loopstr user manual

Title	loopstr (Natural loop analysis pass for Machine-SUIF)
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Release Date	03 October 2014
Version	1.1.2
Rev. history	
v1.1.2	2014-10-03 Minor README.rst correction.
v1.1.1	2014-09-25 Updated headers in all source code files. Added File Listing section in README; new files AUTHORS, LICENSE and VERSION; renamed README to README.rst.
v1.1.0	2014-02-24 Changed documentation format to RestructuredText.
v1.0.0	2004-07-19 Initial release.

1. Introduction

`loopstr` is an analysis pass built to be used with the SUIF2/MachSUIF2 compiler infrastructure. This pass generates a textual representation for the loop structure of each given C procedure.

This pass uses the cfa library of MachSUIF. What it actually generates is the natural loop analysis report for the procedure. The format of such file is shown below:

```
Loop info:
  node depth begin end exit
   int: int   Y/N  Y/N  Y/N
   ..................................
```

where:

node: the number of the corresponding basic block (integer)

depth: the loop nesting depth (integer)

begin: a boolean flag to report if a loop begins at the specified node

end: a boolean flag to report if a loop ends at the specified node

exit: a boolean flag to report if an exit from the loop is possible from that node.

This pass depends on the machine, cfg and cfa libraries of MachSUIF. This pass works for the SUIFvm instruction set as well as other MachSUIF backends. The `loopstr` pass has been tested with MachSUIF 2.02.07.15.

2. File listing

The `loopstr` distribution includes the following files:

/loopstr	Top-level directory
AUTHORS	List of `loopstr` authors.
LICENSE	The modified BSD license governs `loopstr`.
README.rst	This file.
README.html	HTML version of README.
README.pdf	PDF version of README.
VERSION	Current version of the project sources.
loopstr.cpp	Implementation of the `loopstr` pass.
loopstr.h	C++ header file containing declarations and prototypes for the above.
rst2docs.sh	Bash script for generating the HTML and PDF versions of the documentation (README).
suif_main.cpp	Entry point for building the standalone program `do_loopstr` that implements the pass.
suif_pass.cpp	Define the SUIF pass built as the dynamically loadable library `libloopstr.so`.
suif_main.h	C++ header file for the above.

3. Installation

Unpack the `loopstr` archive wherever you like, e.g. in `$MACHSUIFHOME/cfa/loopstr`. You don't need to modify anything in the Makefile, if you have a working MachSUIF 2 installation.

The program binary (`do_loopstr`) will be installed at `$NCIHOME/bin` and the shared library (`libloopstr.so`) at `$NCIHOME/solib`, where NCIHOME is the SUIF 2 top-level directory.

4. Usage details

The pass accepts an input file in CFG form to operate. Textual output is generated, written to stdout by default.

Usage synopsys:

```
$ do_loopstr test.cfg
```