi 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
aperfmpperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 sse3 cx16 xtpr
pdc_m 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 vmmi 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
aperfmpperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 sse3 cx16 xtpr
pdc_m 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 vmmi 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       : 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
aperfmpperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 sse3 cx16 xtpr
pdc_m 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 vmmi flexpriority ept vpid
bogomips     : 6599.09

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
aperfmpperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 sse3 cx16 xtpr
pdc_m 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 vmmi 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
aperfmpperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 sse3 cx16 xtpr
pdc_m 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 vmmi 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
aperfmpperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 sse3 cx16 xtpr
pdc_m 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 vmmi 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
aperfmpperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 sse3 cx16 xtpr
pdc_m 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 vmmi flexpriority ept vpid
bogomips     : 6599.09
```

```

cflflush 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 cflflush 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
aperfmpperf 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
cflflush 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 cflflush 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
aperfmpperf 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
cflflush 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 cflflush 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
aperfmpperf 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
cflflush 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 cflflush 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

aperfmpperf 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
cflflush 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 cflflush 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
aperfmpperf 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
cflflush 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 cflflush 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
aperfmpperf 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
cflflush 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 cflflush 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
aperfmpperf 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
cflflush 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
rtdscp lm constant tsc arch_perfmon pebs bts rep_good xtopology nonstop tsc
aperfmpcrf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 sse3 cx16 xtpr
pdc_m 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
rtdscp lm constant tsc arch_perfmon pebs bts rep_good xtopology nonstop tsc
aperfmpcrf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 sse3 cx16 xtpr
pdc_m 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[?251';
SHOWCURSOR_TERM=`\e[?121\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_num> <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[?251")
  (SETQ@S SHOWCURSOR_TERM@S "\e[?121\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
          (IF@J 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_CPFUPROC))
      (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[?251") (SETQ@S SHOWCURSOR
_TERM@S "\e[?121\e[?25h") (SETQ@S GOTOCURSOR_TERM@S "\e[?i%&d;%dH") (DEFUN FIBO
NACCICOORDINATOR (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 (FIBONACC
ISEAMLESS@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_CPFUPROC)) (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 00 00 00 00 00 00 00 T 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 00 00 00 00 Z 00 00 00
00 00 00 00
-----
*You may recompile the `fastlisp' with commented `#define_NOISY_MODE_'
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 00 0D 00 00 00 00 00 00 00 00 02 00 00 00 00 00 00 00 00 00 02 00
00 00 00 00 00 00 00 00 m 00 00 00 00 00 00 00 D5 01 00 00 00 00 00 00 00 04 00 00 00
00 00 00 00 00 00 00 00 00 00 00 T 00 00 00 00 00 00 00 00 00 03 00 00 00 00 00 00
00 00 03 00 00 00 00 00 00 00 00 0C 00 00 00 00 00 00 00 15 00 00 00 00 00 00 00 00
D4 04 00 00 00 00 00 00 02 00 02 00 00 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 T BC
00 00 00 00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00 00 00 00 00 I 00 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 00 D4 04 00 00 00 00 00 00 03 00 00 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 00
