chronos相关问题

1. inline int

   在est下make 报错如下：

```
cfg.o：在函数‘scan_procs’中：
/home/skye/chronos/est/cfg.c:71：对‘inst_type’未定义的引用
cfg.o：在函数‘scan_blocks’中：
/home/skye/chronos/est/cfg.c:107：对‘inst_type’未定义的引用
cfg.o：在函数‘create_cfg_edges’中：
/home/skye/chronos/est/cfg.c:227：对‘inst_type’未定义的引用
cfg.o：在函数‘loop_check’中：
/home/skye/chronos/est/cfg.c:356：对‘bb_is_loop_head’未定义的引用
loops.o：在函数‘find_loops’中：
/home/skye/chronos/est/loops.c:89：对‘bb_is_loop_head’未定义的引用
/home/skye/chronos/est/loops.c:89：对‘bb_is_loop_tail’未定义的引用
ss/ss_exegraph.o：在函数‘add_inst’中：
/home/skye/chronos/est/ss/ss_exegraph.c:273：对‘inst_type’未定义的引用
collect2: error: ld returned 1 exit status
Makefile:12: recipe for target 'all' failed
make: *** [all] Error 1
skye@ubuntu:~/chronos/est$
```

   源代码相关部分如下：

   isa.c:

```
// return (decoded) instruction type
inline int
inst_type(de_inst_t *inst)
{
    return isa[inst->op_enum].type;
}
```

   isa.h:

```
// instruction types broadly in three groups:
// computation,
// memory access
// control flow transfer
enum inst_type_t {
    INST_NOP = 0,    // instr. doing nothing
    // (1) computation
    INST_ICOMP,      // integer arithmetic instr.
    INST_FCOMP,      // floating-point arithmetic instr.
    // (2) memory access
    INST_LOAD,
    INST_STORE,
    // (3) control flow transfer
    INST_COND,
    INST_UNCOND,
    INST_CALL,
    INST_RET,
    // (4) trap instr such as syscall, break, etc
    INST_TRAP
};
```

cfg.c:

```
inline int
bb_is_loop_head(cfg_node_t *bb)
{
    return (bb->loop_role & LOOP_HEAD);
}



inline int
bb_is_loop_tail(cfg_node_t *bb)
{
    return (bb->loop_role & LOOP_TAIL);
}
```

可以看到“未定义的引用”均是有定义的，查询资料后，得出inline关键字只用在implementation中而不用在declaration中，因为inline是属于implementation detail，declaration不应该包含implementation detail信息，因此inline关键字不用在declaration中。

解决方案：

在这三个函数前添加定义，如下：

```
int bb_is_loop_tail(cfg_node_t *bb);
```

2. yy_current_buffer:

   ldlex.c 源代码如下：

```
static void
yy_input (buf, result, max_size)
     char *buf;
     int *result;
     int max_size;
{
  *result = 0;
  if (yy_current_buffer->yy_input_file)
    {
      if (yyin)
    {
    *result = read (fileno (yyin), (char *) buf, max_size);
    if (*result < 0)
      einfo ("%F%P: read in flex scanner failed\n");
    }
    }
```

   找到定义如下：

```
#define YY_CURRENT_BUFFER ( (yy_buffer_stack) \
                          ? (yy_buffer_stack)[(yy_buffer_stack_top)] \
                          : NULL)
```

   将全小写改为全大写

3. 对'is_reserved_word' 未定义的引用

   在gcc-2.7.2.3中make，

   报错如下

在header中添加is_reserved_word的定义：

```
int doing_objc_thang;

struct resword * is_reserved_word (str, len);

extern tree is_class_name ();
```

