Dataflow in Practice: Calculating Pi Number with Chudnovsky Algorithm and GMP Library 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 Pi number calculation 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 Pi number calculation 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 Pi Number Calculation

We calculate Pi Number with Chudnovsky Algorithm described below:

Chudnovsky Algorithm of Pi Number Calculation

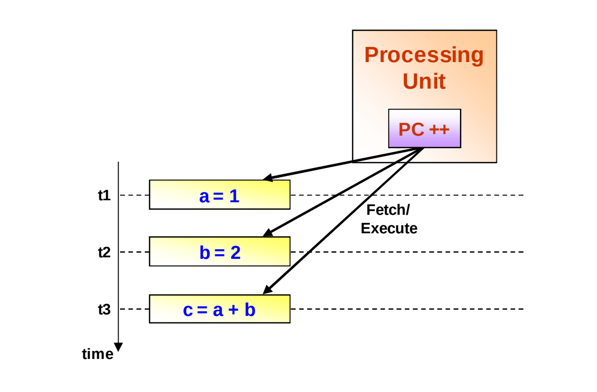
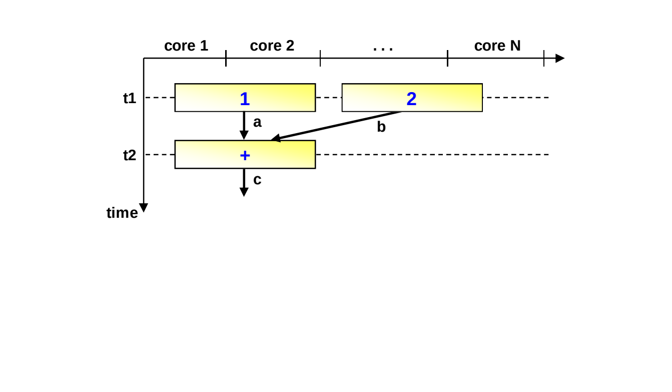
```
                              _____
                   426880 * \/10005
pi = --------------------------------------------
       _Inf_
       \     (6*k)! * (13591409 + 545140134 * k)
        \    ----------------------------------
        /     (3*k)! * (k!)^3 * (-640320)^(3*k)
       /____
        k=0
```

In order to ensure high precision of our calculation (100000 digits), we use GMP library functions that are wrapped for BMDFM via C-interface.

We program our test application of Pi number calculation 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
 Processing Unit PC ++ t1 a = 1 t2 b = 2 t3 c = a + b time Fetch/ Execute	 core 1 core 2 . . . core N t1 1 2 a b t2 + c time

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).

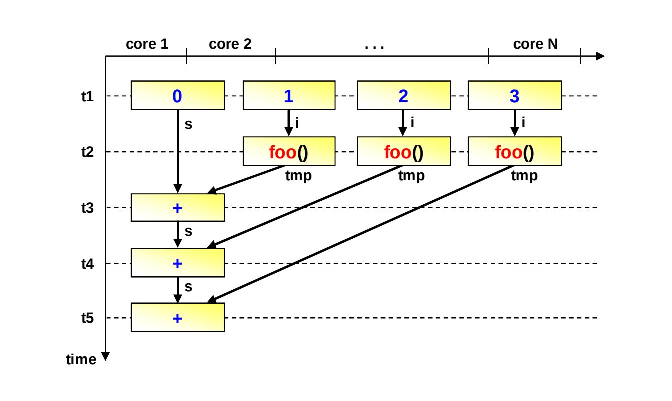
Transparent Dataflow Semantics

```
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 Pi Number Calculation with Chudnovsky Algorithm

Using transparent dataflow semantics, we write a simple trivial implementation of our parallel multithreaded Pi number calculation into the ***GMP_pi.flp*** file. Note that we need neither special parallelization directives nor special reserved function names. All necessary GMP library functions are wrapped for BMDFM via C-interface.

Pi Number Calculation with Chudnovsky Algorithm
Using Transparent Dataflow Semantics

```
# GMP_pi.flp
# GMP Wrapper Test that Computes Pi.
# FastLisp program example by Sancho Mining.

# The Chudnovsky Algorithm:
#
#                                _____
#                     426880 * \/10005
#  pi = ---------------------------------------------
#         _Inf_
#         \     (6*k)! * (13591409 + 545140134 * k)
#          \    -----------------------------------
#          /     (3*k)! * (k!)^3 * (-640320)^(3*k)
#         /____
#          k=0

(defun chudnovsky
  (progn
    (setq digits (iabs $1))
    (setq iterations (+ 1 (/. digits 14.1816474627254776555)))
    (setq mpf_precision (+ 10 digits))  # in decimal digits

    (setq mpf_sum (mpf (padl "0.0" mpf_precision)))
    (setq mpf_con (mpf_mul (mpf_sqr (mpf (padl "10005.0" mpf_precision)))
      (mpf (padl "426880.0" mpf_precision))))

    (setq mpz_13591409 (mpz 13591409))
    (setq mpz_545140134 (mpz 545140134))
    (setq mpz_-640320 (mpz -640320))

    (for k 0 1 iterations (progn
      (setq k3 (* 3 k))
      (setq mpz_a (mpz_fac_i (* 6 k)))
      (setq mpz_b (mpz_add mpz_13591409 (mpz_mul mpz_545140134 (mpz k))))
      (setq mpz_c (mpz_fac_i k3))
      (setq mpz_d (mpz_pow_i (mpz_fac_i k) 3))
      (setq mpz_e (mpz_pow_i mpz_-640320 k3))
      (setq mpf_a (cat (mpz_tostr (mpz_mul mpz_a mpz_b)) ".0"))
      (setq mpf_b (cat (mpz_tostr (mpz_mul mpz_c (mpz_mul mpz_d mpz_e))) ".0"))
      (setq mpf_a (mpf (if (< (len mpf_a) mpf_precision) (padl mpf_a mpf_precision) mpf_a)))
      (setq mpf_b (mpf (if (< (len mpf_b) mpf_precision) (padl mpf_b mpf_precision) mpf_b)))
      (setq mpf_f (mpf_div mpf_a mpf_b))
      (setq mpf_sum (mpf_add mpf_sum mpf_f))
    ))
    (left (mpf_tostr (mpf_div mpf_con mpf_sum)) digits)
  )
)

(setq digits 100000)

(setq pi (chudnovsky digits))
(outf "%s\n" pi)
(outf "(size=%ld)\n" (len pi))
""
```

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 GMP_pi.flp with single-threaded engine and log
fastlisp GMP_pi.flp >GMP_pi.fastlisp

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

We tested our Pi number calculation on an affordable 28-way SMP x86-64 machine. The Linux OS reported in total 28 2.4GHz 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
Pi Number Calculation (GMP_pi.flp)	**167sec.**	**7sec.**

Appendix: GMP Wrapper and 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:

cflp_udf.c (GMP Wrapper)

```c
/* cflp_udf.c - FastLisp User Defined Functions written in C
                Sancho Mining 07-09-2000 20:51:42.51pm */

#include <math.h>
#include <stdio.h>
#include <stdlib.h>
#ifndef _NOT_UNIX_
#include <unistd.h>
#endif
#include <string.h>
#include "cflp_udf.h"

#ifdef __cplusplus
extern "C" {
#endif

#ifdef _EXTENDED_INTERFACE_LESS_GLOBALS_
  #define VERSION_CFLPUDF___ VERSION_CFLPUDF_X_
  #define _CONST_VOID_PTR_RT_CTRL_comma const void *rt_ctrl,
  #define _RT_CTRL_comma rt_ctrl,
  #define noterror() noterror_fast(rt_ctrl)
#else
  #define _CONST_VOID_PTR_RT_CTRL_comma
  #define _RT_CTRL_comma
#endif

const CHR *VERSION_CFLPUDF___="Sancho M. CFLPUDF v.1.0.0.";

extern const ULO INSTRUCTIONS;

/* ________________________________________________________________________ */
/* Functions                                                      SECTION 0 */
/* ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ */

/* == GMP Wrapper (C-implementation) ======================== BEGINS HERE == */

/* * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                     *
*  IMPORTANT: link against GMP with the "-lgmp" flag!  *
*                                                     *
* * * * * * * * * * * * * * * * * * * * * * * * * * * */

#include <gmp.h>

/* gmp.h:
typedef struct{
  int _mp_alloc;     // Number of *limbs* allocated and pointed to by _mp_d.
  int _mp_size;      // abs(_mp_size) is the number of used limbs.
  mp_limb_t *_mp_d;  // Pointer to the limbs.
} __mpz_struct; */

CHR *mpz__serialize(CHR **targ, const __mpz_struct *source){
  if(mk_fst_buff(targ,sizeof(__mpz_struct)+labs((SLO)source->_mp_size)*
     sizeof(mp_limb_t))){
    **((__mpz_struct**)targ)=*source;
    memcpy((void*)(*targ+sizeof(__mpz_struct)),(void*)source->_mp_d,
      labs((SLO)source->_mp_size)*sizeof(mp_limb_t));
    ((__mpz_struct*)*targ)->_mp_alloc=labs((SLO)source->_mp_size);
    ((__mpz_struct*)*targ)->_mp_d=(mp_limb_t*)(*targ+sizeof(__mpz_struct));
  }
  return *targ;
}

UCH mpz__deserialize(__mpz_struct *targ, const CHR *source){
  UCH ret_val=0;
  if((len(source)>=sizeof(__mpz_struct))&&(((__mpz_struct*)source)->_mp_alloc*
     sizeof(mp_limb_t)==len(source)-sizeof(__mpz_struct))){
    *targ=*((__mpz_struct*)source);
    targ->_mp_d=(mp_limb_t*)((__mpz_struct*)source+1);
    ret_val=1;
  }
  return ret_val;
}

CHR *mpz__fromstr(CHR **targ, const CHR *source){
  mpz_t z;
  if((SLO)mpz_init_set_str(z,source,10)<0)
    free_string(targ);
  else
    mpz__serialize(targ,&z[0]);
  mpz_clear(z);
  return *targ;
}

CHR *mpz__tostr(CHR **targ, const CHR *source){
  SLO l;
  CHR *temp=NULL;
  mpz_t z;
  equ(&temp,source);
  free_string(targ);
  if(mpz__deserialize(&z[0],temp))
    if((l=mpz_sizeinbase(z,10))>=0)
      if(mk_fst_buff(targ,l+2)){
        *(*targ+l)=*(*targ+l+1)=0;
        gmp_snprintf(*targ,l+2,"%Zd",z);
        rtrim(targ,*targ);
      }
  free_string(&temp);
  return *targ;
}

/* gmp.h:
typedef struct{
  int _mp_prec;       // Max precision, in number of `mp_limb_t's.
  int _mp_size;       // abs(_mp_size) is the number of used limbs.
  mp_exp_t _mp_exp;   // Exponent, in the base of `mp_limb_t'.
  mp_limb_t *_mp_d;   // Pointer to the limbs.
} __mpf_struct; */

CHR *mpf__serialize(CHR **targ, const __mpf_struct *source){
  if(mk_fst_buff(targ,sizeof(__mpf_struct)+labs((SLO)source->_mp_size)*
     sizeof(mp_limb_t))){
    **((__mpf_struct**)targ)=*source;
    memcpy((void*)(*targ+sizeof(__mpf_struct)),(void*)source->_mp_d,
      labs((SLO)source->_mp_size)*sizeof(mp_limb_t));
    ((__mpf_struct*)*targ)->_mp_prec=labs((SLO)source->_mp_size);
    ((__mpf_struct*)*targ)->_mp_d=(mp_limb_t*)(*targ+sizeof(__mpf_struct));
  }
  return *targ;
}

UCH mpf__deserialize(__mpf_struct *targ, const CHR *source){
  UCH ret_val=0;
  if((len(source)>=sizeof(__mpf_struct))&&(((__mpf_struct*)source)->_mp_prec*
     sizeof(mp_limb_t)==len(source)-sizeof(__mpf_struct))){
    *targ=*((__mpf_struct*)source);
    targ->_mp_d=(mp_limb_t*)((__mpf_struct*)source+1);
    ret_val=1;
  }
  return ret_val;
}

CHR *mpf__fromstr(CHR **targ, const CHR *source){
  mpf_t f;
  ULO prec,prec_=len(source)*34/10;  /* ~ 10==2^3.4 */
  mpf_init2(f,prec_);
  prec=f[0]._mp_prec;
  while(1){
    mpf_clear(f);
    /* ATTENTION: GMP native mpf_set_default_prec() is not thread-safe! */
    mpf_set_default_prec(prec_);
    if((SLO)mpf_init_set_str(f,source,10)<0){
      free_string(targ);
      break;
    }
    if(prec==f[0]._mp_prec){
      mpf__serialize(targ,&f[0]);
      break;
    }
  }
  mpf_clear(f);
  return *targ;
}

CHR *mpf__tostr(CHR **targ, const CHR *source){
  ULO l;
  CHR *temp=NULL,*temp1=NULL,*temp2=NULL;
  mpf_t f;
  equ(&temp,source);
  free_string(targ);
  if(mpf__deserialize(&f[0],temp)){
    l=f[0]._mp_prec*10*8*sizeof(mp_limb_t)/34;
    if(mk_fst_buff(targ,l+2)){
      *(*targ+l)=*(*targ+l+1)=0;
      equ_num(&temp1,l);
      lcat(&temp1,get_std_buff(&temp2,"%."));
      cat(&temp1,get_std_buff(&temp2,"Ff"));
      gmp_snprintf(*targ,l+2,temp1,f);
      free_string(&temp1);
      free_string(&temp2);
      l=len(rtrim(targ,*targ))-1;
      temp1=*targ;
      while(*(temp1+l)=='0')
        l--;
      left(targ,*targ,l+1);
    }
  }
  free_string(&temp);
  return *targ;
}

SCH mpz__cmp(const CHR *op_a, const CHR *op_b){
  SCH ret_val=-2;
  int z_res;
  mpz_t z_a,z_b;
  if(mpz__deserialize(&z_a[0],op_a))
    if(mpz__deserialize(&z_b[0],op_b)){
      z_res=mpz_cmp(z_a,z_b);
      ret_val=z_res<0?-1:(z_res>0);
    }
  return ret_val;
}

CHR *mpz__add(CHR **targ, const CHR *op_a, const CHR *op_b){
  mpz_t z_a,z_b,z_res;
  if(mpz__deserialize(&z_a[0],op_a))
    if(mpz__deserialize(&z_b[0],op_b)){
      mpz_init(z_res);
      mpz_add(z_res,z_a,z_b);
      mpz__serialize(targ,&z_res[0]);
      mpz_clear(z_res);
    }
    else
      free_string(targ);
  else
    free_string(targ);
  return *targ;
}
```

```
CHR *mpz__sub(CHR **targ, const CHR *op_a, const CHR *op_b){
  mpz_t z_a,z_b,z_res;
  if(mpz__deserialize(&z_a[0],op_a))
    if(mpz__deserialize(&z_b[0],op_b)){
      mpz_init(z_res);
      mpz_sub(z_res,z_a,z_b);
      mpz__serialize(targ,&z_res[0]);
      mpz_clear(z_res);
    }
    else
      free_string(targ);
  else
    free_string(targ);
  return *targ;
}

CHR *mpz__mul(CHR **targ, const CHR *op_a, const CHR *op_b){
  mpz_t z_a,z_b,z_res;
  if(mpz__deserialize(&z_a[0],op_a))
    if(mpz__deserialize(&z_b[0],op_b)){
      mpz_init(z_res);
      mpz_mul(z_res,z_a,z_b);
      mpz__serialize(targ,&z_res[0]);
      mpz_clear(z_res);
    }
    else
      free_string(targ);
  else
    free_string(targ);
  return *targ;
}

CHR *mpz__div(CHR **targ, const CHR *op_a, const CHR *op_b){
  mpz_t z_a,z_b,z_res;
  if(mpz__deserialize(&z_a[0],op_a))
    if(mpz__deserialize(&z_b[0],op_b)){
      mpz_init(z_res);
      mpz_div(z_res,z_a,z_b);
      mpz__serialize(targ,&z_res[0]);
      mpz_clear(z_res);
    }
    else
      free_string(targ);
  else
    free_string(targ);
  return *targ;
}

CHR *mpz__mod(CHR **targ, const CHR *op_a, const CHR *op_b){
  mpz_t z_a,z_b,z_res;
  if(mpz__deserialize(&z_a[0],op_a))
    if(mpz__deserialize(&z_b[0],op_b)){
      mpz_init(z_res);
      mpz_mod(z_res,z_a,z_b);
      mpz__serialize(targ,&z_res[0]);
      mpz_clear(z_res);
    }
    else
      free_string(targ);
  else
    free_string(targ);
  return *targ;
}

CHR *mpz__neg(CHR **targ, const CHR *op_a){
  mpz_t z_a,z_res;
  if(mpz__deserialize(&z_a[0],op_a)){
    mpz_init(z_res);
    mpz_neg(z_res,z_a);
    mpz__serialize(targ,&z_res[0]);
    mpz_clear(z_res);
  }
  else
    free_string(targ);
  return *targ;
}

CHR *mpz__abs(CHR **targ, const CHR *op_a){
  mpz_t z_a,z_res;
  if(mpz__deserialize(&z_a[0],op_a)){
    mpz_init(z_res);
    mpz_abs(z_res,z_a);
    mpz__serialize(targ,&z_res[0]);
    mpz_clear(z_res);
  }
  else
    free_string(targ);
  return *targ;
}

CHR *mpz__pow_i(CHR **targ, const CHR *op_a, SLO op_b){
  mpz_t z_a,z_res;
  if(mpz__deserialize(&z_a[0],op_a)){
    mpz_init(z_res);
    mpz_pow_ui(z_res,z_a,op_b);
    mpz__serialize(targ,&z_res[0]);
    mpz_clear(z_res);
  }
  else
    free_string(targ);
  return *targ;
}