T BC 00 00 00 00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00 00 00 00 I 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 00 01 00 00 00
00 00 00 00 D4 1C 00 00 00 00 00 00 00 03 00 00 00 00 00 00 09 00 00 00 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 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 00 00 I 00
00 00 00 00 00 00 02 00 00 00 00 00 00 00 00 00 i 00 00 00 00 00 00 00 00 02 00 00
00 00 00 D4 1C 00 00 00 00 00 00 03 00 00 00 00 00 00 09 00 00 00 00 00 00 00 00
00 00 . 00 00 00 00 00 00 D4 80 00 00 00 00 00 02 00 00 00 00 00 00 00 00 00 00
03 00 00 00 00 00 00 00 i 00 00 00 00 00 00 03 00 00 00 00 00 00 00 00 00 I 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 D4 BC 00 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 00 02 00 00 00 00 00 00 00 02 00 00 00 00 00 05 00 00 00 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 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 00 I 00 00 00 00 00 00
00 00 01 00 00 00 00 00 00 L 18 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
02 00 00 00 00 00 00 02 00 00 00 00 00 00 08 00 00 00 00 00 00 00 00 00 D4 C4
00 00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00 00 00 00 00 00 i 00 00
00 00 00 02 00 00 00 00 00 00 00 I 00 00 00 00 00 00 00 00 02 00 00 00 00 00 00
00 00 D4 \ ( 01 00 00 00 00 00 02 00 00 00 00 00 00 03 00 00 00 00 00 00 00 00
i 00 00 00 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 01
00 00 00 00 00 00 D4 BC 00 00 00 00 00 00 02 00 00 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 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 00 00 00 00 00 00 00 00 00
t B4 03 00 00 00 00 00 01 00 00 00 00 00 00 00 00 00 D4 C4 00 00 00 00 00 00 02 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 02 00 00 00
00 00 00 00 I 00 00 00 00 00 00 02 00 00 00 00 00 00 00 00 00 D5 01 00 00 00 00
00 03 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
03 00 00 00 00 00 00 03 00 00 00 00 00 00 00 0C 00 00 00 00 00 00 00 00 00 0F 00
00 00 00 00 00 00 D4 04 00 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 00 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 00 I 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 00 00 00 D4 04 00 00 00 00 00 00 00 00 02 00 00 00 00 00 00 00 00 01 00
00 00 00 00 00 00 T D0 02 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 03 00 00 00 00 00 00 00
00 00 P 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00 00 P 00 00 00 00 00 00 00 00
02 00 00 00 00 00 00 T 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 12 00 00 00 00 00 00 00 17 00 00 00 00 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 3 00 00 00 00 00 00 00 8 00 00 00 00 00 00 00 00
= 00 00 00 00 00 C 00 00 00 00 00 00 I 00 00 00 00 00 00 00 00 R 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 2 00 00 00 00 00 00 00 00 00 D4 05 00 00 00 00
00 01 00 00 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
05 00 00 00 00 00 00 x t e r m 00 00 00 00 D4 04 00 00 00 00 00 00 00 02 00
00 00 00 00 00 01 00 00 00 00 00 00 00 00 I 00 00 00 00 00 00 00 00 3 00 00
00 00 00 00 D4 04 00 00 00 00 00 00 03 00 00 00 00 00 00 00 00 01 00 00 00 00 00
00 00 I 00 00 00 00 00 00 m 00 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 00 00 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 00 00 00 00 05 00 00
00 00 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00 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 00 00 00 00 00 00 00 00 00 00 00
00 00 1B [ 7 m 00 00 00 00 D4 05 00 00 00 00 00 00 00 00 00 00 00 00 00 06 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 00
01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 04 00 00 00 00 00 00 00 00 00 00 00 1B [
5 m 00 00 00 00 00 D4 05 00 00 00 00 00 00 00 07 00 00 00 00 00 00 00 00 00 00 01
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 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 D4 05 00 00 00 00 00 08 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
S 00 00 00 00 00 00 04 00 00 00 00 00 00 00 00 00 1B [ 0 m 00 00 00 00 00 D4 05
00 00 00 00 00 09 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 00 00 1B [ ? 2 5 1 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 00
0C 00 00 00 00 00 00 00 1B [ ? 1 2 1 1B [ ? 2 5 h 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 00 00 S 00 00 00
00 00 00 00 0A 00 00 00 00 00 00 00 00 1B [ ? % i % d ; % d H 00 00 00 00 00
00 00 D4 04 00 00 00 00 00 00 00 00 00 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 00 03 00 00 00 00 00 00 00 00 I 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
00 00 00 00 L 18 00 00 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 00
00 00 01 00 00 00 00 00 00 P 00 00 00 00 00 00 00 0C 00 00 00 00 00 00 00 00
-----
*You may recompile the `fastlisp' with commented `#define_NOISY_MODE_'