4. buffer overflow

   在gcc-2.7.2.3中make，

   报错如下

```
/home/skye/chronos/sslittle-na-sstrix/bin/ar rc libobjc.a hash.o sarray.o class.o sendmsg.o init.o archive.o encoding.o s
*** buffer overflow detected ***: /home/skye/chronos/sslittle-na-sstrix/bin/ar terminated
======= Backtrace: =========
/lib/x86_64-linux-gnu/libc.so.6(+0x777f5)[0x7f780f05a7f5]
/lib/x86_64-linux-gnu/libc.so.6(__fortify_fail+0x5c)[0x7f780f0fc25c]
/lib/x86_64-linux-gnu/libc.so.6(+0x117260)[0x7f780f0fa260]
/lib/x86_64-linux-gnu/libc.so.6(+0x1167c9)[0x7f780f0f97c9]
/lib/x86_64-linux-gnu/libc.so.6(_IO_default_xsputn+0x80)[0x7f780f05e6c0]
/lib/x86_64-linux-gnu/libc.so.6(_IO_padn+0xa0)[0x7f780f052000]
/lib/x86_64-linux-gnu/libc.so.6(_IO_vfprintf+0xec4)[0x7f780f031044]
/lib/x86_64-linux-gnu/libc.so.6(__vsprintf_chk+0x84)[0x7f780f0f9854]
/lib/x86_64-linux-gnu/libc.so.6(__sprintf_chk+0x7d)[0x7f780f0f97ad]
/home/skye/chronos/sslittle-na-sstrix/bin/ar[0x406bc3]
/home/skye/chronos/sslittle-na-sstrix/bin/ar[0x408904]
/home/skye/chronos/sslittle-na-sstrix/bin/ar[0x40b61b]
/home/skye/chronos/sslittle-na-sstrix/bin/ar[0x404485]
/home/skye/chronos/sslittle-na-sstrix/bin/ar[0x4046a9]
/home/skye/chronos/sslittle-na-sstrix/bin/ar[0x402539]
/lib/x86_64-linux-gnu/libc.so.6(__libc_start_main+0xf0)[0x7f780f003840]
/home/skye/chronos/sslittle-na-sstrix/bin/ar[0x402819]
======= Memory map: ========
00400000-00438000 r-xp 00000000 08:01 1983734                            /home/skye/chronos/sslittle-na-sstrix/bin/ar
00637000-00638000 r--p 00037000 08:01 1983734                            /home/skye/chronos/sslittle-na-sstrix/bin/ar
00638000-00639000 rw-p 00038000 08:01 1983734                            /home/skye/chronos/sslittle-na-sstrix/bin/ar
01f8b000-01fac000 rw-p 00000000 00:00 0                                  [heap]
7f780e942000-7f780e958000 r-xp 00000000 08:01 2888868                    /lib/x86_64-linux-gnu/libgcc_s.so.1
7f780e958000-7f780eb57000 ---p 00016000 08:01 2888868                    /lib/x86_64-linux-gnu/libgcc_s.so.1
7f780eb57000-7f780eb58000 rw-p 00015000 08:01 2888868                    /lib/x86_64-linux-gnu/libgcc_s.so.1
7f780eb58000-7f780efe3000 r--p 00000000 08:01 3151275                    /usr/lib/locale/locale-archive
7f780efe3000-7f780f1a3000 r-xp 00000000 08:01 2883944                    /lib/x86_64-linux-gnu/libc-2.23.so
7f780f1a3000-7f780f3a3000 ---p 001c0000 08:01 2883944                    /lib/x86_64-linux-gnu/libc-2.23.so
7f780f3a3000-7f780f3a7000 r--p 001c0000 08:01 2883944                    /lib/x86_64-linux-gnu/libc-2.23.so
7f780f3a7000-7f780f3a9000 rw-p 001c4000 08:01 2883944                    /lib/x86_64-linux-gnu/libc-2.23.so
7f780f3a9000-7f780f3ad000 rw-p 00000000 00:00 0
7f780f3ad000-7f780f3d3000 r-xp 00000000 08:01 2883936                    /lib/x86_64-linux-gnu/ld-2.23.so
7f780f5b6000-7f780f5b9000 rw-p 00000000 00:00 0
7f780f5d1000-7f780f5d2000 rw-p 00000000 00:00 0
7f780f5d2000-7f780f5d3000 r--p 00025000 08:01 2883936                    /lib/x86_64-linux-gnu/ld-2.23.so
7f780f5d3000-7f780f5d4000 rw-p 00026000 08:01 2883936                    /lib/x86_64-linux-gnu/ld-2.23.so
7f780f5d4000-7f780f5d5000 rw-p 00000000 00:00 0
7ffcdf357000-7ffcdf379000 rw-p 00000000 00:00 0                          [stack]
7ffcdf3ee000-7ffcdf3f1000 r--p 00000000 00:00 0                          [vvar]
7ffcdf3f1000-7ffcdf3f3000 r-xp 00000000 00:00 0                          [vdso]
ffffffffff600000-ffffffffff601000 r-xp 00000000 00:00 0                  [vsyscall]
/home/skye/chronos/gcc-2.7.2.3/objc/Makefile:62: recipe for target 'libobjc.a' failed
make[1]: *** [libobjc.a] 已放弃 (core dumped)
make[1]: *** Deleting file 'libobjc.a'
make[1]: Leaving directory '/home/skye/chronos/gcc-2.7.2.3/objc'
Makefile:1268: recipe for target 'libobjc.a' failed
make: *** [libobjc.a] Error 2
skye@ubuntu:~/chronos/gcc-2.7.2.3$
```