CHR *mpz__fac_i(CHR **targ, SLO op_a){
  mpz_t z_res;
  mpz_init(z_res);
  mpz_fac_ui(z_res,op_a);
  mpz__serialize(targ,&z_res[0]);
  mpz_clear(z_res);
  return *targ;
}

CHR *mpz__sqrt(CHR **targ, const CHR *op_a){
  mpz_t z_a,z_res;
  if(mpz__deserialize(&z_a[0],op_a)){
    mpz_init(z_res);
    mpz_sqrt(z_res,z_a);
    mpz__serialize(targ,&z_res[0]);
    mpz_clear(z_res);
  }
  else
    free_string(targ);
  return *targ;
}

CHR *mpz__and(CHR **targ, const CHR *op_a, const CHR *op_b){
  mpz_t z_a,z_b,z_res;
  if(mpz__deserialize(&z_a[0],op_a))
    if(mpz__deserialize(&z_b[0],op_b)){
      mpz_init(z_res);
      mpz_and(z_res,z_a,z_b);
      mpz__serialize(targ,&z_res[0]);
      mpz_clear(z_res);
    }
    else
      free_string(targ);
  else
    free_string(targ);
  return *targ;
}

CHR *mpz__ior(CHR **targ, const CHR *op_a, const CHR *op_b){
  mpz_t z_a,z_b,z_res;
  if(mpz__deserialize(&z_a[0],op_a))
    if(mpz__deserialize(&z_b[0],op_b)){
      mpz_init(z_res);
      mpz_ior(z_res,z_a,z_b);
      mpz__serialize(targ,&z_res[0]);
      mpz_clear(z_res);
    }
    else
      free_string(targ);
  else
    free_string(targ);
  return *targ;
}

CHR *mpz__xor(CHR **targ, const CHR *op_a, const CHR *op_b){
  mpz_t z_a,z_b,z_res;
  if(mpz__deserialize(&z_a[0],op_a))
    if(mpz__deserialize(&z_b[0],op_b)){
      mpz_init(z_res);
      mpz_xor(z_res,z_a,z_b);
      mpz__serialize(targ,&z_res[0]);
      mpz_clear(z_res);
    }
    else
      free_string(targ);
  else
    free_string(targ);
  return *targ;
}

CHR *mpz__com(CHR **targ, const CHR *op_a){
  mpz_t z_a,z_res;
  if(mpz__deserialize(&z_a[0],op_a)){
    mpz_init(z_res);
    mpz_com(z_res,z_a);
    mpz__serialize(targ,&z_res[0]);
    mpz_clear(z_res);
  }
  else
    free_string(targ);
  return *targ;
}

SCH mpf__cmp(const CHR *op_a, const CHR *op_b){
  SCH ret_val=-2;
  int f_res;
  mpf_t f_a,f_b;
  if(mpf__deserialize(&f_a[0],op_a))
    if(mpf__deserialize(&f_b[0],op_b)){
      f_res=mpf_cmp(f_a,f_b);
      ret_val=f_res<0?-1:(f_res>0);
    }
  return ret_val;
}

CHR *mpf__add(CHR **targ, const CHR *op_a, const CHR *op_b){
  mpf_t f_a,f_b,f_res;
  if(mpf__deserialize(&f_a[0],op_a))
    if(mpf__deserialize(&f_b[0],op_b)){
      mpf_init2(f_res,(f_a[0]._mp_prec>f_b[0]._mp_prec?f_a[0]._mp_prec:
        f_b[0]._mp_prec)*8*sizeof(mp_limb_t));
      mpf_add(f_res,f_a,f_b);
      mpf__serialize(targ,&f_res[0]);
      mpf_clear(f_res);
    }
    else
      free_string(targ);
  else
    free_string(targ);
  return *targ;
}

CHR *mpf__sub(CHR **targ, const CHR *op_a, const CHR *op_b){
  mpf_t f_a,f_b,f_res;
  if(mpf__deserialize(&f_a[0],op_a))
    if(mpf__deserialize(&f_b[0],op_b)){
      mpf_init2(f_res,(f_a[0]._mp_prec>f_b[0]._mp_prec?f_a[0]._mp_prec:
        f_b[0]._mp_prec)*8*sizeof(mp_limb_t));
      mpf_sub(f_res,f_a,f_b);
      mpf__serialize(targ,&f_res[0]);
      mpf_clear(f_res);
    }
    else
      free_string(targ);
  else
    free_string(targ);
  return *targ;
}

CHR *mpf__mul(CHR **targ, const CHR *op_a, const CHR *op_b){
  mpf_t f_a,f_b,f_res;
  if(mpf__deserialize(&f_a[0],op_a))
    if(mpf__deserialize(&f_b[0],op_b)){
      mpf_init2(f_res,(f_a[0]._mp_prec>f_b[0]._mp_prec?f_a[0]._mp_prec:
        f_b[0]._mp_prec)*8*sizeof(mp_limb_t));
      mpf_mul(f_res,f_a,f_b);
      mpf__serialize(targ,&f_res[0]);
      mpf_clear(f_res);
    }
    else
      free_string(targ);
  else
    free_string(targ);
  return *targ;
}

CHR *mpf__div(CHR **targ, const CHR *op_a, const CHR *op_b){
  mpf_t f_a,f_b,f_res;
  if(mpf__deserialize(&f_a[0],op_a))
    if(mpf__deserialize(&f_b[0],op_b)){
      mpf_init2(f_res,(f_a[0]._mp_prec>f_b[0]._mp_prec?f_a[0]._mp_prec:
        f_b[0]._mp_prec)*8*sizeof(mp_limb_t));
      mpf_div(f_res,f_a,f_b);
      mpf__serialize(targ,&f_res[0]);
      mpf_clear(f_res);
    }
    else
      free_string(targ);
  else
    free_string(targ);
  return *targ;
}

CHR *mpf__neg(CHR **targ, const CHR *op_a){
  mpf_t f_a,f_res;
  if(mpf__deserialize(&f_a[0],op_a)){
    mpf_init2(f_res,f_a[0]._mp_prec*8*sizeof(mp_limb_t));
    mpf_neg(f_res,f_a);
    mpf__serialize(targ,&f_res[0]);
    mpf_clear(f_res);
  }
  else
    free_string(targ);
  return *targ;
}

CHR *mpf__abs(CHR **targ, const CHR *op_a){
  mpf_t f_a,f_res;
  if(mpf__deserialize(&f_a[0],op_a)){
    mpf_init2(f_res,f_a[0]._mp_prec*8*sizeof(mp_limb_t));
    mpf_abs(f_res,f_a);
    mpf__serialize(targ,&f_res[0]);
    mpf_clear(f_res);
  }
  else
    free_string(targ);
  return *targ;
}

CHR *mpf__pow_i(CHR **targ, const CHR *op_a, SLO op_b){
  mpf_t f_a,f_res;
  if(mpf__deserialize(&f_a[0],op_a)){
    mpf_init2(f_res,f_a[0]._mp_prec*8*sizeof(mp_limb_t));
    mpf_pow_ui(f_res,f_a,op_b);
    mpf__serialize(targ,&f_res[0]);
    mpf_clear(f_res);
  }
  else
    free_string(targ);
  return *targ;
}

CHR *mpf__sqrt(CHR **targ, const CHR *op_a){
  mpf_t f_a,f_res;
  if(mpf__deserialize(&f_a[0],op_a)){
    mpf_init2(f_res,f_a[0]._mp_prec*8*sizeof(mp_limb_t));
    mpf_sqrt(f_res,f_a);
    mpf__serialize(targ,&f_res[0]);
    mpf_clear(f_res);
  }
  else
    free_string(targ);
  return *targ;
}

CHR *mpf__ceil(CHR **targ, const CHR *op_a){
  mpf_t f_a,f_res;
  if(mpf__deserialize(&f_a[0],op_a)){
    mpf_init2(f_res,f_a[0]._mp_prec*8*sizeof(mp_limb_t));
    mpf_ceil(f_res,f_a);
    mpf__serialize(targ,&f_res[0]);
    mpf_clear(f_res);
  }
  else
    free_string(targ);
  return *targ;
}

CHR *mpf__floor(CHR **targ, const CHR *op_a){
  mpf_t f_a,f_res;
  if(mpf__deserialize(&f_a[0],op_a)){
    mpf_init2(f_res,f_a[0]._mp_prec*8*sizeof(mp_limb_t));
    mpf_floor(f_res,f_a);
    mpf__serialize(targ,&f_res[0]);
    mpf_clear(f_res);
  }
  else
    free_string(targ);
  return *targ;
}

CHR *mpf__trunc(CHR **targ, const CHR *op_a){
  mpf_t f_a,f_res;
  if(mpf__deserialize(&f_a[0],op_a)){
    mpf_init2(f_res,f_a[0]._mp_prec*8*sizeof(mp_limb_t));
    mpf_trunc(f_res,f_a);
    mpf__serialize(targ,&f_res[0]);
    mpf_clear(f_res);
  }
  else
    free_string(targ);
  return *targ;
}
/* == GMP Wrapper (C-implementation) ========================= ENDS HERE == */
```

```
/* == GMP Wrapper (CFLP-implementation) ===================== BEGINS HERE == */
#ifdef ECODE_RT__WRONG_FMT_STRING
  #define ECODE_RT__GMP_PROCESSING_FAIL ECODE_RT__WRONG_FMT_STRING
#else
  #define ECODE_RT__GMP_PROCESSING_FAIL 9
#endif

void func__mpz_fromstr(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpz__fromstr(&ret_dat->svalue,ret_dat->svalue)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "String to GMP conversion error in mpz_fromstr()!");
    }
  }
  return;
}

void func__mpz_tostr(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpz__tostr(&ret_dat->svalue,ret_dat->svalue)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP to String conversion error in mpz_tostr()!");
    }
  }
  return;
}

void func__mpf_fromstr(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpf__fromstr(&ret_dat->svalue,ret_dat->svalue)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "String to GMP conversion error in mpf_fromstr()!");
    }
  }
  return;
}

void func__mpf_tostr(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpf__tostr(&ret_dat->svalue,ret_dat->svalue)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP to String conversion error in mpf_tostr()!");
    }
  }
  return;
}

void func__mpz_cmp(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    if((ret_dat->value.ival=mpz__cmp(ret_dat->svalue,op_b))==-2){
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_cmp()!");
    }
  }
  free_string(&op_b);
  return;
}

void func__mpz_equal(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    if((ret_dat->value.ival=mpz__cmp(ret_dat->svalue,op_b))==-2){
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_equal()!");
    }
    else
      ret_dat->value.ival=!ret_dat->value.ival;
  }
  free_string(&op_b);
  return;
}

void func__mpz_notequal(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    if((ret_dat->value.ival=mpz__cmp(ret_dat->svalue,op_b))==-2){
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_notequal()!");
    }
    else
      ret_dat->value.ival=(ret_dat->value.ival!=0);
  }
  free_string(&op_b);
  return;
}

void func__mpz_greater(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    if((ret_dat->value.ival=mpz__cmp(ret_dat->svalue,op_b))==-2){
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_greater()!");
    }
    else
      ret_dat->value.ival=(ret_dat->value.ival==1);
  }
  free_string(&op_b);
  return;
}

void func__mpz_greaterorequal(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    if((ret_dat->value.ival=mpz__cmp(ret_dat->svalue,op_b))==-2){
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_greaterorequal()!");
    }
    else
      ret_dat->value.ival=(ret_dat->value.ival>=0);
  }
  free_string(&op_b);
  return;
}

void func__mpz_less(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    if((ret_dat->value.ival=mpz__cmp(ret_dat->svalue,op_b))==-2){
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_less()!");
    }
    else
      ret_dat->value.ival=(ret_dat->value.ival==-1);
  }
  free_string(&op_b);
  return;
}

void func__mpz_lessorequal(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    if((ret_dat->value.ival=mpz__cmp(ret_dat->svalue,op_b))==-2){
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_lessorequal()!");
    }
    else
      ret_dat->value.ival=(ret_dat->value.ival<=0);
  }
  free_string(&op_b);
  return;
}

void func__mpz_add(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpz__add(&ret_dat->svalue,ret_dat->svalue,op_b)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_add()!");
    }
  }
  free_string(&op_b);
  return;
}

void func__mpz_sub(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpz__sub(&ret_dat->svalue,ret_dat->svalue,op_b)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_sub()!");
    }
  }
  free_string(&op_b);
  return;
}

void func__mpz_mul(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpz__mul(&ret_dat->svalue,ret_dat->svalue,op_b)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_mul()!");
    }
  }
  free_string(&op_b);
  return;
}

void func__mpz_div(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if((len(op_b)>=sizeof(__mpz_struct))&&!((__mpz_struct*)op_b)->_mp_size){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP division by zero error in mpz_div()!");
    }
    else
      if(mpz__div(&ret_dat->svalue,ret_dat->svalue,op_b)==NULL){
        mk_fst_buff(&ret_dat->svalue,0);
        rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
          "GMP conversion error in mpz_div()!");
      }
  }
  free_string(&op_b);
  return;
}

void func__mpz_mod(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if((len(op_b)>=sizeof(__mpz_struct))&&!((__mpz_struct*)op_b)->_mp_size){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP division by zero error in mpz_mod()!");
    }
    else
      if(mpz__mod(&ret_dat->svalue,ret_dat->svalue,op_b)==NULL){
        mk_fst_buff(&ret_dat->svalue,0);
        rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
          "GMP conversion error in mpz_mod()!");
      }
  }
  free_string(&op_b);
  return;
}

void func__mpz_neg(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpz__neg(&ret_dat->svalue,ret_dat->svalue)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_neg()!");
    }
  }
  return;
}

void func__mpz_abs(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpz__abs(&ret_dat->svalue,ret_dat->svalue)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_abs()!");
    }
  }
  return;
}

void func__mpz_pow_i(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  SLO op_b;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_ival(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(op_b<0){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP negative power operand in mpz_pow_i()!");
    }
    else
      if(mpz__pow_i(&ret_dat->svalue,ret_dat->svalue,op_b)==NULL){
        mk_fst_buff(&ret_dat->svalue,0);
        rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
          "GMP conversion error in mpz_pow_i()!");
      }
  }
  return;
}

void func__mpz_fac_i(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_ival(_RT_CTRL_comma dat_ptr,&ret_dat->value.ival);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(ret_dat->value.ival<0){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP negative factorial operand in mpz_fac_i()!");
    }
    else
      if(mpz__fac_i(&ret_dat->svalue,ret_dat->value.ival)==NULL){
        mk_fst_buff(&ret_dat->svalue,0);
        rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
          "GMP conversion error in mpz_fac_i()!");
      }
  }
  return;
}

void func__mpz_sqrt(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if((len(ret_dat->svalue)>=sizeof(__mpz_struct))&&
       (((__mpz_struct*)ret_dat->svalue)->_mp_size<0)){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP negative operand in mpz_sqrt()!");
    }
    else
      if(mpz__sqrt(&ret_dat->svalue,ret_dat->svalue)==NULL){
        mk_fst_buff(&ret_dat->svalue,0);
        rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
          "GMP conversion error in mpz_sqrt()!");
      }
  }
  return;
}

void func__mpz_and(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpz__and(&ret_dat->svalue,ret_dat->svalue,op_b)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_and()!");
    }
  }
  free_string(&op_b);
  return;
}

void func__mpz_ior(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpz__ior(&ret_dat->svalue,ret_dat->svalue,op_b)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_ior()!");
    }
  }
  free_string(&op_b);
  return;
}

void func__mpz_xor(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpz__xor(&ret_dat->svalue,ret_dat->svalue,op_b)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_xor()!");
    }
  }
  free_string(&op_b);
  return;
}

void func__mpz_com(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpz__com(&ret_dat->svalue,ret_dat->svalue)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpz_com()!");
    }
  }
  return;
}

void func__mpf_cmp(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    if((ret_dat->value.ival=mpf__cmp(ret_dat->svalue,op_b))==-2){
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_cmp()!");
    }
  }
  free_string(&op_b);
  return;
}

void func__mpf_equal(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    if((ret_dat->value.ival=mpf__cmp(ret_dat->svalue,op_b))==-2){
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_equal()!");
    }
    else
      ret_dat->value.ival=!ret_dat->value.ival;
  }
  free_string(&op_b);
  return;
}

void func__mpf_notequal(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    if((ret_dat->value.ival=mpf__cmp(ret_dat->svalue,op_b))==-2){
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_notequal()!");
    }
    else
      ret_dat->value.ival=(ret_dat->value.ival!=0);
  }
  free_string(&op_b);
  return;
}

void func__mpf_greater(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    if((ret_dat->value.ival=mpf__cmp(ret_dat->svalue,op_b))==-2){
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_greater()!");
    }
    else
      ret_dat->value.ival=(ret_dat->value.ival==1);
  }
  free_string(&op_b);
  return;
}

void func__mpf_greaterorequal(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    if((ret_dat->value.ival=mpf__cmp(ret_dat->svalue,op_b))==-2){
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_greaterorequal()!");
    }
    else
      ret_dat->value.ival=(ret_dat->value.ival>=0);
  }
  free_string(&op_b);
  return;
}

void func__mpf_less(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    if((ret_dat->value.ival=mpf__cmp(ret_dat->svalue,op_b))==-2){
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_less()!");
    }
    else
      ret_dat->value.ival=(ret_dat->value.ival==-1);
  }
  free_string(&op_b);
  return;
}

void func__mpf_lessorequal(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='I';
    if((ret_dat->value.ival=mpf__cmp(ret_dat->svalue,op_b))==-2){
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_lessorequal()!");
    }
    else
      ret_dat->value.ival=(ret_dat->value.ival<=0);
  }
  free_string(&op_b);
  return;
}

