Scribble Test Suite: SMARTS 2.6 to CAPBAK/MSW 3.2 with TCAT C/C++ Windows v2.1

This comprehensive application note explores how the entire suite of Software Research's testing tools interacts with the sample application **Scribble**. The sample *Scribble* has 9 source files and 102 functions. Also, it has total 1433 lines of the source codes. We have built an instrumented version of *Scribble* and exercised it. There are 104 lines in the mskefile. The coverage C1 and S1 for this *Scribble* are *74.32%* and *88.52%*.

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Getting Started with SMARTS

- Start up **SMARTS**.
- Click on **Run** button and select the "*scribble.ats*" file from File Open.
- Select a test or test group in the Test Tree box of the Run Tests window.
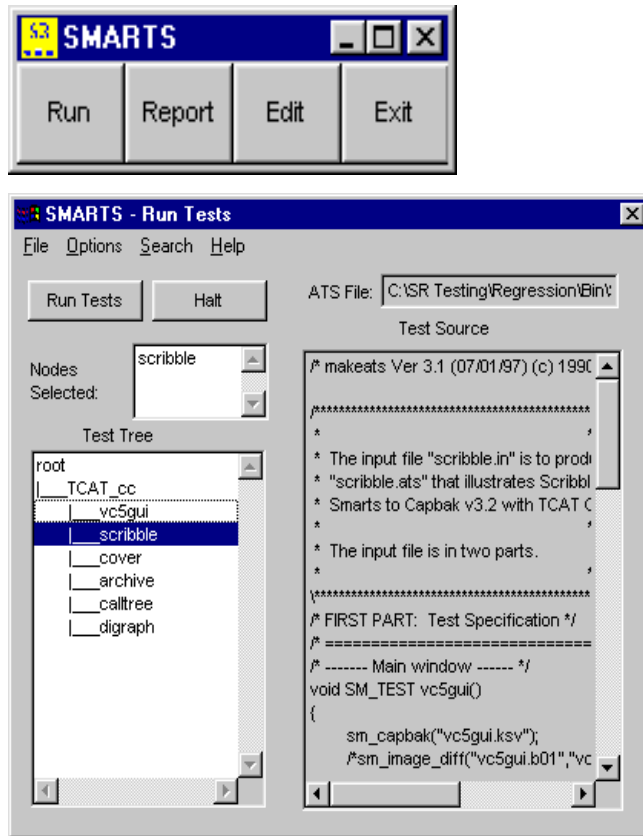- Click the **Run Tests** button to run the tests.

FIGURE 1   SMARTS Main Window

```
/*********************************************************\
 *                                                         *
 *   The input file "scribble.in" is to produce an ATS file  *
 *   "scribble.ats" that illustrates Scribble test suite:    *
 *   SMARTS to CAPBAK v3.2 with TCAT C/C++ Windows v2.1       *
 *                                                         *
 *   The input file is in two parts.                       *
 *                                                         *
\*********************************************************/
#
/* FIRST PART:  Test Specification */
/* ============================== */
#
/* ------- Main window ------ */
vc5gui
#
/* ------- Executing the instrumented Scribble ------ */
scribble
#
/* ------- Viewing coverage reports with Cover ------ */
cover
#
/* ------- Viewing coverage reports/archive with Cover ------ */
archive
#
/* ------- Viewing a Calltree ------- */
calltree
#
/* ------- Viewing directed graphs with DiGraph ------ */
digraph
#
#
/* SECOND PART:  Test Tree */
/* ====================== */
#

TCAT_cc
        vc5gui
        scribble
        cover
        archive
        calltree
        digraph
```

FIGURE 2   ATS Input "*Scribble.in*" File

```
/***********************************************************\
 *                                                         *
 *  The input file "scribble.in" is to produce an ATS file  *
 *  "scribble.ats" that illustrates Scribble test suite:    *
 *  SMARTS to CAPBAK v3.2 with TCAT C/C++ Windows v2.1       *
 *                                                         *
 *  The input file is in two parts.                        *
 *                                                         *
\***********************************************************/
/* FIRST PART:  Test Specification */
/* ============================= */
/* ------- Main window ------ */
void SM_TEST vc5gui()
{
        sm_capbak("vc5gui.ksv");
        sm_image_diff("vc5gui.b01","vc5gui.r01","");
}
/* ------- Executing the instrumented Scribble ------ */
void SM_TEST scribble()
{
        sm_capbak("scribble.ksv");
        sm_image_diff("scribble.b01","scribble.r01","");
}
/* ------- Viewing coverage reports with Cover ------ */
void SM_TEST cover()
{
        sm_capbak("cover.ksv");
        sm_image_diff("cover.b01","cover.r01","");
}
/* ------- Viewing coverage reports/archive with Cover ------ */
void SM_TEST archive()
{
        sm_capbak("archive.ksv");
        sm_image_diff("archive.b01","archive.r01","");
}
/* ------- Viewing a Calltree ------- */
void SM_TEST calltree()
{
        sm_capbak("calltree.ksv");
        sm_image_diff("calltree.b01","calltree.r01","");
}
/* ------- Viewing directed graphs with DiGraph ------ */
void SM_TEST digraph()
{
        sm_capbak("digraph.ksv");
        sm_image_diff("digraph.b01","digraph.r01","");
}
/* SECOND PART:  Test Tree */
/* ===================== */
void SM_GROUP TCAT_cc()
{
        vc5gui();
        scribble();
        cover();
        archive();
        calltree();
        digraph();
}
```

