UTILIZATION OF TESTING TOOLS

CONTENTS

1 Introduction

This work started from the subject of my pro gradu thesis "The newest methods and tools for software testing". After a long search there were nearly 600 (six hundred) tools found. I am sure, that there are tools much more than these now occurred. A very good aid to me was the list in Internet (www.testingfaqs.org), which Brian Marick made famous and is now maintained by Danny Faught. Other sources have been Internet overall, the brochures of the products and the literature. Because the amount of the tools was so large, I had to restrict them and to take up only the most interesting once. The division to the main groups was: Design, GUI (Graphical User Interface), Load and Performance, Management, Implementation, Evaluation, Static Analysis and outside of inspection: Defect Tracking, Web Sites and Miscellaneous.

The limits between the groups are out of focus, because there are many tools, which can belong to several classes (See Figure 1.).
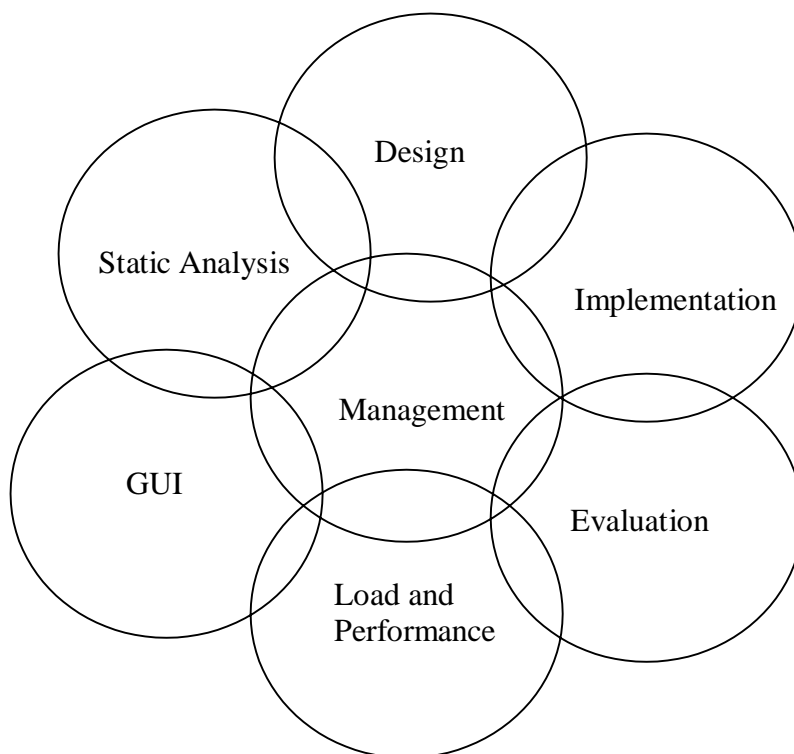

Figure 1. The Division of the tools

A short description of the main groups:

Test Design Tools
>Tools that help you decide what tests need to be executed. Test data and test case generators.
>Total 15 tools.

GUI Test Drivers
>Tools that automate execution of tests for products with graphical user interfaces. Client/server test automation tools, including load testers, also go here.
>Total 28 tools.

Load and Performance Tools
>Tools that specialize in putting a heavy load on systems (especially client-server systems). These tools are often also GUI test drivers.
>Total 21 tools.

Test Management Tools
>Tools that automate execution of tests for products without graphical user interfaces. Also tools that help you work with large test suites.
>Total 43 tools.

Test Implementation Tools
>Miscellaneous tools that help you implement tests. For example, tools that automatically generate stub routines go here, as do tools that attempt to make failures more obvious (assertion generators, etc.)
>Total 27 tools.

Test Evaluation Tools
>Tools that help you evaluate the quality of your tests. Code coverage tools go here.
>Total 31 tools.

Static Analysis Tools
>Tools that analyse programs without running them. Metrics tools fall in this category.
>Total 33 tools.

Total sum 198 tools.

In PlugIT-project interesting tools are at least: Regression, requirement, component, integration, object-oriented, coverage, test case and use case.
Searching with these words the recent 198 tools the results were:

Regression Tools
>Regression testing tools are used to test software after modification. Dividing in groups as above (one or two typical examples per group are presented) there were:
>Design: None
>GUI: Auto Tester for Windows (No 3) is specifically meant to support project teams in automating regression testing. Others 4, 6, 12, 15 and 27.
>Load and Performance: Teleprocessing Network Simulator (No20) can be used to automate regression testing. Others10 and 12.
>Management: Test Manager (No 2) provides an interactive development environment for working with regression test suites. OTF – On Object Testing Framework (No 18) is a tool for Smalltalk objects, in which regression testing is automatic with full logging of results. Others 1, 4, 5, 10, 14, 16, 27, 28, 29, 37 and 38.
>Implementation: Junit (No 5) is a regression testing framework used by developers who implement unit tests in Java. Others 1, 15 and 18.

Evaluation: Logiscope (No 26) identifies effective non regression if program files have been modified.

Statistic Analysis: ParaSoft Jtest (No 6) automatically performs regression testing of Java code.

Total 28 tools.

Requirement Tools

Requirement-based or requirement definition related tools.

Design: Caliber-RBT (No 1) is a test case design system for requirement-based testing. Others 6 and 15.

GUI: Panorama-2 (No 8) is a tool for requirement analysis. Another 17.

Load and Performance: SilkRealizer (No 19) is a tool that enables users develope and deploy system level testing simulating real world events to assure that applications will meet the requirements.

Management: AutoAdviser (No13) provides from requirements through production a central repository for organizing and managing business requirements, tests and associated files. Others 18, 21, 35 and 37.

Implementation: None

Evaluation: Panorama C/C++ (No 15) is a requirement and test case analysis tool.

Static Analysis: None

Total 12 tools.

Component Tools

Tools, which have some relationships with component-programming.

Design: Inferno's (No 2) capabilities include creation of an intuitive library of reusable components that support shared-scripts and data-driven-scripts.

GUI: None

Load and Performance: None

Management: SilkPilot (No 1) lets you test the behaviour of distributed objects within your application's server components. AutoAdviser (No 13) consolidates your test library components and provides test team members with access to those components. Others 2, 32, 40 and 42.

Implementation: AssertMate for Java (No 2) is a system that aids Java engineers use assertions to ensure proper implementation of component interfaces. Another 1.

Evaluation: QC/Coverage (No 16) helps users by identifying code components that have not been adequately tested.

Static Analysis: WhiteBox (No 33) provide insight into the complexity of different components of the software.

Total 11 tools.

Integration Tools

Tools used with integration testing.

Design: ObjectPlanner (No 13) allows software developers and managers to calculate the approximate time schedules to perform unit and integration testing. Another 15.

GUI: Solution Evaluation Tool (No 14) is usable in testing the integration of new applications.

Load and Performance: None

Management: Cantata (No 3) is a solution for unit and integration testing of C and C++ code. Others 5, 6, 14, 25, 32 and 40.

Implementation: Autotest (No 14) is an automatic test harness tool for integration testing. Another 15.

Evaluation: Cantata++ (No 7) is an effective tool for C++ integration testing. Others 18 and 27.

Static Analysis: None.

Total 15 tools.

Object-oriented Tools

Tools used specially with object-oriented systems. All Java and C++ tools fall automatically in this category although the search has not found them with keyword object.

Design: T-VEC Test Generation System (No 15) is integrated in an environment to support the development and management of structured or object-oriented requirements specifications. Another 12.

GUI: Vermont HighTest Plus (No 23) includes object-level record/playback of all Windows and VB controls. Others 4, 8, 16, 17, 18 and 27.

Load and Performance: None

Management: TOOTSIE (No 42) is a total object-oriented testing support environment. Others 1, 2 and 18.

Implementation: ObjectTester (No 11) is a software tool to automate the generation of C++ unit test scripts. Others 1 and 2.

Evaluation: TotalMetric for Java (No 1) is a software metrics tool to calculate and display object-oriented metrics for the Java language.

Static Analysis: ObjectDetail (No 12) is a software tool to help automate the metrics generation of C++ programs. Another 27.

Total 19 tools.

Coverage Tools

Code coverage, test case coverage, test coverage and so on.

Design: Caliber-RBT (No 1) uses the requirements as a basis to design the minimum number of test cases needed for full functional coverage. Others 2, 4 and 15.

GUI: Smalltalk Test Mentor (No 15) automatically gathers execution and method coverage metrics. Others 8, 18 and 20.

Load and Performance: DataShark (No 6) generates the minimal number of test cases with maximum coverage based on equivalence class partitioning and boundary condition analysis.

Management: Cantata (No 3) is a code coverage analyser. Others10, 13 and 38.

Implementation: None

Evaluation: DeepCover (No 2) provides test coverage analysis for C/C++ and Java applications. ObjectCoverage (No 13) a branch coverage analysis tool for C++. Others all but 1, 21 and 24.

Static Analysis: Plum Hall (No 15) is a static analysis and code coverage tool for testing C/C++ code. Others 21, 31 and 33.

Total 45 tools.

Test case Tools

Tools used e.g. in test case design.

Design: Validator/Req (No 6) performs test case generation. Others 1, 2, 3, 4 and 5.

GUI: imbus GUI Test Case Library (No 26) is a library of predefined test cases for automated GUI testing. Others 8 and 19.

Load and Performance: DataShark (No 6) generates the minimal number of test cases with maximum coverage based on equivalence class partitioning and boundary condition analysis.

Management: QCIT (nr 21) tracks the software testing process from requirement development, through test plan and test case development and execution. Test Case Manager-TCM (No 30) organizes test cases for storage and execution logging. Others 5, 10, 25, 26, 28, 31, 34, 35 and 40.

Implementation: Autotest (No 14) controls a series of test cases on different programs and software units Visula. Others 11 and 13.

Evaluation: Object/Coverage (No 13) analyses statements and generates a test case coverage report. Others 15 and 24.

Static Analysis: Poly Space Verifier (No 16) is a tool designed to directly detect run-time errors and non-deterministic constructs at compilation time. Others 15, 31 and 33.

Total 31 tools

Use case Tools

Use case testing and design.

Every group none.

Total sum 161 tools.

If you are interested for example in regression tools, you have them now in the same group and you don't have to scan through all the 198.

Here you had two examples how to divide tools in the groups. There are many other grounds to do the same thing. Everyone can think himself what is the best.

We can also place the different types of tools in the software development life cycle (Figure 2.). The limits between groups are ambiguous. The division is based on the divisions by Fewster and Graham [FeG99] and Tervonen [Ter00].

Test management tools can be used in the whole software development life cycle. Test design and inspection tools can be used in requirement specification, in architectural design and in the detailed design phases. The static analysis tools help testing in the coding phase. Execution and comparison tools can be used overall on the right side of V-model. Dynamic analysis tools are usable in functionality, integration and unit testing. They assess the system while the software is running. Coverage tools are designed specifically for unit testing. Acceptance and system tests fall in load and performance tools. GUI test drivers have features of many other tools and are useful in the whole implementation and evaluation area, but they are designed for GUI testing and are distinctly an own group.
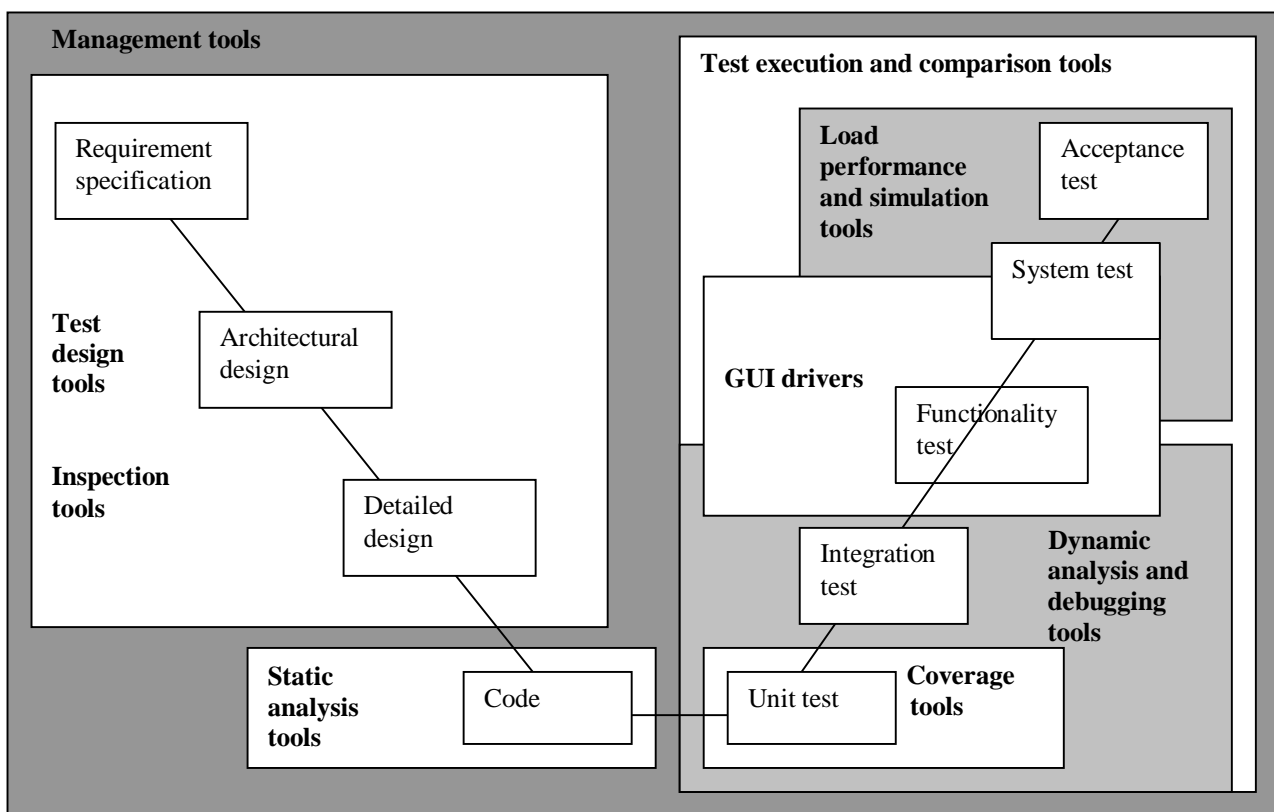

Figure 2. Division of the tools in the software development life cycle (V-model)

2 References

[FeG99]   Fewster, M., Graham, D.: Software Test Automation. ACM Press, New York, 1999.
[Ter00]   Tervonen, I.: Katselmointi ja testaus. Lecture notes in University of Oulu, 2000.

3 Division of the Tools

Every tool has a similar structure of the description. It contains firstly in the header line: Name of the tool, Company name and www-address(es). Then the description begins with one sentence, which explains the main scope of the tool. A short software description is after that and finally in the last lines possible free use and platforms of the tool if known.

Test Design Tools

Test Case Tools

1. **Caliber-RBT, Technology Builders, www.TBI.com**

   Test case design system for requirements-based testing. CaliberRBT is a requirements-based, functional test case design system that drives clarification of application requirements and designs the minimum number of test cases for maximum functional coverage. By thoroughly evaluating application requirements for errors and logical inconsistencies, CaliberRBT enables project teams to refine and validate the requirements earlier in the development cycle. The earlier in the cycle requirement errors are found and corrected, the less costly and time-consuming they are to fix. CaliberRBT uses the requirements as a basis to design the minimum number of test cases needed for full functional coverage. CaliberRBT then allows project teams to review both the requirements and the test cases in a variety of formats, including a logic diagram and structured English functional specification, to ensure that the requirements are correct, complete, fully understood and testable.
   Free demo.
   Platforms: Any

2. **Inferno, Gresham Enterprise Software, www.gresham-software.com**

   Test cases creating tool. Automating with Inferno allows you to create repeatable test cases and leverage your investment throughout the lifetime of the application. Automated testing with Inferno condenses testing cycles while increasing test coverage. Inferno's capabilities include simplified script development and maintenance, creation of an intuitive library of reusable components that support shared-scripts and data-driven-scripts, and the ability to conduct unattended testing 24x7, even through system under test failures.
   Free demo.