void func__mpf_add(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpf__add(&ret_dat->svalue,ret_dat->svalue,op_b)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_add()!");
    }
  }
  free_string(&op_b);
  return;
}

void func__mpf_sub(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpf__sub(&ret_dat->svalue,ret_dat->svalue,op_b)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_sub()!");
    }
  }
  free_string(&op_b);
  return;
}

void func__mpf_mul(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpf__mul(&ret_dat->svalue,ret_dat->svalue,op_b)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_mul()!");
    }
  }
  free_string(&op_b);
  return;
}

void func__mpf_div(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  CHR *op_b=NULL;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_sval(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if((len(op_b)>=sizeof(__mpf_struct))&&!((__mpf_struct*)op_b)->_mp_size){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP division by zero error in mpf_div()!");
    }
    else
      if(mpf__div(&ret_dat->svalue,ret_dat->svalue,op_b)==NULL){
        mk_fst_buff(&ret_dat->svalue,0);
        rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
          "GMP conversion error in mpf_div()!");
      }
  }
  free_string(&op_b);
  return;
}

void func__mpf_neg(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpf__neg(&ret_dat->svalue,ret_dat->svalue)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_neg()!");
    }
  }
  return;
}

void func__mpf_abs(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpf__abs(&ret_dat->svalue,ret_dat->svalue)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_abs()!");
    }
  }
  return;
}

void func__mpf_pow_i(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  SLO op_b;
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  ret_ival(_RT_CTRL_comma dat_ptr+1,&op_b);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(op_b<0){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP negative power operand in mpf_pow_i()!");
    }
    else
      if(mpf__pow_i(&ret_dat->svalue,ret_dat->svalue,op_b)==NULL){
        mk_fst_buff(&ret_dat->svalue,0);
        rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
          "GMP conversion error in mpf_pow_i()!");
      }
  }
  return;
}

void func__mpf_sqrt(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if((len(ret_dat->svalue)>=sizeof(__mpf_struct))&&
       (((__mpf_struct*)ret_dat->svalue)->_mp_size<0)){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP negative operand in mpf_sqrt()!");
    }
    else
      if(mpf__sqrt(&ret_dat->svalue,ret_dat->svalue)==NULL){
        mk_fst_buff(&ret_dat->svalue,0);
        rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
          "GMP conversion error in mpf_sqrt()!");
      }
  }
  return;
}

void func__mpf_ceil(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpf__ceil(&ret_dat->svalue,ret_dat->svalue)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_ceil()!");
    }
  }
  return;
}

void func__mpf_floor(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpf__floor(&ret_dat->svalue,ret_dat->svalue)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_floor()!");
    }
  }
  return;
}

void func__mpf_trunc(_CONST_VOID_PTR_RT_CTRL_comma const ULO *dat_ptr,
   struct fastlisp_data *ret_dat){
  ret_dat->disable_ptr=1;
  ret_sval(_RT_CTRL_comma dat_ptr,&ret_dat->svalue);
  if(noterror()){
    ret_dat->single=1;
    ret_dat->type='S';
    if(mpf__trunc(&ret_dat->svalue,ret_dat->svalue)==NULL){
      mk_fst_buff(&ret_dat->svalue,0);
      rise_error_info(ECODE_RT__GMP_PROCESSING_FAIL,
        "GMP conversion error in mpf_trunc()!");
    }
  }
  return;
}
/* == GMP Wrapper (CFLP-implementation) ======================== ENDS HERE == */

/* __________________________________________________________________________ */
/* FastLisp Callbacks                                               SECTION 1 */
/* ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ */

void startup_callback(void){
  /* This is just a stub. Place your own code here. */
  return;
}

void taskjob_end_callback(ULO id_taskjob){
  /* This is just a stub. Place your own code here. */
  return;
}

/* The BMDFMldr module is capable of invoking/evaluating VM language
   expressions from C/C++ code (1-Capable;0-Unable).*/
UCH BMDFMldr_capable_call_VMcode_from_C=0;

void user_io_callback(SLO usr_id, CHR **usr_buff){
  /* This is just a stub. Place your own code here. */
  /* The following is a default behavior: */
  CHR *temp=NULL,*temp1=NULL,*temp2=NULL;
  equ(&temp,*usr_buff);
  if(cmp(temp,get_std_buff(&temp1,"PWD"))){
    mk_fst_buff(&temp1,4096);
    if(getcwd((char*)temp1,(size_t)len(temp1)))
      get_std_buff(usr_buff,temp1);
  }
  else
    if(cmp(head(&temp2,temp),get_std_buff(&temp1,"GetEnv"))){
      tail(&temp1,temp);
      get_std_buff(usr_buff,getenv(temp1));
    }
    else{
      lcat(usr_buff,get_std_buff(&temp,", usr_buff=\""));
      lcat(usr_buff,equ_num(&temp,usr_id));
      lcat(usr_buff,get_std_buff(&temp,"USER_IO: usr_id="));
      cat(usr_buff,get_std_buff(&temp,"\"."));
    }
  free_string(&temp);
  free_string(&temp1);
  free_string(&temp2);
  return;
}

/* __________________________________________________________________________ */
/* FastLisp Database Register                                       SECTION 2 */
/* ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ */

INSTRUCTION_STRU INSTRUCTION_SET[]={
/* == GMP Wrapper (CFLP-implementation) ====================== BEGINS HERE == */
  {"MPZ_FROMSTR",1,'S',(UCH*)"S",&func__mpz_fromstr},
  {"MPZ",1,'S',(UCH*)"S",&func__mpz_fromstr},
  {"MPZ_TOSTR",1,'S',(UCH*)"S",&func__mpz_tostr},
  {"MPZ_CMP",2,'I',(UCH*)"SS",&func__mpz_cmp},
  {"MPZ_==",2,'I',(UCH*)"SS",&func__mpz_equal},
  {"MPZ_!=",2,'I',(UCH*)"SS",&func__mpz_notequal},
  {"MPZ_>",2,'I',(UCH*)"SS",&func__mpz_greater},
  {"MPZ_>=",2,'I',(UCH*)"SS",&func__mpz_greaterorequal},
  {"MPZ_<",2,'I',(UCH*)"SS",&func__mpz_less},
  {"MPZ_<=",2,'I',(UCH*)"SS",&func__mpz_lessorequal},
  {"MPZ_ADD",2,'S',(UCH*)"SS",&func__mpz_add},
  {"MPZ_+",2,'S',(UCH*)"SS",&func__mpz_add},
  {"MPZ_SUB",2,'S',(UCH*)"SS",&func__mpz_sub},
  {"MPZ_-",2,'S',(UCH*)"SS",&func__mpz_sub},
  {"MPZ_MUL",2,'S',(UCH*)"SS",&func__mpz_mul},
  {"MPZ_*",2,'S',(UCH*)"SS",&func__mpz_mul},
  {"MPZ_DIV",2,'S',(UCH*)"SS",&func__mpz_div},
  {"MPZ_/",2,'S',(UCH*)"SS",&func__mpz_div},
  {"MPZ_MOD",2,'S',(UCH*)"SS",&func__mpz_mod},
  {"MPZ_%",2,'S',(UCH*)"SS",&func__mpz_mod},
  {"MPZ_NEG",1,'S',(UCH*)"S",&func__mpz_neg},
  {"MPZ_0-",1,'S',(UCH*)"S",&func__mpz_neg},
  {"MPZ_ABS",1,'S',(UCH*)"S",&func__mpz_abs},
  {"MPZ_POW_I",2,'S',(UCH*)"SI",&func__mpz_pow_i},
  {"MPZ_**_I",2,'S',(UCH*)"SI",&func__mpz_pow_i},
  {"MPZ_FAC_I",1,'S',(UCH*)"I",&func__mpz_fac_i},
  {"MPZ_FACT_I",1,'S',(UCH*)"I",&func__mpz_fac_i},
  {"MPZ_SQRT",1,'S',(UCH*)"S",&func__mpz_sqrt},
  {"MPZ_SQR",1,'S',(UCH*)"S",&func__mpz_sqrt},
  {"MPZ_AND",2,'S',(UCH*)"SS",&func__mpz_and},
  {"MPZ_&",2,'S',(UCH*)"SS",&func__mpz_and},
  {"MPZ_IOR",2,'S',(UCH*)"SS",&func__mpz_ior},
  {"MPZ_|",2,'S',(UCH*)"SS",&func__mpz_ior},
  {"MPZ_XOR",2,'S',(UCH*)"SS",&func__mpz_xor},
  {"MPZ_^",2,'S',(UCH*)"SS",&func__mpz_xor},
  {"MPZ_COM",1,'S',(UCH*)"S",&func__mpz_com},
  {"MPF_FROMSTR",1,'S',(UCH*)"S",&func__mpf_fromstr},
  {"MPF",1,'S',(UCH*)"S",&func__mpf_fromstr},
  {"MPF_TOSTR",1,'S',(UCH*)"S",&func__mpf_tostr},
  {"MPF_CMP",2,'I',(UCH*)"SS",&func__mpf_cmp},
  {"MPF_==",2,'I',(UCH*)"SS",&func__mpf_equal},
  {"MPF_!=",2,'I',(UCH*)"SS",&func__mpf_notequal},
  {"MPF_>",2,'I',(UCH*)"SS",&func__mpf_greater},
  {"MPF_>=",2,'I',(UCH*)"SS",&func__mpf_greaterorequal},
  {"MPF_<",2,'I',(UCH*)"SS",&func__mpf_less},
  {"MPF_<=",2,'I',(UCH*)"SS",&func__mpf_lessorequal},
  {"MPF_ADD",2,'S',(UCH*)"SS",&func__mpf_add},
  {"MPF_+",2,'S',(UCH*)"SS",&func__mpf_add},
  {"MPF_SUB",2,'S',(UCH*)"SS",&func__mpf_sub},
  {"MPF_-",2,'S',(UCH*)"SS",&func__mpf_sub},
  {"MPF_MUL",2,'S',(UCH*)"SS",&func__mpf_mul},
  {"MPF_*",2,'S',(UCH*)"SS",&func__mpf_mul},
  {"MPF_DIV",2,'S',(UCH*)"SS",&func__mpf_div},
  {"MPF_/",2,'S',(UCH*)"SS",&func__mpf_div},
  {"MPF_NEG",1,'S',(UCH*)"S",&func__mpf_neg},
  {"MPF_0-",1,'S',(UCH*)"S",&func__mpf_neg},
  {"MPF_ABS",1,'S',(UCH*)"S",&func__mpf_abs},
  {"MPF_POW_I",2,'S',(UCH*)"SI",&func__mpf_pow_i},
  {"MPF_**_I",2,'S',(UCH*)"SI",&func__mpf_pow_i},
  {"MPF_SQRT",1,'S',(UCH*)"S",&func__mpf_sqrt},
  {"MPF_SQR",1,'S',(UCH*)"S",&func__mpf_sqrt},
  {"MPF_CEIL",1,'S',(UCH*)"S",&func__mpf_ceil},
  {"MPF_FLOOR",1,'S',(UCH*)"S",&func__mpf_floor},
  {"MPF_TRUNC",1,'S',(UCH*)"S",&func__mpf_trunc}
/* == GMP Wrapper (CFLP-implementation) ======================== ENDS HERE == */
};
const ULO INSTRUCTIONS=sizeof(INSTRUCTION_SET)/sizeof(INSTRUCTION_STRU);

/* __________________________________________________________________________ */
/* Invocation of Function Main                                      SECTION 3 */
/* ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ */

extern int _Main_(int argc, char *argv[]);

int main(int argc, char *argv[]){
  return _Main_(argc,argv);
}

#ifdef __cplusplus
} // extern "C"
#endif
```

cat /proc/cpuinfo

```
processor       : 0
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 0
siblings        : 2
core id         : 0
cpu cores       : 2
apicid          : 0
initial apicid  : 0
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 1
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 0
siblings        : 2
core id         : 1
cpu cores       : 2
apicid          : 1
initial apicid  : 1
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 2
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 1
siblings        : 2
core id         : 0
cpu cores       : 2
apicid          : 2
initial apicid  : 2
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
```

```
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 3
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 1
siblings        : 2
core id         : 1
cpu cores       : 2
apicid          : 3
initial apicid  : 3
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 4
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 2
siblings        : 2
core id         : 0
cpu cores       : 2
apicid          : 4
initial apicid  : 4
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 5
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 2
siblings        : 2
core id         : 1
cpu cores       : 2
apicid          : 5
initial apicid  : 5
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 6
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 3
siblings        : 2
core id         : 0
cpu cores       : 2
apicid          : 6
initial apicid  : 6
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 7
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 3
siblings        : 2
core id         : 1
cpu cores       : 2
apicid          : 7
initial apicid  : 7
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 8
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 4
siblings        : 2
core id         : 0
cpu cores       : 2
apicid          : 8
initial apicid  : 8
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 9
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 4
siblings        : 2
core id         : 1
cpu cores       : 2
apicid          : 9
initial apicid  : 9
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 10
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 5
siblings        : 2
core id         : 0
cpu cores       : 2
apicid          : 10
initial apicid  : 10
fpu             : yes
```

```
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 11
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 5
siblings        : 2
core id         : 1
cpu cores       : 2
apicid          : 11
initial apicid  : 11
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 12
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 6
siblings        : 2
core id         : 0
cpu cores       : 2
apicid          : 12
initial apicid  : 12
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 13
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 6
siblings        : 2
core id         : 1
cpu cores       : 2
apicid          : 13
initial apicid  : 13
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 14
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 7
siblings        : 2
core id         : 0
cpu cores       : 2
apicid          : 14
initial apicid  : 14
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 15
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 7
siblings        : 2
core id         : 1
cpu cores       : 2
apicid          : 15
initial apicid  : 15
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 16
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 8
siblings        : 2
core id         : 0
cpu cores       : 2
apicid          : 16
initial apicid  : 16
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 17
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 8
siblings        : 2
core id         : 1
cpu cores       : 2
apicid          : 17
initial apicid  : 17
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 18
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
```

```
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 9
siblings        : 2
core id         : 0
cpu cores       : 2
apicid          : 18
initial apicid  : 18
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 19
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 9
siblings        : 2
core id         : 1
cpu cores       : 2
apicid          : 19
initial apicid  : 19
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 20
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 10
siblings        : 2
core id         : 0
cpu cores       : 2
apicid          : 20
initial apicid  : 20
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 21
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 10
siblings        : 2
core id         : 1
cpu cores       : 2
apicid          : 21
initial apicid  : 21
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 22
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 11
siblings        : 2
core id         : 0
cpu cores       : 2
apicid          : 22
initial apicid  : 22
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 23
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 11
siblings        : 2
core id         : 1
cpu cores       : 2
apicid          : 23
initial apicid  : 23
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 24
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 12
siblings        : 2
core id         : 0
cpu cores       : 2
apicid          : 24
initial apicid  : 24
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 25
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 12
siblings        : 2
core id         : 1
cpu cores       : 2
apicid          : 25
initial apicid  : 25
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
```

```
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 26
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 13
siblings        : 2
core id         : 0
cpu cores       : 2
apicid          : 26
initial apicid  : 26
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:

processor       : 27
vendor_id       : GenuineIntel
cpu family      : 6
model           : 79
model name      : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
stepping        : 1
microcode       : 0xb000017
cpu MHz         : 2393.736
cache size      : 35840 KB
physical id     : 13
siblings        : 2
core id         : 1
cpu cores       : 2
apicid          : 27
initial apicid  : 27
fpu             : yes
fpu_exception   : yes
cpuid level     : 20
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm
constant_tsc arch_perfmon pebs bts nopl xtopology tsc_reliable nonstop_tsc
aperfmperf pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt
aes xsave avx f16c rdrand hypervisor lahf_lm 3dnowprefetch ida arat epb pln pts
dtherm fsgsbase smep
bogomips        : 4788.91
clflush size    : 64
cache_alignment : 64
address sizes   : 40 bits physical, 48 bits virtual
power management:
```

GMP_pi.fastlisp