FIGURE 3   ATS Output "*Scribble.ats*" File

Tests Description

The test group includes five test scripts: **VC5GUI**, **Scribble**, **Cover**, **Archive**, **Calltree**, and **Digraph**.

Select TCAT_CC to execute all scripts, or select individual ones.

The description for each test script is listed below.

Main Window: TCAT C/C++ Integrated with MS-Visual C++ v 5.0 Main Window

- Start up **MS-Visual C++ 5.0**.
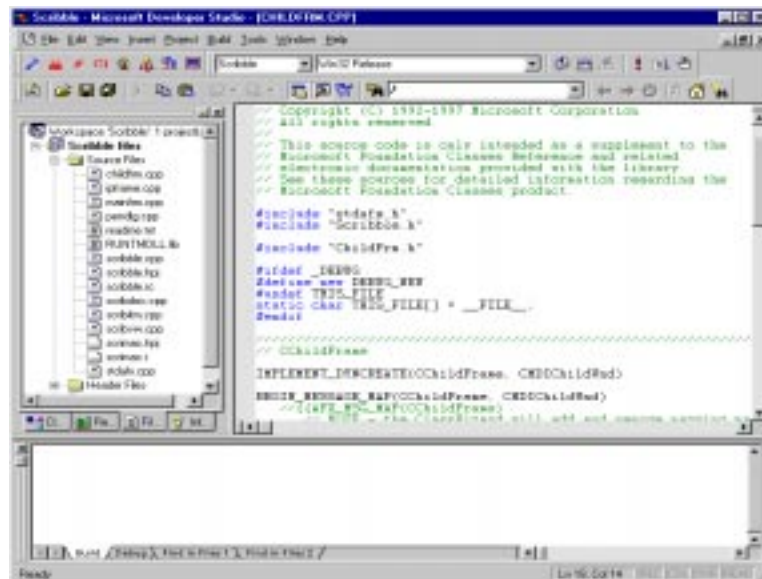- Point to the **TCAT C/C++ for Windows** features tool bar.

FIGURE 4   MS-Visual C++ v.5.0 Window

Scribble: Executing the Instrumented Scribble in Windows 95/NT

- Start up **Scribble**.
- Test-drive the instrumented **Scribble** to create a trace file.
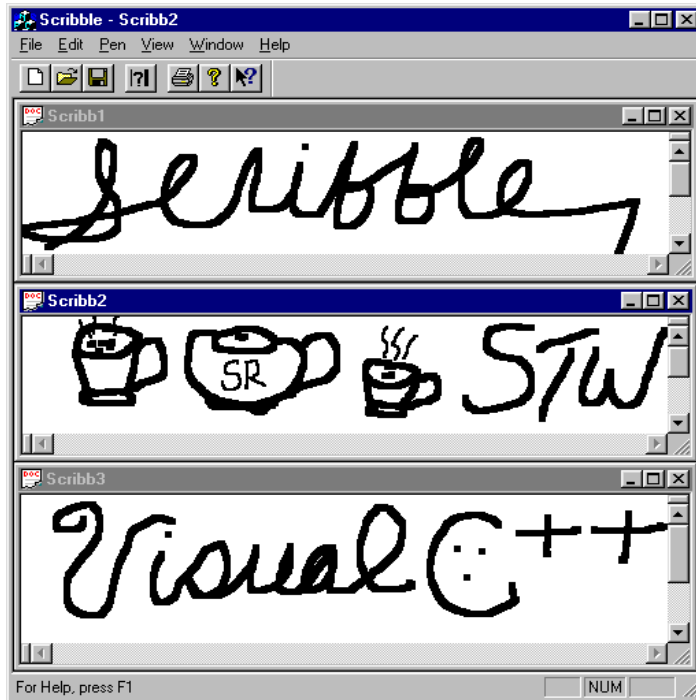

FIGURE 5   Testing Scribble

Cover: Viewing Coverage Reports with Cover

- Start up **Cover**.
- From the **File** menu, select **Open**.
- In the Open dialog box, click on the file name "***Trace.trc***" from the

  "*...\Prj_Dir\tcat_db\Prj_Name*"

  directory created during instrumentation. The dialog box then asks for an archive file; ignore this request by clicking the Cancel button. A coverage report of the test of Scribble appears.

- Viewing the Source Code Associated With Coverage Reports.

  (a). Click on the Segment number, or the CallPair number of the function.