3. **RadSTAR, IMI Systems Inc., [FeG99].**

Test design and execution. RadSTAR is a model-based, automated software testing approach initially developed in the USA by IMI Systems Inc. It is a combination of a test planning methodology and an automated engine, which executes the planned test cases.
Platforms: Any

4. **SoftTest, Bender and Associates, www.methods-tools.com/tools/testing.html**

Test case design tool. SoftTest is a functional test case design tool that can be used to generate test definition scripts for any type of application, written in any language, and run on any platform. It uses a mathematically rigorous technique to verify a system's functional requirements by generating a minimum set of test case scripts designed for maximum functional coverage.
Version: 5.2
Platforms: Any

5. **TDGEN, Software Research, Inc., www.soft.com/Products/index.html, www.testingfaqs.org/t-design.htm#TDGEN**

Test case generation tool. TDGEN is a test data generator which works as a stand-alone product or as part of the fully integrated TestWorks/Advisor tool suite. TDGEN takes an existing test script and substitutes new random or sequential data values to create additional tests.TDGEN increases the size of a test suite to more fully exercise the application under test. TDGEN behaves as an intelligent macro processor. The user either creates new test data files or configures existing test scripts to substitute different data items for selected fields. With TDGEN, hundreds of additional tests can be created in a short amount of time.
Platforms: SPARC SunOS; SPARC Solaris ; HP-9000; DEC-Alpha OSF1; NCR 3000; DOS

6. **Validator/Req, Aonix, www.aonix.com, http://www.methods-tools.com/tools/testing.html**

Test case generator. Validator/Req performs test case generation. Producing up to 1000 test cases per minute, Validator/Req automatically extracts test specifications from project models. The Validator/Req product includes StP/T. StP 2.6 combined with Validator/Req is a suite of development tools to close the loop between requirement specification, modeling and testing.
Platforms: Sun Solaris/SunOS, HP-UX, AIX, Silicon Graphics IRIX, Digital Unix

Database Tools

7. DataFactory, Quest Software Inc., www.quest.com

Populate test databases with meaningful test data. DataFactory will read a database schema and display database objects such as tables and columns, and users can then point, click, and specifically define how to populate the table.
Generates meaningful data from an extensive test database that includes tens of thousands of names, zip codes, area codes, cities, states, and more.
Enables users to test with millions of rows of data, giving a realistic picture of database performance in the production environment.
Project-oriented architecture allows multiple tables and databases to be loaded in a single session.
Supports direct access to Oracle, DB2, Sybase and any ODBC (Open Database Connectivity) compliant database.
Enables developers to output to the database or to a flat text file.
Maintains referential integrity, including support for multiple foreign keys.
Gives developers the option to use DataFactory data tables or import their own data from a database or delimited text file.

Data Generators

8. Datagen2000, Superfine Software, www.superfinesoftware.com

Test data generator designed exclusively for Oracle databases. A level of flexibility, scalability and ease of use. The ability to harness the power of PL/SQL (Procedural Language/Structured Query Language) to define your test sets. Comprehensive support for foreign key relationships. An interactive generation environment.
Free download.

9. Datatect, Banner Software Inc, www.Datatect.com

Test data generation tool. Generate to flat files directly to database tables. Create flat ASCII files with fixed or variable length fields and records, which can be used with any appropriate application or imported into a database or spreadsheet. Directly populate tables for many popular databases, including Oracle, Microsoft SQL (Structured Query Language) Server, Informix, Sybase, and Access, using ODBC (Open Database Connectivity). The user has the capability to read in existing database table structures to aid in the generation of meaningful test data beds.
Free trial.
Platforms: Windows 95, 98, NT

10. JustData Enterprise, JustSoft Pty Ltd, www.justsoft.com.au, www.testingfaqs.org/t-design.htm#JustData

Multi Purpose Data Tool for IT people. JustData is a rapid data generation tool for IT person(s) who need to create large amounts of structured data, prior to testing applications. Working with ADO (Active Data Objects)/SQL ANSI92 compliant databases systems, General applications, Spreadsheet applications, MSSQL Server V6.0 - 7.0, Oracle 7.0 - i8.0 SQL*Loader.
Platforms: Windows 95, 98, NT, 2000

11. Move for Legacy, Princeton Softech, Inc., http://princetonsoftech.com/products/comparefordb2.asp

Move for Legacy™ is specifically designed to extract and move legacy data to support a variety of data processing tasks:
Integrate DB2 and legacy data to create accurate, consistent and realistic test data.
Take advantage of COBOL or PL/I copybook information for transforming legacy records.
Define relationships to extract all required legacy data for easy migration to a target legacy system or a relational database.
Move data from multiple databases and legacy data files without complex SQL or custom programs.
Mask sensitive data or transform legacy data for specific test scenarios.
Move for Legacy uses sophisticated algorithms to maximize its performance. Extracts that had taken hours using other approaches are done in minutes. Whether you need to create unique test databases, split or combine databases, or move data into production, Move for Legacy gets the job done with guaranteed accuracy.

General Test Design

12. ObjectGeode, Verolog Inc., www.methods-tools.com/tools/testing.html

ObjectGEODE is a solution for the analysis, design, verification and validation (through design model simulation), code generation, and testing of real-time and distributed applications. ObjectGEODE supports the consistent integration of complementary object-oriented approaches based on the OMT (Object Modelling Technique), SDL (object-oriented design language) and MSC (trace language) standard notations.
Version: 1.1.
Platforms: Sun Solaris/SunOS, AIX, HP-UX

13. ObjectPlanner, ObjectSoftware Inc., www.obsoft.com, http://www.testingfaqs.org/t-misc.htm#objectplanner

C++ Test schedule generator tool. ObjectPlanner is a software tool to automate the generation of testing schedules. Applications written in the C++ language require unit and integration testing to reveal errors. The amount of time, number of people and other

resources required to test an application are usually not known. ObjectPlanner analyses C++ classes and calculates the approximate time that will be required to perform unit testing. This allows software developers and managers to calculate the approximate time schedules to perform unit and integration testing.
Platforms: SPARC - SunOs 4.1.X and Solaris 2.X

14. Test Designer, Intusoft, http://www.intusoft.com/products.htm

Test synthesis, fault analysis, isolation strategies and strategy reports.Test Designer automates test synthesis, fault analysis, isolation strategies, and generates detailed test strategy reports. It is valid for all types of system, IC (Integrated Circuit), and board-level designs. It can include analog, mixed-signal, and mechanical elements as well as behavioral and C code AHDL (Hardware Description Language) blocks. The user can easily pair different circuit configurations with various analyses to create test setups, assign measurements and define pass/fail limits for the detection of failures.
Free demo.
Platforms: Win 95/98/ME & NT 4.0/2000/XP

15. T-VEC Test Generation System, T-VEC Technologies, www.t-vec.com, www.testingfaqs.org/t-design.htm#tvec_anchor

Specification-based Test Vector Generator, Coverage Analysis and Test Driver Generation. The toolset, called the T-VEC Factory, provides specification-based test vector generation, coverage analysis and test driver generation. The Factory tools are integrated in an environment to support the development and management of structured or object-oriented requirements specifications. This process supports both unit testing, integration and software system testing through hierarchical specifications. A Specification Compiler verifies the consistency of the specification and then transforms it into a form appropriate for test vector generation.
The Test Vector Generator automatically generates tests by determining the input space boundaries for each requirement specification element, and then selects inputs along the boundaries; it uses the inputs to compute the expected output based on the specification. The Test Coverage Analyzer verifies that each requirement specification element has associated test vectors; if not, uncovered requirements are flagged. An execution/debug environment is included to aid in locating specification errors. The test execution can be fully automated from the specification-based tests.
The environment supports generation and management of specification-to-implementation objects mappings that can be customized for any implementation language and test environment. The Test Driver Generator automatically creates test drives from the object mappings to support test execution and results analysis.
The environment functionality is packaged in a visual environment that has a look and feel similar to the Microsoft WindowsNT Explorer and includes Visualization - a matrix representation of the test vectors and of artifact status.
Platforms: PC, WindowsNT

GUI Test Drivers

1. **Android, Smith House, http://www.smith-house.org/open.html, www.testingfaqs.org/t-gui.htm#Android**

   Automated GUI Client Testing Tool. Android is an open-source GUI testing tool that can observe and record your interactions with a graphical user interface, creating a script that can repeat the session to any desired level of accuracy. The user can specify test points

where the designated window is to be checked to see if it differs from the "canonical" test run originally recorded, signalling a test failure if this is the case. It can also be used to write GUI automation scripts.
Freeware.
Platforms: Record mode requires Expect. Playback or scripting will work on any Posix-compliant system with a working port of Tcl/Tk (programming languages).

2. AutoTester for OS/2, AutoTester Inc., www.autotester.com, http://www.testingfaqs.org/t-gui.htm#AUTOS2

Creation, execution and documentation of tests. AutoTester for OS/2 is an automated testing tool designed specifically for the creation, execution and documentation of automated tests for OS/2-based applications.
Platforms: OS/2-based apps.

3. AutoTester for Windows, AutoTester Inc., www.autotester.com, http://www.testingfaqs.org/t-gui.htm#AUTWin

Creation, execution and documentation of tests. AutoTester for Windows is an automated testing solution designed for the creation, execution and documentation of automated tests for Windows 3.x. NT, and 95 applications. AutoTester®, a comprehensive automated testing application is specifically designed to support project teams in automating functional and regression testing.
Platforms: Windows 3.X, Windows 95, Windows NT

4. CAPBAK, Software Research, Inc., www.soft.com/Products/index.html, http://www.testingfaqs.org/t-gui.htm#CAPBAK

Test Capture/Playback Tool. CAPBAK is a test capture/playback system, which works as a stand-alone product or as part of the fully integrated TestWorks/Regression multi-platform suite of testing tools. CAPBAK captures all user activities during the testing process using three modes: TrueTime, Character Recognition, and Object Oriented modes. Keystrokes, mouse movements, captured bitmap images, widget/object activity and extracted ASCII characters are captured into a test script. The captured images and characters provide baselines of expected application behavior against which future tests runs are compared. CAPBAK's automatic output synchronization capabilities ensures reliable playback, allowing tests to be run unsupervised as often as required.
Platforms: SPARC SunOS; SPARC Solaris; HP-9000; DEC-Alpha; NCR 3000; DOS; Win 3.x, 95, NT

5. Certify, WorkSoft, Inc., http://www.worksoft.com/, http://www.testingfaqs.org/t-gui.htm#Certify

Business-user-oriented automated testing system. Certify provides enterprise-level test automation. It allows tests to span applications, platforms and test tools while shielding

users from the complexities of script languages. Certify detects application changes and automatically maps them to affected tests, simplifying maintenance and protecting the investment in the test repository.
Free demo.
Platforms: Windows 98, NT, 2000. May require third party test tool for client/server applications.

6. CitraTest, Tevron, LLC, http://www.tevron.com, http://www.testingfaqs.org/t-gui.htm#CitraTest

Automated GUI client testing tool. CitraTest is the client side Automated Testing Solution for all Citrix hosted applications.
This tool is ideal for latency, functional, and regression testing.
Platforms: Windows NT, Windows 2000, Windows 98, Windows 95, Windows ME

7. JavaStar, Sun Microsystems, www.methods-tools.com/tools/testing.html

JavaStar is an automated software testing tool for testing Java applications and applets through their GUIs. As a GUI testing tool, JavaStar compliments JavaSpec (Test Implementation Tools)- the Java API testing tool. JavaStar is created specifically for, and focused exclusively on, testing Java.
Version: JDK.
No support since 1999.
Platforms: 1.1.1. Java and JDK 1.1 platforms

8. Panorama-2, International Software Automation, Inc. (ISA), http://www.softwareautomation.com , http://www.testingfaqs.org/t-gui.htm#ISA_C

Capture/playback, Coverage, Test Case Minimization, Memory Check, Defect Tracing. Panorama-2 is an enhanced product of Panorama C/C++. It is a comprehensive environment for software design, coding, testing, QA, reengineering, debugging, defect tracing, and problem management, consists of eight integrated tools (OO-Playback, OO-MemoryChecker, OO-DefectTracer, OO-Test, OO-SQA, OO-Browser, OO-Diagrammer, and OO-Analyzer), offers Object (Window) oriented and GUI-based capture/playback (without scripting and extra programming) with test coverage analysis and test case minimization so that only the minimized test cases will be played back.
Test coverage analysis of template/class/function/block/branch/ segment/loop boundary/condition & multi-condition outcome, code execution frequency analysis in function level and branch level, requirement/test case and code correspondence analysis and dynamic tracing.
Memory leak/violation checking, defect/problem tracing, quality measurement using static and dynamic OO-metrics. Automated error simulation, error checking/detecting/locating, dynamic test result mapping (from object code to source code or user-defined/system header files).

Dynamic test result display in colourful class inheritance chart, function call graph, on-line accessible reports, and logic/control flow diagrams with unexecuted path/segment/condition outcome highlighted.
Platforms: SUN Sparc, OS/Solaris, Windows NT, Windows 95, HP-UX (new).

9. QARun, Compuware Corporation, www.compuware.com, http://www.testingfaqs.org/t-gui.htm#QARUN

GUI capture, script development test automation tool. *QA*Run™ is an enterprise-wide test script development and execution tool that is part of Compuware's *QA*Center™ family of application testing products. *QA*Run's automated capabilities improve the productivity of testers, enabling them to efficiently create test scripts, verify tests, and analyze test results. Using *QA*Run, tests can be easily maintained for repeat use.
With Compuware's *QA*Center, software testers and application developers can now ensure application quality with the enterprise-wide testing solution that includes client/server automated testing tools, mainframe testing tools, test process management tools and testing services. *QA*Center consists of client/server automated testing tools as well as Compuware's mainframe testing products, *QA*Hiperstation™, for VTAM (Virtual Telecommunications Access Method) applications, and *QA*Playback™, for CICS (Customer Information Control System) -based applications.
Platforms: All Windows and character based platforms

10. QC/Replay, CenterLine Development Systems, Inc., www.centerline.com, http://www.testingfaqs.org/t-gui.htm#qcreplay

GUI record/replay/scripting language for X applications. QC/Replay offers "widget-based" testing of GUI based applications. Testers can record sessions and play them back on a variety of platforms. "Widget-based" rather than bitmap based verification makes test scripts robust: they are unaffected by changes in window size, position, window manager, screen size and colour, as well as changes in the application during normal development.
QC/Replay uses Tcl (programming language) for scripting, and supports portable testing across platforms.
Platforms: SunOS, Solaris, HP-UX, SVR4, UnixWare, Digital UNIX and AIX.

11. QES/EZ for GUI, QES,Inc., www.qestest.com, http://www.testingfaqs.org/t-gui.htm#QESEZGUI

Automated GUI software testing system without scripting. QES/EZ is an automated GUI software testing system without the need for scripting or programming. The test data is stored in a relational database, which makes the maintenance and management of the test data very efficient and easy. QES/EZ for GUI has 2 run levels, extensive timing and comparison controls, reporting capabilities, variables, dynamic interaction with the target systems behaviour, etc. QES/EZ gives you the power to automatically validate, verify, test and populate any software systems without scripting. You do not have to tell QES/EZ what to test! You can instantly capture and execute the test!

Platforms: Windows 3.x, Windows/95, Windows/NT, OS/2

12. Rational Robot, Rational Software Corp, www.rational.com, http://www.softwareqatest.com/qatweb1.html

Automated functional testing tool. Allows user to create, modify, and run automated functional, regression, and smoke tests for e-applications built using a wide variety of independent development environments. Rational TestManager and Rational SiteCheck are included, enhancing ability to manage all test assets and have them available to all team members; includes capabilities for Web site link management, site monitoring, and more. Platforms: Windows

13. Rational TeamTest, Rational Software Corp, www.rational.com, http://www.testingfaqs.org/t-gui.htm#TeamTest

Automated test tool for Windows client/server applications. Rational TeamTest is a complete set of functional testing tools, delivering seamlessly integrated functional testing of enterprise-level client/server applications. Built on a scalable, integrated server-based test repository, Rational TeamTest combines leading-edge testing power and comprehensive management tools to set the standard for automated testing of client/server applications. Platforms: Windows NT 4.0 SP 5 or 6a; Windows 2000, Windows 98 second edition; or Windows 95 SR2

14. SET (Solution Evaluation Tool), IBM, http://www.as.ibm.com/asus/svs.html, http://www.testingfaqs.org/t-gui.htm#SETTOOL

GUI test drivers and capture/replay tool, load and performance tool. The Solutions Evaluation Tool (SET) is IBM's unique, non-intrusive, automated, computer-aided software testing tool. It drives mouse, keyboard, and graphical interfaces to simulate peak work periods in complex client/server environments. SET works with any application under all operating systems in a multi vendor environment.
The SET tool can be beneficial in: Testing the performance of existing applications, testing the integration of new applications, performing server consolidation testing and evaluating e-business performance.
SET Highlights: Measures application performance and capacity, evaluates application design alternatives, validates functional specifications, determines network, server, and client workstation sizing parameters, isolates performance problems, measures actual end-to-end response times across any multi-tier environment, works in conjunction with and supports calibration of load generation tools and supports workstations, network stations, and portables.
Platforms: DOS based controller software will run on any PC with an ISA (Industry Standard Architecture) or MC (MicroChannel) architecture.