```
Current termcap settings:
  TERM_TYPE=`xterm'; LINES_TERM=`43'; COLUMNS_TERM=`120';
  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 `GMP_pi.flp' file is already precompiled...
Reading the `fastlisp.cfg' configuration profile...
Checking the syntax of the configuration profile...
Squeezing the nested source PROGN statements in Global FastLisp function set...
  Redundant nested source PROGN statements removed: 0.
Looking for uninitialized variables/arrays in Global FastLisp function set...
Resolving data types in Global FastLisp function set...
Reading the `GMP_pi.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>)
Squeezing the nested source PROGN statements...
  Redundant nested source PROGN statements removed: 1.
Looking for uninitialized variables/arrays in the FastLisp code...
Resolving data types in the FastLisp code...
--------------------------------------------------------------------------------
(PROGN
  (SETQ@S TERM_TYPE@S "xterm")
  (SETQ@I LINES_TERM@I 43)
  (SETQ@I COLUMNS_TERM@I 120)
  (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
    CHUDNOVSKY
    (PROGN
      (SETQ@I DIGITS@I (IABS $1))
      (SETQ@I ITERATIONS@I (+ 1 (/. DIGITS@I 14.1816474627254776555)))
      (SETQ@I MPF_PRECISION@I (+@J 10 DIGITS@I))
      (SETQ@S MPF_SUM@S (MPF@J (PADL@J "0.0" MPF_PRECISION@I)))
      (SETQ@S
        MPF_CON@S
        (MPF_MUL@J
          (MPF_SQR@J (MPF@J (PADL@J "10005.0" MPF_PRECISION@I)))
          (MPF@J (PADL@J "426880.0" MPF_PRECISION@I))
        )
      )
      (SETQ@S MPZ_13591409@S (MPZ 13591409))
      (SETQ@S MPZ_545140134@S (MPZ 545140134))
      (SETQ@S MPZ_-640320@S (MPZ -640320))
      (FOR@J
        K@I 0 1 ITERATIONS@I
        (PROGN
          (SETQ@I K3@I (*@J 3 K@I))
          (SETQ@S MPZ_A@S (MPZ_FAC_I@J (*@J 6 K@I)))
          (SETQ@S
            MPZ_B@S
            (MPZ_ADD@J MPZ_13591409@S (MPZ_MUL@J MPZ_545140134@S (MPZ K@I)))
          )
          (SETQ@S MPZ_C@S (MPZ_FAC_I@J K3@I))
          (SETQ@S MPZ_D@S (MPZ_POW_I@J (MPZ_FAC_I@J K@I) 3))
          (SETQ@S MPZ_E@S (MPZ_POW_I@J MPZ_-640320@S K3@I))
          (SETQ@S
            MPF_A@S
            (CAT@J (MPZ_TOSTR@J (MPZ_MUL@J MPZ_A@S MPZ_B@S)) ".0")
          )
          (SETQ@S
            MPF_B@S
            (CAT@J
              (MPZ_TOSTR@J (MPZ_MUL@J MPZ_C@S (MPZ_MUL@J MPZ_D@S MPZ_E@S)))
              ".0"
            )
          )
          (SETQ@S
            MPF_A@S
            (MPF@J
              (IF@J
                (<@I (LEN@J MPF_A@S) MPF_PRECISION@I)
                (PADL@J MPF_A@S MPF_PRECISION@I)
                MPF_A@S
              )
            )
          )
          (SETQ@S
            MPF_B@S
            (MPF@J
              (IF@J
                (<@I (LEN@J MPF_B@S) MPF_PRECISION@I)
                (PADL@J MPF_B@S MPF_PRECISION@I)
                MPF_B@S
              )
            )
          )
          (SETQ@S MPF_F@S (MPF_DIV@J MPF_A@S MPF_B@S))
          (SETQ@S MPF_SUM@S (MPF_ADD@J MPF_SUM@S MPF_F@S))
        )
      )
      (LEFT@J (MPF_TOSTR@J (MPF_DIV@J MPF_CON@S MPF_SUM@S)) DIGITS@I)
    )
  )
  (SETQ@I DIGITS@I 100000)
  (SETQ@S PI@S (CHUDNOVSKY DIGITS@I))
  (OUTF "%s\n" PI@S)
  (OUTF "(size=%ld)\n" (LEN@J PI@S))
  ""
)
--------------------------------------------------------------------------------
(PROGN (SETQ@S TERM_TYPE@S "xterm") (SETQ@I LINES_TERM@I 43) (SETQ@I COLUMNS_TE
RM@I 120) (SETQ@S CLRSCR_TERM@S "\e[H\e[2J") (SETQ@S REVERSE_TERM@S "\e[7m") (S
ETQ@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[?12
l\e[?25h") (SETQ@S GOTOCURSOR_TERM@S "\e[%i%d;%dH") (DEFUN CHUDNOVSKY (PROGN (S
ETQ@I DIGITS@I (IABS $1)) (SETQ@I ITERATIONS@I (+ 1 (/. DIGITS@I 14.18164746272
54776555))) (SETQ@I MPF_PRECISION@I (+@J 10 DIGITS@I)) (SETQ@S MPF_SUM@S (MPF@J
 (PADL@J "0.0" MPF_PRECISION@I))) (SETQ@S MPF_CON@S (MPF_MUL@J (MPF_SQR@J (MPF@
J (PADL@J "10005.0" MPF_PRECISION@I))) (MPF@J (PADL@J "426880.0" MPF_PRECISION@
I)))) (SETQ@S MPZ_13591409@S (MPZ 13591409)) (SETQ@S MPZ_545140134@S (MPZ 54514
0134)) (SETQ@S MPZ_-640320@S (MPZ -640320)) (FOR@J K@I 0 1 ITERATIONS@I (PROGN
(SETQ@I K3@I (*@J 3 K@I)) (SETQ@S MPZ_A@S (MPZ_FAC_I@J (*@J 6 K@I))) (SETQ@S MP
Z_B@S (MPZ_ADD@J MPZ_13591409@S (MPZ_MUL@J MPZ_545140134@S (MPZ K@I)))) (SETQ@S
 MPZ_C@S (MPZ_FAC_I@J K3@I)) (SETQ@S MPZ_D@S (MPZ_POW_I@J (MPZ_FAC_I@J K@I) 3))
 (SETQ@S MPZ_E@S (MPZ_POW_I@J MPZ_-640320@S K3@I)) (SETQ@S MPF_A@S (CAT@J (MPZ_
TOSTR@J (MPZ_MUL@J MPZ_A@S MPZ_B@S)) ".0")) (SETQ@S MPF_B@S (CAT@J (MPZ_TOSTR@J
 (MPZ_MUL@J MPZ_C@S (MPZ_MUL@J MPZ_D@S MPZ_E@S))) ".0")) (SETQ@S MPF_A@S (MPF@J
 (IF@J (<@I (LEN@J MPF_A@S) MPF_PRECISION@I) (PADL@J MPF_A@S MPF_PRECISION@I) M
PF_A@S))) (SETQ@S MPF_B@S (MPF@J (IF@J (<@I (LEN@J MPF_B@S) MPF_PRECISION@I) (P
ADL@J MPF_B@S MPF_PRECISION@I) MPF_B@S))) (SETQ@S MPF_F@S (MPF_DIV@J MPF_A@S MP
F_B@S)) (SETQ@S MPF_SUM@S (MPF_ADD@J MPF_SUM@S MPF_F@S)))) (LEFT@J (MPF_TOSTR@J
 (MPF_DIV@J MPF_CON@S MPF_SUM@S)) DIGITS@I))) (SETQ@I DIGITS@I 100000) (SETQ@S
PI@S (CHUDNOVSKY DIGITS@I)) (OUTF "%s\n" PI@S) (OUTF "(size=%ld)\n" (LEN@J PI@S
)) "")
--------------------------------------------------------------------------------
*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 3672bytes.
--------------------------------------------------------------------------------
 D5 A9 00 00 00 00 00 00 0D 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00 01 00
 00 00 00 00 00 00 D5 01 00 00 00 00 00 00 13 00 00 00 00 00 00 00 00 00 00 00
 00 00 00 00  T 00 00 00 00 00 00 00 0A 00 00 00 00 00 00 00 0A 00 00 00 00 00
 00 00 10 00 00 00 00 00 00 00 1E 00 00 00 00 00 00 00  ' 00 00 00 00 00 00 00
  3 00 00 00 00 00 00 00  O 00 00 00 00 00 00 00  U 00 00 00 00 00 00 00  [ 00
 00 00 00 00 00 00  a 00 00 00 00 00 00 00  3 01 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 00 01 00 00 00
 00 00 01 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 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  T  X 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
 F 00 00 00 00 00 00 00  W 9D  o E5 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 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 0A 00 00 00 00 00
00 00  i 00 00 00 00 00 00 00 01 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  t 94 00 00 00 00 00 00 01 00
00 00 00 00 00 00 D4  T 02 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 03 00 00 00 00 00 00 00  0  .  0 00 00 00
00 00  i 00 00 00 00 00 00 00 03 00 00 00 00 00 00 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  t C8 00 00 00 00 00 00 02 00
00 00 00 00 00 00 0D 00 00 00 00 00 00 00  t F0 00 00 00 00 00 00 01 00 00 00
00 00 00 00  t 94 00 00 00 00 00 00 01 00 00 00 00 00 00 00 D4  T 02 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
07 00 00 00 00 00 00 00  1  0  0  0  5  .  0 00  i 00 00 00 00 00 00 00 03 00
00 00 00 00 00 00  t 94 00 00 00 00 00 00 01 00 00 00 00 00 00 00 D4  T 02 00
00 00 00 00 02 00 00 00 00 00 00 00 05 00 00 00 00 00 00 00  S 00 00 00 00 00
00 00 08 00 00 00 00 00 00 00  4  2  6  8  8  0  .  0 00 00 00 00 00 00 00 00
 i 00 00 00 00 00 00 00 03 00 00 00 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  t 04 00 00 00 00 00 00 01 00 00 00
00 00 00 00  I 00 00 00 00 00 00 00  q  c CF 00 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  t 04 00 00 00 00 00 00
01 00 00 00 00 00 00 00  I 00 00 00 00 00 00 00 A6  -  ~ __ 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  t 04 00 00
00 00 00 00 01 00 00 00 00 00 00 00  I 00 00 00 00 00 00 00 C0  : F6 FF FF FF
FF FF D4  $ 00 00 00 00 00 00 05 00 00 00 00 00 00 00 06 00 00 00 00 00 00 00
07 00 00 00 00 00 00 00 08 00 00 00 00 00 00 00 09 00 00 00 00 00 00 00  i 00
00 00 00 00 00 00 09 00 00 00 00 00 00 00  I 00 00 00 00 00 00 00 00 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  T 00 00 00 00 00 00 00 0C 00 00 00 00 00 00 00
0C 00 00 00 00 00 00 00 15 00 00 00 00 00 00 00 __ 00 00 00 00 00 00 00  0 00
00 00 00 00 00 00  6 00 00 00 00 00 00 00  A 00 00 00 00 00 00 00  J 00 00 00
00 00 00 00  [ 00 00 00 00 00 00 00  q 00 00 00 00 00 00 00 8B 00 00 00 00 00
00 00 A5 00 00 00 00 00 00 00 AE 00 00 00 00 00 00 00 D4 04 00 00 00 00 00 00
0A 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00 D4 CC 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 09 00 00 00 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  t  d 00 00 00 00 00 00
01 00 00 00 00 00 00 00 D4 CC 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 06 00 00 00 00 00 00 00  i 00 00 00
00 00 00 00 09 00 00 00 00 00 00 00 D4 05 00 00 00 00 00 00 0C 00 00 00 00 00
00 00 01 00 00 00 00 00 00 00  t \( 00 00 00 00 00 00 02 00 00 00 00 00 00 00
03 00 00 00 00 00 00 00  s 00 00 00 00 00 00 00 06 00 00 00 00 00 00 00  t  8
00 00 00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00  s 00 00 00
00 00 00 00 07 00 00 00 00 00 00 00  t 04 00 00 00 00 00 00 01 00 00 00 00 00
00 00  i 00 00 00 00 00 00 00 09 00 00 00 00 00 00 00 D4 05 00 00 00 00 00 00
0D 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00  t  d 00 00 00 00 00 00 01 00
00 00 00 00 00 00  i 00 00 00 00 00 00 00 0A 00 00 00 00 00 00 00 D4 05 00 00
00 00 00 00 0E 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00  t \\ 00 00 00 00
00 00 02 00 00 00 00 00 00 00 05 00 00 00 00 00 00 00  t  d 00 00 00 00 00 00
01 00 00 00 00 00 00 00  i 00 00 00 00 00 00 00 09 00 00 00 00 00 00 00  I 00
00 00 00 00 00 00 03 00 00 00 00 00 00 00 D4 05 00 00 00 00 00 00 0F 00 00 00
00 00 00 00 01 00 00 00 00 00 00 00  t \\ 00 00 00 00 00 00 02 00 00 00 00 00
00 00 03 00 00 00 00 00 00 00  s 00 00 00 00 00 00 00 08 00 00 00 00 00 00 00
 i 00 00 00 00 00 00 00 0A 00 00 00 00 00 00 00 D4 05 00 00 00 00 00 00 10 00
00 00 00 00 00 00 01 00 00 00 00 00 00 00 D4 F4 01 00 00 00 00 00 02 00 00 00
00 00 00 00 0A 00 00 00 00 00 00 00  t 08 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 03 00 00 00 00 00 00 00
 s 00 00 00 00 00 00 00 0B 00 00 00 00 00 00 00  s 00 00 00 00 00 00 00 0C 00
00 00 00 00 00 00  S 00 00 00 00 00 00 00 02 00 00 00 00 00 00 00  .  0 00 00
00 00 00 00 D4 05 00 00 00 00 00 00 11 00 00 00 00 00 00 00 01 00 00 00 00 00
00 00 D4 F4 01 00 00 00 00 00 02 00 00 00 00 00 00 00 0F 00 00 00 00 00 00 00
 t 08 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 03 00 00 00 00 00 00 00  s 00 00 00 00 00 00 00 0D 00 00 00
00 00 00 00  t  8 00 00 00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00
00 00  s 00 00 00 00 00 00 00 0E 00 00 00 00 00 00 00  s 00 00 00 00 00 00 00
0F 00 00 00 00 00 00 00  S 00 00 00 00 00 00 00 02 00 00 00 00 00 00 00  .  0
00 00 00 00 00 00 D4 05 00 00 00 00 00 00 10 00 00 00 00 00 00 00 01 00 00 00
00 00 00 00  t 94 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 0B 00 00 00 00 00 00 00 11 00 00 00 00 00 00 00
D4  x 00 00 00 00 00 00 02 00 00 00 00 00 00 00 05 00 00 00 00 00 00 00 D4 E8
01 00 00 00 00 00 01 00 00 00 00 00 00 00  s 00 00 00 00 00 00 00 10 00 00 00
00 00 00 00  i 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00 D4  T 02 00 00 00
00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00  s 00 00 00 00 00 00 00
10 00 00 00 00 00 00 00  i 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00  s 00
00 00 00 00 00 00 10 00 00 00 00 00 00 00 D4 05 00 00 00 00 00 00 11 00 00 00
00 00 00 00 01 00 00 00 00 00 00 00  t 94 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 0B 00 00 00 00 00 00 00
11 00 00 00 00 00 00 00 D4  x 00 00 00 00 00 00 02 00 00 00 00 00 00 00 05 00
00 00 00 00 00 00 D4 E8 01 00 00 00 00 00 01 00 00 00 00 00 00 00  s 00 00 00
00 00 00 00 11 00 00 00 00 00 00 00  i 00 00 00 00 00 00 00 03 00 00 00 00 00
00 00 D4  T 02 00 00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00
 s 00 00 00 00 00 00 00 11 00 00 00 00 00 00 00  i 00 00 00 00 00 00 00 03 00
00 00 00 00 00 00  s 00 00 00 00 00 00 00 11 00 00 00 00 00 00 00 D4 05 00 00
00 00 00 00 12 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00  t D0 00 00 00 00
00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00  s 00 00 00 00 00 00 00
10 00 00 00 00 00 00 00  s 00 00 00 00 00 00 00 11 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  t B8 00 00
00 00 00 00 02 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00  s 00 00 00 00 00
00 00 04 00 00 00 00 00 00 00  s 00 00 00 00 00 00 00 12 00 00 00 00 00 00 00
D4 00 02 00 00 00 00 00 02 00 00 00 00 00 00 00 0A 00 00 00 00 00 00 00  t 98
00 00 00 00 00 00 01 00 00 00 00 00 00 00  t D0 00 00 00 00 00 00 02 00 00 00
00 00 00 00 03 00 00 00 00 00 00 00  s 00 00 00 00 00 00 00 05 00 00 00 00 00
00 00  s 00 00 00 00 00 00 00 04 00 00 00 00 00 00 00  i 00 00 00 00 00 00 00
01 00 00 00 00 00 00 00  T 00 00 00 00 00 00 00 10 00 00 00 00 00 00 00 10 00
00 00 00 00 00 00 15 00 00 00 00 00 00 00 19 00 00 00 00 00 00 00 1D 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  1 00 00 00 00 00 00 00  6 00 00 00 00 00 00 00  ; 00 00 00 00 00 00 00
 A 00 00 00 00 00 00 00  G 00 00 00 00 00 00 00  K 00 00 00 00 00 00 00  S 00
00 00 00 00 00 00  Z 00 00 00 00 00 00 00  d 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 D4 04 00 00 00 00 00 00
01 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 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  x 00 00 00 00 00 00 00 D4 05 00 00 00 00
00 00 03 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 04 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 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  [  5  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  [  1  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  [  0  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 06 00 00 00 00 00 00 00 1B  [  ?  2  5  l 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 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 0A 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 0B 00 00 00 00 00 00 00 01 00 00 00 00 00
```