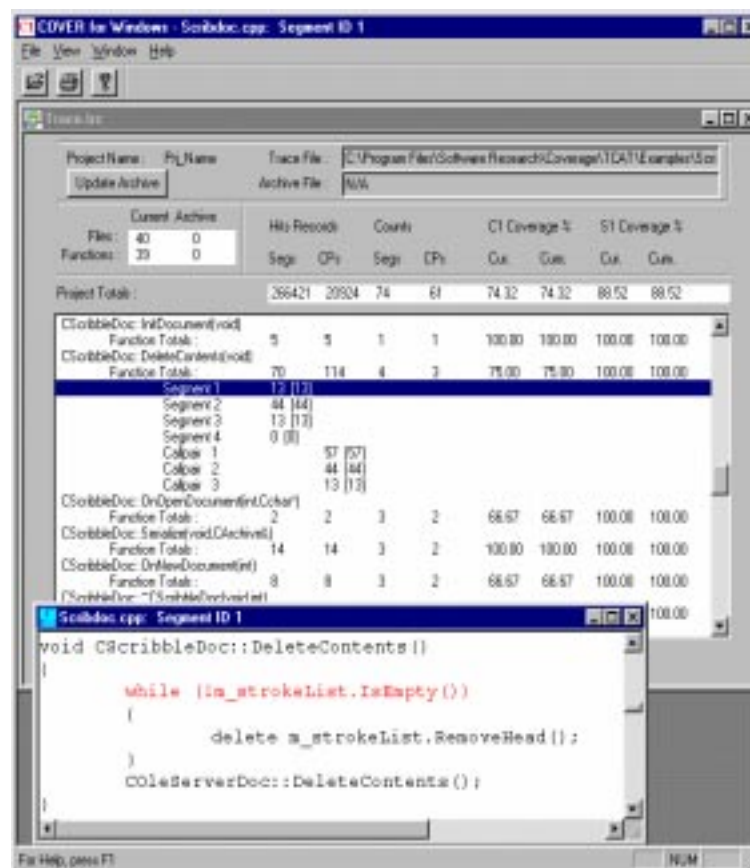 The code is displayed in a separate window with the calling statement highlighted in red.

FIGURE 6   Cover Main Window

Archive: Viewing Coverage Reports/Archive with Cover

- • Start up **Cover**.
- • From the **File** menu, select **Open**.
- • In the Open dialogue, click on the file name "***Trace.trc***" from the

  "*...\Prj_Dir\tcat_db\Prj_Name*"

  directory created during instrumentation. The dialog box then asks for an archive file; select the **"*SR.arh*"** file and Press the Enter Key. A coverage report with the Archive file of the test of Scribble appears.

CallTree: Viewing a Calltree

- Start up **CallTree**.
- Select **Open**/**File.**
- Select "*Scribble.cg*" under the c_graph directory.
- Select the "*Prj_Name.mdf*" file in the

   "*...\Prj_Dir\tcat_db\Prj_Name*"

   directory.
- A Select Function list box appears. Select a function.

The **CallTree** depicting the selected function appears.

- Viewing the Directed Graph Associated With a CalTtree Node
    - (a). Select the root node of the calltree.
    - (b). Click on the View **Digraph** button on the toolbar.

A directed graph of the function appears.

- Viewing the Source Code Associated With A CallTree
    - (a). Click on the edge running from the root node to the left-most node.
    - (b). Click on the **Source Code** button on the toolbar has a red code.

The code is displayed in a separate window with the calling statement highlighted in red.
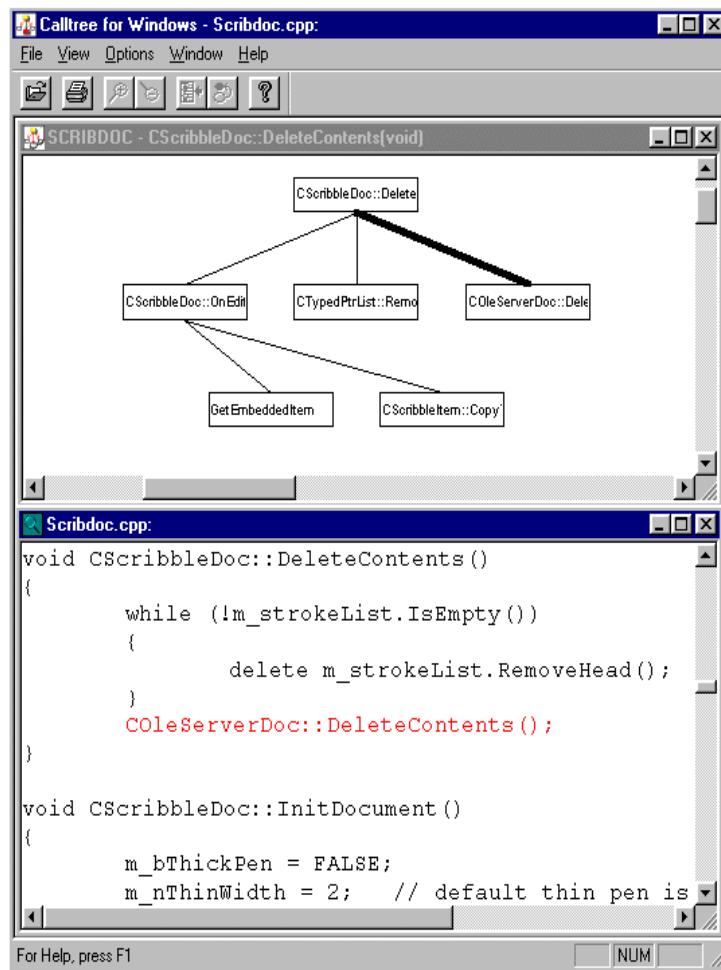
FIGURE 7   CallTree and Source Code Associated with one CallPair