15. Smalltalk Test Mentor, SilverMark, Inc., www.silvermark.com, http://www.testingfaqs.org/t-gui.htm#stm

Test framework for Smalltalk. Automated testing tool for VisualAge for Smalltalk and Cincom's VisualWorks. Test Mentor is a automated testing framework for Smalltalk. It seamlessly integrates UI record/playback with domain object testing for deep regression testing of your applications. Test Mentor automatically gathers execution and method coverage metrics, and provides analysis tools so you can rapidly measure the health of your project.
Platforms: All platforms supported by VisualAge for Smalltalk and Cincom's VisualWorks

16. SQA TeamTest: ERP-Extension for SAP, Rational Software Corporation, www.rational.com, http://www.testingfaqs.org/t-gui.htm#TeamTestSAP

Functional Testing and Implementation Tool. SQA TeamTest ERP (Enterprise Resource Planning) Extension provides automated validation (functional testing) of SAP R/3 implementations. It is packaged as an SQA Robot extension, so you get the advantages of SQA Robot's object-level recording, which provides robust test scripts, even when the SAP application changes as a result of configuration changes.
Platforms: Microsoft Windows NT 3.51, Windows NT 4.0, or Windows 95, and SAP R/3

17. SQA TestFoundation for PeopleSoft, Rational Software Corporation, www.rational.com, http://www.testingfaqs.org/t-gui.htm#TestFoundation

Functional Testing and Implementation Tool. SQA TestFoundation for PeopleSoft is an Automated Application Quality (AAQ) solution for PeopleSoft. AAQ products help ensure success in PeopleSoft implementations through predefined methodologies, steps and automatic processes.
SQA TestFoundation for PeopleSoft contains industry-proven methods for successful implementations, comprehensive requirements lists and their related validation steps, and the software solution for automated validation from Rational. Rational is the pioneer in automated testing of PeopleSoft applications and sets the standard for PeopleTools testing, with the industry's object-level integration with PeopleTools.
Platforms: Microsoft Windows NT 3.51, Windows NT 4.0, or Windows 95, and PeopleTools 6 or greater

18. Test Mentor for VisualAge Smalltalk, SilverMark Inc., http://www.javatesting.com/Product/VisualAge/VAsmtlkDev.html, www.methods-tools.com/tools/testing.html

GUI record/playback and domain object (model) testing.Test Mentor for VisualAge Smalltalk is an automated testing solution designed specifically for VisualAge Smalltalk and Generator. It integrates GUI record/playback and domain object (model) testing, while providing a test architecture that strongly encourages test case reuse. SilverMark's Test Mentor exploits the VisualAge Smalltalk development environment for test case version control, and provides interfaces for test management, results analysis, and method coverage

metrics.
Version: 1.1b
Free evaluation copy.
Platforms: Win 95/98/NT, Win3.1, AIX, OS/2

19. Test Now, ST Labs, Inc., www.stlabs.com, http://www.testingfaqs.org/t-gui.htm#testnow

Add-on package to Microsoft Test. It has been discontinued, but is still available as a free download.
The idea of the product is made up of four parts:

1. It supplies the user with common routines that must always be created when starting a new project with MS Test. Basically, it's 10,000 lines of code the user doesn't have to write but would have had to otherwise.

2. It supplies the user with a common approach to creating their test cases. All too often people are given MS Test and told to "automate the testing of the product." Keeping things flexible to make future changes and enhancements easier is difficult to do your first couple of times automating a product. This guides the user to help keep things flexible for future needs by allowing them to incorporate a "framework."

3. A full and heavily commented suite of tests is included. Basically, it's a "real world" test suite that they can tear apart and learn from when creating their own automated tests when using Microsoft Test.

4. A stand-alone utility for not only capturing X-Y coordinates when dealing with "fake" or virtual Windows controls, but to also keep it on an independent system so that moving from one resolution to another will keep coordinate changes to a bare minimum.

The product comes with the source code for most of the routines. We do not suggest nor support changes to the code, however.
Free download.
Platforms: Windows

20. TestBench400, Original Software, www.origsoft.com, http://www.testingfaqs.org/t-gui.htm#TestBench400

Total test automation for the IBM AS400 (iSeries). TestBench400 - fully integrated Database, Screen & Report test automation designed specifically for AS/400 systems:
- Batch and Interactive program coverage
- Advanced Test Planning, Data Creation and Management
- Recording, Playback and Verification of Scripts - Native, GUI & web browser
- Full Test Results Analysis and Audit-Ready Reporting
Platforms: AS400

21. **TestQuest Pro Test Automation System, TestQuest, Inc., www.testquest.com, http://www.testingfaqs.org/t-gui.htm#TestQuest**

Automated software testing tool. TestQuest provides non-intrusive test automation tools and services for information appliances, general computing, handheld devices and industrial control. Our products, services and expertise enable you to easily automate the testing of your complex products resulting in decreased test cycle time and increased product quality and customer satisfaction.
Free demo.
Platforms: The software under test may be executing under any operating system. The TestQuest Pro runs on MS Windows 2000.

22. **TestRunner, Qronus Interactive, www.qronus.com, http://www.testingfaqs.org/t-gui.htm#testrunner**

For automated system testing. A non intrusive automated software quality system for interactive embedded and real-time environments. Specially designed to handle systems incorporating any combination of GUI and I/O channels. (Serial, Digital, Lan, etc.)
Platforms: TestRunner runs from an independent NT host, connecting Non-Intrusively to the system under test

23. **Vermont HighTest Plus, Vermont Creative Software, www.vtsoft.com, http://www.testingfaqs.org/t-gui.htm#vermont**

Record-Playback. Vermont HighTest Plus is an integrated tool set for automated testing of Windows 95, NT, and 3.1 applications. Capabilities include object-level record/playback of all Windows and VB controls, a Point and Click Suite Manager, a natural-syntax scripting language, automatic logging of test results, and an integrated debugger. The Suite Manager lets users combine scripts into test suites, structure scripts into hierarchies, and create nested loops -- all without programming. The intuitive, natural scripting language makes it easy to revise scripts, declare variables, perform conditional logic, set up nested loops, manage data files, and write results. Scripts can be played back unattended. Script maintenance is simplified by object-level recording, modular scripts, and hierarchical script organization.
Free evaluation.
Platforms: Windows 95, NT, and 3.1

24. **Visual Test, Rational Software Corporation, www.rational.com, http://www.testingfaqs.org/t-gui.htm#VisualTest**

GUI Test Drivers and Capture/Replay Tools. Rational Visual Test is an automated testing tool that makes it easier and cost-effective for organizations to deploy mission-critical applications for the Microsoft Windows 95 and Windows NT operating systems and for the Web. Rational Visual Test helps developers rapidly create tests for applications of virtually any size and created with any development tool. Visual Test is integrated with Microsoft Developer Studio, a desktop development environment, and has extensive integration with Microsoft Visual C++.
Platforms: Win 3.1x, Win for Workgroups 3.11, Win 95 and NT

25. WinRunner, www.merc-int.com, http://www.testingfaqs.org/t-gui.htm#winrunner

Automated GUI client testing tool. Automated Testing Tool for MS Windows applications. WinRunner is an integrated, functional testing tool for your entire enterprise. It captures, verifies and replays user interactions automatically, so that you can identify defects and ensure that business processes, which span across multiple applications and databases, work flawlessly the first time and remain reliable.
Platforms: Windows NT and OS/2

26. imbus GUI Test Case Library, imbus GmbH, http://www.imbus.de, http://www.testingfaqs.org/t-gui.htm#GUI-TestLib

Library of predefined test cases for automated GUI testing. The imbus Test Case Library is a powerful and easy to use add-on for Mercury Interactive´s WinRunner. It extends WinRunner´s functionality and provides solutions for frequent test programming problems. The library functions help you to improve, simplify and speed up your test implementation process. They have been proven in numerous GUI testing projects.
Platforms: Runs with Mercury Interactive WinRunner (4.04 or higher) on Windows NT/WIN 95 systems.

27. XRunner, Mercury Interactive, www.merc-int.com, http://www.methods-tools.com/tools/testing.html

Functional test tool. XRunner is designed for testing the GUI portion of XWindows applications. XRunner 4.0's integrated testing tool components includes the RapidTest Script Wizard, which navigates all available UI paths to create a complex test script suite for unattended regression testing, and the Visual Testing environment, which combines object-oriented recording, point-and-click test generation and test script logic into a single environment, flexible verification and replay options, sophisticated reporting tools, and portability across multiple platforms.
Version: 5.0
Platforms: IBM AS/400, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix

28. X-Designer, Imperial Software Tecnology, Imperial Software Technology , www.methods-tools.com/tools/testing.html

GUI - builder and code generator. X-Designer (XD) is a comprehensive GUI builder for Motif (an industry standard graphical user interface). It also generates code for Windows and Java. X-Designer provides built-in GUI testing for Motif applications with its XD/Replay feature. The XD/Capture feature enables existing, even hand-coded, Motif applications to be re-engineered in X-Designer and migrated to Java. No run-time licences or proprietary code are required.
Version: 5.0

Free evaluation.
Platforms: Sun Solaris/SunOS, Digital Unix, HP-UX, AIX, Silicon Graphics IRIX, DEC VMS, Linux, other Unix platforms

Load and Performance Testing Tools

1. **AutoController with Virtual DirectTest, AutoTester Inc., www.autotester.com, http://www.testingfaqs.org/t-load.htm#Directest**

   SAP R/3-Load and Performance Tool. AutoController with Virtual DirectTest gives SAP R/3 users true end-to-end load and performance testing by simulating transactions of hundreds or thousands of users against the R/3 system.
   Platforms: Windows NT.

2. AutoController, AutoTester Inc., www.autotester.com, http://www.testingfaqs.org/t-load.htm#Controller

Load Tester/Manager. AutoController provides a centralized environment for distributed or stress testing of Windows and OS/2 client/server applications across a network.
AutoController is the automated solution for distributed testing of your Windows and OS/2 GUI and client/server applications.
From a central point, you can execute and monitor tests created with AutoTester for Windows and OS/2, across a network, for load, stress and performance testing purposes.
Any combination of tests may be scheduled for concurrent or synchronized playback across any combination of network machines.
During execution, test progress is monitored allowing complete control of each workstation.
When the tests are complete, the results are immediately available for failure and performance analysis.
AutoController gives you the power and flexibility you need to put your GUI and client/server applications to the test.
Platforms: Windows 95, Windows NT, OS/2 2.1 and higher.

3. Benchmark Factory, Quest Software, Inc., www.quest.com, http://www.testingfaqs.org/t-load.htm#Benchmark%20Factory

Load testing and capacity planning. Benchmark Factory® is a load testing and capacity planning tool for critical e-business environments. It can be used to put enormous stress on a system, which is typically hard to achieve in a standard testing environment. When a system breaks it is typically under extreme load, and this is generally when it is needed most. By identifying system capacity and performance bottlenecks before they occur, Benchmark Factory facilitates proactive testing, which in turn reduces downtime, development costs, and potential loss of revenue.
With Benchmark Factory you have the ability to:
Determine system throughput and capacity for web, database, email
Create web tests using a standard web browser, a built-in spider, or actual web traffic history
Examine tests results with built-in analysis features or Excel Reports
Simulate thousands of concurrent users with a minimal amount of hardware
Platforms: Windows NT/2000, Windows 9x/ME, Capable of testing internet applications, email servers, file servers and database servers.

4. Chariot, Ganymede Software Inc., www.ganymedesoftware.com, http://www.testingfaqs.org/t-load.htm#Chariot

Multiprotocol networks load and performance tool. Chariot is an innovative test tool that determines the true end-to-end performance of complex, multiprotocol networks. It runs as a set of coordinated network programs that simulate the data traffic of real client/server applications. Use it to evaluate the performance of a single device - such as a router, adapter, or switch - or to measure the end-to-end performance of a network. Creating and running tests is simple, whether you want to simulate a single file transfer or create hundreds of connections, mixing protocols and types of application traffic.

Platforms:
Console platforms: WinNT and OS/2
Endpoint platforms: Win31, Win95, WinNT for x86, WinNT for Alpha OS/2,NetWare, AIX, Digital UNIX, HP-UX, Linux, Sun Solaris, Novell Netware, MVS

5. CYRANO ServerPack, CYRANO, Inc., www.cyrano.com, http://www.testingfaqs.org/t-load.htm#CyranoL

Automated Load and Stress Testing with RDBMS (Relational Database Management System) Analysis. Automated performance testing of client/server systems using simulated clients. ServerPack can simulate client loads for any type of client (MS Windows, X-Windows, VMS, batch processes, etc) which communicate via TCP/IP. ServerPack can also drive the running of MS Windows application on PCs.
Initial test scenarios and scripts are typically created using wizards. The CYRANO TestCommander automatically captures SQL transactions between the client and the server. ServerPack includes a powerful integrated GUI transaction modeler, which simplifies script development by allowing users to enhance SQL transactions for multi-user tests without having to write code. Test analysis includes the standard response time graphs as well as DBMS performance data, which is integrated into response time graphs. This allows you to really "drill-down" to find the links between poor response times and database issues (locking contention, table scans, etc).
Platforms: WindowsNT, Solaris, HP/UX for client simulation Microsoft Windows NT, Windows 95 and Windows 3.x for optional playback of Windows applications.

6. DataShark, Hardball Software, www.methods-tools.com/tools/testing.html

Oracle application testing tool. DataShark is an automated software quality tool that is used to test Oracle applications against realistic database models. Major features and functions include: 1) definition and creation test data from scratch; this data can be created based on business rules that you specify or can be randomly generated; 2) extraction of subsets or supersets of data from your existing databases, with the ability to automatically propagate or redefine referential integrity as needed; 3) black box testing, generating the minimal number of test cases with maximum coverage based on equivalence class partitioning and boundary condition analysis, and; 4) performance testing that allows testers to create and remove indexes on a database, along with the ability create and test SQL scripts to measure the impact of alternative keys and indexing schemes.
Version: 2.6.
Platforms: Win 95/98/NT

7. JavaLoad, Sun Microsystems, www.methods-tools.com/tools/testing.html

Load testing tool for Java programs. JavaLoad can load test an enterprise application from a pure client perspective or isolate each server-side interface and protocol. Using the JavaLoad Console, from any machine accessible to the JavaLoad test, JavaLoad generates reports of all test data, including the number of simulated users engaged, the average response time per user, an analysis of the session, and a comparison of different test sessions.

Version: JDK (Java Development Kit).
Platforms: 1.1.1. Java and JDK 1.1 platforms.

8. Load Runner Product Family, Mercury Interactive, www.merc-int.com, http://www.testingfaqs.org/t-load.htm#loadrunner, www.methods-tools.com/tools/testing.html

Multi-user system and server testing tool. Automated client/server system testing tools which provide performance testing, load testing and system tuning for multi-user applications
Platforms: LoadRunner/UX: for UNIX/X Window Applications, LoadRunner/PC: for MS Windows Applications, LoadRunner/XL: for Server Functionality and Performance, LoadRunner/RTE: for Terminal-Based Applications

9. preVue, Rational Software Corporation, www.rational.com, www.methods-tools.com/tools/testing.html

Quality and performance testing. preVue is a remote terminal emulator that provides quality and performance testing of character-based applications.
Version: 5.0
Platforms: Sun Solaris/SunOS, AIX, Silicon Graphics IRIX, OS/2, HP-UX, Digital Unix, DEC VMS

10. preVue-ASCEE, Rational Software Corporation, www.rational.com/products/prevue/, http://www.testingfaqs.org/t-load.htm#preVue

Quality assurance, performance measurement and regression testing. preVue performs quality assurance, performance measurement, and regression testing of character-based UNIX applications. The preVue system is the basis for the entire preVue product family. preVue's record/playback technology allows testers to automatically record the workload of 1 to 1000's of virtual user sessions, create test scripts, execute test sessions, and evaluate the summarized reports and graphs. preVue utilizes Remote Terminal Emulation to replicate the workload of actual application users on the System Under Test. preVue provides verification of and timing information for the System Under Test responses over communication mediums.
preVue allows testers to perform multi-user performance benchmarks that measure the application response times, system throughput, and system stress levels. preVue has no special hardware requirements and has been successfully ported to a wide range of UNIX platforms.
Platforms: Supported on all major UNIX platforms.

11. preVue-C/S, Rational Software Corporation, www.rational.com, www.methods-tools.com/tools/testing.html

Multi-user quality and performance testing. preVue-C/S provides accurate and scaleable multi-user quality and performance testing for a wide range of client/server environments. preVue-C/S supports successful deployment of client/server applications through emulation of hundreds or thousands of users for stress load testing and performance measurement.
Version: 5.0
Platforms: Win3.1, Sun Solaris/SunOS, AIX, Silicon Graphics IRIX, OS/2, Win 95/98/NT, HP-UX, Digital Unix, MacOS, IBM AS/400

12. preVue-X, Rational Software Corporation, www.rational.com, http://www.testingfaqs.org/t-load.htm#preVue-X, www.methods-tools.com/tools/testing.html

Regression and performance testing. preVue-X provides non-intrusive regression and performance testing of X Window applications. preVue-X accurately emulates multiple users while requiring no changes to the application or test environment.
Version: 5.0
Platforms: Sun Solaris/SunOS, AIX, Silicon Graphics IRIX, HP-UX, Digital Unix

13. PureLoad, Minq Software AB, www.minq.se, http://www.testingfaqs.org/t-load.htm#pureload

Performance Testing and Analysing Tool. PureLoad is a Java-based performance testing and analyzing tool that helps application developers by automating the process of stress testing their server applications. This is achieved by simulating several hundreds of users performing tasks. Statistics are used to analyze the bottlenecks in the system, primarily the performance, scalability and quality characteristics.
Platforms: Java 2 version 1.3. PureLoad has been tested and verified on Solaris/SPARC, Windows NT/2000 and Linux.

