

Installing SimpleScalar: common problems and their solutions

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Step 0: Download all the required files (**simpleutils-990811.tar.gz**, **simplesim-3.0.tar.gz** and **simpletools.tar.gz**) either from course home page (customized for the project) or from www.simplescalar.com. It is assumed in this document that you have downloaded the files from the course home page. However, the basic steps are the same even if you download from other sources. But, you might have a little bit different directory structure and in the worst case, more installation problems to deal with.

Step 1: Checking host machine

```
uname -a
```

The output will be something like this - Linux CE-PC18 2.6.18-5-686 #1 SMP Wed Oct 3 00:12:50 UTC 2007 i686 GNU/Linux

The following may make next steps easier: `setenv MYHOST i686-unknown-gnu/linux`

Step 2: Creating installation directory and copying the required files to installation directory

- `mkdir simplescalar`
- `setenv IDIR <path of your home directory>/simplescalar`
- Copy all the zipped files to the installation directory - **simpleutils-990811.tar.gz**, **simplesim-3.0.tar.gz**, **simpletools.tar.gz**
- Unzip the files
`gunzip *.*`
`tar xvf simpleutils-990811.tar`
`tar xvf simplesim-3.0.tar`
`tar xvf simpletools.tar`
- Remove the tar files as they are no longer required - `rm *.tar`
- Check whether you have the followings in the installation directory
f2c-1994.09.27 (directory)
glibc-1.09 (directory)
simplesim-3.0 (directory)
ssbig-na-sstrix (directory)
gcc-2.7.2.3 (directory)
Readme.gcc-2.7.2.3 (file)
simpleutils-990811 (directory)
sslittle-na-sstrix (directory)

Step 3: Installing GNU binary utilities

```
cd $IDIR/simpleutils-990811/
```

```
3(a) ./configure --host=$MYHOST --target=sslittle-na-sstrix --with-gnu-as --with-gnu-ld --prefix=$IDIR
```

Problem: You may encounter the following error:

```
./configure: line 2274: flex: command not found  
checking for flex... lex
```

```
checking for yywrap in -ll... no
checking lex output file root... ./configure: line 2362: lex:
command not found
configure: error: cannot find output from lex; giving up
```

Why? **flex** is program which does some lexical analysis for the utility tools used in this part of configuration.

How to solve? Install **flex** and rerun the configure command

3(b) make

Problem: You may encounter the following error:

```
ldlex.l: In function `yy_input':
ldlex.l:589: error: `yy_current_buffer' undeclared (first use in
this function)
ldlex.l:589: error: (Each undeclared identifier is reported only
once
ldlex.l:589: error: for each function it appears in.)
```

How to solve? Change in "ld/ldlex.l": "if (yy_current_buffer->yy_input_file)" to "if (YY_CURRENT_BUFFER->yy_input_file)"

3(c) make install

Step 4: Building the simulators

```
cd $IDIR/simplesim-3.0/
make config-pisa
make
```

Step 5: Building the gcc-cross compiler for SimpleScalar

```
cd $IDIR/gcc-2.7.2.3/
```

5(a): ./configure --host=\$MYHOST --target=sslittle-na-ssstrip --with-gnu-as --with-gnu-ld --prefix=\$IDIR

5(b): make LANGUAGES="c" CFLAGS="-g -O3" CC="gcc"

Problem: You may encounter the following errors:

```
(a)
insn-output.c:675:10: missing terminating " character
insn-output.c: In function `output_110':
insn-output.c:676: error: syntax error before "sll"
insn-output.c:676: error: stray '\ ' in program
insn-output.c:676: error: stray '\ ' in program
insn-output.c:676: error: stray '\ ' in program
insn-output.c:676: error: stray '\ ' in program
```

How to solve? Changed in "insn-output.c": "return "FIXME\n" to "return "FIXME\n\" (line no 675,750 and 823)

(b)

```
In file included from ./libgcc2.c:1419:
/cab/cestud/user/mdmafiju/DAT105/simplescalar/sslittle-na-
sstrix/include/stdio.h:167: parse error before `void'
```

How to solve? Replace sslittle-na-sstrix/include/sys/cdefs.h with patched one under "patched" directory (which redefined __NORETURN)

(c)

```
cxxmain.c:2978: error: conflicting types for 'malloc'
make: *** [cxxmain.o] Error
```

How to solve? Change in cxxmain.c: Comment lines 2978 and 2979 (char * malloc () and char * realloc ()) (May need to apply chmod 755 *.* before making the changes)

5(c) make enquire

5(d) ../simplesim-3.0/sim-safe ./enquire -f > float.h-cross

5(e) make install LANGUAGES="c"

Problem: You may encounter the following errors:

(a)

```
sendmsg.c:36: parse error
```

How to solve? In objc/sendmsg.c, add "#define STRUCT_VALUE 0" at line 35 (May need to apply chmod 755 *.* before making the changes in objc)

(b)

```
In file included from ./protoize.c:60:
/usr/lib/gcc/i486-linux-gnu/4.1.2/include/varargs.h:4:2: error:
#error "GCC no longer implements <varargs.h>."
/usr/lib/gcc/i486-linux-gnu/4.1.2/include/varargs.h:5:2: error:
#error "Revise your code to use <stdarg.h>."
```

How to solve? In protoize.c, replace "#include <varargs.h>" at line 60 with "#include <stdarg.h>"

Step 6: Testing that your installation works correctly
./sim-fast tests-pisa/bin.little/test-math

You may encounter more weird problems.