```
 00 00  I 00 00 00 00 00 00 00 A0 86 01 00 00 00 00 00 D4 05 00 00 00 00 00 00
 0C 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 01 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00  P 00 00 00
 00 00 00 00 0B 00 00 00 00 00 00 00  T  8 00 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 03 00 00 00 00 00 00 00
  %  s 0A 00 00 00 00 00  s 00 00 00 00 00 00 00 0C 00 00 00 00 00 00 00  T  8
 00 00 00 00 00 00 02 00 00 00 00 00 00 00 05 00 00 00 00 00 00 00  S 00 00 00
 00 00 00 00 0B 00 00 00 00 00 00 00 \(  s  i  z  e  =  %  l  d \) 0A 00 00 00
 00 00 D4 E8 01 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  S 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 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)...
--------------------------------------------------------------------------------
 00  J E8 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 D0 \)
  @ 00 00 00 00 00 01 00 00 00 00 00 00 00 18  J E8 00 00 00 00 00 A0 \)  @ 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)...
--------------------------------------------------------------------------------
 D0  T E8 00 00 00 00 00 0D 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00  X  J
 E8 00 00 00 00 00  p  J E8 00 00 00 00 00 13 00 00 00 00 00 00 00 00 00 00 00
 00 00 00 00 D0 \)  @ 00 00 00 00 00 0A 00 00 00 00 00 00 00 D0  J E8 00 00 00
 00 00 08  K E8 00 00 00 00 00 80  K E8 00 00 00 00 00 D0  K E8 00 00 00 00 00
  8  L E8 00 00 00 00 00 __  M E8 00 00 00 00 00  X  M E8 00 00 00 00 00 90  M
 E8 00 00 00 00 00 C8  M E8 00 00 00 00 00  `  T E8 00 00 00 00 00 B0  |  A 00
 00 00 00 00 01 00 00 00 00 00 00 00 E8  J E8 00 00 00 00 00  0 94  A 00 00 00
 00 00 F8  J E8 00 00 00 00 00 B0  w  A 00 00 00 00 00 00 00 00 00 00 00 00 00
 B0  |  A 00 00 00 00 00 02 00 00 00 00 00 00 00 __  K E8 00 00 00 00 00 E0 90
  A 00 00 00 00 00  8  K E8 00 00 00 00 00  H  K E8 00 00 00 00 00  ` \)  @ 00
 00 00 00 00 01 00 00 00 00 00 00 00  @ A4  A 00 00 00 00 00  `  K E8 00 00 00
 00 00  p  K E8 00 00 00 00 00 90  x  A 00 00 00 00 00 01 00 00 00 00 00 00 00
 C0 8D  @ 00 00 00 00 00  W 9D  o E5 00  ]  ,  @ B0  |  A 00 00 00 00 00 03 00
 00 00 00 00 00 00 98  K E8 00 00 00 00 00 90  2  @ 00 00 00 00 00 B0  K E8 00
 00 00 00 00 C0  K E8 00 00 00 00 00  ` \)  @ 00 00 00 00 00 0A 00 00 00 00 00
 00 00 90  x  A 00 00 00 00 00 01 00 00 00 00 00 00 00 D0  }  A 00 00 00 00 00
 04 00 00 00 00 00 00 00 E8  K E8 00 00 00 00 00 A0 16  B 00 00 00 00 00 F8  K
 E8 00 00 00 00 00 90 04  A 00 00 00 00 00 10  L E8 00 00 00 00 00 \(  L E8 00
 00 00 00 00  @  z  @ 00 00 00 00 00 03 00 00 00 00 00 00 00  0  .  0 00 00 00
 00 00 90  x  A 00 00 00 00 00 03 00 00 00 00 00 00 00 D0  }  A 00 00 00 00 00
 05 00 00 00 00 00 00 00  P  L E8 00 00 00 00 00  p  5  B 00 00 00 00 00  h  L
 E8 00 00 00 00 00 C8  L E8 00 00 00 00 00 F0  :  B 00 00 00 00 00  x  L E8 00
 00 00 00 00 A0 16  B 00 00 00 00 00 88  L E8 00 00 00 00 00 90 04  A 00 00 00
 00 00 A0  L E8 00 00 00 00 00 B8  L E8 00 00 00 00 00  @  z  @ 00 00 00 00 00
 07 00 00 00 00 00 00 00  1  0  0  0  5  .  0 00 90  x  A 00 00 00 00 00 03 00
 00 00 00 00 00 00 A0 16  B 00 00 00 00 00 D8  L E8 00 00 00 00 00 90 04  A 00
 00 00 00 00 F0  L E8 00 00 00 00 00 10  M E8 00 00 00 00 00  @  z  @ 00 00 00
 00 00 08 00 00 00 00 00 00 00  4  2  6  8  8  0  .  0 00 00 00 00 00 00 00 00
 90  x  A 00 00 00 00 00 03 00 00 00 00 00 00 00 D0  }  A 00 00 00 00 00 06 00
 00 00 00 00 00 00  8  M E8 00 00 00 00 00  ` 13  B 00 00 00 00 00  H  M E8 00
 00 00 00 00  ` \)  @ 00 00 00 00 00  q  c CF 00 00 00 00 00 D0  }  A 00 00 00
 00 00 07 00 00 00 00 00 00 00  p  M E8 00 00 00 00 00  ` 13  B 00 00 00 00 00
 80  M E8 00 00 00 00 00  ` \)  @ 00 00 00 00 00 A6  -  ~ __ 00 00 00 00 D0  }
  A 00 00 00 00 00 08 00 00 00 00 00 00 00 A8  M E8 00 00 00 00 00  ` 13  B 00
 00 00 00 00 B8  M E8 00 00 00 00 00  ` \)  @ 00 00 00 00 00 C0  : F6 FF FF FF
 FF FF __  l  A 00 00 00 00 00 F8  M E8 00 00 00 00 00 08  N E8 00 00 00 00 00
 18  N E8 00 00 00 00 00 \(  N E8 00 00 00 00 00  8  N E8 00 00 00 00 00 90  x
  A 00 00 00 00 00 09 00 00 00 00 00 00 00  ` \)  @ 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 90  x  A 00 00 00
 00 00 02 00 00 00 00 00 00 00 D0 \)  @ 00 00 00 00 00 0C 00 00 00 00 00 00 00
 A8  N E8 00 00 00 00 00 F8  N E8 00 00 00 00 00  X  O E8 00 00 00 00 00 E0  O
 E8 00 00 00 00 00 18  P E8 00 00 00 00 00  x  P E8 00 00 00 00 00 C8  P E8 00
 00 00 00 00  X  Q E8 00 00 00 00 00 10  R E8 00 00 00 00 00 E8  R E8 00 00 00
 00 00 C0  S E8 00 00 00 00 00 10  T E8 00 00 00 00 00 B0  |  A 00 00 00 00 00
 0A 00 00 00 00 00 00 00 C0  N E8 00 00 00 00 00  0  3  @ 00 00 00 00 00 D8  N
 E8 00 00 00 00 00 E8  N E8 00 00 00 00 00  ` \)  @ 00 00 00 00 00 03 00 00 00
 00 00 00 00 90  x  A 00 00 00 00 00 09 00 00 00 00 00 00 00 D0  }  A 00 00 00
 00 00 0B 00 00 00 00 00 00 00 10  O E8 00 00 00 00 00  `  '  B 00 00 00 00 00
 __  O E8 00 00 00 00 00  0  3  @ 00 00 00 00 00  8  O E8 00 00 00 00 00  H  O
 E8 00 00 00 00 00  ` \)  @ 00 00 00 00 00 06 00 00 00 00 00 00 00 90  x  A 00
 00 00 00 00 09 00 00 00 00 00 00 00 D0  }  A 00 00 00 00 00 0C 00 00 00 00 00
 00 00  p  O E8 00 00 00 00 00  P 1E  B 00 00 00 00 00 88  O E8 00 00 00 00 00
 98  O E8 00 00 00 00 00 80  z  A 00 00 00 00 00 06 00 00 00 00 00 00 00 B0 __
  B 00 00 00 00 00 B0  O E8 00 00 00 00 00 C0  O E8 00 00 00 00 00 80  z  A 00
 00 00 00 00 07 00 00 00 00 00 00 00  ` 13  B 00 00 00 00 00 D0  O E8 00 00 00
 00 00 90  x  A 00 00 00 00 00 09 00 00 00 00 00 00 00 D0  }  A 00 00 00 00 00
 0D 00 00 00 00 00 00 00 F8  O E8 00 00 00 00 00  `  '  B 00 00 00 00 00 08  P
 E8 00 00 00 00 00 90  x  A 00 00 00 00 00 0A 00 00 00 00 00 00 00 D0  }  A 00
 00 00 00 00 0E 00 00 00 00 00 00 00  0  P E8 00 00 00 00 00  `  &  B 00 00 00
 00 00  H  P E8 00 00 00 00 00  h  P E8 00 00 00 00 00  `  '  B 00 00 00 00 00
  X  P E8 00 00 00 00 00 90  x  A 00 00 00 00 00 09 00 00 00 00 00 00 00  ` \)
  @ 00 00 00 00 00 03 00 00 00 00 00 00 00 D0  }  A 00 00 00 00 00 0F 00 00 00
 00 00 00 00 90  P E8 00 00 00 00 00  `  &  B 00 00 00 00 00 A8  P E8 00 00 00
 00 00 B8  P E8 00 00 00 00 00 80  z  A 00 00 00 00 00 08 00 00 00 00 00 00 00
 90  x  A 00 00 00 00 00 0A 00 00 00 00 00 00 00 D0  }  A 00 00 00 00 00 10 00
 00 00 00 00 00 00 E0  P E8 00 00 00 00 00 00 93  @ 00 00 00 00 00 F8  P E8 00
 00 00 00 00  @  Q E8 00 00 00 00 00 80 14  B 00 00 00 00 00 08  Q E8 00 00 00
 00 00 B0 __  B 00 00 00 00 00 __  Q E8 00 00 00 00 00  0  Q E8 00 00 00 00 00
 80  z  A 00 00 00 00 00 0B 00 00 00 00 00 00 00 80  z  A 00 00 00 00 00 0C 00
 00 00 00 00 00 00  @  z  @ 00 00 00 00 00 02 00 00 00 00 00 00 00  .  0 00 00
 00 00 00 00 D0  }  A 00 00 00 00 00 11 00 00 00 00 00 00 00  p  Q E8 00 00 00
 00 00 00 93  @ 00 00 00 00 00 88  Q E8 00 00 00 00 00 F8  Q E8 00 00 00 00 00
 80 14  B 00 00 00 00 00 98  Q E8 00 00 00 00 00 B0 __  B 00 00 00 00 00 B0  Q
 E8 00 00 00 00 00 C0  Q E8 00 00 00 00 00 80  z  A 00 00 00 00 00 0D 00 00 00
 00 00 00 00 B0 __  B 00 00 00 00 00 D8  Q E8 00 00 00 00 00 E8  Q E8 00 00 00
 00 00 80  z  A 00 00 00 00 00 0E 00 00 00 00 00 00 00 80  z  A 00 00 00 00 00
 0F 00 00 00 00 00 00 00  @  z  @ 00 00 00 00 00 02 00 00 00 00 00 00 00  .  0
 00 00 00 00 00 00 D0  }  A 00 00 00 00 00 10 00 00 00 00 00 00 00 \(  R E8 00
 00 00 00 00 A0 16  B 00 00 00 00 00  8  R E8 00 00 00 00 00 __  *  @ 00 00 00
 00 00  X  R E8 00 00 00 00 00 A0  R E8 00 00 00 00 00 D8  R E8 00 00 00 00 00
  @  -  @ 00 00 00 00 00  p  R E8 00 00 00 00 00 90  R E8 00 00 00 00 00 E0  s
  @ 00 00 00 00 00 80  R E8 00 00 00 00 00 80  z  A 00 00 00 00 00 10 00 00 00
 00 00 00 00 90  x  A 00 00 00 00 00 03 00 00 00 00 00 00 00 90 04  A 00 00 00
 00 00 B8  R E8 00 00 00 00 00 C8  R E8 00 00 00 00 00 80  z  A 00 00 00 00 00
 10 00 00 00 00 00 00 00 90  x  A 00 00 00 00 00 03 00 00 00 00 00 00 00 80  z
  A 00 00 00 00 00 10 00 00 00 00 00 00 00 D0  }  A 00 00 00 00 00 11 00 00 00
 00 00 00 00 00  S E8 00 00 00 00 00 A0 16  B 00 00 00 00 00 10  S E8 00 00 00
 00 00 __  *  @ 00 00 00 00 00  0  S E8 00 00 00 00 00  x  S E8 00 00 00 00 00
 B0  S E8 00 00 00 00 00  @  -  @ 00 00 00 00 00  H  S E8 00 00 00 00 00  h  S
 E8 00 00 00 00 00 E0  s  @ 00 00 00 00 00  X  S E8 00 00 00 00 00 80  z  A 00
 00 00 00 00 11 00 00 00 00 00 00 00 90  x  A 00 00 00 00 00 03 00 00 00 00 00
 00 00 90 04  A 00 00 00 00 00 90  S E8 00 00 00 00 00 A0  S E8 00 00 00 00 00
 80  z  A 00 00 00 00 00 11 00 00 00 00 00 00 00 90  x  A 00 00 00 00 00 03 00
 00 00 00 00 00 00 80  z  A 00 00 00 00 00 11 00 00 00 00 00 00 00 D0  }  A 00
 00 00 00 00 12 00 00 00 00 00 00 00 D8  S E8 00 00 00 00 00 C0  6  B 00 00 00
```

```
00 00 F0  S E8 00 00 00 00 00 00  T E8 00 00 00 00 00 80  z  A 00 00 00 00 00
10 00 00 00 00 00 00 00 80  z  A 00 00 00 00 00 11 00 00 00 00 00 00 00 D0  }
 A 00 00 00 00 00 04 00 00 00 00 00 00 00 \(  T E8 00 00 00 00 00 D0  2  B 00
00 00 00 00  @  T E8 00 00 00 00 00  P  T E8 00 00 00 00 00 80  z  A 00 00 00
00 00 04 00 00 00 00 00 00 00 80  z  A 00 00 00 00 00 12 00 00 00 00 00 00 00
B0 98  @ 00 00 00 00 00  x  T E8 00 00 00 00 00 C0  T E8 00 00 00 00 00 90 18
 B 00 00 00 00 00 88  T E8 00 00 00 00 00 C0  6  B 00 00 00 00 00 A0  T E8 00
00 00 00 00 B0  T E8 00 00 00 00 00 80  z  A 00 00 00 00 00 05 00 00 00 00 00
00 00 80  z  A 00 00 00 00 00 04 00 00 00 00 00 00 00 90  x  A 00 00 00 00 00
01 00 00 00 00 00 00 00 D0 \)  @ 00 00 00 00 00 10 00 00 00 00 00 00 00  `  U
E8 00 00 00 00 00 90  U E8 00 00 00 00 00 B8  U E8 00 00 00 00 00 E0  U E8 00
00 00 00 00 10  V E8 00 00 00 00 00  @  V E8 00 00 00 00 00  p  V E8 00 00 00
00 00 A0  V E8 00 00 00 00 00 D0  V E8 00 00 00 00 00 00  W E8 00 00 00 00 00
 8  W E8 00 00 00 00 00  p  W E8 00 00 00 00 00 98  W E8 00 00 00 00 00 E0  W
E8 00 00 00 00 00 __  X E8 00 00 00 00 00  x  X E8 00 00 00 00 00 D0  }  A 00
00 00 00 00 00 00 00 00 00 00 00 00  x  U E8 00 00 00 00 00  @  z  @ 00 00 00
00 00 05 00 00 00 00 00 00 00  x  t  e  r  m 00 00 00 B0  |  A 00 00 00 00 00
01 00 00 00 00 00 00 00 A8  U E8 00 00 00 00 00  ` \)  @ 00 00 00 00 00  + 00
00 00 00 00 00 00 B0  |  A 00 00 00 00 00 02 00 00 00 00 00 00 00 D0  U E8 00
00 00 00 00  ` \)  @ 00 00 00 00 00  x 00 00 00 00 00 00 00 D0  }  A 00 00 00
00 00 03 00 00 00 00 00 00 00 F8  U E8 00 00 00 00 00  @  z  @ 00 00 00 00 00
07 00 00 00 00 00 00 00 1B  [  H 1B  [  2  J 00 D0  }  A 00 00 00 00 00 04 00
00 00 00 00 00 00 \(  V E8 00 00 00 00 00  @  z  @ 00 00 00 00 00 04 00 00 00
00 00 00 00 1B  [  7  m 00 00 00 00 D0  }  A 00 00 00 00 00 05 00 00 00 00 00
00 00  X  V E8 00 00 00 00 00  @  z  @ 00 00 00 00 00 04 00 00 00 00 00 00 00
1B  [  5  m 00 00 00 00 D0  }  A 00 00 00 00 00 06 00 00 00 00 00 00 00 88  V
E8 00 00 00 00 00  @  z  @ 00 00 00 00 00 04 00 00 00 00 00 00 00 1B  [  1  m
00 00 00 00 D0  }  A 00 00 00 00 00 07 00 00 00 00 00 00 00 B8  V E8 00 00 00
00 00  @  z  @ 00 00 00 00 00 04 00 00 00 00 00 00 00 1B  [  0  m 00 00 00 00
D0  }  A 00 00 00 00 00 08 00 00 00 00 00 00 00 E8  V E8 00 00 00 00 00  @  z
 @ 00 00 00 00 00 06 00 00 00 00 00 00 00 1B  [  ?  2  5  l 00 00 D0  }  A 00
00 00 00 00 09 00 00 00 00 00 00 00 18  W E8 00 00 00 00 00  @  z  @ 00 00 00
00 00 0C 00 00 00 00 00 00 00 1B  [  ?  1  2  l 1B  [  ?  2  5  h 00 00 00 00
D0  }  A 00 00 00 00 00 0A 00 00 00 00 00 00 00  P  W E8 00 00 00 00 00  @  z
 @ 00 00 00 00 00 0A 00 00 00 00 00 00 00 1B  [  %  i  %  d  ;  %  d  H 00 00
00 00 00 00 B0  |  A 00 00 00 00 00 0B 00 00 00 00 00 00 00 88  W E8 00 00 00
00 00  ` \)  @ 00 00 00 00 00 A0 86 01 00 00 00 00 00 D0  }  A 00 00 00 00 00
0C 00 00 00 00 00 00 00 B0  W E8 00 00 00 00 00  0  i  A 00 00 00 00 00  X  J
E8 00 00 00 00 00 01 00 00 00 00 00 00 00 D0  W E8 00 00 00 00 00  @  ^  @ 00
00 00 00 00 0B 00 00 00 00 00 00 00  p E2  A 00 00 00 00 00 F8  W E8 00 00 00
00 00 10  X E8 00 00 00 00 00  @  z  @ 00 00 00 00 00 03 00 00 00 00 00 00 00
 %  s 0A 00 00 00 00 00 80  z  A 00 00 00 00 00 0C 00 00 00 00 00 00 00  p E2
 A 00 00 00 00 00  8  X E8 00 00 00 00 00  X  X E8 00 00 00 00 00  @  z  @ 00
00 00 00 00 0B 00 00 00 00 00 00 00 \(  s  i  z  e  =  %  l  d \) 0A 00 00 00
00 00 E0  s  @ 00 00 00 00 00  h  X E8 00 00 00 00 00 80  z  A 00 00 00 00 00
0C 00 00 00 00 00 00 00  @  z  @ 00 00 00 00 00 00 00 00 00 00 00 00 00 00 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: 0.009537sec.
   Used by  system: 0.000000sec.
   Total used time: 9.537000000000E-03sec.
Real absolute time: 9.549856185913E-03sec.
*** Resetting time counters (second event controlpoint)... ***
==============================================================================
3.14159265358979323846264338327950288419716939937510582097494459230781640628620
8998628034825342117067982148086513282306647093844609550582231725359408128481117
4502841027019385211055596446229489549303819644288109756659334461284756482337867
8316527120190914564856692346034861045432664821339360726024914127372458700660631
5588174881520920962829254091715364367892590360011330530548820466521384146951941
5116094330572703657595919530921861173819326117931051185480744623799627495673518
8575272489122793818301194912983367336244065664308602139494639522473719070217986
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4962374772681369428435006293881442998790530105621737545918267997321773502936892
8065210025396268807498092643458011655715886700443503976505323478287327368840863
5400027406767838219635222265392909398073673913640828987220177767471681181958561
3372158311905468293608323697611345028175783020293484598292500089568263027126329
5866292147653142233351793093387951357095346377183684092444422096319331295620305
5755173400679737406141621079236334238056468500920371671526425563718538895714164
1977238742261059666739699717316816941543509528319355641770566862221521799115135
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8588143674070005997697036490192733288261353293631124036506986521606389872502672
3808740339674439783025829689425689674186433613497947524552629142652284241924308
3388103580053787023999542172113686550275341362211693140694669513186928102574795
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0605589595835581523201218460582056359269930347885113206862662758877144603599665
6108430725696500563064489187599466596772847171539573612108180841547273142661748
9331341746326623542220726001460127012069346395205644455432916629866607830890681
1879009081529506362678207561438881578135113469536630387841209234694286873083932
0432333872775496805210302821544324723388845215343727250128589747691460808314404
1258681815400491877722878698018534545370065266556491709154295227567092222174741
1206272065662298980603289167206874365494824610869736722554740481288924247185432
3605753411672850757552057131156697954584887398742228135887985840783135060548290
5514827852948911219053831956242287194847594078593980479010941940706717644390327
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3569529300652195528261526991271637277388418993287130563464688227398288763198645
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5775684368111018531749816701642664788409026268282444825802753209454991510451851
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8348725874239194108904441159599327600445065562064611646556654875942473692523369
5599303035509581762617623184956190649483967300203776387436934399982943020914707
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7880327014186769526211809750064051497558896502930048676052080104915378854139094
2453169171998762894127722112946456829486028149318156024967788794981377721622935
9437811004448060797672429276249510784153446429150842764520002042769470698041775
8322090970202916573472515829046309103590378429775726517208772447409522671663060
0546971638794317119687348468873818665675127929857501636341131462753049901913564
6823804329970695770150789337728658035712790913767420805655493624
(size=100000)