14. QALoad, Compuware Corporation, www.compuware.com, http://www.testingfaqs.org/t-load.htm#QALOAD

Enterprise-wide load testing tool. QALoad^{TM}is Compuware's enterprise-wide load testing tool for client/server or midrange hosted applications. It supports Oracle, Sybase, Microsoft SQL Server and any ODBC (Open Database Connectivity) -compliant database, as well as http (web), character-based (TelNet), or Tuxedo traffic. QALoad can stress your client/server system by simulating hundreds or thousands of users simultaneously performing different operations. It creates test scripts that are used to simulate application transactions on the client/server system without involving end users or their equipment. QALoad is part of Compuware's comprehensive QACenter^{TM} family of application testing products.
Platforms: All Windows and character based platforms

15. Rational Quantify, Rational Software Corp, www.rational.com

Performance testing tool. Rational Quantify for Windows automatically pinpoints performance bottlenecks in Visual Basic, Visual C++ and Java applications. It enables you to analyze performance data and make the changes that will have the greatest impact. And you can measure the results of each improvement as you tune your application for maximum performance.

Rational Quantify offers server-side as well as client Java support. With Quantify installed on your web server, you can find Java performance bottlenecks. You can run Quantify against Java Server Pages (JSPs) and Java Servlets running on Web servers such as BEA WebLogic Server or Apache Jakarta Tomcat.

Free evaluation.

16. Rational Suite TestStudio, Rational Software Corp, www.rational.com

Performance testing tool. Rational Suite TestStudio supports testing practitioners with a repeatable, extensible process within an environment of coaching and assistance that allows testers to be highly productive in finding and communicating defects to the team.With Rational Suite TestStudio, testers, developers, and analysts share the same data and metrics about the product, system, software requirements, plans, test implementations and test results. This ability to communicate clearly with each other makes it easier to keep the focus on iterative quality and unifies the entire group into a new, productive team.

Rational Suite TestStudio removes the impediments to successful testing and helps testers focus on what really matters: assuring the quality of the software being developed.Rational Suite TestStudio frees developers from the time-consuming task of trying to reproduce defects and locate their sources because testers can communicate a rich set of pinpointed information about the defects they find with point-and-click simplicity.

Free demo.

17. RemoteCog Product Family, Five Nine Solutions Inc, www.fiveninesolutions.com, http://www.testingfaqs.org/t-load.htm#RemoteCog

Multi-user system and server testing and monitoring framework. RemoteCog is cost-effective flexible and extensible. You can reuse all of your existing scripts and programs. You preserve your investment. If you want, over time, you can take advantage of RemoteCog features to replace hard to maintain scripts. One of the immediate benefits is being able to control and monitor your tasks from any RemoteCog Control Center. If any script or program fails, the system can page or alert anyone. It can attempt to restart the tasks or take other action.

Using the Scenario Wizard (part of the Control Center), you can define scenarios that execute a series of commands or scripts. You can create a scenario to shut down a DBMS on multiple machines and then initiate system backups and maintenance. As your needs become more complex, you can take advantage of our product features and RemoteCogs to implement your new requirements.

For instance, the Database RemoteCog can be used to create SQL scripts to perform database maintenance, shutdown and startup. You can even parameterize the SQL to handle multiple databases. Using the OS RemoteCog, you can launch programs and scripts across one or many machines. You can easily control and run different software packages from one place using one interface - the RemoteCog Control Center. This simplifies training, support, reduces the chance of errors and reduces total costs.
Free trial.

18. SilkPerformer, Segue Software, Inc., www.segue.com, http://www.testingfaqs.org/t-load.htm#SilkPerformer

Load and performance testing tool. SilkPerformer V is a load-testing tool that provides true visual verification under load capabilities for Web applications. This allows you to capture content errors that occur only when your application is subjected to a realistic load, enabling you to greatly increase the accuracy and reliability of your system. SilkPerformer V's extensive request/response logging mechanism allows for extremely efficient root cause analysis even in large-scale load tests.

19. SilkRealizer, Segue Software, www.segue.com, www.methods-tools.com/tools/testing.html

Functional and performance testing tool. SilkRealizer is a scenario tool that enables non-technical, as well as technical users to develop and deploy true system level testing by combining functional and performance tests to simulate real world events to assure that applications will meet the requirements, before "going live".
Version: 1.2.1
Platforms: Win 95/98/NT

20. Teleprocessing Network Simulator, www.networking.ibm.com/tns/tnsprod.htm, http://www.testingfaqs.org/t-load.htm#TPNS

Performance, function, & automated regression testing, and network design evaluation tool. Teleprocessing Network Simulator (TPNS) improves network computing by conducting stress, performance, regression, function and capacity planning tests with SNA (Systems Network Architecture), CPI-C (Common Programming Interface for Communications) and enhanced TCP (Transmission Control Protocol) support. A market leader with a track record in enterprise testing for over 20 years with an ISO 9000 certification, TPNS can be used to determine system performance and response time, to evaluate network design, to perform functional testing, and to automate regression testing. Used as a basic tool in a comprehensive test plan, TPNS increases the effectiveness of system testing by providing a structured and systematic approach to all phases of testing. Also, to accommodate your business needs, a variety of TPNS-based testing services offerings are available.
Platforms: IBM S/390, IBM S/370 processors and the following operating systems: MVS/370, MVS/XA, MVS/ESA, OS/390, and VM/ESA

21. VisionSoft/PERFORM, VisionSoft Inc., <u>VisionSoft, Inc</u> , <u>www.methods-tools.com/tools/testing.html</u>

Performing and optimizing tool. PERFORM analyzes your application's execution behavior to identify the most executed sections for performance improvement. Statement frequency (ie. execution counts) and function/method execution time data is collected. PERFORM automatically produces reports and color highlighted source code displays to locate places where code can be optimized for performance improvement. PERFORM can apply 10 different source code optimization techniques along with cache optimization methods to yield performance improvements. PERFORM works with any C/C++ build and application execution environment.
Version: 6.3
Platforms: Sun Solaris/SunOS, HP-UX, OS/2, MacOS, AIX, DEC VMS, VxWorks, Win 95/98/NT, Win3.1, Silicon Graphics IRIX, DOS

Test Management Tools

CORBA

1. SilkPilot, Segue Software, Inc., <u>www.segue.com</u> , <u>http://www.testingfaqs.org/t-driver.htm#SilkPilot</u>

Functional and regression testing of middle-tier servers. SilkPilot lets you quickly and easily test the behavior of distributed objects within your application's server components. SilkPilot can be used to test CORBA (Common Object Request Broker Architecture) servers implemented in any programming language, as well as pure Java servers through RMI (Remote Method Invocation) public interfaces. SilkPilot also explicitly supports the Enterprise JavaBeans (EJB) component model. Using SilkPilot, there's no need to build custom test programs - a simple point-and-click user interface lets you create tests without coding.
SilkPilot is offered in Standard and Professional Editions:
The Standard Edition is an entry level, which includes features for the interactive testing of objects.

The Professional Edition includes all Standard Edition features, plus powerful test automation and code generation capabilities.
Platforms: Siemens, Stratus, Win 95/98/NT

2. Test Manager, Julian Jones Ltd, www.julianjones.com, http://www.testingfaqs.org/t-driver.htm#Test_Manager

Testsuite construction, execution, and management tool. TestManager is a software development system written in 100% pure Java. It provides an IDE (Interactive Development Environment) for working with regression test suites, including the facility to create, categorise, execute, and archive a set of tests.
Testcase procedures can be constructed from a set of base procedures supplied with the system. These procedures are configured through the IDE with the use of properties. No programming is required in order to execute arbitrary programs, SQL queries, or HTTP transactions within the IDE. In addition, the system provides a facility for registering custom procedures written in Java, allowing the system to be extended to execute any kind of test procedure, including testing of CORBA servers, EJBs, Java RMI or legacy systems.
The system will automatically verify the execution of a test suite without the need for user intervention, providing summary statistics on the outcome of the test executions
Platforms: Any

3.4.2 C/C++

3. Cantata, Quality Checked Software Ltd., www.qcsltd.com, http://www.testingfaqs.org/t-driver.htm#cantata

Test Harness, Coverage Analyzer, Static Analyzer tool. Cantata provides a high productivity solution for unit and integration testing of C and C++ code. It provides comprehensive facilities for DynamicTesting, Test Coverage and Static Analysis in a single integrated package.
Free demo.
Platforms: Most development and target systems including DOS, OS/2, Windows, Unix and VMS and supports most commonly used C and C++ compilers.

4. CHILL/C/C Pilot, Kvatro Telecom AS, http://www.telelogic.com/index.cfm, http://www.testingfaqs.org/t-driver.htm#kvatropilot

Programmable debugger and conformance/regression tester for CHILL/C/C++ programs.

Programmable source-level thread debugger and test execution engine for programs written in CHILL, C or C++. The Pilot is designed for networked, real-time software. The Pilot can handle multiple programs, each with multiple threads. Programs need not be stopped in order to be attached. Single threads may be stopped by command or at breakpoint, without stopping the program. Interrupt handling and other processing may continue while some threads are stopped or single stepped. Pilot commands may be interpreted at breakpoints, for much higher throughput use functions called inside the program at breakpoint (trace with user-specified data, breakpoint filter, program manipulation). The Pilot is fully programmable. Scripts are written in a scripting language with expressions, 'for' and 'if' statements just like the source language (adapts to the source language of the application, if you program in C, you get C expressions and control statements.) A general macro facility (textual macros with parameters) lets you program the Pilot for complex tasks. Fast start-up and access, typically less than 5 seconds even for very large telecom applications. Minimal interference until program control services are actually used, full speed real-time execution.
Platforms:
Hosts: Sparc/Solaris, SCO Unix on 486 PCs.
Targets: All hosts, and other platforms (please enquire).

5. CTA++ - C++ Test Aider, www.testwell.fi, http://www.testingfaqs.org/t-driver.htm#cta

C++ test harnessing tool, unit/integration testing. CTA++ (C++ Test Aider) is a tool for unit testing C++ classes, libraries and subsystems. CTA++ facilitates effective testing characterized as: easy-to-use and powerful arrangement to model the test suite into test cases, various forms of assertions for automating the test result checking, clear PASS/FAIL reporting on test cases and the whole test session, making the test runs visible, compact HTML browsable reporting of test results, regression testing, reading actual and expected values from command line or from compact textual data files, support for stub functions, reusing test cases of base class when testing inherited classes, testing multi-threaded code, testing all the advanced features of C++ (inheritance, overloading, exceptions, private parts, etc.), and more. Read more from http://www.testwell.fi/ctadesc.html
Platforms: Windows-2000/NT/9x, Solaris, HPUX, Linux

6. CTB, Testwell, www.testwell.fi, http://www.testingfaqs.org/t-driver.htm#ctb

C test harness generator, unit/integration testing environment. CTB (C Test Bed System) generates test driver (and stubs, if needed), which are compiled with the units under test resulting in a test bed program. The test bed building can be incremental and arranged on "as needed" basis using makefiles. Using C-like command language the test bed facilitates specification-based (black-box) unit and integration testing. Both interactive and script-based tests are supported. The work becomes automated, effective, intuitive, visible, documented, standardized, measurable. Read more from http://www.testwell.fi/ctbdesc.html
Platforms: Windows 2000/NT/9x, HPUX, Solaris, Linux.

7. McCabe Reengineer, www.mccabe.com

Reengineering legacy systems. McCabe Reengineer is an interactive visual environment for understanding, simplifying, and reengineering large legacy software systems. Based on twenty years experience of measuring and reengineering software applications, McCabe Reengineer provides comprehensive system analysis to locate high risk and error prone code that will form the basis of reengineering efforts. By automating the documentation of critical software characteristics you can immediately attain: faster understanding of architecture, location of high-risk code, focused development efforts and accurate resource planning. McCabe Reengineer brings focus, speed, and reliability to your reengineering process, resulting in cheaper accelerated redevelopment, with faster time to market.
Supported languages: Ada, C, C++, COBOL, FORTRAN, Java, Visual Basic.

8. OSPC, Knowledge Software Ltd., www.methods-tools.com/tools/testing.html

Portability checker. OSPC (Open systems portability checker) checks applications, written in C (also supports embedded SQL), for conformance to company coding standards, International standards, and conformance to the C standard. OSPC can also flag portability problems between two platforms, such as 32 vs 64 bit differences, or using different API's.
Version: 4.2c.
Platforms: Sun Solaris/SunOS, HP-UX, AIX, Digital Unix.

9. Temporal Rover, Time Rover, www.time-rover.com/Trindex.html

Scripting language tool for sequence detection and specification based verification. If you need code that detects certain sequences, such as User clicked on a banner between viewing video-A and video-B, you can write your sequence definition, using temporal logic, and use the Temporal Rover to generate the appropriate code. The Temporal Rover is a tool for the specification and verification/validation of protocols and reactive systems. The Temporal Rover will save you verification time and money, and will reduce human errors during verification. It is a tool that can automate the verification of real-time and relative temporal properties of your design (hardware or software).
The TemporalRover is a Specification based Verification tool. It lets you write formal specifications inside your source files (e.g. C, C++, Ada, Java, Verilog, etc.), within specially marked comments. The formal specification is written using a combination of Temporal Logic and your language of choice. Furthermore, the Temporal Rover converts the formal specification into executable code, to be executed when you test your program. When you do not want this code, simply do not feed your program files through the TemporalRover filter. The Temporal Rover is command line based, so you can invoke it from your Make and batch files.

10. VectorCAST, Vector Software`s, www.vectors.com, http://www.testingfaqs.org/t-driver.htm#VECTOR

Unit Test Tool for Host and Embedded Applications. The VectorCAST products scan your Ada, Ada95, C and JOVIAL source code and automatically generate the test code necessary

to construct executable test harnesses for both host and embedded environments. Utilities are also included to construct and execute test cases, generate the reports necessary to provide an audit trail of expected and actual results, perform automated regression testing and code coverage.
Free demo.
Platforms: Solaris, SunOS, HP UX, AIX, Alpha Unix, NT/95, VMS

3.4.3 Others

11. Aegis, http://www.canb.auug.org.au/~millerp/aegis/, http://www.testingfaqs.org/t-driver.htm#aegis

Software configuration management tool for a team of developers. Aegis is a transaction-based software configuration management system. It provides a framework within which a team of developers may work on many changes to a program independently, and Aegis coordinates integrating these changes back into the master source of the program, with as little disruption as possible. Aegis has the ability to require mandatory testing of all change sets before they are committed to the repository. Tests are retained in the repository, and may be replayed later by developers, to make sure future change sets don't break existing functionality. Correlations between source files and test files allow Aegis to suggest relevant tests to developers. Bug fixes are not only required to have their tests pass on the fixed code, but they are required to fail on the unfixed code immediately before commit, to demonstrate that the bug has been reproduced accurately.
Platforms: Everything. Aegis is open source software.

12. ANVL, MIDNIGHT NETWORKS INC., www.midnight.com/, http://www.testingfaqs.org/t-driver.htm#anvl

Test driver for network products; network test suite. ANVL: The Automated Network Validation Library is a system for automated testing of network products. It enables network product companies to make their testing processes faster and more thorough. With ANVL, a user can rapidly and repeatable test network-based devices without the need of an analyzer or lots of equipment. ANVL facilitates negative testing by its ability to generate incorrectly formatted packets as well as correctly-formatted ones.
Platforms: SunOS 4.1 on Sun3 and Sun4, Solaris 2.3 on Sun4.

13. AutoAdviser, AutoTester Inc., www.autotester.com, http://www.testingfaqs.org/t-driver.htm#Adviser

Test manager and analyser. AutoAdviser manages the quality assurance process of all your mission critical software projects throughout their entire lifecycle. From requirements through production, AutoAdviser provides a central repository for organizing and managing your business requirements, tests and associated files, and test results.
AutoAdviser is more than a test manager - it is a powerful analysis facility which allows you to evaluate the readiness of your application for release into the marketplace. With

AutoAdviser, managers, business analysts, application users, testers, and developers can ensure software quality throughout the entire application lifecycle.