DiGraph: Viewing Directed Graphs with DiGraph

- Open up **DiGraph.**
- Select **File/Open.**
- You are prompted for the name of the directed graph to view.

Find the **"*Scribble.dg file*"** under the *d_graph* directory.

- The next prompt asks for the name of the database file. Select the "*Prj_Name.mdf*" file in the

    "*...Prj_Dir\tcat_db\Prj_Name*" directory.

- A window pops up listing the available functions. Select one of the functions to view.

A directed graph depicting possible program flows of the function appears. By clicking near the number associated with an edge and selecting the View Source button, you can call up and view the associated source code.
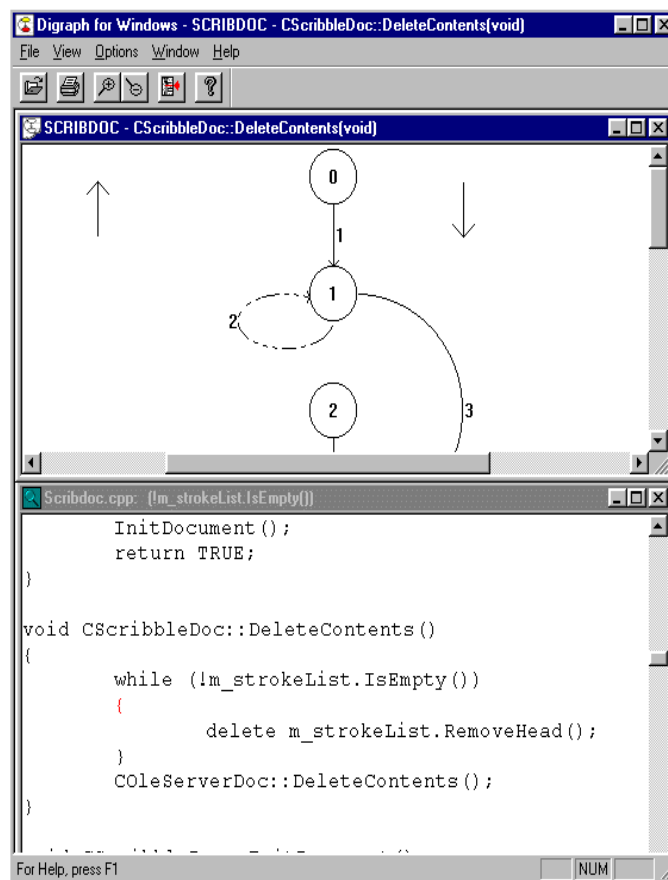

FIGURE 8   Digraph and Source Code Associated with One of its Segments

Example file list

Scribble.cpp	cpp file: scribble source file
Scribdoc.cpp	cpp file: scribble source file
Scribble.in	Input file: creating a ATS file
Scribble.ats	ATS file: the Tcat C++ example
Tcatvcgui.ksv	Keysave file: main window
Scribble.ksv	Keysave file: the test-drive scribble
Cover.ksv	Keysave file: coverage report
Scribonly.trc	Trace file
Scribble.trc	Trace file
About.trc	Trace file
SR.arh	Archive file: scribble's trace file
Archive.ksv	Keysave file: coverage report with archive file
Calltree.ksv	Keysave file: calltree
Digraph.ksv	Keysave file: Digraph

Example Script Files

This file lists examples of CAPBAK/MSW files. Here are the examples of keysave files:

- **Turetime Mode**

This is a typical *keysave* file:

```
/*
 * Capbak for Win32 (v3.2)
 * Copyright (c) 1998 Software Research, Inc. All Rights Reserved
 * Session started on Fri Oct 30 16:06:54 1998
 */

void tt()
{
cb_move_mouse(21, 753, 10);
cb_move_mouse(22, 755, 20);
cb_move_mouse(23, 756, 20);
cb_move_mouse(24, 756, 131);
cb_move_mouse(25, 756, 90);
cb_move_mouse(25, 756, 0);
cb_move_mouse(25, 755, 571);
cb_move_mouse(26, 755, 490);
cb_mbutton_down("LEFT", 26, 755, 20);
cb_mbutton_up("LEFT", 26, 755, 131);
cb_move_mouse(258, 622, 20);
cb_move_mouse(258, 624, 10);
cb_move_mouse(258, 625, 20);
cb_move_mouse(258, 626, 10);
cb_move_mouse(258, 627, 20);
cb_move_mouse(258, 628, 20);
cb_move_mouse(259, 629, 10);
cb_move_mouse(259, 630, 40);
cb_move_mouse(259, 631, 10);
cb_move_mouse(260, 631, 230);
cb_mbutton_down("LEFT", 260, 631, 0);
cb_mbutton_up("LEFT", 260, 631, 101);
cb_move_mouse(286, 595, 600);
cb_move_mouse(286, 595, 0);
cb_move_mouse(286, 595, 0);
cb_move_mouse(286, 595, 0);
cb_move_mouse(287, 595, 671);
cb_move_mouse(287, 595, 0);
cb_move_mouse(288, 595, 0);
cb_move_mouse(288, 595, 0);
cb_move_mouse(288, 595, 0);
cb_move_mouse(288, 595, 0);
cb_move_mouse(288, 595, 0);
cb_move_mouse(288, 595, 0);
cb_move_mouse(288, 595, 0);
cb_move_mouse(288, 595, 0);
cb_sync_win_activate("Microsoft Developer Studio", 58, 67, 825, 595);
cb_sync_win_activate("Microsoft Developer Studio", 58, 67, 825, 595);
cb_move_mouse(394, 78, 20);
cb_move_mouse(395, 78, 20);
cb_mbutton_down("LEFT", 395, 78, 0);
cb_move_mouse(397, 78, 10);
cb_move_mouse(397, 78, 0);
cb_move_mouse(398, 78, 20);
cb_move_mouse(400, 78, 10);
cb_move_mouse(401, 78, 20);
cb_move_mouse(402, 78, 21);
cb_move_mouse(403, 79, 10);
cb_move_mouse(404, 79, 20);
cb_move_mouse(405, 79, 30);
cb_move_mouse(406, 80, 30);
cb_mbutton_up("LEFT", 406, 80, 150);
cb_move_mouse(406, 81, 150);
cb_move_mouse(405, 81, 60);
cb_move_mouse(405, 82, 20);
cb_key_down("VK_MENU", 1332);
cb_key_down("VK_CONTROL", 30);
```

```
cb_key_down("VK_CONTROL", 461);
cb_key_down("VK_CONTROL", 70);
cb_key_down("VK_CONTROL", 70);
cb_key_down("VK_CONTROL", 70);
cb_key_down("VK_CONTROL", 70);
cb_key_up("VK_MENU", 500);
cb_key_up("VK_CONTROL", 500);
cb_save_window("C:\\TEMP\\ksv86.b01", 405, 82);
cb_move_mouse(405, 81, 1012);
cb_move_mouse(406, 81, 80);
cb_mbutton_down("LEFT", 406, 81, 81);
cb_move_mouse(407, 81, 100);
cb_move_mouse(408, 81, 50);
cb_move_mouse(408, 81, 0);
cb_move_mouse(409, 81, 30);
cb_move_mouse(488, 125, 61);
cb_mbutton_up("LEFT", 488, 125, 170);
cb_move_mouse(488, 126, 20);
cb_move_mouse(612, 440, 20);
cb_move_mouse(612, 439, 10);
cb_key_down("VK_MENU", 2494);
cb_key_down("VK_CONTROL", 10);
cb_key_up("VK_MENU", 500);
cb_key_up("VK_CONTROL", 500);
cb_save_area("C:\\TEMP\\ksv86.b02", 375, 135, 126, 32);
cb_key_down("VK_MENU", 12248);
cb_key_down("VK_CONTROL", 10);
cb_key_up("VK_MENU", 500);
cb_key_up("VK_CONTROL", 500);
cb_wait_area("C:\\TEMP\\ksv86.s01", 298, 142, 44, 24);
cb_move_mouse(342, 166, 982);
cb_move_mouse(346, 166, 20);
cb_move_mouse(362, 166, 20);


}    /* End tt() */
#pragma comment(user, "tt")
```

