

chronos相关问题

1. inline int

在est下make 报错如下:

```
ss/ss_exegraph.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:

```

26 // instruction types broadly in three groups:
27 // computation,
28 // memory access
29 // control flow transfer
30 enum inst_type_t {
31     INST_NOP = 0,    // instr. doing nothing
32     // (1) computation
33     INST_ICOMP,      // integer arithmetic instr.
34     INST_FCOMP,      // floating-point arithmetic instr.
35     // (2) memory access
36     INST_LOAD,
37     INST_STORE,
38     // (3) control flow transfer
39     INST_COND,
40     INST_UNCOND,
41     INST_CALL,
42     INST_RET,
43     // (4) trap instr such as syscall, break, etc
44     INST_TRAP
45 };
46

```

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

```
skye@ubuntu: ~/chronos/gcc-2.7.2.3
abort ();
^
bc-otab.c:788:3: note: include '<stdlib.h>' or provide a declaration of 'abort'
cc -DCROSS_COMPILE -DIN_GCC -g -o cc1 c-parse.o c-lang.o c-lex.o c-pragma.o
c-decl.o c-typeck.o c-convert.o c-aux-info.o c-common.o c-iterate.o toplev.o ver
sion.o tree.o print-tree.o stor-layout.o fold-const.o function.o stmt.o expr.o c
alls.o expmed.o explow.o optabs.o varasm.o rtl.o print-rtl.o rtlanal.o emit-rtl.
o real.o dbxout.o sbout.o dwarfout.o xcoffout.o integrate.o jump.o cse.o loop.o
unroll.o flow.o stupid.o combine.o regclass.o local-alloc.o global.o reload.o r
eload1.o caller-save.o insn-peep.o reorg.o sched.o final.o recog.o reg-stack.o i
nsn-opinit.o insn-recog.o insn-extract.o insn-output.o insn-emit.o insn-attrtab.
o ss.o getpwd.o convert.o bc-emit.o bc-otab.o obstack.o `case "cc" in "cc") e
cho "" ;; esac `
ss.o: 在函数'make_temp_file'中:
/home/skye/chronos/gcc-2.7.2.3/./config/ss/ss.c:3869: 警告: the use of `mktemp'
is dangerous, better use `mkstemp' or `mkdtemp'
c-lex.o: 在函数'init_lex'中:
/home/skye/chronos/gcc-2.7.2.3/c-lex.c:197: 对'is_reserved_word'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/c-lex.c:201: 对'is_reserved_word'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/c-lex.c:202: 对'is_reserved_word'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/c-lex.c:203: 对'is_reserved_word'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/c-lex.c:204: 对'is_reserved_word'未定义的引用
c-lex.o:/home/skye/chronos/gcc-2.7.2.3/c-lex.c:205: 跟着更多未定义的参考到 is_re
served_word
collect2: error: ld returned 1 exit status
Makefile:973: recipe for target 'cc1' failed
make: *** [cc1] Error 1
skye@ubuntu:~/chronos/gcc-2.7.2.3$
```

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)[0x7f780f0c25c]
/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
00637000-00638000 r--p 00037000 08:01 1983734
00638000-00639000 rw-p 00038000 08:01 1983734
01f8b000-01fac000 rw-p 00000000 00:00 0
7f780e942000-7f780e958000 r-xp 00000000 08:01 2888868
7f780e958000-7f780eb57000 ---p 00016000 08:01 2888868
7f780eb57000-7f780eb58000 rw-p 00015000 08:01 2888868
7f780eb58000-7f780ef3000 r--p 00000000 08:01 3151275
7f780ef3000-7f780f1a3000 r-xp 00000000 08:01 2883944
7f780f1a3000-7f780f3a3000 ---p 001c0000 08:01 2883944
7f780f3a3000-7f780f3a7000 r--p 001c0000 08:01 2883944
7f780f3a7000-7f780f3a9000 rw-p 001c4000 08:01 2883944
7f780f3a9000-7f780f3ad000 rw-p 00000000 00:00 0
7f780f3ad000-7f780f3d3000 r-xp 00000000 08:01 2883936
7f780f3d3000-7f780f3d9000 r-wp 00000000 00:00 0
7f780f3d9000-7f780f3d2000 rw-p 00000000 00:00 0
7f780f3d2000-7f780f5d3000 r--p 00025000 08:01 2883936
7f780f5d3000-7f780f5d4000 rw-p 00026000 08:01 2883936
7f780f5d4000-7f780f5d5000 rw-p 00000000 00:00 0
7ffcd3f357000-7ffcd3f37000 rw-p 00000000 00:00 0
7ffcd3f37000-7ffcd3f3f1000 r--p 00000000 00:00 0
7ffcd3f3f1000-7ffcd3f3f3000 r-xp 00000000 00:00 0
ffffffffff600000-ffffffffff601000 r-xp 00000000 00:00 0
/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，否则会提示“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：