search得知： buffer overflow 的原因是 linux 版本过高

解决方案为 下载 ar 和 ranlib 替换 sslittle-trix中的同名文件：

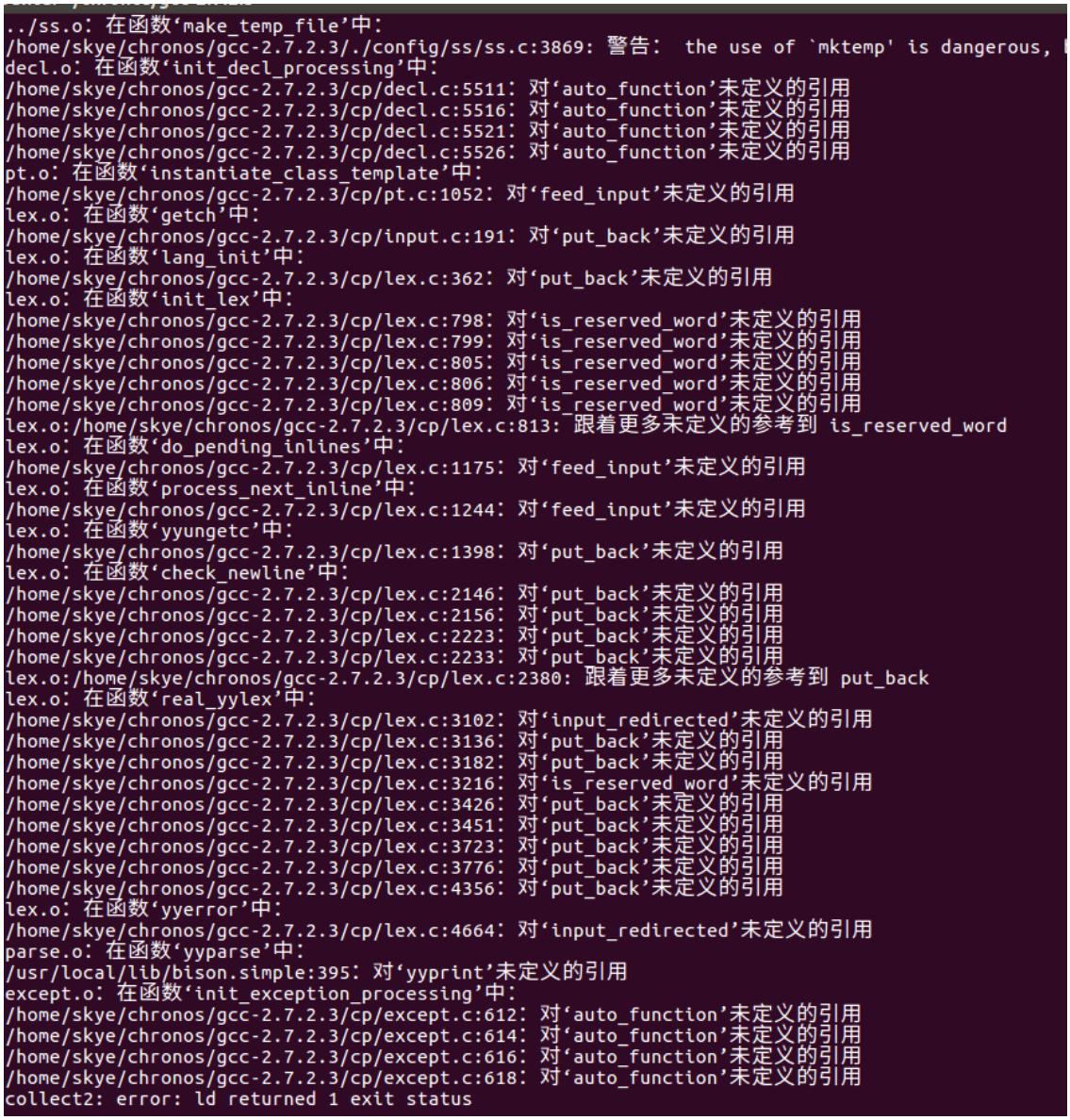
> .再次执行“make LANGUAGES...”后，碰到错误"buffer overflow"，这是由于Ubuntu版本较新造成的。
>
> 下载以下文件，放在$IDIR/sslittle-na-sstrix/bin下:
>
> - http://www.ict.kth.se/courses/IS2202/ar
>
> - http://www.ict.kth.se/courses/IS2202/ranlib
>
> 然后，请修改ar及ranlib的权限为可执行，不然会提示“Permission denied”!
>
> 使用命令：
>
> $ chmod +x ar ranlib
>
> 或在ar及ranlib的属性中修改。

