loopstr user manual

Title	loopstr (Natural loop analysis pass for Machine-SUIF)
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Rev. history	
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 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`