- **Object Mode**

This is a typical *keysave* file:

```
/*
 * Capbak for Win32 (v3.2)
 * Copyright (c) 1998 Software Research, Inc. All Rights Reserved
 * Session started on Fri Oct 30 17:22:53 1998
 */

void om()
{
cb_move_mouse(246, 558, 0);
cb_move_mouse(246, 558, 0);
cb_sync_win_activate("Scribble - Scribb1", 66, 66, 768, 537);
cb_sync_win_activate("Scribble - Scribb1", 66, 66, 768, 537);
cb_move_mouse(251, 96, 30);
cb_move_mouse(252, 96, 20);
cb_move_mouse(252, 95, 10);
cb_move_mouse(253, 95, 50);
cb_key_up("VK_MENU", 500);
cb_key_up("VK_CONTROL", 500);
cb_save_window("C:\\TEMP\\ksv8B.b01", 253, 95);
cb_key_down("VK_MENU", 2454);
cb_key_down("VK_CONTROL", 30);
cb_move_mouse(321, 127, 20);
cb_move_mouse(319, 127, 10);
cb_move_mouse(317, 127, 20);
cb_move_mouse(316, 128, 20);
cb_move_mouse(314, 128, 10);
cb_move_mouse(313, 128, 20);
cb_move_mouse(312, 128, 20);
cb_move_mouse(311, 128, 10);
cb_move_mouse(310, 129, 20);
cb_om_menu_select("Scribble - Scribb1", "Afx:400000:8:10008:0:7001e7", "&Help\&About Scribble...", 10);
cb_sync_win_activate("About Scribble", 0, 0, 0, 0);
cb_sync_win_activate("About Scribble", 329, 310, 332, 114);
cb_key_up("VK_MENU", 500);
```

```
cb_key_up("VK_CONTROL", 500);
cb_save_area("C:\\TEMP\\ksv8B.b02", 390, 341, 106, 28);
cb_key_down("VK_MENU", 1642);
cb_key_down("VK_CONTROL", 30);
cb_move_mouse(636, 353, 10);
cb_move_mouse(636, 352, 20);
cb_move_mouse(635, 352, 191);
cb_move_mouse(635, 351, 200);
cbw_button_clicked("#32770", "About Scribble", 0, "OK");
cb_sync_win_activate("Scribble - Scribbl", 111, 99, 768, 537);
cb_move_mouse(635, 350, 211);
cb_move_mouse(634, 346, 20);
cb_move_mouse(630, 334, 10);
cb_move_mouse(620, 320, 20);
cb_move_mouse(604, 304, 20);
cb_move_mouse(586, 288, 10);
cb_move_mouse(566, 272, 20);
cb_move_mouse(542, 254, 20);
cb_move_mouse(522, 238, 10);
cb_om_menu_select("Scribble - Scribbl", "Afx:400000:8:10008:0:7001e7", "&File\&Open...Ctrl+O", 10);
cb_sync_win_activate("Open", 0, 0, 0, 0);
cb_sync_win_activate("Open", 282, 235, 426, 264);
cb_key_up("VK_MENU", 500);
cb_key_up("VK_CONTROL", 500);
cb_wait_area("C:\\TEMP\\ksv8B.s01", 308, 327, 51, 18);
cb_key_down("VK_MENU", 3635);
cb_key_down("VK_CONTROL", 10);
cb_key_down("VK_CONTROL", 471);
cb_key_down("VK_CONTROL", 80);
cbw_button_clicked("#32770", "Open", 0, "Cancel");
cb_sync_win_activate("Scribble - Scribbl", 111, 99, 768, 537);
cb_sync_win_activate("Scribble - Scribbl", 111, 99, 768, 537);
cb_move_mouse(675, 460, 151);
cb_move_mouse(676, 456, 10);
cb_move_mouse(676, 442, 20);
cb_move_mouse(728, 187, 20);
cb_move_mouse(728, 186, 471);
cb_move_mouse(729, 186, 80);
cb_mbutton_down("LEFT", 729, 186, 20);
cb_mbutton_up("LEFT", 729, 186, 110);
cb_sync_win_activate("Scribble", 0, 0, 0, 0);
cb_sync_win_activate("Scribble", 395, 308, 201, 119);
cb_move_mouse(543, 398, 20);
cb_move_mouse(546, 398, 11);
cb_move_mouse(549, 398, 20);
cb_move_mouse(551, 398, 20);
cbw_button_clicked("#32770", "Scribble", 0, "Cancel");
cb_sync_win_activate("Scribble - Scribbl", 111, 99, 768, 537);
cb_move_mouse(871, 117, 10);
cb_move_mouse(871, 116, 40);
cb_move_mouse(871, 115, 30);
cb_move_mouse(871, 114, 30);
cb_move_mouse(871, 113, 51);
cb_move_mouse(871, 112, 100);
cb_mbutton_down("LEFT", 871, 112, 30);
cb_mbutton_up("LEFT", 871, 112, 100);
cb_sync_win_activate("Scribble", 0, 0, 0, 0);
cb_sync_win_activate("Scribble", 395, 308, 201, 119);
cb_move_mouse(591, 323, 400);
cb_move_mouse(581, 335, 20);
cb_move_mouse(577, 339, 20);
cb_move_mouse(494, 398, 10);
cb_move_mouse(494, 399, 20);
cb_move_mouse(493, 399, 20);
cbw_button_clicked("#32770", "Scribble", 0, "&No");
cb_move_mouse(494, 399, 80);
cb_move_mouse(495, 396, 30);
cb_move_mouse(496, 394, 30);
cb_move_mouse(497, 392, 20);
cb_move_mouse(499, 390, 20);
cb_move_mouse(501, 387, 10);
cb_move_mouse(504, 374, 40);
cb_move_mouse(514, 364, 10);
cb_sync_win_activate("Scribble - Scribbl", 111, 99, 768, 537);
}    /* End om() */
#pragma comment(user, "om")
```