由于这两个网站没有打开，所以使用百度网盘：

http://pan.baidu.com/s/1gduH9sf

下载后用其中的 install needed进行替换，解决了buffer overflow 的问题。

5. 更多的未定义的引用问题：



1） auto_function : inline

2） feed_input， put_back， input_redirected : inline

input.c 中添加定义

3）is_reserved_word: inline

hush.h 中添加定义

4） yyprint：inline

lex.c 中添加定义

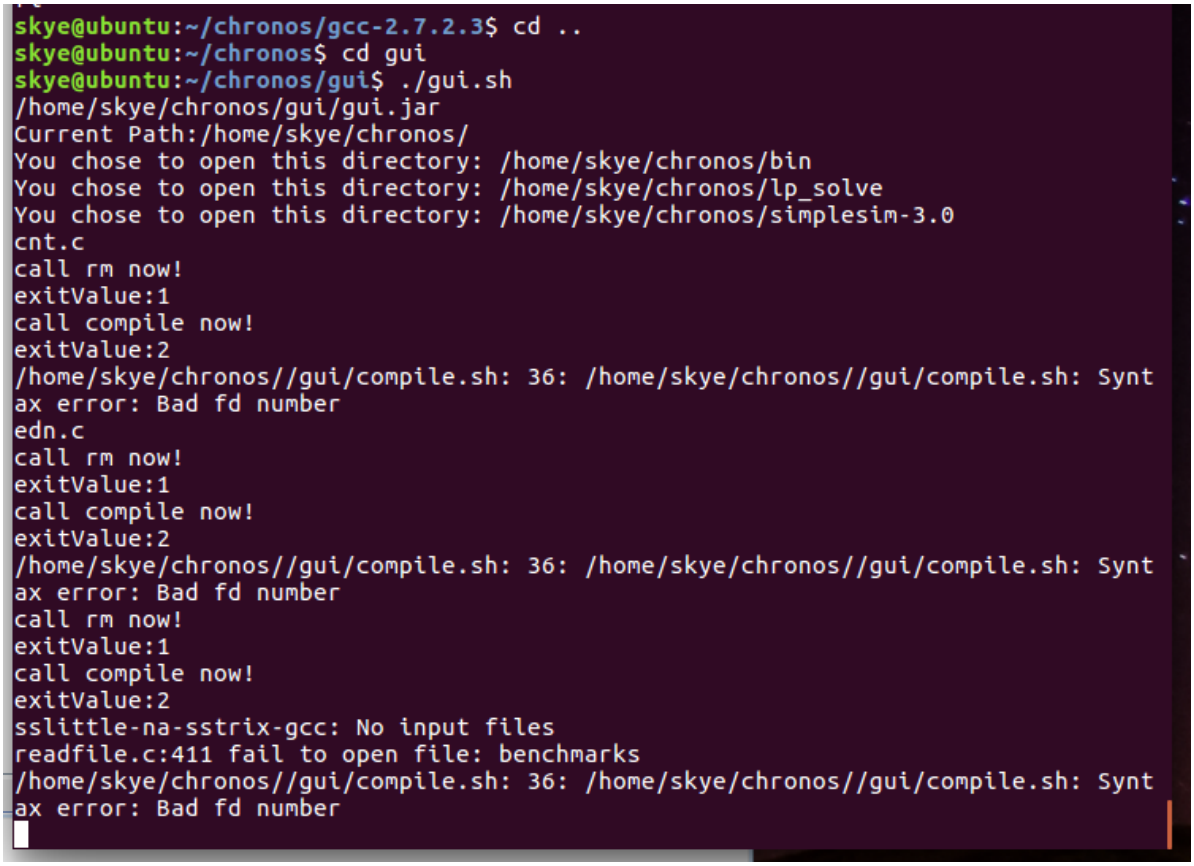
参考：

SimpleScalar的安装与配置_dahogn的专栏-程序员秘密 - 程序员秘密 (cxymm.net)

Ubuntu 14.10安装simplescalar - 风吹的心 - 博客园 (cnblogs.com)

运行时遇到的问题：