Central Repository:

AutoAdviser is a true workgroup solution for the use, management, and maintenance of your application test libraries. Serving as a central repository, AutoAdviser consolidates your test library components and provides test team members with access to those components. Business requirements, test plans, tests, and test results are all stored and managed from within AutoAdviser.

Test Planning:

AutoAdviser helps you plan your testing to ensure that all critical business procedures are tested and business requirements are addressed. Business requirements are stored in the repository and linked directly to your AutoTester tests. AutoAdviser displays your business requirements in a hierarchical format allowing you to quickly analyze the business process flow of your applications.

Full documentation features provide easy reference to requirement details and associated tests. Test execution and reporting can be controlled at the business requirement level for measuring test coverage. With AutoAdviser, you can ensure that each and every function of your application is adequately tested before release.

Test Organization:

AutoAdviser greatly reduces test creation and maintenance time by organizing your testing projects into hierarchical groups. From these groups, tests from current projects can be copied or grouped with tests from other projects.

For example, if you had a common navigational sequence, you would create a test once, then copy it into each test group that required navigational testing. If the navigational sequence changes, you would need to update only one test component - instead of hundreds of tests.

As your applications progress through their lifecycle, AutoAdviser provides a structured approach to the entire testing process. By combining individual tests into groups and projects, you can verify specific sections of an application, from a single dialog to an entire functional area without having to recreate entirely new test projects.

Test Scheduling & Execution:

AutoAdviser allows you to control your entire testing effort from one central location. Tests can be executed directly within AutoAdviser and can be scheduled for immediate playback or to run at a specific time in the future. For future execution, you can set a countdown timer or specify an exact date/time specification.

Change Control:

Project managers control the entire testing effort with AutoAdviser's change control features. Various levels of access rights, from report viewing to test modification to full project management privileges allow you to manage access to your test library components. AutoAdviser monitors changes made to your library and protects your testing assets by preventing users from overwriting files or modifying the same test files at the same time. AutoAdviser also produces audit trail reports that track changes in the AutoAdviser database, such as who modified a test file and when, making it easy to evaluate the status of your test library.

Quality Analysis and Drill-Down Reporting:

AutoAdviser's reporting options allow you to make informed decisions concerning the release of your applications. Instead of just producing simple pass/fail statistics, AutoAdviser offers a multitude of customizable reports that make it easy to analyze the progress of your testing and development effort.

AutoAdviser's status reports provide a snapshot of a project's current state by calculating

coverage and success of tests and requirements. To provide an early warning before project milestones are missed, AutoAdviser's progress reports measure the change in coverage and success between project test runs or dates. In addition, graphical drill-down reports give you an overall project status and allow you to quickly get more information by "drilling down" to the desired level of detail.

14. AutoTester Client/Server for use with SAP R/3, AutoTester Inc., www.autotester.com, http://www.testingfaqs.org/t-driver.htm#AUTCS

Test management and implementation tool. Designed for SAP R/3 implementation teams, this product provides automated unit, functional, integration and regression testing, as well as a powerful scripting language for general task automation.
AutoTester Client/Server is a comprehensive automated testing solution specifically designed to support R/3 project teams in the configuration and automated testing of SAP R/3. The industry's most advanced solution, AutoTester seamlessly handles the specific issues involved in R/3 functional testing and can be used to automate R/3 configuration control, master data input, training data input, response time monitoring, migration between R/3 clients, and other labour-intensive tasks.
Platforms: Windows 3.X, Windows 95, Windows NT

15. CYRANO TEST, CYRANO, www.cyrano.com, http://www.testingfaqs.org/t-driver.htm#CYRANO_TEST

Host-based suite of testing tools for terminal-based, character cell applications.
CYRANO provides suite of testing tools available that was designed specifically for testing terminal-based applications. Because the tools run on the application host instead of a PC, the test engine can automatically synchronize test scripts to the I/Os of the application, use multiple threads (terminals), communicate & synchronize events between threads, monitor the resources the process being tested is using, and more.
The CYRANO suite of tools can be used not only for software testing, but process automation as well. Utilities include terminal monitoring/recording, script generation, test controller, statistical analyzer, screen image editor, native file comparator, and system clock simulator.
Platforms: IBM AIX, HP/UX, OpenVMS, Digital Unix, Sun Solaris, Windows NT, and more.

16. DejaGnu, Cygnus Support, www.cygnus.com, http://www.testingfaqs.org/t-driver.htm#dejagnu

Testing framework for interactive or batch oriented apps. Tcl/Expect based testing framework designed for regression testing and embedded systems testing.

Freeware.
Platforms: Most Unix machines

17. MYNAH, Bellcore, http://www.testingfaqs.org/t-driver.htm#mynah

Testing environment, synchronous, asynchronous and interfaces to GUI testers.
MYNAH is an advanced software testing environment that can be used in all phases of
software testing to exercise and analyze mainframe, minicomputer and workstation
applications. MYNAH's high-level scripting language allows for great flexibility. MYNAH
also allows simulation of an unlimited number of terminals for performance and stress
testing.
Platforms: SunOS, Sun Solaris

18. OTF – On Object Testing Framework, MCG Software, Inc., www.mc§§§§§§§§§§§§§§§§§§§§§soft.com/, http://www.testingfaqs.org/t-driver.htm#MCGSoftware

Testing Framework for Smalltalk Objects. OTF is an easy-to-use framework for the
developing; editing, keeping, sharing and running suites of tests for Smalltalk objects.
Regression testing is automatic with full logging of results. Tests may be looped and
conditional code executed for stress testing. While OTF focuses on testing modelling
objects, there is also a simple mechanism for testing user interfaces. Extensions are easily
added to OTF to expand OTF functionality and tailor OTF to site requirements. OTF is
available on all the major Smalltalks.
Free trial.
Platforms: Windows, OS/2, & Unix via Visual Smalltalk; Visual Smalltalk Enterprise;
Visual Works; Visual Age

19. QADirector, Compuware Corporation, www.compuware.com/qacenter, http://www.testingfaqs.org/t-driver.htm#QADIRECTOR, www.methods-tools.com/tools/testing.html

Test management of all phases of testing. *QA*Director® is a Windows-based test process
management tool that is part of Compuware's comprehensive *QA*Center™ family of
application testing products. It provides application and system managers, developers and
QA workgroups with a single point of control for orchestrating all phases of testing.
*QA*Director integrates test management with automated testing to provide a framework for
managing the entire testing process-from planning and design to test execution and analysis.
*QA*Director also enables you to make the best use of existing test assets (test plans, cases,
scripts), methodologies and application testing tools.
With Compuware's *QA*Center, software testers and application developers can now ensure
application quality with the first enterprise-wide testing solution that includes client/server
automated testing tools, mainframe testing tools, test process management tools and testing
services. *QA*Center consists of client/server automated testing tools as well as Compuware's
market-leading mainframe testing products, *QA*Hiperstation™, for VTAM applications, and
*QA*Playback™, for CICS-based applications.

Platforms: All Windows and character based platforms

20. QAPlayback, Compuware Corporation, www.compuware.com, www.methods-tools.com/tools/testing.html

QAPlayback is a mainframe testing solution that is part of Compuware's QACenter family. QAPlayback supports the testing process of CICS applications. QAPlayback includes extension options to automatically capture and synchronize all files and DB2 activity connected with test transactions.
Platforms: Win 95/NT, Win3.1

21. QCIT, Quality Information Systems, LLC, www.qistest.com, http://www.testingfaqs.org/QSi

Manual and automated test process management system. QCIT, Quality Control Information Tool, is an automated test management tool. QCIT consolidates, tracks and manages all functions, processes and information generated by the typical software testing organization. QCIT stores information by organization, project, and product (release version and build). It tracks the software testing process from requirement development, through test plan and test case development and execution. As testing is executed QCIT collects, stores and reports on test plan and test case pass/fail status. QCIT can also create and track defects and problem records when processes fail. If you can use a word processor and know how to navigate Windows Explorer, you are ready to start using QIS's test automation management tools.
Databases: All leading ODBC compliant databases
Platforms: Clients: Windows and NT, Server: PC, NT, UNIX

22. QES/Architect, QES, Inc., www.qestest.com, http://www.testingfaqs.org/t-driver.htm#QESArchitect

Complete CAST (Computer-aided Software Testing) system without scripting.
QES/Architect is a complete CAST system without the need for scripting or programming. The testdata is stored in a relational database which makes the maintenance and management of the testdata very efficient and easy. The Architect has 4 runlevels, WYSIWYG editing, WYSIWYG prototyping, extensive timing and comparison controls, extensive reporting capabilities, variables and recoveries, dynamic interaction with the target systems behaviour, etc. QES/Architect will help organize every task necessary to manage a software production process: create specifications, schedules, personnel assignments, management information, validation criteria, data item repository, complete documentation and association map for all items in the relational database, and more. It also connects this management capacity to an engine that has the power to automatically validate, verify, test and populate the software systems that are being managed.
Platforms: PC: All platforms accessible from a PC running DOS, Windows or OS/2: like IBM 3270, AS/400, UNIX, VAX, Prime, CRAY, WANG, HP, UNISYS, TANDEM, DOS, OS/2, etc.

23. Rational Clearcase, Rational Software Corp., www.rational.com

Configuration management. Rational ClearCase is software configuration management solution that simplifies the process of change. To software teams of all sizes, it offers tools and processes you can implement today and tailor as you grow. Rational ClearCase provides a family of products that scale from small project workgroups to the distributed global enterprise, enabling you to:

Accelerate release cycles by supporting unlimited parallel development.

Unify your change process across the software development lifecycle.

Scale from small teams to the enterprise without changing tools or processes.

24. Rational TestFoundation for Windows 2000, Rational Software Corp, www.rational.com

Extension to Rational Team Test (GUI test drivers). Rational TestFoundation tests software applications for compliance with the Microsoft® Windows® 2000 Application Specification. It is ideal for independent software vendors and in-house teams developing Windows 2000 applications. Rational TestFoundation includes common tools, data, methods, metrics and documentation; and can be used as a free extension to Rational TeamTest.

Microsoft chose Rational to provide Rational TestFoundation and chose Lionbridge Technologies' VeriTest laboratories to provide services to validate that an application can be successfully used on the Windows 2000 platform.

Rational TestFoundation for Windows 2000 allows you to test compliance with the Windows 2000 operating environment as part of normal testing during development. Unlike mechanisms that require manual testing and management, Rational TestFoundation helps you build-in compliance to the Windows 2000 standard, making certification easier to obtain.

Freeware.

25. Rational TestManager, Rational Software Corp, www.rational.com

Test management tool. Rational TestManager is used to manage all aspects of testing and all sources of information related to the testing effort throughout all phases of a software development project.

- Test planning

- Test design

- Test implementation

- Test execution

- Results analysis

Rational TestManager handles scheduling, execution, and collection of results for every test that gets run under its command - functional, load, manual, integration, unit, etc. - including running third-party test tools and collating those results.

Using Rational TestManager, testers create, maintain or reference the test plan that organizes the test cases, iterations, and configurations, as well as external artifacts such as inputs from documents, models, change requests and Excel spreadsheets.

26. SDTF – SNA Development Test Facility, Applied Computer Technology, www.acomtech.com, http://www.testingfaqs.org/t-driver.htm#sdtf

Network test driver/manager. SNA (Systems Network Architecture) network product testing system. Provides PC-based environment for development, architectural conformance verification, load/stress and performance testing. Provides over 13,000 ready-to-run validated tests, and allows development of additional tests using test case development tools and an open API (Application Programming Interface).
Platforms: DOS, Windows 98, Windows NT

27. SMARTS, Software Research, Inc., www.soft.com/Products/index.html , http://www.testingfaqs.org/t-driver.htm#SMARTS

Maintenance and regression testing. SMARTS is the software maintenance and regression test system which operates as a stand-alone product or as part of the fully integrated TestWorks/Regression multi-platform suite of testing tools. SMARTS automates and simplifies the testing process by organizing tests into a hierarchical tree, providing the capability to automatically execute all or a subset of tests, and generating a variety of reports based on test results. The tests can be supplemented with activation commands, comparison arguments and pass/fail evaluation methods. When executed, SMARTS performs the prestated actions, runs a difference check on the output against the baseline, and accumulates a detailed record of test results. Six reports are automatically generated from test outcomes: Latest, All, Regression, Time, Failed and Summary reports.
Platforms: HP-9000; HP-UX; DEC-Alpha; NCR 3000; DOS; Win 3.x/ NT/ 95

28. STW/Regression for Windows, Software Research, www.soft.com/Products/index.html, www.methods-tools.com/tools/testing.html

Regression testing tool. STW/Regression for Windows automates and manages tests on both text and GUI applications. It includes CAPBAK/MSW, SMARTS/MSW, and CBDIFF, which are also available separately. CAPBAK/MSW records and plays back test sessions, capturing all user activities (keystrokes and mouse movements) during the testing process. SMARTS/MSW organizes tests into a hierarchical tree, allowing automatic execution of tests. SMARTS/MSW performs prestated actions and runs a difference check on outputs against the baseline. CBDIFF compares bitmap images, while discarding extraneous discrepancies during the differencing process.
Platforms: Sun Solaris/SunOS, AIX, Silicon Graphics IRIX, HP-UX, DOS

29. STW/Regression, Software Research, www.soft.com/Products/index.html, www.methods-tools.com/tools/testing.html

Regression testing tool. STW/Regression automates and manages tests on both text and GUI applications. It includes CAPBAK/X, SMARTS, and EXDIFF, which are also available separately. CAPBAK/X captures all user activities during the testing process and offers

automatic output synchronization and test case preview and optimization. SMARTS automates testing by organizing tests into a hierarchical tree, allowing automatic execution of all or a subset of tests, and reporting status, history, regression, and certification reports. EXDIFF verifies bitmaps captured during a recording session and automatically compares them with actual images at playback. EXDIFF can also determine a successful test based on actual values, using Optical Character Recognition and translating the values to ASCII characters. STW/Regression includes automated load generation for multi-user applications, and employs a test management component for automated test execution and management to allow unattended test runs.
Platforms: Sun Solaris/SunOS, AIX, Silicon Graphics IRIX, HP-UX, DOS, Digital Unix, SCO Unix, Solaris X86

30. TCM (Test Case Manager), Pierce Business Systems, jupiter.drw.net/matpie/PBSystems/products/Development.html, http://www.testingfaqs.org/t-driver.htm#TCM

Organizes test cases for storage and execution logging. Test Case Manager (TCM) is a tool designed for software test engineers to organize test cases for storage and execution logging. Test cases are written up in a standard format and saved into the system. Test cases can be organized by level (Smoke, Critical Path, Acceptance Criteria, Suggested), by area (GUI breakdown, installation, data, etc.), by status (pass, fail, untested, etc.), or other breakdown criteria. Once test cases are built, testers use TCM to track and report success or failure of test cases. TCM provides an unlimited number of central, multi-user databases, each of which will support an entire test team. TCM is intended for use by small to midsize software development companies or organizations. Most features are implemented as intuitive wizards for users to step through.
Freeware.
Platforms: Windows. Requires Microsoft Access.