The Instrumentor Engine Database Files

This file lists examples of **WinIC**'9 output files. Here are the examples of database files:

- **d_graph File**

   This is a typical *d_graph* file:

```
0 1 1 0 0 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 31 0 0 0 (1) 0 0 0
0 1 1 1 0 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 31 0 0 0 (1) 0 0 0
0 1 1 2 0 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 51 0 0 0 (1) 0 0 0
0 1 1 3 0 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 71 0 0 0 (1) 0 0 0
1 2 2 3 1 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 72 0 0 0 (!AfxOleInit()) 0 0 0
1 2 3 3 1 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 83 0 0 0 (!AfxOleInit()) 0 0 0
2 3 4 3 1 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 122 0 0 0 (!pMainFrame->Load-
Frame(128)) 0 0 0
2 3 5 3 1 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 123 0 0 0 (!pMainFrame->Load-
Frame(128)) 0 0 0
3 4 6 3 1 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 135 0 0 0
(cmdInfo.m_bRunEmbedded||cmdInfo.m_bRunAutomated) 0 0 0
3 4 7 3 1 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 143 0 0 0
(cmdInfo.m_bRunEmbedded||cmdInfo.m_bRunAutomated) 0 0 0
4 5 8 3 1 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 147 0 0 0 (!ProcessShellCom-
mand(cmdInfo)) 0 0 0
4 5 9 3 1 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 151 0 0 0 (!ProcessShellCom-
mand(cmdInfo)) 0 0 0
0 1 1 4 0 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 188 0 0 0 (1) 0 0 0
0 1 1 5 0 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 192 0 0 0 (1) 0 0 0
0 1 1 6 0 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 197 0 0 0 (1) 0 0 0
0 1 1 7 0 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 197 0 0 0 (1) 0 0 0
0 1 1 8 0 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 206 0 0 0 (1) 0 0 0
```

- **c_graph File**

   This is a typical *c_graph* file:

```
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) Afx-
OleInit(int) 1 3 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 71 0 0 1
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) AfxMessage-
Box(int,Cchar*,Uint,Uint) 2 3 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 73 0 0 2
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int)
Enable3dControls(int,CWinApp&) 3 3 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 83 0 0
3
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) LoadStdPro-
fileSettings(void,CWinApp&,Uint) 4 3 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 88 0
0 3
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) CMultiDocTem-
plate::SetServerInfo(void,Uint,Uint,CRuntimeClass*,CRuntimeClass*) 5 3 C:\SRTEST~1\COVER-
AGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 101 0 0 3
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) AddDocTem-
plate(void,CWinApp&,CDocTemplate*) 6 3 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP
105 0 0 3
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) COleTemplate-
Server::ConnectTemplate(void,C_GUID&,CDocTemplate*,int) 7 3 C:\SRTEST~1\COVERAGE\TCAT\EXAM-
PLES\SCRIBB~1.0\SCRIBBLE.CPP 110 0 0 3
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) COleTemplate-
Server::RegisterAll(int) 8 3 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 114 0 0 3
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) CMain-
Frame::LoadFrame(int,Uint,Ulong,CWnd*,CCreateContext*) 9 3 C:\SRTEST~1\COVERAGE\TCAT\EXAM-
PLES\SCRIBB~1.0\SCRIBBLE.CPP 121 0 0 3
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) CWnd::DragAc-
ceptFiles(void,int) 10 3 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 127 0 0 5
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) ParseCommand-
Line(void,CWinApp&,CCommandLineInfo&) 11 3 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIB-
BLE.CPP 131 0 0 5
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) COleTemplate-
Server::UpdateRegistry(void,OLE_APPTYPE,Cchar**,Cchar**) 12 3 C:\SRTEST~1\COVERAGE\TCAT\EXAM-
PLES\SCRIBB~1.0\SCRIBBLE.CPP 143 0 0 7
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) Pro-
cessShellCommand(int,CWinApp&,CCommandLineInfo&) 13 3 C:\SRTEST~1\COVERAGE\TCAT\EXAM-
PLES\SCRIBB~1.0\SCRIBBLE.CPP 146 0 0 7
```

```
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) CMain-
Frame::ShowWindow(int,int) 14 3 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 151 0 0 9
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) CMain-
Frame::UpdateWindow(void) 15 3 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 152 0 0 9
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CAboutDlg::DoDataExchange(void,CDataEx-
change*) CDialog::DoDataExchange(void,CDataExchange*) 1 5 C:\SRTEST~1\COVERAGE\TCAT\EXAM-
PLES\SCRIBB~1.0\SCRIBBLE.CPP 192 0 0 1
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::OnAppAbout(void) CAbout-
Dlg::DoModal(int) 1 8 C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CPP 207 0 0 1
```