打开文件报错：



(7条消息) Linux执行sh脚本报错: Syntax error: Bad fd number_小丑快学习的博客-CSDN博客

今天再用chronos分析的WCET的时候，出现这样一个错误：

```
: Syntax error: Bad fd number
```

这个错误是执行sh脚本时报的错误，而且是打开文件的时候的发生的错误。
解决方案：
经过查阅资料得知，有可能是sh链接到了dash，而非bash，因此只需要检查链接情况即可。
执行命令

```
ls -l /bin/sh
```

结果：

```
lrwxrwxrwx 1 root root 4 Sep 26 00:57 /bin/sh -> dash
```

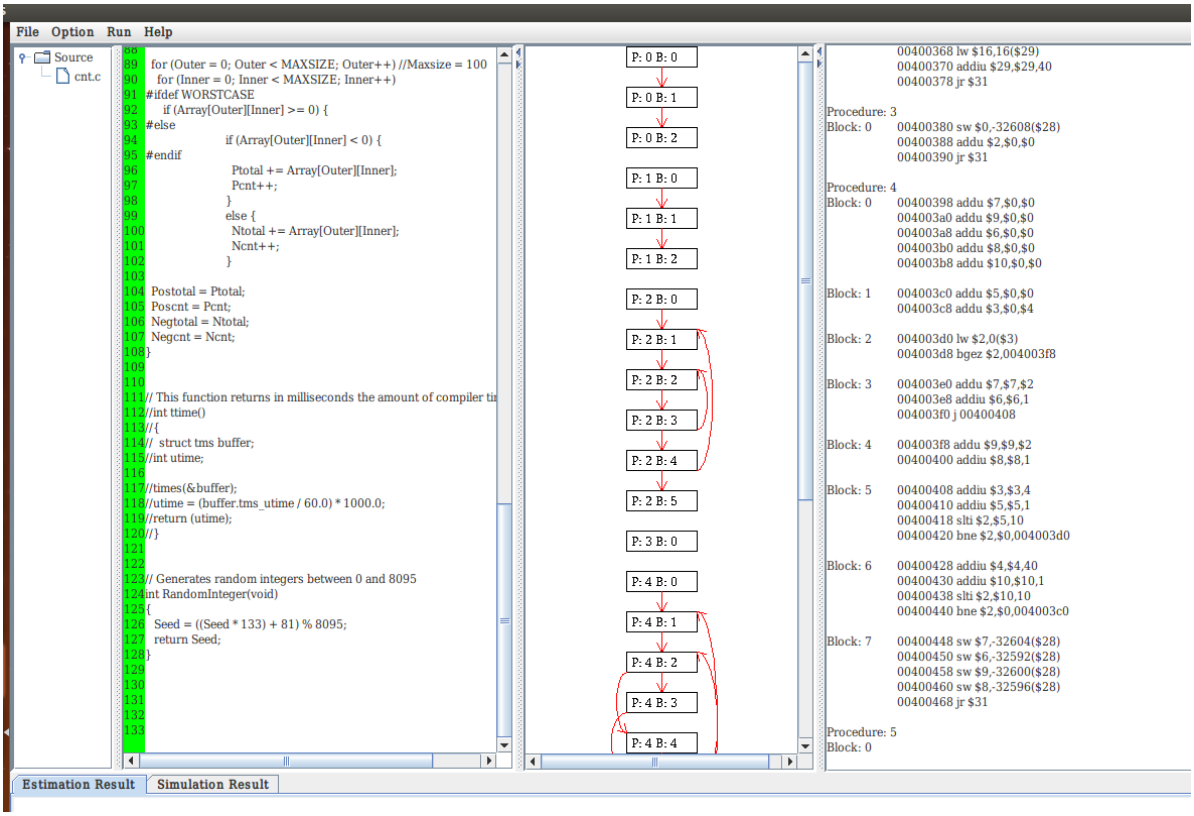
如果得到以上的结果，则继续执行命令：

```
sudo mv /bin/sh /bin/sh.orig
sudo ln -s /bin/bash /bin/sh
```