```

../ss.o: 在函数'make_temp_file'中:
/home/skye/chronos/gcc-2.7.2.3/./config/ss/ss.c:3869: 警告: the use of `mktemp' is dangerous,
decl.o: 在函数'init_decl_processing'中:
/home/skye/chronos/gcc-2.7.2.3/cp/decl.c:5511: 对'auto_function'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/decl.c:5516: 对'auto_function'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/decl.c:5521: 对'auto_function'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/decl.c:5526: 对'auto_function'未定义的引用
pt.o: 在函数'instantiate_class_template'中:
/home/skye/chronos/gcc-2.7.2.3/cp/pt.c:1052: 对'feed_input'未定义的引用
lex.o: 在函数'getch'中:
/home/skye/chronos/gcc-2.7.2.3/cp/input.c:191: 对'put_back'未定义的引用
lex.o: 在函数'lang_init'中:
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:362: 对'put_back'未定义的引用
lex.o: 在函数'init_lex'中:
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:798: 对'is_reserved_word'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:799: 对'is_reserved_word'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:805: 对'is_reserved_word'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:806: 对'is_reserved_word'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:809: 对'is_reserved_word'未定义的引用
lex.o: /home/skye/chronos/gcc-2.7.2.3/cp/lex.c:813: 跟着更多未定义的参考到 is_reserved_word
lex.o: 在函数'do_pending_inlines'中:
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:1175: 对'feed_input'未定义的引用
lex.o: 在函数'process_next_inline'中:
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:1244: 对'feed_input'未定义的引用
lex.o: 在函数'yyungetc'中:
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:1398: 对'put_back'未定义的引用
lex.o: 在函数'check_newline'中:
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:2146: 对'put_back'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:2156: 对'put_back'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:2223: 对'put_back'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:2233: 对'put_back'未定义的引用
lex.o: /home/skye/chronos/gcc-2.7.2.3/cp/lex.c:2380: 跟着更多未定义的参考到 put_back
lex.o: 在函数'real_yylex'中:
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:3102: 对'input_redirected'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:3136: 对'put_back'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:3182: 对'put_back'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:3216: 对'is_reserved_word'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:3426: 对'put_back'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:3451: 对'put_back'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:3723: 对'put_back'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:3776: 对'put_back'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:4356: 对'put_back'未定义的引用
lex.o: 在函数'yyerror'中:
/home/skye/chronos/gcc-2.7.2.3/cp/lex.c:4664: 对'input_redirected'未定义的引用
parse.o: 在函数'yparse'中:
/usr/local/lib/bison.simple:395: 对'yyprint'未定义的引用
except.o: 在函数'init_exception_processing'中:
/home/skye/chronos/gcc-2.7.2.3/cp/except.c:612: 对'auto_function'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/except.c:614: 对'auto_function'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/except.c:616: 对'auto_function'未定义的引用
/home/skye/chronos/gcc-2.7.2.3/cp/except.c:618: 对'auto_function'未定义的引用
collect2: error: ld returned 1 exit status

```

- 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 \(cxyymm.net\)](http://cxyymm.net)

[Ubuntu 14.10安装simplescalar - 风吹的心 - 博客园 \(cnblogs.com\)](http://cnblogs.com)

运行时遇到的问题:

打开文件报错:

```
skye@ubuntu:~/chronos/gcc-2.7.2.3$ cd ..
skye@ubuntu:~/chronos$ cd gui
skye@ubuntu:~/chronos/gui$ ./gui.sh
/home/skye/chronos/gui/gui.jar
Current Path:/home/skye/chronos/
You chose to open this directory: /home/skye/chronos/bin
You chose to open this directory: /home/skye/chronos/lp_solve
You chose to open this directory: /home/skye/chronos/simplesim-3.0
cnt.c
call rm now!
exitValue:1
call compile now!
exitValue:2
/home/skye/chronos//gui/compile.sh: 36: /home/skye/chronos//gui/compile.sh: Syntax error: Bad fd number
edn.c
call rm now!
exitValue:1
call compile now!
exitValue:2
/home/skye/chronos//gui/compile.sh: 36: /home/skye/chronos//gui/compile.sh: Syntax error: Bad fd number
call rm now!
exitValue:1
call compile now!
exitValue:2
sslittle-na-sstrix-gcc: No input files
readfile.c:411 fail to open file: benchmarks
/home/skye/chronos//gui/compile.sh: 36: /home/skye/chronos//gui/compile.sh: Syntax error: Bad fd number
```

(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：

```
1 | : 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

```
1 | 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：

```
1 | sudo mv /bin/sh /bin/sh.orig
2 | 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
```

```
skye@ubuntu:~/chronos/gui$ ls -l /bin/sh
lrwxrwxrwx 1 root root 4 2月 24 2020 /bin/sh -> dash
skye@ubuntu:~/chronos/gui$ sudo mv /bin/sh /bin/sh.orig
[sudo] skye 的密码：
对不起，请重试。
[sudo] skye 的密码：
skye@ubuntu:~/chronos/gui$ sudo ln -s /bin/bash /bin/sh
skye@ubuntu:~/chronos/gui$ ls -l /bin/sh
lrwxrwxrwx 1 root root 9 4月 2 14:41 /bin/sh -> /bin/bash
skye@ubuntu:~/chronos/gui$
```

至此，可以正常运行。

File Option Run Help

Source

cnt.c

```
89 for (Outer = 0; Outer < MAXSIZE; Outer++) //Maxsize = 100
90 for (Inner = 0; Inner < MAXSIZE; Inner++)
91 #ifdef WORSTCASE
92 if (Array[Outer][Inner] >= 0) {
93 #else
94 if (Array[Outer][Inner] < 0) {
95 #endif
96 Ptotal += Array[Outer][Inner];
97 Pcnt++;
98 }
99 else {
100 Ntotal += Array[Outer][Inner];
101 Ncnt++;
102 }
103
104 Ptotal = Ptotal;
105 Pscnt = Pcnt;
106 Negtotal = Ntotal;
107 Negcnt = Ncnt;
108 }
109
110 // This function returns in milliseconds the amount of compiler time
111 //int time()
112 //{
113 // struct tms buffer;
114 //int utime;
115 //
116 //times(&buffer);
117 //utime = (buffer.tms_utime / 60.0) * 1000.0;
118 //return (utime);
119 //}
120
121
122 // Generates random integers between 0 and 8095
123 int RandomInteger(void)
124 {
125 Seed = ((Seed * 133) + 81) % 8095;
126 return Seed;
127 }
128
129
130
131
132
133
```

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 sli \$2,\$5,10

00400420 bne \$2,\$0,004003d0

Block: 6

00400428 addiu \$4,\$4,40

00400430 addiu \$10,\$10,1

00400438 sli \$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