==============================================================================
Time spent to run the task:
   Used by process: 164.049304sec.
   Used by  system: 2.480923sec.
   Total used time: 1.665302270000E+02sec.
Real absolute time: 1.665303559303E+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    =       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           =        64 # Number of the CPU PROCs
N_OQPROC            =        64 # Number of the OQ PROCs
N_IORBPPROC         =        64 # 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>
```

GMP_pi.BMDFMldr

```
Current termcap settings:
  TERM_TYPE=`xterm'; LINES_TERM=`43'; COLUMNS_TERM=`120';
  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 56bytes.
----------------------------------------------------------------------------------
 E0  D  r  S 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  0
  @ 00 00 00 00 00 01 00 00 00 00 00 00 00 F8  D  r  S 00 00 00 00 D0  /  @ 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 `GMP_pi.flp' file is already precompiled...
Reading the `GMP_pi.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.
Squeezing the nested source PROGN statements...
  Redundant nested source PROGN statements removed: 1.
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=9594, Listener PID=9594, SocketN# is 0.
--------------------------------------------------------------------------------
(PROGN
  (SETQ@S MAIN:TERM_TYPE@S "xterm")
  (SETQ@I MAIN:LINES_TERM@I 43)
  (SETQ@I MAIN:COLUMNS_TERM@I 120)
  (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:CHUDNOVSKY
    (PROGN
      (SETQ@I MAIN:CHUDNOVSKY:DIGITS@I (IABS MAIN:CHUDNOVSKY:$1))
      (SETQ@I
        MAIN:CHUDNOVSKY:ITERATIONS@I
        (+ 1 (/. MAIN:CHUDNOVSKY:DIGITS@I 14.1816474627254776555))
      )
      (SETQ@I
        MAIN:CHUDNOVSKY:MPF_PRECISION@I
        (+@J 10 MAIN:CHUDNOVSKY:DIGITS@I)
      )
      (SETQ@S
        MAIN:CHUDNOVSKY:MPF_SUM@S
        (MPF@J (PADL@J "0.0" MAIN:CHUDNOVSKY:MPF_PRECISION@I))
      )
      (SETQ@S
        MAIN:CHUDNOVSKY:TMP__000000001@S
        (MPF@J (PADL@J "10005.0" MAIN:CHUDNOVSKY:MPF_PRECISION@I))
      )
      (SETQ@S
        MAIN:CHUDNOVSKY:TMP__000000002@S
        (MPF_SQR@J MAIN:CHUDNOVSKY:TMP__000000001@S)
      )
      (SETQ@S
        MAIN:CHUDNOVSKY:TMP__000000003@S
        (MPF@J (PADL@J "426880.0" MAIN:CHUDNOVSKY:MPF_PRECISION@I))
      )
      (SETQ@S
        MAIN:CHUDNOVSKY:MPF_CON@S
        (MPF_MUL@J
          MAIN:CHUDNOVSKY:TMP__000000002@S MAIN:CHUDNOVSKY:TMP__000000003@S
        )
      )
      (SETQ@S MAIN:CHUDNOVSKY:MPZ_13591409@S (MPZ 13591409))
      (SETQ@S MAIN:CHUDNOVSKY:MPZ_545140134@S (MPZ 545140134))
      (SETQ@S MAIN:CHUDNOVSKY:MPZ_-640320@S (MPZ -640320))
      (FOR@J
        MAIN:CHUDNOVSKY:K@I 0 1 MAIN:CHUDNOVSKY:ITERATIONS@I
        (PROGN
          (SETQ@I MAIN:CHUDNOVSKY:K3@I (*@J 3 MAIN:CHUDNOVSKY:K@I))
          (SETQ@S
            MAIN:CHUDNOVSKY:MPZ_A@S
            (MPZ_FAC_I@J (*@J 6 MAIN:CHUDNOVSKY:K@I))
          )
          (SETQ@S MAIN:CHUDNOVSKY:TMP__000000001@S (MPZ MAIN:CHUDNOVSKY:K@I))
          (SETQ@S
            MAIN:CHUDNOVSKY:TMP__000000002@S
            (MPZ_MUL@J
              MAIN:CHUDNOVSKY:MPZ_545140134@S MAIN:CHUDNOVSKY:TMP__000000001@S
            )
          )
          (SETQ@S
            MAIN:CHUDNOVSKY:MPZ_B@S
            (MPZ_ADD@J
              MAIN:CHUDNOVSKY:MPZ_13591409@S MAIN:CHUDNOVSKY:TMP__000000002@S
            )
          )
          (SETQ@S MAIN:CHUDNOVSKY:MPZ_C@S (MPZ_FAC_I@J MAIN:CHUDNOVSKY:K3@I))
          (SETQ@S
            MAIN:CHUDNOVSKY:TMP__000000001@S
            (MPZ_FAC_I@J MAIN:CHUDNOVSKY:K@I)
          )
          (SETQ@S
            MAIN:CHUDNOVSKY:MPZ_D@S
            (MPZ_POW_I@J MAIN:CHUDNOVSKY:TMP__000000001@S 3)
          )
          (SETQ@S
            MAIN:CHUDNOVSKY:MPZ_E@S
            (MPZ_POW_I@J MAIN:CHUDNOVSKY:MPZ_-640320@S MAIN:CHUDNOVSKY:K3@I)
          )
          (SETQ@S
            MAIN:CHUDNOVSKY:TMP__000000001@S
            (MPZ_MUL@J MAIN:CHUDNOVSKY:MPZ_A@S MAIN:CHUDNOVSKY:MPZ_B@S)
          )
          (SETQ@S
            MAIN:CHUDNOVSKY:TMP__000000002@S
            (MPZ_TOSTR@J MAIN:CHUDNOVSKY:TMP__000000001@S)
          )
          (SETQ@S
            MAIN:CHUDNOVSKY:MPF_A@S
            (CAT@J MAIN:CHUDNOVSKY:TMP__000000002@S ".0")
          )
          (SETQ@S
            MAIN:CHUDNOVSKY:TMP__000000001@S
            (MPZ_MUL@J MAIN:CHUDNOVSKY:MPZ_D@S MAIN:CHUDNOVSKY:MPZ_E@S)
          )
          (SETQ@S
            MAIN:CHUDNOVSKY:TMP__000000002@S
            (MPZ_MUL@J
              MAIN:CHUDNOVSKY:MPZ_C@S MAIN:CHUDNOVSKY:TMP__000000001@S
            )
          )
          (SETQ@S
            MAIN:CHUDNOVSKY:TMP__000000003@S
            (MPZ_TOSTR@J MAIN:CHUDNOVSKY:TMP__000000002@S)
          )
          (SETQ@S
            MAIN:CHUDNOVSKY:MPF_B@S
            (CAT@J MAIN:CHUDNOVSKY:TMP__000000003@S ".0")
          )
          (SETQ@S
            MAIN:CHUDNOVSKY:MPF_A@S
            (MPF@J
              (IF@J
                (<@I
                  (LEN@J MAIN:CHUDNOVSKY:MPF_A@S)
                  MAIN:CHUDNOVSKY:MPF_PRECISION@I
                )
                (PADL@J
                  MAIN:CHUDNOVSKY:MPF_A@S MAIN:CHUDNOVSKY:MPF_PRECISION@I
                )
                MAIN:CHUDNOVSKY:MPF_A@S
              )
            )
          )
          (SETQ@S
            MAIN:CHUDNOVSKY:MPF_B@S
            (MPF@J
              (IF@J
                (<@I
                  (LEN@J MAIN:CHUDNOVSKY:MPF_B@S)
                  MAIN:CHUDNOVSKY:MPF_PRECISION@I
                )
                (PADL@J
                  MAIN:CHUDNOVSKY:MPF_B@S MAIN:CHUDNOVSKY:MPF_PRECISION@I
                )
                MAIN:CHUDNOVSKY:MPF_B@S
              )
            )
          )
          (SETQ@S
            MAIN:CHUDNOVSKY:MPF_F@S
            (MPF_DIV@J MAIN:CHUDNOVSKY:MPF_A@S MAIN:CHUDNOVSKY:MPF_B@S)
          )
          (SETQ@S
            MAIN:CHUDNOVSKY:MPF_SUM@S
            (MPF_ADD@J MAIN:CHUDNOVSKY:MPF_SUM@S MAIN:CHUDNOVSKY:MPF_F@S)
          )
        )
      )
      (SETQ@S
        MAIN:CHUDNOVSKY:TMP__000000001@S
        (MPF_DIV@J MAIN:CHUDNOVSKY:MPF_CON@S MAIN:CHUDNOVSKY:MPF_SUM@S)
      )
      (SETQ@S
        MAIN:CHUDNOVSKY:TMP__000000002@S
        (MPF_TOSTR@J MAIN:CHUDNOVSKY:TMP__000000001@S)
      )
      (SETQ@S
        MAIN:CHUDNOVSKY:TMP__000000000@S
        (LEFT@J MAIN:CHUDNOVSKY:TMP__000000002@S MAIN:CHUDNOVSKY:DIGITS@I)
      )
    )
  )
  (SETQ@I MAIN:DIGITS@I 100000)
  (SETQ@S MAIN:PI@S (MAIN:CHUDNOVSKY MAIN:DIGITS@I))
  (SETQ@S MAIN:TMP__000000001@S (OUTF "%s\n" MAIN:PI@S))
  (SETQ@S MAIN:TMP__000000001@S (OUTF "(size=%ld)\n" (LEN@J MAIN:PI@S)))
  (SETQ@S MAIN:TMP__000000001@S (OUTF (PRN_STRING_FMT) (CAT@J "" "")))
  (SETQ@S MAIN:TMP__000000000@S "")
)
--------------------------------------------------------------------------------
(PROGN (SETQ@S MAIN:TERM_TYPE@S "xterm") (SETQ@I MAIN:LINES_TERM@I 43) (SETQ@I
MAIN:COLUMNS_TERM@I 120) (SETQ@S MAIN:CLRSCR_TERM@S "\e[H\e[2J") (SETQ@S MAIN:R
EVERSE_TERM@S "\e[7m") (SETQ@S MAIN:BLINK_TERM@S "\e[5m") (SETQ@S MAIN:BOLD_TER
M@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:GOTOC
URSOR_TERM@S "\e[%i%d;%dH") (DEFUN MAIN:CHUDNOVSKY (PROGN (SETQ@I MAIN:CHUDNOVS
KY:DIGITS@I (IABS MAIN:CHUDNOVSKY:$1)) (SETQ@I MAIN:CHUDNOVSKY:ITERATIONS@I (+
1 (/. MAIN:CHUDNOVSKY:DIGITS@I 14.1816474627254776555))) (SETQ@I MAIN:CHUDNOVSK
Y:MPF_PRECISION@I (+@J 10 MAIN:CHUDNOVSKY:DIGITS@I)) (SETQ@S MAIN:CHUDNOVSKY:MP
F_SUM@S (MPF@J (PADL@J "0.0" MAIN:CHUDNOVSKY:MPF_PRECISION@I))) (SETQ@S MAIN:CH
UDNOVSKY:TMP__000000001@S (MPF@J (PADL@J "10005.0" MAIN:CHUDNOVSKY:MPF_PRECISIO
N@I))) (SETQ@S MAIN:CHUDNOVSKY:TMP__000000002@S (MPF_SQR@J MAIN:CHUDNOVSKY:TMP_
_000000001@S)) (SETQ@S MAIN:CHUDNOVSKY:TMP__000000003@S (MPF@J (PADL@J "426880.
0" MAIN:CHUDNOVSKY:MPF_PRECISION@I))) (SETQ@S MAIN:CHUDNOVSKY:MPF_CON@S (MPF_MU
L@J MAIN:CHUDNOVSKY:TMP__000000002@S MAIN:CHUDNOVSKY:TMP__000000003@S)) (SETQ@S
 MAIN:CHUDNOVSKY:MPZ_13591409@S (MPZ 13591409)) (SETQ@S MAIN:CHUDNOVSKY:MPZ_545
140134@S (MPZ 545140134)) (SETQ@S MAIN:CHUDNOVSKY:MPZ_-640320@S (MPZ -640320))
(FOR@J MAIN:CHUDNOVSKY:K@I 0 1 MAIN:CHUDNOVSKY:ITERATIONS@I (PROGN (SETQ@I MAIN
:CHUDNOVSKY:K3@I (*@J 3 MAIN:CHUDNOVSKY:K@I)) (SETQ@S MAIN:CHUDNOVSKY:MPZ_A@S (
MPZ_FAC_I@J (*@J 6 MAIN:CHUDNOVSKY:K@I))) (SETQ@S MAIN:CHUDNOVSKY:TMP__00000000
1@S (MPZ MAIN:CHUDNOVSKY:K@I)) (SETQ@S MAIN:CHUDNOVSKY:TMP__000000002@S (MPZ_MU
L@J MAIN:CHUDNOVSKY:MPZ_545140134@S MAIN:CHUDNOVSKY:TMP__000000001@S)) (SETQ@S
MAIN:CHUDNOVSKY:MPZ_B@S (MPZ_ADD@J MAIN:CHUDNOVSKY:MPZ_13591409@S MAIN:CHUDNOVS
KY:TMP__000000002@S)) (SETQ@S MAIN:CHUDNOVSKY:MPZ_C@S (MPZ_FAC_I@J MAIN:CHUDNOV
SKY:K3@I)) (SETQ@S MAIN:CHUDNOVSKY:TMP__000000001@S (MPZ_FAC_I@J MAIN:CHUDNOVSK
Y:K@I)) (SETQ@S MAIN:CHUDNOVSKY:MPZ_D@S (MPZ_POW_I@J MAIN:CHUDNOVSKY:TMP__00000
0001@S 3)) (SETQ@S MAIN:CHUDNOVSKY:MPZ_E@S (MPZ_POW_I@J MAIN:CHUDNOVSKY:MPZ_-64
0320@S MAIN:CHUDNOVSKY:K3@I)) (SETQ@S MAIN:CHUDNOVSKY:TMP__000000001@S (MPZ_MUL
@J MAIN:CHUDNOVSKY:MPZ_A@S MAIN:CHUDNOVSKY:MPZ_B@S)) (SETQ@S MAIN:CHUDNOVSKY:TM
```