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 ~ ,
@ 00 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 x DB D2 00 00 00 00 00 00 00 , @ 00
00 00 00 00
-----
*You may recompile the `fastlisp' with commented `#define_NOISY_MODE_'
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 00 00 00 00 00 00 00 00 00 00 00 B0 DD
D2 00 00 00 00 00 10 E1 D2 00 00 00 00 00 00 00 00 C8 DD D2 00 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 00 00 00 03 00 00 00 00
00 00 00 F0 DD D2 00 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 02 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 0 DE D2 00 00 00 00 E0 + @ 00
00 00 00 00 00 00 00 00 00 00 00 E0 FE @ 00 00 00 00 00 00 00 00
00 00 @ 84 @ 00 00 00 00 00 00 03 00 00 00 00 00 00 X DE D2 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 E0 +
@ 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 B0 , @ 00 00 00 00 00 B0 DE D2 00 00 00 00 00 00 E8 DE D2 00 00
00 00 F8 DE D2 00 00 00 00 00 0  @ 00 00 00 00 00 00 C8 DE D2 00 00 00 00
D8 DE D2 00 00 00 00 00 00 DF FD @ 00 00 00 00 00 02 00 00 00 00 00 00 +
@ 00 00 00 00 00 02 00 00 00 00 00 00 00 DF FD @ 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 00 PF D2 00 00 00
00 00 80 E0 D2 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 DF FD @ 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 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 90 DF D2 00 00 00 00 B0 DF D2 00 00 00 00 00
@ 9 @ 00 00 00 00 A0 DF D2 00 00 00 00 00 00 DF FD @ 00 00 00 00 00 02 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 DF FD @ 00 00 00 00 00 03 00 00 00 00 00 E0 + @ 00 00 00
00 00 01 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 10 H0 D2 00 00 00 00 00 H0 D2 00 00 00 00 00 A0 7
@ 00 00 00 00 00 \ ( E0 D2 00 00 00 00 8 E0 D2 00 00 00 00 DF FD @ 00
00 00 00 02 00 00 00 00 00 00 E0 + @ 00 00 00 00 00 02 00 00 00 00
00 00 ~ , @ 00 00 00 00 00 ~ E0 D2 00 00 00 00 p E0 D2 00 00 00 00 00
D0 FD @ 00 00 00 03 00 00 00 00 00 00 E0 + @ 00 00 00 00 00 01 00
00 00 00 00 0 7 @ 00 00 00 00 00 98 E0 D2 00 00 00 00 C8 E0 D2 00
00 00 00 80 v D 00 00 00 00 A8 E0 D2 00 00 00 00 @ 9 @ 00 00 00
00 00 B8 E0 D2 00 00 00 00 DF FD @ 00 00 00 00 02 00 00 00 00 00 00
80 v D 00 00 00 00 D8 E0 D2 00 00 00 A0 7 @ 00 00 00 00 00 F0 E0
D2 00 00 00 00 E1 D2 00 00 00 00 DF FD @ 00 00 00 00 02 00 00 00 00
00 00 00 00 E0 + @ 00 00 00 00 02 00 00 00 00 00 00 00 \ ( E1 D2 00 00
00 00 03 00 00 00 00 00 00 00 00 00 00 00 00 ~ , @ 00 00 00 00 00 00
03 00 00 00 00 00 P E1 D2 00 00 00 00 A0 E1 D2 00 00 00 00 C0 E1
D2 00 00 00 00 @ 84 @ 00 00 00 01 00 00 00 00 00 h E1 D2 00 00
00 00 00 p 10 A 00 00 00 00 80 E1 D2 00 00 00 90 E1 D2 00 00 00 00
00 00 E0 + @ 00 00 00 00 00 00 00 00 00 E0 FE @ 00 00 00 00 00
00 00 00 00 00 @ 84 @ 00 00 00 02 00 00 00 00 00 00 00 B8 E1
D2 00 00 00 A0 @ @ 00 00 00 j @ 00 00 00 00 B0 DD D2 00 00
00 00 00 02 00 00 00 00 00 E8 E1 D2 00 00 00 F8 E1 D2 00 00 00
00 00 FA @ 00 00 00 01 00 00 00 00 FA @ 00 00 00 00
02 00 00 00 00 ~ , @ 00 00 00 00 00 0E 00 00 00 00 00 88 E2
D2 00 00 00 00 B0 E2 D2 00 00 00 00 E0 E2 D2 00 00 00 08 E3 D2 00
00 00 00 0 E3 D2 00 00 00 00 ~ E3 D2 00 00 00 90 E3 D2 00 00
00 00 C0 E3 D2 00 00 00 F0 E3 D2 00 00 00 00 ~ E4 D2 00 00 00 00
P E4 D2 00 00 00 88 E4 D2 00 00 00 C0 E4 D2 00 00 00 10 E5
D2 00 00 00 @ 84 @ 00 00 00 00 00 00 00 00 A0 E2 D2 00 00
00 00 00 E0 + @ 00 00 00 2 00 00 00 00 00 F0 82 @ 00 00 00
00 01 00 00 00 00 C8 E2 D2 00 00 00 00 s @ 00 00 00 00 02 00
05 00 00 00 00 x t e r m @ 00 00 @ 84 @ 00 00 00 02 00
00 00 00 00 F8 E2 D2 00 00 00 00 E0 + @ 00 00 00 00 3 00 00 00
00 00 00 @ 84 @ 00 00 00 03 00 00 00 00 ~ E3 D2 00 00
00 00 E0 + @ 00 00 00 m 00 00 00 00 00 F0 82 @ 00 00 00 00
04 00 00 00 00 H E3 D2 00 00 00 00 ~ s @ 00 00 00 00 07 00
00 00 00 00 1B [ H 1B [ 2 J 00 00 00 82 @ 00 00 00 05 00 00
00 00 00 00 x E3 D2 00 00 00 00 ~ s @ 00 00 00 04 00 00 00 00
00 00 1B [ 7 m 00 00 00 F0 82 @ 00 00 00 06 00 00 00 00 00
A8 E3 D2 00 00 00 00 ~ s @ 00 00 00 04 00 00 00 00 00 1B [
5 m 00 00 00 F0 82 @ 00 00 00 07 00 00 00 00 00 D8 E3 D2 00
00 00 00 ~ s @ 00 00 00 04 00 00 00 00 00 00 1B [ 1 m 00 00
00 00 F0 82 @ 00 00 00 08 00 00 00 00 08 E4 D2 00 00 00 00
~ s @ 00 00 00 04 00 00 00 00 00 00 1B [ 0 m 00 00 00 F0 82
@ 00 00 00 09 00 00 00 00 8 E4 D2 00 00 00 00 ~ s @ 00
00 00 00 06 00 00 00 00 00 1B [ ? 2 5 1 00 00 F0 82 @ 00 00 00
00 00 0A 00 00 00 00 h E4 D2 00 00 00 00 ~ s @ 00 00 00 00
0C 00 00 00 00 1B [ ? 2 1 1B [ ? 2 5 h 00 00 00 00 F0 82
@ 00 00 00 0B 00 00 00 A0 E4 D2 00 00 00 00 ~ s @ 00
00 00 00 0A 00 00 00 00 00 1B [ % i % d ; % d H 00 00 00 00
00 00 @ 84 @ 00 00 00 0C 00 00 00 00 D8 E4 D2 00 00 00 00
0 7 @ 00 00 00 F0 E4 D2 00 00 00 00 00 E5 D2 00 00 00 00 E0 +
@ 00 00 00 00 00 00 00 00 00 00 E0 FE @ 00 00 00 00 00 00 00
00 00 00 j @ 00 00 00 10 E1 D2 00 00 00 01 00 00 00 00
00 00 0 E5 D2 00 00 00 FA @ 00 00 00 00 0C 00 00 00 00 00
```

