



Offenburg (Germany) / Tampere (Finland), 3 October 2014

Please be informed that a new **Testwell CTC++ version 7.3.1** has been released.

This version contains some enhancements and bug fixes. Mentioning the following:

- * In v7.3 we added multicondition instrumentation also on assignment statements of the form 'var = bool_expr;'. Unfortunately it did not handle properly all cases where such assignment can occur, e.g. in the following: '(v = ...);', 'cond ? (v1 = ...) : (v2 = ...)', 'foo(..., p = ..., ...)', 'arr[i = ...]'. Fixed in v7.3.1.
- * New version of ctcxmlmerge utility. It has new '-x summary.xml' option. It gives an XML form summary report of TER%s. In that file also the header files are reported as their own file-entities, and can be further processed from XML form.

See below the CTC++ v7.3.1 VERSION.TXT excerpt for more detailed info.

Olavi Poutanen
Testwell

-----excerpt of VERSION.TXT:

Testwell Oy
Verifysoft Technology GmbH
3 October 2014

CTC++ System Version 7.3.1

This file describes the changes in successive versions of CTC++.
The latest version is described first.

Version 7.3.1 (3 October 2014)

This revision 7.3.1 of CTC++ has the following version numbers in its components:

Preprocessor	7.3.1 (was: 7.3; seen by -h option)
Run-time libraries	7.3 (unchanged; seen by 'ident' command applied on the library in some environments)
Postprocessor	7.3 (unchanged; seen by -h option and in the listings)
Header file ctc.h	7.3 (unchanged; seen in the file)
Configuration file ctc.ini	7.3 (unchanged; seen in the file)
CTC++ to HTML Converter	4.1 (was: 4.0; seen by -h option)
CTC++ to Excel Converter	3.0 (unchanged; seen by -h option)
CTC++ XML Merger utility	2.2 (was: 2.1; seen by -h option)
ctc2dat receiver utility	3.2 (unchanged; seen by -h option)



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and the following version numbers in its Windows platform specific components:

Visual Studio IDE Integration
4.2 (unchanged; seen by clicking the Tw-icon in the dialog program and selecting "About...")

CTC++ Wrapper for Windows 3.2 (unchanged; seen by -h option)

and the following version numbers in its Unix platform (Linux, Solaris, HPUX) specific components:

CTC++ Wrapper for Unix 1.4 (unchanged; seen by -h option)

This CTC++ v7.3.1 version contains enhancements and bug fixes:

In the CTC++ preprocessor (ctc):

- Bug fix: In v7.3 came enhancement that assignment statements of form "variable = boolean_expression;" is instrumented for multicondition coverage, if it has &&, || operators. We had false assumption that the construct would always end to ';', and if not, ctc gave its own syntax error. Such assignments can however occur also in contexts like "(v = ...);", "c ? (v1 = ...) : (v2 = ...)", "arr[i = ...]", "foo(p1, p2 = ...)". Now corrected.
- Bug fix: If instrumentation was for multicondition coverage (-i m) and there was code like

```
if (condition)
    variable = expression; // not {...} around the then-part!
code continues...        // e.g. else if (...) ...
```

There was a bug in parsing the 'expression' for instrumentation of its possible && and || operators. The bug was normally harmless, or the instrumented code did not compile, or remaining function code was not instrumented properly. However, if 'condition' was of type "declaration in condition", the instrumented code could in some cases behave differently than original (unless compile error before it). Now corrected.
- Bug fix: A C++ construct (declaration in condition, with **), like

```
if (Type ** variable = something) {...
```

is now instrumented correctly. Previously compilation error.
- Enhancement (workaround on Windows/VC++ limitation): VC++ (cl, link) has limitation that a line in response file cannot be longer than ~131.000 characters. Now ctc splits its generated long response files to contain max 100.000 characters on a line. No more needed certain other abnormal ctc-workaround here.

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In CTC++ to HTML converter (ctc2html):

- New: Added option `--enable-syntax_highlight=0/1`. When activated the generated HTML pages on source code get somewhat similar appearance as in commonly used syntax editors (Visual Studio editor coloring style was used as model).
- New: Now in the delivery package there is a ready-made `ctc2html.ini` file. Thinking is that for a user it would be easier to modify it for changing the utility's default behavior in various graphical aspects.

In the CTC++ XML Merger utility:

- New: Added new option `"-x summary.xml"`. The output file is a compact XML summary of the merged report, and has only TER information of the functions/files/overall. Notably, now also the extracted header file TER results can be further processed from XML form.
- Change: The `"-o profilefile"` option was changed to `"-p profilefile"`. It is now similar as `ctcpost's -p`.
- Change: Into error messages added `"(i/j)"` portion, e.g.
*** ctcxmlmerge error 5 (1/285): Unknown option: -rubbish
It is for vendor internal use, helping in technical support.

General:

- CTC++ User's Guide upgraded to v7.3.1 level (`ctcug.pdf`).

Version 7.3 (21 August 2014)

For this version, please have a look to
<http://www.verifysoft.com/ctcpp73.pdf>