```
P__000000002@S (MPZ_TOSTR@J MAIN:CHUDNOVSKY:TMP__000000001@S)) (SETQ@S MAIN:CHU
DNOVSKY:MPF_A@S (CAT@J MAIN:CHUDNOVSKY:TMP__000000002@S ".0")) (SETQ@S MAIN:CHU
DNOVSKY:TMP__000000001@S (MPZ_MUL@J MAIN:CHUDNOVSKY:MPZ_D@S MAIN:CHUDNOVSKY:MPZ
_E@S)) (SETQ@S MAIN:CHUDNOVSKY:TMP__000000002@S (MPZ_MUL@J MAIN:CHUDNOVSKY:MPZ_
C@S MAIN:CHUDNOVSKY:TMP__000000001@S)) (SETQ@S MAIN:CHUDNOVSKY:TMP__000000003@S
 (MPZ_TOSTR@J MAIN:CHUDNOVSKY:TMP__000000002@S)) (SETQ@S MAIN:CHUDNOVSKY:MPF_B@
S (CAT@J MAIN:CHUDNOVSKY:TMP__000000003@S ".0")) (SETQ@S MAIN:CHUDNOVSKY:MPF_A@
S (MPF@J (IF@J (<@I (LEN@J MAIN:CHUDNOVSKY:MPF_A@S) MAIN:CHUDNOVSKY:MPF_PRECISI
ON@I) (PADL@J MAIN:CHUDNOVSKY:MPF_A@S MAIN:CHUDNOVSKY:MPF_PRECISION@I) MAIN:CHU
DNOVSKY:MPF_A@S))) (SETQ@S MAIN:CHUDNOVSKY:MPF_B@S (MPF@J (IF@J (<@I (LEN@J MAI
N:CHUDNOVSKY:MPF_B@S) MAIN:CHUDNOVSKY:MPF_PRECISION@I) (PADL@J MAIN:CHUDNOVSKY:
MPF_B@S MAIN:CHUDNOVSKY:MPF_PRECISION@I) MAIN:CHUDNOVSKY:MPF_B@S))) (SETQ@S MAI
N:CHUDNOVSKY:MPF_F@S (MPF_DIV@J MAIN:CHUDNOVSKY:MPF_A@S MAIN:CHUDNOVSKY:MPF_B@S
)) (SETQ@S MAIN:CHUDNOVSKY:MPF_SUM@S (MPF_ADD@J MAIN:CHUDNOVSKY:MPF_SUM@S MAIN:
CHUDNOVSKY:MPF_F@S)))) (SETQ@S MAIN:CHUDNOVSKY:TMP__000000001@S (MPF_DIV@J MAIN
:CHUDNOVSKY:MPF_CON@S MAIN:CHUDNOVSKY:MPF_SUM@S)) (SETQ@S MAIN:CHUDNOVSKY:TMP__
000000002@S (MPF_TOSTR@J MAIN:CHUDNOVSKY:TMP__000000001@S)) (SETQ@S MAIN:CHUDNO
VSKY:TMP__000000000@S (LEFT@J MAIN:CHUDNOVSKY:TMP__000000002@S MAIN:CHUDNOVSKY:
DIGITS@I)))) (SETQ@I MAIN:DIGITS@I 100000) (SETQ@S MAIN:PI@S (MAIN:CHUDNOVSKY M
AIN:DIGITS@I)) (SETQ@S MAIN:TMP__000000001@S (OUTF "%s\n" MAIN:PI@S)) (SETQ@S M
AIN:TMP__000000001@S (OUTF "(size=%ld)\n" (LEN@J MAIN:PI@S))) (SETQ@S MAIN:TMP_
_000000001@S (OUTF (PRN_STRING_FMT) (CAT@J "" ""))) (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*f
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 35 "MAIN:TERM_TYPE@S")
      (1 30 "MAIN:LINES_TERM@I")
      (2 26 "MAIN:COLUMNS_TERM@I")
      (3 25 "MAIN:CLRSCR_TERM@S")
      (4 33 "MAIN:REVERSE_TERM@S")
      (5 0 "MAIN:BLINK_TERM@S")
      (6 1 "MAIN:BOLD_TERM@S")
      (7 31 "MAIN:NORMAL_TERM@S")
      (8 29 "MAIN:HIDECURSOR_TERM@S")
      (9 34 "MAIN:SHOWCURSOR_TERM@S")
      (10 28 "MAIN:GOTOCURSOR_TERM@S")
    )
    (Fnc
      (N# 0)
      (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 0)
    )
    (Fnc
      (N# 1)
      (FLP (SETQ@I MAIN:LINES_TERM@I 43))
      (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" " + 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 1)
    )
    (Fnc
      (N# 2)
      (FLP (SETQ@I MAIN:COLUMNS_TERM@I 120))
      (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" " x 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 2)
    )
    (Fnc
      (N# 3)
      (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 3)
    )
    (Fnc
      (N# 4)
      (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 4)
    )
    (Fnc
      (N# 5)
      (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 5)
    )
    (Fnc
      (N# 6)
      (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 6)
    )
    (Fnc
      (N# 7)
      (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 7)
    )
    (Fnc
      (N# 8)
      (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 8)
    )
    (Fnc
      (N# 9)
      (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 9)
    )
    (Fnc
      (N# 10)
      (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 10)
    )
  )
)
(CTRL
  (N# 1)
  (OpGroup 2)
  (COP 14)
  (GOTO 16)
  (REM "Pass over UDF `MAIN:CHUDNOVSKY' body")
)
(CTRL
  (N# 2)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 2 "MAIN:CHUDNOVSKY:$1")
      (1 3 "MAIN:CHUDNOVSKY:DIGITS@I")
      (2 4 "MAIN:CHUDNOVSKY:ITERATIONS@I")
      (3 11 "MAIN:CHUDNOVSKY:MPF_PRECISION@I")
      (4 12 "MAIN:CHUDNOVSKY:MPF_SUM@S")
      (5 22 "MAIN:CHUDNOVSKY:TMP__000000001@S")
      (6 23 "MAIN:CHUDNOVSKY:TMP__000000002@S")
      (7 24 "MAIN:CHUDNOVSKY:TMP__000000003@S")
      (8 9 "MAIN:CHUDNOVSKY:MPF_CON@S")
      (9 14 "MAIN:CHUDNOVSKY:MPZ_13591409@S")
      (10 15 "MAIN:CHUDNOVSKY:MPZ_545140134@S")
      (11 13 "MAIN:CHUDNOVSKY:MPZ_-640320@S")
    )
    (Fnc
      (N# 0)
      (FLP (SETQ@I MAIN:CHUDNOVSKY:DIGITS@I (IABS MAIN:CHUDNOVSKY:$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 00 01 00 00 00 00 00" "01 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:CHUDNOVSKY:ITERATIONS@I
          (+ 1 (/. MAIN:CHUDNOVSKY:DIGITS@I 14.181647462725477655))
        )
      )
      (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"
        "01 00 00 00 00 00 00 00" " T  X 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"
        " F 00 00 00 00 00 00 00" " W 9D  o E5 00  ]  ,  @"
      )
      (Var_Ptrs 2 1)
    )
    (Fnc
      (N# 2)
      (FLP
        (SETQ@I
          MAIN:CHUDNOVSKY:MPF_PRECISION@I
          (+@J 10 MAIN:CHUDNOVSKY:DIGITS@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"
        "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"
        "0A 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 3 1)
    )
    (Fnc
      (N# 3)
      (FLP
        (SETQ@S
          MAIN:CHUDNOVSKY:MPF_SUM@S
          (MPF@J (PADL@J "0.0" MAIN:CHUDNOVSKY:MPF_PRECISION@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 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " t 94 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4  T 02 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"
        "03 00 00 00 00 00 00 00" " 0  .  0 00 00 00 00 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 4 3)
    )
    (Fnc
      (N# 4)
      (FLP
        (SETQ@S
          MAIN:CHUDNOVSKY:TMP__000000001@S
          (MPF@J (PADL@J "10005.0" MAIN:CHUDNOVSKY:MPF_PRECISION@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 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " t 94 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4  T 02 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"
        "07 00 00 00 00 00 00 00" " 1  0  0  0  5  .  0 00"
        " i 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 5 3)
    )
    (Fnc
      (N# 5)
      (FLP
        (SETQ@S
          MAIN:CHUDNOVSKY:TMP__000000002@S
          (MPF_SQR@J MAIN:CHUDNOVSKY:TMP__000000001@S)
        )
      )
      (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 F0 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " s 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 6 5)
    )
    (Fnc
      (N# 6)
      (FLP
        (SETQ@S
          MAIN:CHUDNOVSKY:TMP__000000003@S
          (MPF@J (PADL@J "426880.0" MAIN:CHUDNOVSKY:MPF_PRECISION@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 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " t 94 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4  T 02 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "05 00 00 00 00 00 00 00" " S 00 00 00 00 00 00 00"
        "08 00 00 00 00 00 00 00" " 4  2  6  8  8  0  .  0"
        "00 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 7 3)
    )
    (Fnc
      (N# 7)
      (FLP
        (SETQ@S
          MAIN:CHUDNOVSKY:MPF_CON@S
          (MPF_MUL@J
            MAIN:CHUDNOVSKY:TMP__000000002@S MAIN:CHUDNOVSKY:TMP__000000003@S
          )
        )
      )
      (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 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " t C8 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 8 6 7)
    )
    (Fnc
      (N# 8)
      (FLP (SETQ@S MAIN:CHUDNOVSKY:MPZ_13591409@S (MPZ 13591409)))
      (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"
        " t 04 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " I 00 00 00 00 00 00 00" " q  c CF 00 00 00 00 00"
      )
      (Var_Ptrs 9)
    )
    (Fnc
      (N# 9)
      (FLP (SETQ@S MAIN:CHUDNOVSKY:MPZ_545140134@S (MPZ 545140134)))
      (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"
        " t 04 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " I 00 00 00 00 00 00 00" "A6  -  ~ __ 00 00 00 00"
      )
      (Var_Ptrs 10)
    )
    (Fnc
      (N# 10)
      (FLP (SETQ@S MAIN:CHUDNOVSKY:MPZ_-640320@S (MPZ -640320)))
      (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"
        " t 04 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " I 00 00 00 00 00 00 00" "C0  : F6 FF FF FF FF FF"
      )
      (Var_Ptrs 11)
    )
  )
)
(CTRL (N# 3) (OpGroup 2) (COP 10) (PUSHA))
(CTRL
  (N# 4)
  (OpGroup 4)
  (COP 90)
  (SubCOP 1)
  (<loop_slo> 0)
  (REM "<For> `MAIN:CHUDNOVSKY:K@I' loop initialization begins here")
)
(CTRL (N# 5) (OpGroup 4) (COP 90) (SubCOP 2) (<loopstep_slo> 1))
(CTRL
  (N# 6)
  (OpGroup 1)
  (COP 70)
  (dfmput_zdata
    (VarRef 4)
    (VarName "MAIN:CHUDNOVSKY:ITERATIONS@I")
    (Inq_Dest Ld)
  )
)
(CTRL (N# 7) (OpGroup 1) (COP 81) (SubCOP 3) (<loopto_slo> (dfmget_idata)))
(CTRL
  (N# 8)
  (OpGroup 4)
  (COP 100)
  (FOR <loop_slo> (STEP <loopstep_slo>) (TO <loopto_slo>) (BODY 12))
  (REM "Controlled by `MAIN:CHUDNOVSKY:K@I' variable")
)
(CTRL
  (N# 9)
  (OpGroup 1)
  (COP 71)
  (SubCOP 1)
  (dfmput_idata <loop_slo> (VarRef 6) (VarName "MAIN:CHUDNOVSKY:K@I"))
)
(CTRL
  (N# 10)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 6 "MAIN:CHUDNOVSKY:K@I")
      (1 5 "MAIN:CHUDNOVSKY:K3@I")
      (2 16 "MAIN:CHUDNOVSKY:MPZ_A@S")
      (3 22 "MAIN:CHUDNOVSKY:TMP__000000001@S")
      (4 15 "MAIN:CHUDNOVSKY:MPZ_545140134@S")
      (5 23 "MAIN:CHUDNOVSKY:TMP__000000002@S")
      (6 14 "MAIN:CHUDNOVSKY:MPZ_13591409@S")
      (7 17 "MAIN:CHUDNOVSKY:MPZ_B@S")
      (8 18 "MAIN:CHUDNOVSKY:MPZ_C@S")
      (9 22 "MAIN:CHUDNOVSKY:TMP__000000001@S")
      (10 19 "MAIN:CHUDNOVSKY:MPZ_D@S")
      (11 13 "MAIN:CHUDNOVSKY:MPZ_-640320@S")
      (12 20 "MAIN:CHUDNOVSKY:MPZ_E@S")
      (13 22 "MAIN:CHUDNOVSKY:TMP__000000001@S")
      (14 23 "MAIN:CHUDNOVSKY:TMP__000000002@S")
      (15 7 "MAIN:CHUDNOVSKY:MPF_A@S")
      (16 22 "MAIN:CHUDNOVSKY:TMP__000000001@S")
      (17 23 "MAIN:CHUDNOVSKY:TMP__000000002@S")
      (18 24 "MAIN:CHUDNOVSKY:TMP__000000003@S")
      (19 8 "MAIN:CHUDNOVSKY:MPF_B@S")
      (20 11 "MAIN:CHUDNOVSKY:MPF_PRECISION@I")
      (21 7 "MAIN:CHUDNOVSKY:MPF_A@S")
      (22 8 "MAIN:CHUDNOVSKY:MPF_B@S")
      (23 10 "MAIN:CHUDNOVSKY:MPF_F@S")
      (24 12 "MAIN:CHUDNOVSKY:MPF_SUM@S")
      (25 12 "MAIN:CHUDNOVSKY:MPF_SUM@S")
    )
    (Fnc
      (N# 0)
      (FLP (SETQ@I MAIN:CHUDNOVSKY:K3@I (*@J 3 MAIN:CHUDNOVSKY:K@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"
        "D4 CC 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"
      "01 00 00 00 00 00 00 00"
    )
    (Var_Ptrs 1 0)
  )
  (Fnc
    (N# 1)
    (FLP
      (SETQ@S
        MAIN:CHUDNOVSKY:MPZ_A@S
        (MPZ_FAC_I@J (*@J 6 MAIN:CHUDNOVSKY:K@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 05 00 00 00 00 00 00"
      "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      " t  d 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      "D4 CC 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"
      "06 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 0)
  )
  (Fnc
    (N# 2)
    (FLP (SETQ@S MAIN:CHUDNOVSKY:TMP__000000001@S (MPZ MAIN:CHUDNOVSKY:K@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 05 00 00 00 00 00 00"
      "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      " t 04 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 3 0)
  )
  (Fnc
    (N# 3)
    (FLP
      (SETQ@S
        MAIN:CHUDNOVSKY:TMP__000000002@S
        (MPZ_MUL@J
          MAIN:CHUDNOVSKY:MPZ_545140134@S MAIN:CHUDNOVSKY:TMP__000000001@S
        )
      )
    )
    (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 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"
      "03 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
      "01 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
      "02 00 00 00 00 00 00 00"
    )
    (Var_Ptrs 5 4 3)
  )
  (Fnc
    (N# 4)
    (FLP
      (SETQ@S
        MAIN:CHUDNOVSKY:MPZ_B@S
        (MPZ_ADD@J
          MAIN:CHUDNOVSKY:MPZ_13591409@S MAIN:CHUDNOVSKY:TMP__000000002@S
        )
      )
    )
    (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 05 00 00 00 00 00 00"
      "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      " t \( 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
      "03 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
      "01 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
      "02 00 00 00 00 00 00 00"
    )
    (Var_Ptrs 7 6 5)
  )
  (Fnc
    (N# 5)
    (FLP (SETQ@S MAIN:CHUDNOVSKY:MPZ_C@S (MPZ_FAC_I@J MAIN:CHUDNOVSKY:K3@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 05 00 00 00 00 00 00"
      "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      " t  d 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 8 1)
  )
  (Fnc
    (N# 6)
    (FLP
      (SETQ@S
        MAIN:CHUDNOVSKY:TMP__000000001@S
        (MPZ_FAC_I@J MAIN:CHUDNOVSKY:K@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 05 00 00 00 00 00 00"
      "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      " t  d 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 9 0)
  )
  (Fnc
    (N# 7)
    (FLP
      (SETQ@S
        MAIN:CHUDNOVSKY:MPZ_D@S
        (MPZ_POW_I@J MAIN:CHUDNOVSKY:TMP__000000001@S 3)
      )
    )
    (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 \\ 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
      "03 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
      "01 00 00 00 00 00 00 00" " I 00 00 00 00 00 00 00"
      "03 00 00 00 00 00 00 00"
    )
    (Var_Ptrs 10 9)
  )
  (Fnc
    (N# 8)
    (FLP
      (SETQ@S
        MAIN:CHUDNOVSKY:MPZ_E@S
        (MPZ_POW_I@J MAIN:CHUDNOVSKY:MPZ_-640320@S MAIN:CHUDNOVSKY:K3@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 05 00 00 00 00 00 00"
      "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      " t \\ 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
      "03 00 00 00 00 00 00 00" " s 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 12 11 1)
  )
  (Fnc
    (N# 9)
    (FLP
      (SETQ@S
        MAIN:CHUDNOVSKY:TMP__000000001@S
        (MPZ_MUL@J MAIN:CHUDNOVSKY:MPZ_A@S MAIN:CHUDNOVSKY:MPZ_B@S)
      )
    )
    (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 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"
      "03 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
      "01 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
      "02 00 00 00 00 00 00 00"
    )
    (Var_Ptrs 13 2 7)
  )
  (Fnc
    (N# 10)
    (FLP
      (SETQ@S
        MAIN:CHUDNOVSKY:TMP__000000002@S
        (MPZ_TOSTR@J MAIN:CHUDNOVSKY:TMP__000000001@S)
      )
    )
    (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 08 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      " s 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
    )
    (Var_Ptrs 14 13)
  )
  (Fnc
    (N# 11)
    (FLP
      (SETQ@S
        MAIN:CHUDNOVSKY:MPF_A@S
        (CAT@J MAIN:CHUDNOVSKY:TMP__000000002@S ".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 05 00 00 00 00 00 00"
      "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      "D4 F4 01 00 00 00 00 00" "02 00 00 00 00 00 00 00"
      "03 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
      "01 00 00 00 00 00 00 00" " S 00 00 00 00 00 00 00"
      "02 00 00 00 00 00 00 00" " .  0 00 00 00 00 00 00"
    )
    (Var_Ptrs 15 14)
  )
  (Fnc
    (N# 12)
    (FLP
      (SETQ@S
        MAIN:CHUDNOVSKY:TMP__000000001@S
        (MPZ_MUL@J MAIN:CHUDNOVSKY:MPZ_D@S MAIN:CHUDNOVSKY:MPZ_E@S)
      )
    )
    (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 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"
      "03 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
      "01 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
      "02 00 00 00 00 00 00 00"
    )
    (Var_Ptrs 16 10 12)
  )
  (Fnc
    (N# 13)
    (FLP
      (SETQ@S
        MAIN:CHUDNOVSKY:TMP__000000002@S
        (MPZ_MUL@J MAIN:CHUDNOVSKY:MPZ_C@S MAIN:CHUDNOVSKY:TMP__000000001@S)
      )
    )
    (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 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"
      "03 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
      "01 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
      "02 00 00 00 00 00 00 00"
    )
    (Var_Ptrs 17 8 16)
```

