

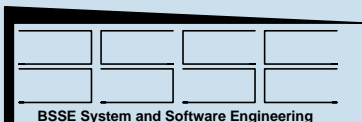
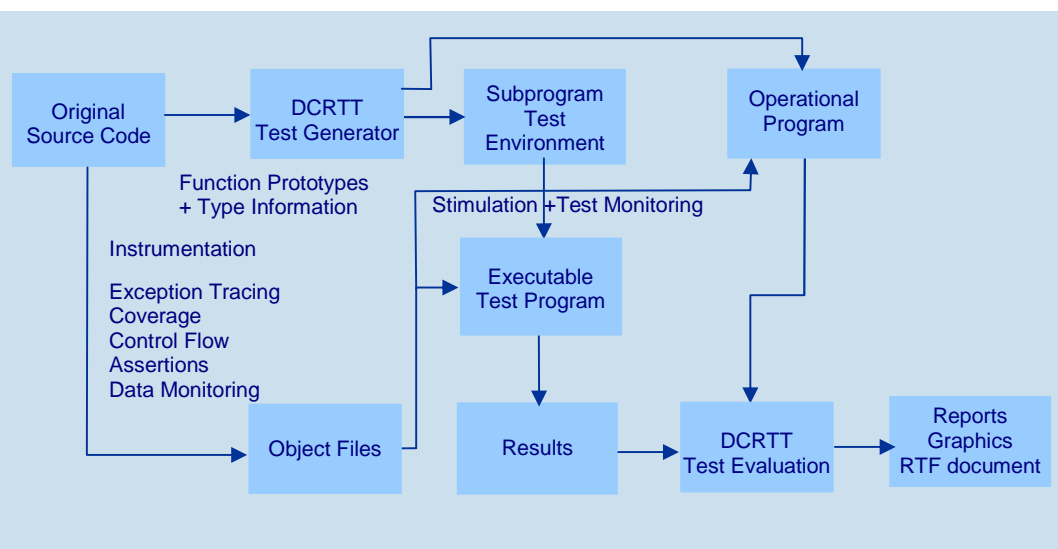
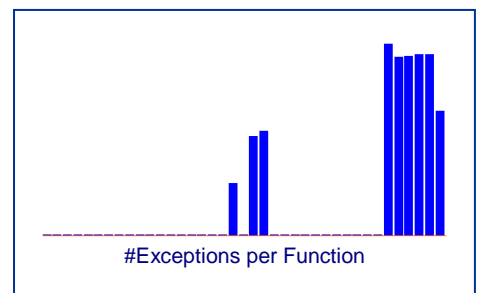
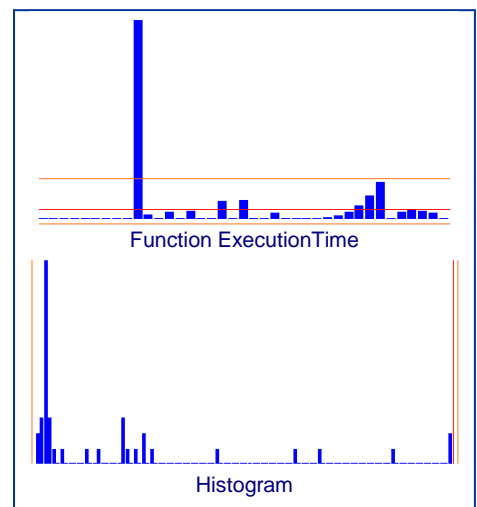
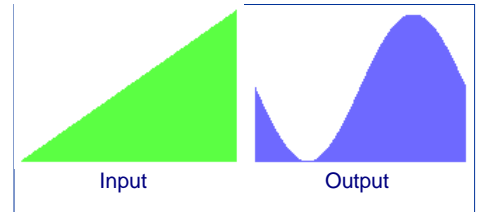
Major Features

- Automated Function Testing
- Random, Statistical and Incremental Test Steps
- Automated Test Vector Generation (Input and Output)
- Automated Robustness Testing and Fault Injection
- Automated Coverage Analysis (Block and Decision Coverage during Module and Integration Testing, in operation)
- Automated Control Flow Analysis
- Automated Exception Recording
- Determination and Recording of Execution Times
- Instrumentation support for Integration and System Testing
- Automated Documentation
- Code Analysis: Function and Type Properties
- Integration with Canatata++
- Auto-Filtering of Test Cases and Test Driver Generation
- Classification of Test Cases (graphical figures)
- Monitoring of Data Range of Function Parameters and Static Variables
- Automated substitution of missing functions and data with stimulation capabilities
- Full support of any user-defined data type
- Full support for ANSI C

DCRTT automates testing of C functions from test case generation to test evaluation and documentation. The product offers high productivity of testing, coverage analysis, identification of exceptions and execution times. Starting of a script in the source directory is fully sufficient to run the automated tests and to get the results in an automatically generated document.