- **mdf File**

  This is a typical *mdf* file:

```
Prj_Name 40 39
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIB-
BLE.CScribbleApp::_GetBaseMessageMap(CAFX_MSGMAP*) 0 100 1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::GetMessageMap(CAFX_MSGMAP*) 1
100 1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::CScribbleApp(void) 2 100 1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) 3 100 9 15
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CAboutDlg::CAboutDlg(void) 4 100 1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CAboutDlg::DoDataExchange(void,CDataEx-
change*) 5 100 1 1
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CAboutDlg::_GetBaseMessageMap(CAFX_MSGMAP*) 6
100 1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CAboutDlg::GetMessageMap(CAFX_MSGMAP*) 7 100
1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::OnAppAbout(void) 8 100 1 1
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::CreateObject(CObject*) 9 100 1
0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::_GetBaseClass(CRuntimeClass*)
10 100 1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::GetRuntimeClass(CRuntime-
Class*) 11 100 1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribble-
Doc::_GetBaseMessageMap(CAFX_MSGMAP*) 12 100 1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::GetMessageMap(CAFX_MSGMAP*) 13
100 1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::CScribbleDoc(void) 14 100 2 1
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::~CScribbleDoc(void,int) 15 100
1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::OnNewDocument(int) 16 100 3 2
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::Serialize(void,CArchive&) 17
100 3 2
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::OnOpenDocument(int,Cchar*) 18
100 3 2
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::DeleteContents(void) 19 100 4 3
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::InitDocument(void) 20 100 1 1
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::NewStroke(CStroke*) 21 100 2 2
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CStroke::CreateObject(CObject*) 22 100 1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CStroke::_GetBaseClass(CRuntimeClass*) 23 100
1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CStroke::GetRuntimeClass(CRuntimeClass*) 24
100 1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.>>(CArchive&,CArchive&,CStroke*&) 25 100 1 1
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CStroke::CStroke(void) 26 100 1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CStroke::CStroke(void,Uint) 27 100 1 1
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CStroke::Serialize(void,CArchive&) 28 100 3 3
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CStroke::DrawStroke(int,CDC*) 29 100 8 6
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::OnEditClearAll(void) 30 100 1 3
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::OnPenThickOrThin(void) 31 100 1
1
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::ReplacePen(void) 32 100 1 2
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::OnUpdateEditClearAll(void,CCm-
dUI*) 33 100 1 1
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::OnUpdatePenThickOr-
Thin(void,CCmdUI*) 34 100 1 1
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::OnPenWidths(void) 35 100 3 2
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CStroke::FinishStroke(void) 36 100 5 4
```

```
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::OnGetEmbeddedItem(COleServerI-
tem*) 37 100 1 0
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::OnSetItem-
Rects(void,CtagRECT*,CtagRECT*) 38 100 1 4
C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBDOC.CScribbleDoc::OnEditCopy(void) 39 100 1 2
```

- **Trace File and Archive File**

This is a typical *trace* file or *archive* file:

```
#Format 3.0
# Profile for project 'Prj_Name':
p Prj_Name 9 8
n C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIB-
BLE.CScribbleApp::_GetBaseMessageMap(CAFX_MSGMAP*) 0 100 1 0
n C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::GetMessageMap(CAFX_MSGMAP*) 1
100 1 0
n C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::CScribbleApp(void) 2 100 1 0
n C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::InitInstance(int) 3 100 9 15
n C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CAboutDlg::CAboutDlg(void) 4 100 1 0
n C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CAboutDlg::DoDataExchange(void,CDataEx-
change*) 5 100 1 1
n C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CAbout-
Dlg::_GetBaseMessageMap(CAFX_MSGMAP*) 6 100 1 0
n C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CAboutDlg::GetMessageMap(CAFX_MSGMAP*) 7
100 1 0
n C:\SRTEST~1\COVERAGE\TCAT\EXAMPLES\SCRIBB~1.0\SCRIBBLE.CScribbleApp::OnAppAbout(void) 8 100 1 1
# End of profile for project 'Prj_Name'.
s 0 1 1466
s 1 1 1833
s 2 1 1
s 3 1 1
s 3 3 1
s 3 5 1
s 3 7 1
s 3 9 1
c 3 1 1
c 3 3 1
c 3 4 1
c 3 5 1
c 3 6 1
c 3 7 1
c 3 8 1
c 3 9 1
c 3 10 1
c 3 11 1
c 3 12 1
c 3 13 1
c 3 14 1
c 3 15 1
```

If you are having any problems either setting up, or working with this test suite of **TCAT C++ for Windows**, please report them to Software Research and every effort will be made to get them resolved and included in the next release.

We would also appreciate feedback regarding the usability (the project workflow), how it can be improved, etc.

Any other comments are also welcome.

You can contact Software Research through any of these ways:

E-MAIL: support@soft.com

PHONE: +1 (800) 942-SOFT or +1 (415) 957-1441

FAX: +1 (415) 957-0730

WWW: *http://www.soft.com/Support/index.html*