再次检查应该得到正确的结果。

```
lrwxrwxrwx 1 root root 9 Sep 27 00:19 /bin/sh -> /bin/bash
```

至此，可以正常运行。


File Option Run Help
Source
cnt.c
for (Outer = 0; Outer < MAXSIZE; Outer++) //Maxsize = 100
for (Inner = 0; Inner < MAXSIZE; Inner++)
#ifdef WORSTCASE
if (Array[Outer][Inner] >= 0) {
#else
if (Array[Outer][Inner] < 0) {
#endif
Ptotal += Array[Outer][Inner];
Pcnt++;
}
else {
Ntotal += Array[Outer][Inner];
Ncnt++;
}
Postotal = Ptotal;
Poscnt = Pcnt;
Negtotal = Ntotal;
Negcnt = Ncnt;
}
// This function returns in milliseconds the amount of compiler ti
//int ttime()
//{
// struct tms buffer;
//int utime;
//times(&buffer);
//utime = (buffer.tms_utime / 60.0) * 1000.0;
//return (utime);
//}
// Generates random integers between 0 and 8095
int RandomInteger(void)
{
Seed = ((Seed * 133) + 81) % 8095;
return Seed;
}
P: 0 B: 0
P: 0 B: 1
P: 0 B: 2
P: 1 B: 0
P: 1 B: 1
P: 1 B: 2
P: 2 B: 0
P: 2 B: 1
P: 2 B: 2
P: 2 B: 3
P: 2 B: 4
P: 2 B: 5
P: 3 B: 0
P: 4 B: 0
P: 4 B: 1
P: 4 B: 2
P: 4 B: 3
P: 4 B: 4
00400368 lw $16,16($29)
00400370 addiu $29,$29,40
00400378 jr $31
Procedure: 3
Block: 0 00400380 sw $0,-32608($28)
00400388 addu $2,$0,$0
00400390 jr $31
Procedure: 4
Block: 0 00400398 addu $7,$0,$0
004003a0 addu $9,$0,$0
004003a8 addu $6,$0,$0
004003b0 addu $8,$0,$0
004003b8 addu $10,$0,$0
Block: 1 004003c0 addu $5,$0,$0
004003c8 addu $3,$0,$4
Block: 2 004003d0 lw $2,0($3)
004003d8 bgez $2,004003f8
Block: 3 004003e0 addu $7,$7,$2
004003e8 addiu $6,$6,1
004003f0 j 00400408
Block: 4 004003f8 addu $9,$9,$2
00400400 addiu $8,$8,1
Block: 5 00400408 addiu $3,$3,4
00400410 addiu $5,$5,1
00400418 slti $2,$5,10
00400420 bne $2,$0,004003d0
Block: 6 00400428 addiu $4,$4,40
00400430 addiu $10,$10,1
00400438 slti $2,$10,10
00400440 bne $2,$0,004003c0
Block: 7 00400448 sw $7,-32604($28)
00400450 sw $6,-32592($28)
00400458 sw $9,-32600($28)
00400460 sw $8,-32596($28)
00400468 jr $31
Procedure: 5
Block: 0
Estimation Result
Simulation Result