Automated Test Procedure

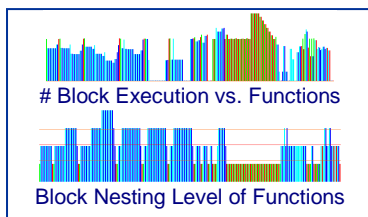
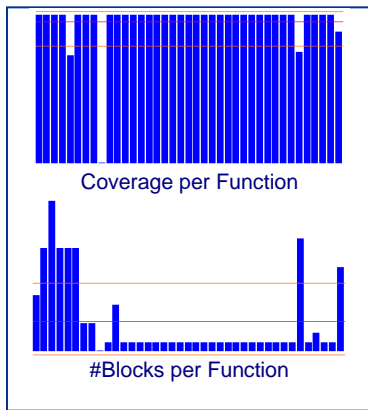
- **User Interaction:**
provide the source files, wait for completion of tests, analyse the documented results
- **Test Case Generation** for all C and user-defined types incl. fault injection, selection of singular cases
- **Test Vector Recording** in ASCII and spreadsheet input format (e.g. MS-Excel)
- **Execution Time Recording** for each function, optionally
- **Exception Recording:** file, function and line of raising statement, sorting according to user-defined categories
- **Data Monitoring** by automated instrumentation for function parameters, static and stack data, identification of limits.
- **Assertions** on function parameters, static and stack data by automated instrumentation.
- **Coverage Analysis:**
block coverage (C0), MC/DC coverage (C3)
- **Source Code Analysis and Metrics:**
Functions, types, source lines, comment and blank lines
- **Automated Test Case Identification**
Auto-generation of Cantata++ test drivers, test case selection according to coverage criteria (statement, MC/DC, exceptions), singular cases.



Coverage Analysis

Coverage analysis provides objective measurement of how effective testing has been in executing the source code.

- Code Coverage Metrics**
Entry points, Call Returns
Statements, Basic Blocks
Decisions (branches)
Conditions
MC/DC (DO-178B)
Exceptions



Expression	False	True
A B	240	60
A	300	0
B	240	60

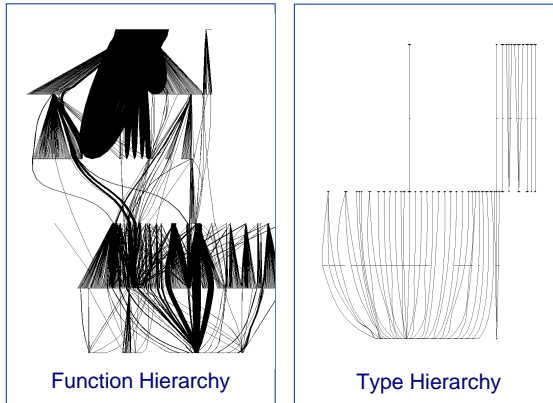
A	B	Res
0	0	0
1	0	1
0	1	1
1	1	1

Truth Tables and Occurrences

Code Analysis

Static analysis provides information on code quantities, functions and types.

- Procedural Metrics** including code lines, comments, functions, and counts of most code constructs.
- Function and Type Information:** prototypes, caller-callee dependencies, type dependencies



Control Flow and Coverage, Occurrence of Exceptions

Classification of Filtered Test Cases

BlockCoverage: 100.00% = 44 of 44

DecisionCoverage: 100.00% = 19 of 19

Integration and System Tests

The capabilities for coverage analysis, data monitoring and exception identification are also available for integration and system level testing.

DCRTT

Supported Platforms

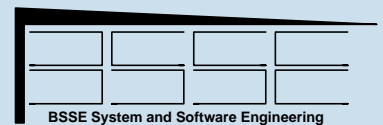
DCRTT is available for ANSI C and MS-VC++ (V6 and V7 .NET) compilers, gcc (3.2.3, 3.4.6), KEIL compiler, VxWorks targets
other compilers on request

Native Development Platforms

Windows 2000, XP
Linux on request

Further Information

BSSE's testing tools support the unit / module, integration and system level testing of ANSI C (**DCRTT**) and Ada (**DARTT**) high integrity and business critical development projects. Further information and detailed product presentations are available from the BSSE website.



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