31. TEO, GAKO Informatique, www.gako.fr, http://www.testingfaqs.org/t-driver.htm#teo

Test case management tool. TEO is a central database, that helps your validation team to share information, such as:
- Test specification (test case, test groups, test specification, test chapter)
- Test environment (product, product's version, product's supported configuration)
- Test execution (test logs, defects)
- Test planning (any tests levels, any versions and configurations)
- TEO is a test reporting tool, that helps your organization, it may produce document such as:
- Test specification (document, statistics)
- Test execution (report, statistics)
- Test Campaign (preparation, follow-up, final status, statistics)
Platforms: Windows 95/98/NT/2000, Linux

32. Test Mentor – Java Edition, SilverMark, Inc., www.javatesting.com, http://www.testingfaqs.org/t-driver.htm#TestMentorJava

Java component, unit and function test automation tool. A functional test and test modelling tool for Java developers & QA Engineers to use as they develop their Java classes, clusters, subsystems, frameworks, and other components, either deployed on the client or the server during unit and integration testing.
Free trial.
Platforms: Client (user-interface) runs on Windows platforms only, test execution on all Java platforms

33. Test Station, AutoTester Inc., www.autotester.com, http://www.testingfaqs.org/t-driver.htm#Teststation

Capture, execution and maintenance. Test Station is an automated testing solution for the creation, execution and documentation of automated tests for character-based applications running on PCs, mid-range computers and mainframes.
Test Station provides you with the power of automated testing through:
- Flexible test capture
- Unattended test execution
- Full test reusability and maintainability
- Automated documentation and reporting
- Scripting capabilities
Platforms: Mainframe

34. TestDirector, Mercury Interactive, www.merc-int.com, www.methods-tools.com/tools/testing.html

Planning, executing and quality control. TestDirector is a scalable test management tool for planning, executing, and communicating quality control during the entire development process. It supports: 1) test case design, witdefinition of key steps and expected results for each test case; 2) test creation, for both manual tests and scripts for automated test execution; 3) organization and management of automated and manual test execution; 4) bug tracking, including association of bugs with tests and monitoring of bug fix times, and; 5) summary statistics of the debugging and testing activities.
Version: 5.0
Platforms: Win 95/98/NT, OS/2, Win3.1

35. TestExpert, Silicon Valley Networks, www.svnetworks.com, http://www.testingfaqs.org/t-driver.htm#TestExpert, www.methods-tools.com/tools/testing.html

Test case organization, test execution and documentation. TestExpert is an open solution offering development teams integration with and control over their existing testing environment. TestExpert provides a powerful Oracle database repository and parallel

execution engine that organizes test cases and test information, drives high-speed test execution, and captures all results and journal information for complete IEEE (Institute of Electrical and Electronic Engineers) standard audit trail documentation and requirements traceability. TestExpert's open architecture provides "Best-of-Class" solution through seamless integration with testing tools from industry leaders, such as PureAtria, Rational, Mercury Interactive, and Segue and allows custom integration with existing "in-house" systems.
Platforms: Solaris, SunOS, HP/UX, NT

36. Testify, Applied Testing and Technology, www.about-testify.com, http://www.testingfaqs.org/t-driver.htm#Testify

Distribution, configuration, and execution of automated software testing. In today's marketplace, software testing - particularly Web application testing - must span a variety of platforms, operating systems, browsers, and hardware configurations. Testify is a test management tool that choreographs the distribution, configuration, and execution of automated software testing across Internet and intranet networks and collects test results into a single comprehensive report. Whether you have 5 test systems or 500, as your testing needs grow Testify grows with you.
Speed time to market: test your software across varied environments with the touch of a button.
Slash QA costs: you will quickly recoup the benefits of your investment in testify by reducing the costs of managing your tests.
Rev up testing productivity: testify managed tests can be run over the course of product development to detect and kill bugs early.
Drive consistent test procedures: use the same process each time testing is performed.
Supercharge product quality and profitability: better test procedures and productivity equals better products. Now there's more time to focus on documentation, installation, compatibility and other key issues!
Testify works with your existing tests, test processes and tool sets.
Platforms: Any Java platform: Windows 95, 98, NT, 2000, most versions of UNIX.

37. TestMaster, Teradyne Inc., Teradyne, Inc. Software & Systems Test, www.methods-tools.com/tools/testing.html

Test program generation system. TestMaster is an automatic test program generation system targeted to the specific needs of advanced telecommunications systems. TestMaster algorithmically generates tests in minutes using a reference model of the software's behaviour. The model is developed using graphical tools from either system requirements or a functional software specification. It can easily be updated or expanded as specifications evolve, and new tests can be generated again in minutes. The resultant TestMaster model represents a virtual data base of every possible test for the target application from which tests can be generated "on-demand" to meet specific needs ranging from basic "new build" tests to exhaustive regression tests.
TestMaster can drive virtually any automated test execution environment - either a custom tool or commercial harness. Some of the commercial test harnesses currently being programmed with TestMaster output include QA Partner, XRunner and MYNAH along with call generators such as Hammer and Crescendo.

Version: 1.8
Platforms: Sun Solaris/SunOS, HP-UX, Digital Unix

38. TestWorks, Software Research, www.methods-tools.com/tools/testing.html, http://www.testingfaqs.org/t-driver.htm#Teststation

Testing tools suite. TestWorks is an integrated suite of testing tools accessible from a GUI or command line. TestWorks comprises four product bundles (see separate listings) that work independently or together: STW/Regression automates test execution for GUI and client/server applications; STW/Coverage measures how much of your code has been tested in branch, call-pair, and path coverage; STW/Advisor uses 17 metrics to analyze an application's data, logic, and size complexity; STW/Web supports development and maintenance of web applications. TestWorks for Windows includes STW/Regression for Windows and TCAT C/C++.
Platforms: Sun Solaris/SunOS, AIX, Silicon Graphics IRIX, HP-UX, DOS, Win3.1, Win 95/98/NT

39. TETware, The Open Group, http://tetworks.opengroup.org, http://www.testingfaqs.org/t-driver.htm#tetware

Distributed Multi-Platform Test-Suite Manager. TETware is a multi-platform test scaffold for supporting both non-distributed and distributed test suites. It is provided as a supported source code product and supports both UNIX operating systems and the Windows NT operating system. A Java API is also available.
This product allows production of test suites sharing a common interface, therefore promoting sharing of test suites within organisation as well as between different organisation. Standardisation of the test methodology and tools allows testing efforts to focus away from the harness and tools, thus potentially increasing efficiency and productivity.
TETware is being used in a wide diversity of automated testing applications, ranging from standards API conformance testing, performance and stress testing, verification of secure electronic transactions, to distributed cross platform applications.
Platforms: UNIX®, Win NT, 95 and 98

40. TEWS (Test Tool for Windows), MSG Software Oy, www.msg.fi/fin/tuotteet/main.htm

Unit, Integration and System testing tool. TEWS is an efficient tool for defining the test specifications for a system under construction and for managing test information in software projects of all size.
TEWS allows the user to concentrate on productive work - no more test cases written on notepads. TEWS systematizes testing. TEWS helps in the planning of future projects.
TEWS lends a new dimension to quality monitoring, allowing software project testing histories to be generated for project groups or individual product categories. TEWS ensures real-time testing documentation.

TEWS is intended for software production and quality departments.
Quality departments - (software) project quality monitoring.
Design managers – ensuring the total quality of software production and projects.
Project managers - monitoring and analysis of testing.
Project groups and testers – enhancing test planning, more specific test specifications with concrete test cases, software product and component quality assurance.
Platforms: Windows 95/98/NT

41. TMS, TESTMASTERS, www.testmastersinc.com, http://www.testingfaqs.org/t-driver.htm#TMS

Suite of Test Management Tools. The TMS (Test Management System) suite consists of three products: TPS (Test Planning System), TCS (Test Control System) and PRS (Problem Reporting System). TPS creates sophisticated Test Plans. TCS is designed to manage test data for complex mainframe systems with multiple interfaces. PRS provides a solution to problem management. Each product can be purchased individually or all in the complete suite.
Platforms: PC based tools, run in LAN environment. Windows 3.1, 95, NT.

42. TOOTSIE: A High-end OO Development Environment (Robert V. Binder), http://www.rbsc.com/, http://www.rbsc.com/

Tootsie (Total Object-Oriented Testing Support Environment) provided comprehensive test automation for BigFoot development. BigFoot is an environment developed to support testing of a large client/server application. BigFoot is a multi-platform client/server system implemented in C++. Clients use Microsoft Foundation Classes for Windows 95 and Windows NT. Server objects wrap a relational DBMS running on multiple Sun/Solaris servers. An ORB (Object Request Broker) provides client/server communication using a distributed object model. BigFoot processing modes include high volume batch, real-time external links, and GUI-based interactive sessions. The system must provide 7x365 availability. Any incorrect output could have very serious and costly consequences.
Platforms: Win95,NT, Sun/Solaris servers

43. Validor SC, B-Tree Systems Inc., http://www.testquest.com/, www.methods-tools.com/tools/testing.html

Compatibility testing tool. Validor SC is an automated system compatibility testing tool for conducting qualitative tests on PC components in a non-intrusive, OS independent manner. Validor SC is used to test virtually any PC component, including motherboards, graphics accelerator boards, or chipsets for compatibility with any software application.
Version: 3.0
Platforms: Win 95/98/NT

Test Implementation Tools

Java

1. **AQtest, AutomatedQA Corp., http://www.automatedqa.com/, http://www.testingfaqs.org/t-impl.htm#AQtest**

   Automated support for functional, unit, and regression testing. AQtest automates and manages functional tests, unit tests and regression tests, for applications written with VC++, VB, Delphi, C++Builder, Java or VS.NET. It also supports white-box testing, down to private properties or methods. External tests can be recorded or written in three scripting languages (VBScript, JScript, DelphiScript). Using AQtest as an OLE (Object Linking and Embedding) server, unit-test drivers can also run it directly from application code. AQtest automatically integrates AQtime when it is on the machine. Entirely COM-based (Component Object Model), AQtest is easily extended through plug-ins using the complete IDL (Interactive Definition Language) libraries supplied. Plug-ins currently support Win32 API (Application Programming Interface) calls, direct ADO (ActiveX Data Objects) access, direct BDE (Borland Database Engine) access, etc.

   One Test Log for the Life of the Project - You use a test tool for the results. In AQtest all test results, and even test errors, go to one log. The log begins when you define a test project

and ends when you close it, perhaps many months later. Tens of different tests, hundreds of iterations, thousands of results all are posted to the log as messages. There are five types of messages, five priorities for each. Messages can be filtered by date, time, test, type, priority, then automatically formatted into clear, to-the-point test reports that tell you exactly what you want to know about how your application is doing. The reports are in XML for reading on any machine equipped with IE 5.0 or later.

Capture and Storage of Object Properties, Screen Clips and Output Files for Comparison - The basis of testing is evaluation. The way to automate this is to get results and compare them to verified results already achieved, or created for the purpose. AQtest can automatically capture results as collections of selected properties from an object and its children (such as a dialog and its controls), as pictures from the screen or from some other source, or as files of any type, from any source. The supplied library then makes most comparisons between "new" and "standard" the business of one or two lines of code.

Language-Independent Scripting - The design philosophy behind AQtest is to never inhibit or restrict a development team or a QAteam. One illustration of this is that with AQtest you never have to use a proprietary scripting language to code test cases. AQtest is the only tool of its kind with built-in support for multiple scripting languages: VBScript, DelphiScript, or JScript, plus C++ in recording mode. (Recorded C++ scripts can be run from inside applications, using AQtest as an OLE server.)

Scripting by Recording or by Coding - Build your test scripts quickly, and build them with the power to thoroughly test your business process. Use any mixture of recorded actions, hand-written code, calls to AQtest's powerful test library, and script tuning in the full-featured editor and debugger -- whatever fits the need, whatever is easiest for the user. Everyone in your organization can start using AQtest immediately for his or her job. Intelligent Script Recording - AQtest's recorder goes much beyond what the world's best macro recorder could do. It records selections, string input, checkings/uncheckings, etc., on Windows controls, identified by parent, class, caption, etc. The recorded script is compact, it "speaks" the way the developer sees things, and it remains valid after interface tweaks. But that is only the beginning. The intelligence goes much deeper than Windows screen objects. AQtest recognizes typical UI library objects for your development tool. In fact, it can recognize "from outside" even the most application-specific objects if the application is compiled for this. On the other hand, the recorder can also log single keyboard events and single mouse events at absolute screen positions, with total detail, if that's what you need.

Testing that Reaches Beyond the Black Box - Can't access functionality you know is in your application? Ever wanted to execute application methods from scripts? AQtest lets you go into the application under test like no other tool can. Open Applications are applications linked with one AQtest file (supplied in source code, of course). This gives scripts access to most of their public elements -- objects, properties, methods. And, if the Open Application is compiled with external debugger information AQtest's Debug Info Agent™ can use it to watch and manage even the application's private elements, just like the IDE (Integrated Development Environment) debugger can.

Debug Info Agent™ is an exclusive AQtest technology, and an industry first. It gives "external" testing more access to application internals than even the application source code has, from other modules. "External" testing can watch or run anything in the application, just as easily as it watches and runs the application's user interface -- including calling methods and changing property values. Easy answeres for the tough questions.

Object Browser - AQtest's Object Browser is divided into two panes like the Windows Explorer. In the left pane it displays a tree of all objects (processes, windows, etc.) that exist in a system, with full expand-collapse capacities. In the right pane, it displays all the available properties and methods of the object selected in the left pane. This right-pane view can itself expand its details in order to dig into the object's properties. You can also select objects directly onscreen with the mouse, and get the same detail analysis. The Browser serves two purposes. First, it lets you orient yourself among all the objects that your test scripts will have access to. Second, it lets you capture and store any collection of properties, or the image of any onscreen object, for later comparison with test output. Before storage, the specific properties to keep can be selected, or the image to save can be trimmed as needed.

Automated Self-testing - The entire process of "digging into" an application from the outside can be reversed. Again by linking in just one file, any application can gain complete control of the AQtest engine (an OLE server). Anything a script can do, application code can do, in the application's own programming language. In other words, the application can test itself, embed recorded scripts, use AQtest's scripting tools to feed itself input and to capture its own output, use the AQtest library and the result sets stored by AQtest to analyze its own behavior, and post its conclusions to the project log just like any other test would. It can also call and execute external AQtest scripts if that is useful. Self-testing applications are an obvious way to simplify Unit testing. Moreover, self-testing code is written in application source language, has the same access to application internals as the rest of the source code, and can be debugged using the same IDE debugger.

Entirely COM-based, Entirely Open Architecture - AQtest is a major automated testing tool that is entirely COM-based. It is the first because this is not easy to do. But the advantages are many. For instance, because the AQtest engine is an OLE server, it can be run from any COM-based language interpreter, or from application code. It can also have an application log its own details to it, so that it becomes "open" to external tests. Because the engine "sees" everything through one interface, COM, it is source-language independent, and can even read debugger information and use it at runtime through the Debug Info Agent(tm). Another advantage is that the various internal interfaces of AQtest are defined in IDL libraries that are supplied with the product, and which you can use to extend it. In fact, the coming Java and .NET support are such plug-in extensions.

Fully customizable interface - The onscreen interface of AQtest is clear, attractive and intuitive, by design. And it is flexible. Everything (everything) can be customized in a few seconds to adapt it to your particular needs of the moment.

Platforms: Windows 95, 98, NT, or 2000.

2. **AssertMate for Java, Reliable Software Technologies, www.rstcorp.com, http://www.cigital.com/news/java98.html, www.methods-tools.com/tools/testing.html**

AssertMate is a system that aids Java engineers in safely and accurately placing software assertions within their Java programs. Software assertions assist in finding bugs earlier in the development process (when they are easier and cheaper to fix). As developers move toward object-oriented design and component reuse, concepts such as "design by contract" and "property-based testing" use assertions to ensure proper implementation of classes,

component interfaces, and internal variables. Until now, assertions have been missing from the Java development environment.

AssertMate provides fast and accurate assertion capability for programmers and class level testers alike. AsserMate enables developers to make use of pre-conditions, post-conditions, and data assertions to validate behavioral correctness of Java programs, while providing a simple system for placing assertions without modifying source code.
Free download.
Platforms: Win 95/98/NT

3. JavaSpec, Sun Microsystems, www.methods-tools.com/tools/testing.html

JavaSpec is an automated software testing tool for testing Java applications and applets through their APIs. JavaSpec compliments JavaStar - the Java GUI testing tool. JavaSpec enables very rigorous and thorough unit testing of Java code.
Version: JDK.
No support since 1999.
Platforms: 1.1.1. Java and JDK 1.1 platforms.

4. JSUnit, Maintained by Edward Hieatt, http://www.edwardh.com/jsunit/, http://www.testingfaqs.org/t-impl.htm#JSUnit

Unit testing framework. JsUnit is a unit testing framework for client-side JavaScript. It is essentially a port of JUnit to JavaScript.
Freeware.
Platforms: Windows NT, Windows 2000 and Windows 95 (IE only). JavaScript 1.4 or higher (Internet Explorer 5.0 or later and Netscape 6.0 or later).

5. Junit, JUnit.org, http://www.junit.org/, http://www.testingfaqs.org/t-impl.htm#JUnit

A regression testing framework used by developers who implement unit tests in Java.
Open source software.
Freeware.

3.5.2 C/C++

6. APROBE, OC Systems, www.ocsystems.com

Development and testing tool. Aprobe is a software development and testing tool that lets developers and testers write probes that alter the behaviour of a program, monitor its behaviour, or log data. What are probes? Probes, or patches, provide a way to alter the image of the executable while it is in memory.
Unlike virtually every other tool on the market, Aprobe works by modifying the executable while it is in RAM. No permanent changes are made to either the source or the executable.
C/C++ supported.