```
)
(Fnc
  (N# 14)
  (FLP
    (SETQ@S
      MAIN:CHUDNOVSKY:TMP__000000003@S
      (MPZ_TOSTR@J MAIN:CHUDNOVSKY:TMP__000000002@S)
    )
  )
  (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 08 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
    " s 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
  )
  (Var_Ptrs 18 17)
)
(Fnc
  (N# 15)
  (FLP
    (SETQ@S
      MAIN:CHUDNOVSKY:MPF_B@S
      (CAT@J MAIN:CHUDNOVSKY:TMP__000000003@S ".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 05 00 00 00 00 00 00"
    "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
    "D4 F4 01 00 00 00 00 00" "02 00 00 00 00 00 00 00"
    "03 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
    "01 00 00 00 00 00 00 00" " S 00 00 00 00 00 00 00"
    "02 00 00 00 00 00 00 00" " .  0 00 00 00 00 00 00"
  )
  (Var_Ptrs 19 18)
)
(Fnc
  (N# 16)
  (FLP
    (SETQ@S
      MAIN:CHUDNOVSKY:MPF_A@S
      (MPF@J
        (IF@J
          (<@I
            (LEN@J MAIN:CHUDNOVSKY:MPF_A@S)
            MAIN:CHUDNOVSKY:MPF_PRECISION@I
          )
          (PADL@J MAIN:CHUDNOVSKY:MPF_A@S MAIN:CHUDNOVSKY:MPF_PRECISION@I)
          MAIN:CHUDNOVSKY:MPF_A@S
        )
      )
    )
  )
  (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 05 00 00 00 00 00 00"
    "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
    " t 94 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"
    "0B 00 00 00 00 00 00 00" "11 00 00 00 00 00 00 00"
    "D4  x 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
    "05 00 00 00 00 00 00 00" "D4 E8 01 00 00 00 00 00"
    "01 00 00 00 00 00 00 00" " s 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" "D4  T 02 00 00 00 00 00"
    "02 00 00 00 00 00 00 00" "03 00 00 00 00 00 00 00"
    " s 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"
    " s 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
  )
  (Var_Ptrs 21 15 20)
)
(Fnc
  (N# 17)
  (FLP
    (SETQ@S
      MAIN:CHUDNOVSKY:MPF_B@S
      (MPF@J
        (IF@J
          (<@I
            (LEN@J MAIN:CHUDNOVSKY:MPF_B@S)
            MAIN:CHUDNOVSKY:MPF_PRECISION@I
          )
          (PADL@J MAIN:CHUDNOVSKY:MPF_B@S MAIN:CHUDNOVSKY:MPF_PRECISION@I)
          MAIN:CHUDNOVSKY:MPF_B@S
        )
      )
    )
  )
  (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 05 00 00 00 00 00 00"
    "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
    " t 94 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"
    "0B 00 00 00 00 00 00 00" "11 00 00 00 00 00 00 00"
    "D4  x 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
    "05 00 00 00 00 00 00 00" "D4 E8 01 00 00 00 00 00"
    "01 00 00 00 00 00 00 00" " s 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" "D4  T 02 00 00 00 00 00"
    "02 00 00 00 00 00 00 00" "03 00 00 00 00 00 00 00"
    " s 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"
    " s 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
  )
  (Var_Ptrs 22 19 20)
)
(Fnc
  (N# 18)
  (FLP
    (SETQ@S
      MAIN:CHUDNOVSKY:MPF_F@S
      (MPF_DIV@J MAIN:CHUDNOVSKY:MPF_A@S MAIN:CHUDNOVSKY:MPF_B@S)
    )
  )
  (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 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " t D0 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 23 21 22)
    )
    (Fnc
      (N# 19)
      (FLP
        (SETQ@S
          MAIN:CHUDNOVSKY:MPF_SUM@S
          (MPF_ADD@J MAIN:CHUDNOVSKY:MPF_SUM@S MAIN:CHUDNOVSKY:MPF_F@S)
        )
      )
      (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 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " t B8 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 25 24 23)
    )
  )
)
(CTRL
  (N# 11)
  (OpGroup 4)
  (COP 101)
  (SubCOP 1)
  (NEXT (BODY 8))
  (REM "Controlled by `MAIN:CHUDNOVSKY:K@I' variable")
)
(CTRL
  (N# 12)
  (OpGroup 1)
  (COP 71)
  (SubCOP 1)
  (dfmput_idata <loop_slo> (VarRef 6) (VarName "MAIN:CHUDNOVSKY:K@I"))
  (REM "<For> postloop `MAIN:CHUDNOVSKY:K@I' control variable value")
)
(CTRL (N# 13) (OpGroup 2) (COP 11) (POPA))
(CTRL
  (N# 14)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 9 "MAIN:CHUDNOVSKY:MPF_CON@S")
      (1 12 "MAIN:CHUDNOVSKY:MPF_SUM@S")
      (2 22 "MAIN:CHUDNOVSKY:TMP__000000001@S")
      (3 23 "MAIN:CHUDNOVSKY:TMP__000000002@S")
      (4 3 "MAIN:CHUDNOVSKY:DIGITS@I")
      (5 21 "MAIN:CHUDNOVSKY:TMP__000000000@S")
    )
    (Fnc
      (N# 0)
      (FLP
        (SETQ@S
          MAIN:CHUDNOVSKY:TMP__000000001@S
          (MPF_DIV@J MAIN:CHUDNOVSKY:MPF_CON@S MAIN:CHUDNOVSKY:MPF_SUM@S)
        )
      )
      (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 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " t D0 00 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
        "02 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 2 0 1)
    )
    (Fnc
      (N# 1)
      (FLP
        (SETQ@S
          MAIN:CHUDNOVSKY:TMP__000000002@S
          (MPF_TOSTR@J MAIN:CHUDNOVSKY:TMP__000000001@S)
        )
      )
      (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 98 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        " s 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 3 2)
    )
    (Fnc
      (N# 2)
      (FLP
        (SETQ@S
          MAIN:CHUDNOVSKY:TMP__000000000@S
          (LEFT@J MAIN:CHUDNOVSKY:TMP__000000002@S MAIN:CHUDNOVSKY:DIGITS@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 05 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
        "D4 00 02 00 00 00 00 00" "02 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " s 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 5 3 4)
    )
  )
)
(CTRL
  (N# 15)
  (OpGroup 2)
  (COP 16)
  (RETURN)
  (REM "End of UDF `MAIN:CHUDNOVSKY' body")
)
(CTRL
  (N# 16)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array] (0 27 "MAIN:DIGITS@I"))
    (Fnc
      (N# 0)
      (FLP (SETQ@I MAIN:DIGITS@I 100000))
      (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" "A0 86 01 00 00 00 00 00"
      )
      (Var_Ptrs 0)
    )
  )
)
(CTRL
  (N# 17)
  (OpGroup 2)
  (COP 12)
  (ENTER_RECURSION)
  (Vars_N#_Ref_Name_[Array]
    (0 3 "MAIN:CHUDNOVSKY:DIGITS@I")
    (1 2 "MAIN:CHUDNOVSKY:$1")
    (2 4 "MAIN:CHUDNOVSKY:ITERATIONS@I")
    (3 11 "MAIN:CHUDNOVSKY:MPF_PRECISION@I")
    (4 12 "MAIN:CHUDNOVSKY:MPF_SUM@S")
    (5 22 "MAIN:CHUDNOVSKY:TMP__000000001@S")
    (6 23 "MAIN:CHUDNOVSKY:TMP__000000002@S")
    (7 24 "MAIN:CHUDNOVSKY:TMP__000000003@S")
    (8 9 "MAIN:CHUDNOVSKY:MPF_CON@S")
    (9 14 "MAIN:CHUDNOVSKY:MPZ_13591409@S")
    (10 15 "MAIN:CHUDNOVSKY:MPZ_545140134@S")
    (11 13 "MAIN:CHUDNOVSKY:MPZ_-640320@S")
    (12 6 "MAIN:CHUDNOVSKY:K@I")
    (13 5 "MAIN:CHUDNOVSKY:K3@I")
    (14 16 "MAIN:CHUDNOVSKY:MPZ_A@S")
    (15 17 "MAIN:CHUDNOVSKY:MPZ_B@S")
    (16 18 "MAIN:CHUDNOVSKY:MPZ_C@S")
    (17 19 "MAIN:CHUDNOVSKY:MPZ_D@S")
    (18 20 "MAIN:CHUDNOVSKY:MPZ_E@S")
    (19 7 "MAIN:CHUDNOVSKY:MPF_A@S")
    (20 8 "MAIN:CHUDNOVSKY:MPF_B@S")
    (21 10 "MAIN:CHUDNOVSKY:MPF_F@S")
    (22 21 "MAIN:CHUDNOVSKY:TMP__000000000@S")
  )
)
(CTRL
  (N# 18)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 2 "MAIN:CHUDNOVSKY:$1")
      (1 27 "MAIN:DIGITS@I")
    )
    (Fnc
      (N# 0)
      (FLP (ALSETQ MAIN:CHUDNOVSKY:$1 MAIN:DIGITS@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:CHUDNOVSKY' invoke initialization (passing the arguments)")
)
(CTRL
  (N# 19)
  (OpGroup 2)
  (COP 15)
  (GOSUB 2)
  (REM "UDF `MAIN:CHUDNOVSKY' call")
)
(CTRL
  (N# 20)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 32 "MAIN:PI@S")
      (1 21 "MAIN:CHUDNOVSKY:TMP__000000000@S")
    )
    (Fnc
      (N# 0)
      (FLP (ALSETQ MAIN:PI@S MAIN:CHUDNOVSKY:TMP__000000000@S))
      (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"
        " s 00 00 00 00 00 00 00" "01 00 00 00 00 00 00 00"
      )
      (Var_Ptrs 0 1)
    )
  )
  (REM "UDF `MAIN:CHUDNOVSKY' returned value")
)
(CTRL (N# 21) (OpGroup 2) (COP 13) (LEAVE_RECURSION))
(CTRL
  (N# 22)
  (OpGroup 1)
  (COP 50)
  (dfmput_marshaled_cluster
    (Vars_N#_Ref_Name_[Array]
      (0 32 "MAIN:PI@S")
      (1 37 "MAIN:TMP__000000001@S")
      (2 37 "MAIN:TMP__000000001@S")
      (3 37 "MAIN:TMP__000000001@S")
      (4 36 "MAIN:TMP__000000000@S")
    )
    (Fnc
      (N# 0)
      (FLP (SETQ@S MAIN:TMP__000000001@S (OUTF "%s\n" MAIN:PI@S)))
      (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"
        "04 00 00 00 00 00 00 00" " S 00 00 00 00 00 00 00"
        "03 00 00 00 00 00 00 00" " %  s 0A 00 00 00 00 00"
        " s 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__000000001@S (OUTF "(size=%ld)\n" (LEN@J MAIN:PI@S)))
      )
      (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"
        "05 00 00 00 00 00 00 00" " S 00 00 00 00 00 00 00"
        "0B 00 00 00 00 00 00 00" "\(  s  i  z  e  =  %  l"
        " d \) 0A 00 00 00 00 00" "D4 E8 01 00 00 00 00 00"
        "01 00 00 00 00 00 00 00" " s 00 00 00 00 00 00 00"
        "01 00 00 00 00 00 00 00"
      )
      (Inq_Dest Ls)
      (Var_Ptrs 2 0)
    )
    (Fnc
      (N# 2)
      (FLP
        (SETQ@S MAIN:TMP__000000001@S (OUTF (PRN_STRING_FMT) (CAT@J "" "")))
      )
      (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"
        " 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"
        "D4 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"
        " S 00 00 00 00 00 00 00" "00 00 00 00 00 00 00 00"
        "00 00 00 00 00 00 00 00"
      )
      (Inq_Dest Ls)
      (Var_Ptrs 3)
    )
    (Fnc
      (N# 3)
      (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 4)
    )
  )
)
(CTRL (N# 23) (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: 0.022289sec.
   Used by  system: 0.002299sec.
   Total used time: 2.458800000000E-02sec.
Real absolute time: 2.415990829468E-02sec.
*** Resetting time counters (second event controlpoint)... ***
================================================================================
The task is being carried out on SocketN# 0.
================================================================================
3.14159265358979323846264338327950288419716939937510582097494459230781640628620
8998628034825342117067982148086513282306647093844609550582231725359408128481117
4502841027019385211055596446229489549303819644288109756659334461284756482337867
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5588174881520920962829254091715364367892590360011330530548820466521384146951941
5116094330572703657595919530921861173819326117931051185480744623799627495673518
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0943702770539217176293176752384674818467669405132000568127145263560827785771342
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2816096318595024459455346908302642522308253344685035261931188171010003137838752
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4726847104047534646208046684259069491293313677028989152104752162056966024058038
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7194782684826014769909026401363944374553050682034962524517493996514314298091906
5925093722169646151570985838741059788595977297549893016175392846813826868386894
2774155991855925245953959431049972524680845987273644695848653836736222626099124
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1490967598526136554978189312978482168299894872265880485756401427047755513237964
```

```
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2434088190710486331734649651453905796268561005508106658796998163574736384052571
4591028970641401109712062804390397595156771577004203378699360072305587631763594
2187312514712053292819182618612586732157919841484882916447060957527069572209175
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7120844335732654893823911932597463667305836041428138830320382490375898524374417
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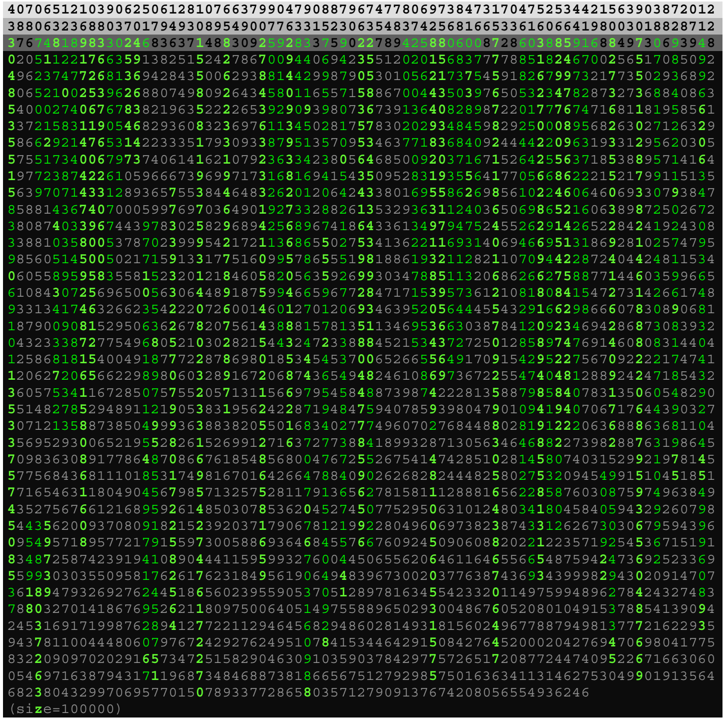

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1206272065662298980603289167206874365494824610869736722554740481288924247185432
3605753411672850757552057131156697954584887398742228135887985840783135060548290
5514827852948911219053831956242287194847594078593980479010941940706717644390327
3071213588738504999363883820550168340277749607027684488028191222063688863681104
3569529300652195528261526991271637277388418993287130563464688227398288763198645
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5775684368111018531749816701642664788409026268282444825802753209454991510451851
7716546311804904567985713257528117913656278158111288816562285876030875974963849
4352756766121689592614850307853620452745077529506310124803418045840594329260798
5443562009370809182152392037179067812199228049606973823874331262673030679594396
0954957189577217915597300588693646845576676092450906088202212235719254536715191
8348725874239194108904441159599327600445065562064611646556654875942473692523369
5599303035509581762617623184956190649483967300203776387436934399982943020914707
3618947932692762445186560239559053705128978163455423320114975994896278424327483
7880327014186769526211809750064051497558896502930048676052080104915378854139094
2453169171998762894127722112946456829486028149318156024967788794981377721622935
9437811004448060797672429276249510784153446429150842764520002042769470698041775
8322090970202916573472515829046309103590378429775726517208772447409522671663060
0546971638794317119687348468873818665675127929857501636341131462753049901913564
68238043299706957701507893377286580357127909137674208056554936246
(size=100000)
```

```
================================================================================
Time spent to run the task (by PARENT loader and CHILD listener):
   Used by process: 0.077351sec.
   Used by  system: 0.264873sec.
   Total used time: 3.422240000000E-01sec.
Real absolute time: 7.005654001236E+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>