```
*You may recompile the 'fastlisp' with commented '#define_NOISY_MODEL_'
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 =3000000000 # 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_SYNCRO = No # Hard synchronization of the arrays
EXT_IN_OUT_SYNCRO = Yes # I/O Hard synchronization of external task
OQ_DB_SEM_LIMIT = 0 # Max number of OQ&DB semaphores (0=unlim.)
```

fib.BMDFMLdr

```
Current termcap settings:
TERM TYPE="xterm"; LINES TERM="51"; COLUMNS TERM="109";
CLRSR TERM="\e[H[2J"; REVERSE TERM="\e[7m"; BLINK TERM="\e[5m";
BOLD TERM="\e[1m"; NORMAL TERM="\e[0m"; HIDECURSOR TERM="\e[?251";
SHOWCURSOR TERM="\e[?121\e[?25h"; GOTOCURSOR TERM="\e[%i%;d%h".
Reading the '~/.conffile2' BM DFM connection file...
Opening the '~/.connpip2' 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 01 00 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_MODEL_'
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_0000000000'; 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:
* ...
* (asetq a 0 1)
* (asetq a 1 5)
* (asetq 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_num> <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 (OUTP (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:CLRSR_TERM@S "\e[H[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[?251")
(SETQ S MAIN:SHOWCURSOR_TERM@S "\e[?121\e[?25h")
(SETQ S MAIN:GOTOCURSOR_TERM@S "\e[%i%;d%h")
(DEFUN
MAIN:FIBONACCICOORDINATOR
(PROGN
(DEFUN
MAIN:FIBONACCICOORDINATOR:SHADOW
(PROGN
```