Platforms: Windows 2000/NT 4; Solaris 2.5.1 / SunOS 5.5.1; Sparc & UltraSparc. AIX 4.2

7. BoundsChecker, Compuware Numega, http://www.numega.com/, http://www.testingfaqs.org/t-impl.htm#boundchecker, www.methods-tools.com/tools/testing.html

Bounds and memory leak detector. BoundsChecker detects invalid Windows API parameters, invalid Windows API return codes, invalid ANSI C parameters, invalid ANSI C return codes, memory leaks, resource leaks, dynamic memory overruns, stack memory overruns, data and heap corruptions, memory locking problems, null pointer manipulation, and processor faults.
Free evaluation.
Platforms: DOS, Windows (include. Windows 95)

8. Inuse, ParaSoft Corporation, www.parasoft.com, http://www.testingfaqs.org/t-impl.htm#Inuse

A graphical tool of memory problems. Inuse helps prevent several common memory problems by displaying and animating in real time the memory allocations performed by an application. An Insure++ (Evaluation tools) add-on. Programs linked with Insure++ can connect at runtime to Inuse, a dynamic memory visualization tool. Inuse is available as an add-on module to Insure++. Inuse displays valuable statistics regarding the amount of dynamic memory in use, memory fragmentation, sizes of allocated blocks, and the number of calls to memory management routines.
Platforms: Windows NT/2000; UNIX; DEC; HP; IBM; Linux, SGI and Solaris

9. ITEX , Telelogic, http://www.iec.org/exhibits/telelogic_02/, www.methods-tools.com/tools/testing.html

ITEX is a toolset for test suite development and execution based on TTCN (Tree and Tabular Combined Notation). The toolset supports test suite auditing, generation (with Telelogic SDT (Software Design Tools)), analysis, simulation (with Telelogic SDT), and test application generation in C. ITEX (Functions used in the test phase of the project) is part of the Telelogic Tau environment.
Version: 3.2
Platforms: Win 95/98/NT, Sun Solaris/SunOS, HP-UX

10. MTE, Integrisoft, www.integrisoft.com

Unit testing tool for C applications. Based on HindSight's combination of static analysis and dynamic testing, MTE relieves the developer of the burden of writing a driver and stub(s) by automatically generating them. In fact, MTE goes further by automating the entire module testing process.
Platforms: Windows NT/95/98/2000.

11. ObjectTester, ObjectSoftware Inc., www.obsoft.com, http://www.testingfaqs.org/t-impl.htm#objecttest

C++ Unit Testing Tool. ObjectTester is a software tool to automate the generation of C++ unit test scripts. Software written in the C++ language is made up of data structures. In C++, a "class" represents a data structure and is made up of data and methods. ObjectTester analyzes C++ classes and generates unit test cases for them. The test cases generated are in the C++ language and are free from syntax or semantic errors. A unit test script is generated for each class. This script can be modified by developers to include any "pre" or "post" conditions for each method.
Platforms: SPARC - SunOs 4.1.X and Solaris 2.X.

12. Rational VisualTest, Rational Software Corp, www.rational.com

Functional testing tool. Rational Visual Test® 6.5 is an automated functional testing tool that helps developers and testers rapidly create tests for Windows applications created with any development tool. Rational Visual Test is integrated with Microsoft Developer Studio, a desktop development environment, and has extensive integration with Microsoft Visual C++.
Rational Visual Test makes developers and testers more productive and makes it easier for organizations to deploy applications of virtually any size for the Microsoft Windows 95, Windows 98, Windows NT and Windows 2000 operating systems and for the World Wide Web.
Platforms: W95, 98, NT, 2000

3.5.3 Others

13. Access for DB2, Princeton Softech, Inc., http://www.princetonsoftech.com/, http://www.testingfaqs.org/t-impl.htm#access

Modify, insert or delete data in test database. To fully test your applications, it is necessary for your test database to contain specific test cases. Some of those test cases may include data errors or combinations of data values that are rarely found in your production database. With Princeton Softechs Access for DB2, the relational editor, you can inspect your test database, modifying, inserting, or deleting data as necessary.

14. Autotest, Racal Electronics Group, [FeG99].

Automatic test harness tool for integration testing. Autotest controls a series of test cases on different programs and software units in Visula.

Each test is defined by its input data, instructions on how to run the test, and the expected output data. The tool requires that the programs to be tested are capable of being driven solely from data held in files.

Test process produces output data and then comparison process compares this and expected output data producing test report.

Autotest can automatically re-run all failed tests at the end of a set of tests, to overcome problems of unexpected events such as network failures.

15. Compare for DB2, Princeton Softech, Inc., http://princetonsoftech.com/products/comparefordb2.asp

Unit testing, integration testing and regression testing tool. It captures a snapshot image of your data "before" and "after" you run application and then automatically identifies the differences. Automating the comparison process allows you to analyze the results and resolve problems. Princeton Softech's Compare for DB2™ analyzes complex sets of referentially intact data and quickly identifies any differences — no matter where they occur in the chain of tables.

16. Complite File Comparison Family, James Veale, http://world.std.com/~jdveale, http://www.testingfaqs.org/t-impl.htm#complite

Word-by-Word ASCII File Comparison Utilities. Word-by-Word comparison utilities for programming language source, ASCII text and data files. Native versions of these utilities are available for OS/2 Warp, Windows NT, and DOS. All versions support split screen displays with correlated scrolling and word highlighting, hardcopy and HTML printouts. Keyword and phrase processing can tailor the comparison for specific applications. Platforms: OS/2 Warp, Windows NT, DOS

17. DateWise FileCompare, DateWise, Ltd., www.datewise.com/mt, http://www.testingfaqs.org/t-impl.htm#datewise

Automated token-by-token text and binary file comparison utility. Patented file comparison utility designed for both binary and text files with expected differences without requiring detailed file specification. Current versions support combinations of ASCII, EBCDIC, big endian, and little endian files. Automatically compares report files with varied dates/formats in the header (ignoring expected differences in the dates, while flagging unexpected differences, even in the heading dates), compares executables ignoring timestamps embedded by the compiling/linking process (telling the user what values were found for the timestamps within the files), etc.

DateWise's unique technique calculates the difference between two files, telling the user if the files matched and what the difference was between the files or where any unresolvable differences are located, just by providing the names of the two files. Furthermore, this tool does not require explicit delimiters (such as spaces or punctuation) to appear around the words or tokens contained in the text or binary files (unlike competitive word-by-word comparison utilities). The powerful technique is not a "silver bullet" because it uses a publicly known technology for producing its results (Patent No. 6,236,993 covers the technology the tool is based on. Other patents are pending.).
Platforms: MS-DOS, Windows, HP-UX, Solaris, and OS/390, but the tool was written in ANSI-C for portability to other platforms and we are willing to port it elsewhere.

18. EXDIFF, Software Research, Inc., www.soft.com/Products/index.html, http://www.testingfaqs.org/t-impl.htm#EXDIFF

Extended Differencing Tool. EXDIFF is the extended file differencing system which operates as a stand-alone product or as part of the fully integrated TestWorks/Regression multi-platform suite of testing tools. EXDIFF extends commonly available file-comparison utilities by comparing files of various logical structures. This includes not only ASCII and binary files, but also bitmap image files saved either with TestWorks/Regression's capture/playback system, CAPBAK, or the standard X Window Dump utility (xwd). Used in conjunction with its TestWorks/Regression companion tools CAPBAK and SMARTS, the testing process is completely automated.
Platforms: SPARC SunOS; SPARC Solaris; HP9000; DEC-Alpha; NCR 3000; DOS; Win 3.x/ NT/ 95

19. FREstimate, SoftRel, http://www.softrel.com/, http://www.testingfaqs.org/t-impl.htm#FREstimate

Software reliability prediction tool. A software reliability prediction is an "assessment of quality and reliability of the software engineering system performed prior to that system being constructed".
This software reliability prediction tool is used early in development, as early as the concept phase to predict the delivered or fielded failure rate or MTTF (Mean Time to Failure) of a software system. The software reliability prediction methods are based on historical data from similar previously fielded software projects in which the actual MTTF, failure rate or reliability is known.
Free demo.
Platforms: Windows 95, at least 100MZ processor, at least 24MB RAM and at least 15 MB available disk space.

20. HeapAgent, MicroQuill Software Publishing, www.microquill.com, http://www.testingfaqs.org/t-impl.htm#HeapAgent

Memory error detection, including leaks, overwrites, invalid references. HeapAgent is an interactive memory error debugging tool. Detects a broad range of heap and stack errors and reports more error information than any other tool. Includes tools for browsing live heap information to diagnose the cause of errors. No relinking/recompiling, works with debuggers, and causes minimal runtime slowdowns.
Free trial.
Platforms: Windows 3.x, Windows NT, Windows 95

21. InCtrl5, PC Magazine, http://www.zdnet.com/pcmag/utilities/, http://www.testingfaqs.org/t-impl.htm#InCtrl5

Monitor changes made by install programs. InCtrl5 is the fifth incarnation of one of PC Magazine's most popular utilities. By monitoring the changes made to your system when you install new software, it enables you to troubleshoot any unexpected problems that come up. Virtually every modern program uses an install utility that installs or updates files, and also may record data in the Registry, and update .ini files or other essential text files. A companion uninstall utility should precisely reverse the effects of the install utility. When a newly installed program causes existing applications to fail, or when the supplied uninstall utility can't complete its task, to restore your system you need a record of exactly what the original install utility did. InCtrl5 can provide this record.
Freeware.
Platforms: Windows 9x, NT, 2000, or Me

22. McCabe TestCompress, www.mccabe.com

GUI-based environment to affect a comprehensive test of your software systems. McCabe TestCompress is an interactive GUI-based environment for identifying the minimal set of data necessary to affect a comprehensive test of your software systems. Based on Mcabe's advanced parsing technology, McCabe TestCompress has been proven to reduce test files by over 97%. By curtailing the size of complex test data files you can immediately: conserve testing resources, efficiently modify test-data, focus data extraction and test systems rapidly and more efficiently.

23. MDBDiff, Pierce Business Systems, http://jupiter.drw.net/matpie/PBSystems/products/retired/MDBDiff.html, http://www.testingfaqs.org/t-impl.htm#MDBDiff

Access database structural comparison tool. MDBDiff is a tool designed to quickly locate structural differences between two Microsoft Access databases (*.mdb files). The comparison is made on the following objects: tables, fields, indexes, relations, and queries. The structural differences analyzed include: changes, additions, and deletions of objects and properties of those objects. The user follows the intuitive wizard-like interface to select two Access databases to compare, enters any necessary security logon information, select the objects to compare, then selects an output type and location for the report that is built. Users can save settings to a text file for auto execution via command line. NOTE: the author has marked this tool as "retired".

Freeware.
Platforms: Windows (running Microsoft Access 97 or Access 2000)

24. Move for DB2, Princeton Softech, Inc., http://www.princetonsoftech.com/, http://www.testingfaqs.org/t-impl.htm#move

Automatically gathers related rows from multiple tables. Princeton Softech's Move for DB2, the Relational Copy Facility, automatically gathers related rows from multiple tables and copies these complete sets of relationally intact data. With Move for DB2, virtually all of the effort of creating test databases is eliminated, the quality of the test data base process is improved significantly, and programmers spend more time programming and testing.

25. mpatrol, Graeme Roy, http://www.cbmamiga.demon.co.uk/mpatrol/, http://www.testingfaqs.org/t-impl.htm#mpatrol

Malloc debugging library. The mpatrol library can be used to diagnose heap errors and locate memory leaks. It is freely distributable under the GNU (An operating system) General Public License and comes with full source code and comprehensive documentation. Freeware.
Platforms: Various UNIX, Windows, AmigaOS

26. The Heap Analyst for DOS, StratosWare Corporation, http://www.stratosware.com/swc/, http://www.testingfaqs.org/t-impl.htm#HA10

Library tool. An informational utility library that shows runtime memory use statistics. The Heap Snapshot feature logs the state of the heap to a disk file, including the size, status, and address of each block, and summary statistic information for the heap. Easy one-call access to statistics like total memory free, total memory used, largest free block size, number of free/used blocks, and more. The Heap Analyst provides a heap fragmentation index which measures how efficiently the runtime library's allocation routines are managing memory. Adds less than 3K in overhead to the application size.
Platforms: CPU: Intel X86 / OS: MS-DOS / Compilers: Microsoft, Borland, Watcom

27. ZeroFault, The Kernel Group, Incorporated, www.tkg.com, http://www.testingfaqs.org/t-impl.htm#zf

Memory analysis tool. ZeroFault is the next generation in active memory analysis tools. Using patent pending technology, ZeroFault detects and reports run-time memory problems before they become expensive. ZeroFault works on any AIX executable without recompilation, or relinking.
Free evaluation.
Platforms: RISC/6000 AIX versions 3.2.x, 4.1.x, 4.2

Test Evaluation Tools

Java

1. **TotalMetric for Java, Reliable Software Technologies, http://www.cigital.com/news/java98.html, www.methods-tools.com/tools/testing.html**

   Software metrics tool. TotalMetric for Java is a software metrics tool to calculate and display cyclomatic complexity, level-of-effort, and object-oriented metrics for the Java language. Using TotalMetric for Java during development provides an effective means of identifying risk areas and where to focus testing as you create your test plan. TotalMetric captures structural and psychological complexity metrics for Java programs and helps to assess "where risks are" in code. TotalMetric is invaluable for intelligently planning and focusing dynamic testing efforts on critical areas of code. Metrics results can be sorted by classes and methods in a fully customizable HTML analyzer. Version: 1.0.
   Free download.
   Platforms: Win 95/98/NT.

2. **DeepCover, Reliable Software Technologies, www.methods-tools.com/tools/testing.html**

   DeepCover provides test coverage analysis for C/C++ and/or Java applications. There are two products: DeepCover for C/C++ and DeepCover for Java. DeepCover measures method, branch, condition/decision and multiple condition coverages with minimal intrusion into the development or testing process. Results are reported in four levels of granularity: Application; Method; Class; and Condition. DeepCover supports most UNIX and Win32 compilers and the Microsoft Developer Studio IDE.
   Version: 2.0.4
   Platforms: Win 95/98/NT, Sun Solaris/SunOS

3. **JavaScope, Sun Microsystems, www.methods-tools.com/tools/testing.html**

Test coverage tool. JavaScope is a software testing tool that quantitatively measures how thoroughly Java applications and applets have been tested. JavaScope is created specifically for, and focused exclusively on, testing Java. JavaScope integrates seamlessly with both JavaStar and JavaSpec.
No support since 1999.
Version: JDK.
Platforms: 1.1.1. Java and JDK 1.1 platforms.

4. Rational PureCoverage, Rational Software Corp, www.rational.com

Code coverage analysis tool. Rational PureCoverage® for UNIX is code coverage analysis tool designed to be used by developers and testers during daily unit tests. Whether PureCoverage is used with Rational Purify or as a standalone tool, it is unsurpassed for ease of use and flexibility. With a single click, you can take advantage of an annotated source view that provides line-by-line code-coverage analysis, revealing the exact lines of code not covered by your test suite. PureCoverage helps you develop fast, reliable code.
Rational PureCoverage for Windows helps you to identify untested code quickly, so you can be sure you've checked your entire application for potential problems, not just part of it. An essential tool for Visual Basic®, Visual C++®, Java™, VB.NET, or C# applications, PureCoverage for Windows will speed testing efforts, save precious development time and enable you to develop fast, reliable code.
Free download.

5. TCAT for Java, Software Research, Inc., www.soft.com/Products/index.html, http://www.testingfaqs.org/t-eval.htm#JAVA

Test Coverage Analysis Tool. TCAT for Java, a component tool of the TestWorks/Web suite, is a test coverage analysis tool configured specifically for Java applets and for use on Java-enabled browsers. Developers of animated Web sites can use TCAT for Java to determine that their Java applets are fully exercised by their test suites -- a critical quality verification when Java applets support financial transactions on the Web. TCAT for Java provides the programmer with a concise summary of the logical conditions executed and not executed during test runs of the program. TCAT for Java does this by instrumenting every conditional statement in the program, identifies the true and false paths, and produces execution time reports -- all automatically.
Free demo.
Platforms: SPARC SunOS; SPARC Solaris; HP-9000; DEC-Alpha; NCR 3000; DOS; Win 3.x/NT/95

6. VisualTestCoverage, (IBM), http://www.alphaworks.ibm.com/tech/visualtest

Test coverage tool. VisualTestCoverage is a technology for determining testing adequacy for programs written in VisualAge for Smalltalk, Generator, and Java. When the programmer is testing a VisualAge application, the tool counts how many connections, events, methods of the program were executed, and displays this information in a view that resembles the VA composition editor. It provides feedback to the developer about whether he has done enough testing on each class. It covers all elements within those classes, and not just the methods.
Platforms: Windows 95

3.6.2 C/C++

7. Cantata++, Quality Checked Software, www.qcsltd.com, http://www.testingfaqs.org/t-eval.htm#cantatapp

Code Coverage Analyzer and Test Driver for C++. Cantata++ provides dynamic testing and test coverage analysis for C++ applications. A second generation tool in the Cantata testing tool family, Cantata++ measures statement, branch (decision), Boolean expression, call, call pair, and MC/DC (Multiple Condition/Decision Coverage) coverages as well as OO coverage measures such as inheritance and template instantiations. Cantata++ also maintains occurance counts for number of times each measured item is encountered.
With a specific design goal of minimal intrusion into the development and testing process, Cantata++ is an effective tool for C++ unit and integration testing. Cantata++ now brings professional testing within the reach of all C++ developers and provides full support for the testing of C++ including: private members, abstract classes, templates and exceptions, all without the overhead of writing stubs. Increasing the productivity of the testing process by quickly identifying any untested statements, decisions, functions, or C++ classes, Cantata++ has been specifically designed to offer developers a high-productivity solution to the verification of C++ software in a unique, integrated toolset.
Free demo.
Platforms: Windows 95, Windows NT, Unix

8. C-Cover, Bullseye Testing Technology, www.bullseye.com, http://www.testingfaqs.org/t-eval.htm#c-cover, www.methods-tools.com/tools/testing.html

Test Coverage Analyser for C/C++. C-Cover increases testing productivity and saves time by quickly identifying untested control structures, functions, C++ classes, source files, and sub-systems. C-Cover is very easy to use and includes advanced features.
Platforms: NT, Windows 9x, Unix

9. CTC++, Testwell, www.testwell.fi

Test Coverage Analyzer for C/C++. CTC++ is a powerful instrumentation-based tool supporting testing and tuning of programs written in C and C++ programming languages. Everyone working with C or C++ is a potential user of CTC++.