```

)
(Fnc
(N# 0)
(FLP (SETQ@I MAIN:$1 50))
(FLP COMPILED
"D5 01 00 00 00 00 00 00 00 " "01 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
" I 00 00 00 00 00 00 00 00 " " 2 00 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 00 " "01 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
" S 00 00 00 00 00 00 00 00 " "05 00 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 00 " "01 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
" I 00 00 00 00 00 00 00 00 " " 3 00 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 00 " "01 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
" I 00 00 00 00 00 00 00 00 " " m 00 00 00 00 00 00 00 00 "
)
(Var_Ptrs 3)
)
(Fnc
(N# 4)
(FLP (SETQ@S MAIN:CLRSR_TERM@S "\e[H\e[2J"))
(FLP COMPILED
"D5 01 00 00 00 00 00 00 00 " "01 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
" S 00 00 00 00 00 00 00 00 " "07 00 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 00 " "01 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
" S 00 00 00 00 00 00 00 00 " "04 00 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 00 " "01 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
" S 00 00 00 00 00 00 00 00 " "04 00 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 00 " "01 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
" S 00 00 00 00 00 00 00 00 " "04 00 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 00 " "01 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
" S 00 00 00 00 00 00 00 00 " "04 00 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[?251"))
(FLP COMPILED
"D5 01 00 00 00 00 00 00 00 " "01 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
" S 00 00 00 00 00 00 00 00 " "06 00 00 00 00 00 00 00 00 "
"1B [ ? 2 5 1 00 00 "
)
(Var_Ptrs 9)
)
(Fnc
(N# 10)

```

```

(FLP (SETQ@S MAIN:SHOWCURSOR_TERM@S "\e[?121\e[?25h"))
(FLP COMPILED
"D5 01 00 00 00 00 00 00 00 " "01 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
" S 00 00 00 00 00 00 00 00 " "0C 00 00 00 00 00 00 00 00 "
"1B [ ? 1 2 1 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 00 " "01 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
" S 00 00 00 00 00 00 00 00 " "0C 00 00 00 00 00 00 00 00 "
"1B [ % i % d ; %m " " d H 00 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
(VarRef_Names [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 00 " "02 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
" T BC 00 00 00 00 00 00 00 " "02 00 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 00 " " V 00 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 00 " "02 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
" T BC 00 00 00 00 00 00 00 " "02 00 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 00 " " V 00 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 00 " "02 00 00 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 00 00 " "01 00 00 00 00 00 00 00 00 "
"D4 x 00 00 00 00 00 00 " "02 00 00 00 00 00 00 00 00 "
"03 00 00 00 00 00 00 00 " " i 00 00 00 00 00 00 00 00 "
"01 00 00 00 00 00 00 00 " " I 00 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 Id)
)
)
)
(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_00000004@I' <if>
conditional branch"
)
)
(CTRL
(N# 7)
(OpGroup 1)
(COP 50)
(dfmput_marshaled_cluster
(Var#_Ref_Name [Array]
(0 14 "MAIN:FIBONACCICOORDINATOR:SHADOW:N@I")
(1 16 "MAIN:FIBONACCICOORDINATOR:SHADOW:TMP_00000000@I")
)
)
(Fnc
(N# 0)
(FLP
(SETQ@I
MAIN:FIBONACCICOORDINATOR:SHADOW:TMP_00000000@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_00000004@I' <else>
conditional branch"
)
)
(CTRL
(N# 9)
(OpGroup 1)
(COP 50)
(dfmput_marshaled_cluster
(Var#_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)
(Var#_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

```

```

(Var#_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 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 00" "01 00 00 00 00 00 00 00"
"D4 \ ( 01 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"
"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
(Var#_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 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)
(Var#_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
(Var#_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)
(dfmpnt_marshaled_cluster
(Var_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)
(dfmpnt_marshaled_cluster
(Var_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)

```

```

(dfmpnt_marshaled_cluster
(Var_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)
(dfmpnt_marshaled_cluster
(Var_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 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 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 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)
(dfmpnt_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 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 00"
"01 00 00 00 00 00 00 00" " I 00 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 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 00"
"01 00 00 00 00 00 00 00" " I 00 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)
(dfmpnt_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 00" "01 00 00 00 00 00 00 00"
" i 00 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)
(dfmpnt_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 00"
"01 00 00 00 00 00 00 00" " i 00 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)
(dfmpnt_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 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 00"
"01 00 00 00 00 00 00 00" " I 00 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 00"
"01 00 00 00 00 00 00 00" " i 00 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
(Var#_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 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 00" " V 00 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)
(Var#_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
(Var#_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 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 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
(Var#_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"

```

```

(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 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 00"
" V 00 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_00000000@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_MODEL1 '
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  : 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 =300000000 # 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]

```

```

O_QO = 5000 # Operation Queue (OQ) size [Entities]
O_DB = 100 # Data Buffer (DB) size [Entities]
O_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
BDMFMLDR_MTHREAD = Yes # BDMFMLdr is multithreaded

T_STATISTIC = 1 # Time to scan DFM for statistic [Seconds]
PROC_HEARTBEATS = Yes # Heartbeats for the CPU, OQ && IORBP PROCs
DFSTHAZARD_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_SYNCRO = No # Hard synchronization of the arrays
EXT_IN_OUT_SYNCRO = 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.

```

<EOF>