CTC++ is available in two sale packages:

"CTC++": using the tool on a host environment. The tool utilities and the instrumented code under test are run on the selected host.

"CTC++ Host-Target & Kernelcoverage": in addition to using CTC++ normally on the host environment, cross-compiling the instrumented code for a target, running tests on the target, getting the test results back to the host, and viewing the coverage reports on the host. This package facilitates also measuring coverage from the kernel mode code on the host.

CTC++ facilitates:

Measuring test coverage => ensure thorough testing, you know when to stop testing, etc.
   Function coverage (functions called).
   Decision coverage (conditional expressions true and false in program branches, case branches in switch statements, catch exception handlers in C++, control transfers).
   Statement coverage (statements executed; concluded from function and decision coverages).
   Condition coverage (elementary conditions true and false in conditional expressions).
   Multicondition coverage (all possible ways exercised to evaluate a conditional expression).
Searching execution bottlenecks => no more guessing in algorithm tunings.
   Function execution timing (if needed, the user may introduce his own time-taking function for measuring whatever is interesting).
   Execution counters.
Conveniently presented test results.
   Hierarchical, HTML-browsable coverage reports.
   Pure textual reports.
Ease of use.
   Instrumentation phase as a "front end" to the compilation command => very simple to use.
   Can be used with existing makefiles.
Usable "in the large".
   Instrumentation overhead very reasonable.
   You can select what source files to instrument and with what instrumentation options.
   Besides full executables, libraries and DLLs can also be measured.
Integrated to Microsoft Visual C++ Developer Studio.
   See description of the CTC++/VC++ integration.
Good management and visibility of testing.
   Easy to read listings (textual and HTML).
   In terms of the original source code.
   Untested code highlighted.
   Various summary level reports.
   TER-% (test effectiveness ratio) calculated per function, source file, and overall.

10. GCT, Testing Foundations, http://www.testingfaqs.org/t-eval.htm#gct

C test coverage. The Generic Coverage Tool (GCT) is a freeware coverage tool that measures how thoroughly tests exercise C programs. It measures branch, multicondition, loop, relational operator, routine, call, race, and weak mutation coverage for C programs. See http://www.testing.com
Freeware.
Platforms: Most UNIX

11. Insure++, Parasoft Corporation, www.parasoft.com, http://www.testingfaqs.org/t-eval.htm#Development

Runtime error detection, memory monitor, coverage analysis tool. Insure++ is a powerful automatic runtime error detection tool for C/C++ that improves software quality, accelerates time to market, and reduces development costs. Insure++ automatically detects errors in your code, regardless of whether you know they exist. Insure++ identifies compile-time, runtime and algorithmic errors, including memory corruption, operations on uninitialized, NULL, or "wild" pointers, memory leaks, errors that allocate and free dynamic memory, operations on unrelated pointers, and more. Insure++ includes a graphical "Malloc Monitor" that helps developers understand how their programs manipulate memory and a total coverage analysis tool that provides information about which pieces of the code have been tested to insure that all of the program is bug-free, not just the most frequently used parts.
Platforms: SunOS, HP, IBM RS6000, SGI 5.X, Digital UNIX, Lynx, Linux, SCO

12. TCA, Parasoft Corporation, www.parasoft.com

Test coverage tool. TCA is a tool developers can use to determine the coverage of Insure++. Using TCA with Insure++ gives developers a comprehensive bug-detection package. TCA reports which sections of code Insure++ tested, how much of the code was tested, and how often Insure++ executed each section. With TCA, developers can increase the efficiency and completeness of their testing, resulting in cleaner, more reliable code.
TCA provides coverage information on three levels. The Overall Summary shows the percentage of the total application that has been tested. The Function Summary displays the coverage of each individual function in an application. The Block Summary breaks down the coverage by individual program statement blocks.
One of TCA's most important features is its ability to test code in logical blocks. Most coverage analysis tools work on a line-by-line basis, a limitation that lengthens the testing process. Testing by block reduces the amount of data the developer needs to analyze and reveals which paths have been executed in addition to which statements.

13. ObjectCoverage, ObjectSoftware Inc., www.obsoft.com, http://www.testingfaqs.org/t-eval.htm#objectcov

C++ branch coverage analysis. ObjectCoverage is a software tool to help automate and improve the effectiveness of C++ software testing. Software written in the C++ language consists of "selection" and "iteration" statements. Selection statements are the "if", "else", "switch", and the "case" statements. Iteration statements are the "for", "while", and "do-

while" constructs. ObjectCoverage analyzes these statements and generates a test case/branch coverage report.
 Platforms: SPARC - SunOs 4.1.X and Solaris 2.X

14. Panorama C/C, International Software Automation, Inc., www.softwareautomation.com

Test coverage tool. QA and maintenance toolkit for PC Windows. Segment (branch) test coverage analysis, loop boundary test coverage analysis, automatic structure analysis and diagramming, automatic source code control flow analysis and diagramming, complexity analysis and automatic document generation.
International Software Automation, Inc. (ISA) is offering a shareware version of Panorama C for Windows 3.1 product for everyone to try before purchasing a product license.
Panorama C for Windows 3.1 is a sub-set of Panorama C for Windows 95/NT. Panorama C for Windows 3.1 is NOT a freeware product. After installing the shareware version of the product in a personal computer, you can use it within 30 days without a license. After the 30 day period of time, you should choose either to purchase a product license from International Software Automation, Inc. (ISA) or an ISA`s product distributor, or to delete it from the computer without using it anywhere.
Panorama C for Windows 3.1 supports MSC 6.0, MSC 7.0 and Borland C 3.1 compilers.

15. Panorama C/C++, International Software Automation, Inc. (ISA), www.softwareautomation.com, http://www.testingfaqs.org/t-eval.htm#ISA_T

Coverage, Metrics, Test Case Minimization, Error Check/simulation/Detection.
Panorama C/C++ is a comprehensive software testing environment consists of OO-Analyzer, OO-Browser, OO-Diagrammer, OO-SQA and OO-Test (the key tools for test evaluation), offers:
Test coverage analysis of template/class/function/block/branch/ segment/loop boundary/condition & multi-condition outcome,
Code execution frequency analysis in function level and branch level,
Requirement/test case and code correspondence analysis and dynamic tracing, test case efficiency analysis and test case minimization for intelligent playback (command line),
Quality measurement using static and dynamic OO-metrics,
Automated error simulation,
Error checking/detecting/locating,
Dynamic test result mapping (from object code to source code or user-defined/system header files),
Dynamic test result display in colourful class inheritance chart, function call graph, on-line accessible reports, and logic/control flow diagrams with unexecuted path/segment/condition outcome highlighted.
Free versions (for a program less than 1501 lines) of Panorama C/C++ can be directly downloaded from Panorama C/C++ web site.
Platforms: SUN Sparc OS/Solaris, Windows NT, Windows 95, HP-UX (new).

16. QC/Coverage, CenterLine Software, www.uniforum.org/news/html/dir.open/24665.html

Code coverage and analysis tool. QC/Coverage is a code coverage and analysis tool for quickly identifying how much of an application's code was exercised during testing. By identifying code components that have not been adequately tested, QC/Coverage helps users focus their efforts, avoid wasting time, and make better use of testing resources. QC/Coverage also provides industry-standard testing metrics to assist in test planning, with specialized support for C++. QC/Sim, a companion product, simulates situations such as a network crash or full disk that are difficult to duplicate in reality.
Platforms: DEC Ultrix, HP-UX, IBM AIX, Novell UnixWare, OS/2, Sun Solaris 2.x, SunOS

17. STW/Coverage, Software Research, www.soft.com/Products/index.html, www.methods-tools.com/tools/testing.html

Test coverage tool. STW/Coverage measures how much of your code has been tested. This coverage analyzer does branch and call-pair coverage in a single test run. It provides full support for all standard constructs and dialects of C and C++, using logical branch, function call and path class coverage. STW/Coverage includes TCAT C/C++, TCAT-PATH, and T-SCOPE, each of which is available separately. TCAT C/C++ uses recursive descent compiler technology to produce textual and graphical reports on logical path and branch completeness at the individual function level and at the system level. TCAT/Ada works on Ada and FORTRAN programs, measuring the number of times logical branches have been exercised for both True and False conditions. S-TCAT works on Ada and FORTRAN programs, measuring the consistency of function-call pairs at the system interface level. TCAT-PATH determines how many of the possible path combinations in a module are exercised by grouping paths into equivalence classes, including multiple instances of iterations. T-SCOPE is a test data observation tool that visually demonstrates logical branches and function calls being exercised while tests are running.
Platforms: Sun Solaris/SunOS, AIX, Silicon Graphics IRIX, HP-UX, DOS

18. TCAT C/C++ for Windows, Software Research, www.soft.com/Products/index.html, www.methods-tools.com/tools/testing.html

Test coverage tool. TCAT C/C++ for Windows provides measurements to determine how much code has been tested. TCAT C/C++ produces textual and graphical reports that identify what has and has not been exercised. It uses logical branch coverage for unit and system testing, and function call coverage for integration tests. TCAT C/C++ uses recursive descent compiler technology to handle all standard constructs and dialects of C and C++. Free demo.
Platforms: Win3.1, Win 95/98/NT

19. T-SCOPE, Software Research, Inc., www.soft.com/Products/index.html, http://www.testingfaqs.org/t-eval.htm#TSCOPE

Test Data Observation Tool. T-SCOPE, a test data observation tool, works directly with TCAT and S-TCAT, part of the fully integrated TestWorks/Coverage testing suite. T-SCOPE dynamically depicts logical branches and function-calls as they are exercised during the testing process. Slider bars can also be selected that will show the percentage of coverage achieved for individual modules or the entire program, as each test is run. Color annotation indicates how logical branch and function-call execution correspond to the minimum and maximum threshold values.
Platforms: SPARC SunOS; SPARC Solaris; HP-9000; SGI Irix 5.3, 6.2; DEC-Alpha; NCR 3000; SCO/UnixWare 2.1.1; DOS; Win 3.x/NT/95

20. **VisionSoft/TEST, VisionSoft Inc., www.methods-tools.com/tools/testing.html**

Code coverage and metrics tool. VisionSoft/TEST is complete code coverage tool that works with any C/C++ build and application execution environment. TEST is a source code based code coverage analysis tool. Statement, branch/limits and edge/path flow coverage analyzes are all supported. In addition VisionSoft/TEST generates application, and file metrics, McCabe complexity analysis and numerous reports including HTML based. Also as your code changes and to prevent redundant retesting, the ChangeSmart feature automatically performs version/change analysis on your code and applies the still valid coverage analysis data to the new application files.
Version: 6.3
Platforms:Win 95/NT, Win3.1, Sun Solaris/SunOS, HP-UX, OS/2, MacOS, AIX, DEC VMS, VxWorks

3.6.3 Others

21. **WhenToStop, SoftRel, http://www.softrel.com/, http://www.testingfaqs.org/t-impl.htm#WhenToStop**

Software reliability measurement tool. This software reliability tool is used during testing or once there are observed failures and to estimate whether or not the required or predicted failure rate or MTTF objective will be met. Hence it is a software reliability estimation tool.This tool uses observed data to estimate software reliability. The software can help you determine when to stop testing and can also help you determine the resources needed for maintaining the software. Software reliability estimation tools can also be used to validate software reliability prediction tools.The software can also help you determine the time needed to reach an objective failure rate.

22. **CodeTEST, Applied Microsystems Corporation, www.amc.com, http://www.testingfaqs.org/t-eval.htm#codetest**

Family of software verification tools for embedded systems.
CodeTEST is software verification tool suite specifically designed for embedded systems software. CodeTEST traces embedded programs and verifies software performance, test coverage, and memory allocation. CodeTEST can monitor an entire program at once, eliminating the difficulty of deciding what part of the program to watch, and how to set up

the tool for each measurement. It can produce reliable traces and measurements when programs are executed out of cache or are dynamically relocated.

The CodeTEST tool suite includes:

Performance Analysis
- o Measures function and task execution times
- o Counts call-pair linkages to identify thrashing
- o Non-sampled measurements of 32,000 functions at one time

Coverage Analysis
- o Displays coverage at program, function, or source levels
- o Plots coverage over time
- o Interactive measurements simplify test creation and refinement

Memory Allocation Analysis
- o Dynamic display shows memory leaks in progress before system crashes
- o Pinpoints memory allocation and free errors to offending source line
- o Measures true worst case allocation

Trace Analysis
- o Traces embedded programs at source, control-flow, or high (task) level
- o Deep trace captures over 100 thousand source lines of execution
- o Powerful triggering and trace display options zero in on problems

Platforms: MS Windows 95, Sun Sparc, HP 9000

23. Hindsight/TCA, Integrisoft, www.integrisoft.com, http://www.testingfaqs.org/t-eval.htm#hindsight, www.methods-tools.com/tools/testing.html

Test Coverage Analysis. Provides five levels of test coverage. Both high and low level results can be displayed on structure charts, and source code diagrams. The results can also be formatted in 16 different reports. Hindsight/TCA also provides path analysis, identifying conditions that need to be satisfied to reach untested areas.
Platforms: SunOS, Solaris, HP/UX, and IBM AIX

24. Hindsight/TPA, Integrisoft, www.integrisoft.com, http://www.testingfaqs.org/t-eval.htm#hindsight2

Test Case Analysis. Hindsight/TPA analyzes the contribution of each test case. Reports are generated which show:

1. Which test cases should be run on modified code.

2. How efficient each test case is.

3. Which test cases are redundant and overlapping.

Hindsight/TPA also cross references the test cases with the functions and source code.
Platforms: SunOS, Solaris, HP/UX, and IBM AIX

25. LDRA Testbed, LDRA Ltd, www.ldra.co.uk, http://www.testingfaqs.org/t-eval.htm#LDRA%20Testbed

Static Analysis and Code Coverage Toolset. Analyses source code statically to enforce coding standards & calculate metrics on quality, complexity, & maintainability. Static Analysis also features coding error detection, data flow analysis, variable cross reference, & code visualisation. Dynamic Analysis measures code coverage of statements, branches, test paths, subconditions, & procedure calls.

Analyses: Ada, Algol, C/C++, Cobol, Coral 66, Fortran, Pascal, PL/M, PL/1, Assemblers (Intel + Motorola).

Platforms: Solaris, SunOS, Windows 95/NT/3.1x, Vax/VMS, Open VMS, HP-UX, Digital Unix, WinOS/2, AIX, IRIX, SCO, MVS.

26. Logiscope, Verilog Inc., http://www.telelogic.com/, http://www.testingfaqs.org/t-eval.htm#Logiscope, www.methods-tools.com/tools/testing.html

Quality and Productivity for the development, test and maintenance of software applications

1) LOGISCOPE TestChecker: Measures the completeness of tests implemented on your application regardless of whether performed on host or target platforms in terms of source code test coverage. Highlights areas of non-executed code (i.e., not checked) during tests.
- Displays test coverage "on-line", i.e., during the execution of the test (even when it is performed on a target platform)
- Identifies effective non regression if program files have been modified
- Identifies inefficient test (regarding test coverage level)
- Identifies test conditions required to test unreached parts of the application,
- Record and re-execute tests cases automatically

2) LOGISCOPE RuleChecker: Checks coding rules, naming conventions and presentation rules. It allows you to select rules from the set of 50 pre-established rules provided with the tool, or introduce rules specific to your company, reused from one project to another.

3) LOGISCOPE ImpactChecker: It proposes a request system for checking the use of resources. These requests are relevant to location, type of data used and dependencies between data.

4) LOGISCOPE Audit: is a graphic tool used to evaluate program quality. It provides users with relevant diagnosis based on computation of a set of software metrics (more than 90). Maintenance teams can rely on graphic overviews to understand the program logic and architecture.

Platforms: UNIX: Sun, HP, IBM, Digital / WINDOWS: NT and 95

27. McCabe Visual Testing Toolset, McCabe and Associates, www.methods-tools.com/tools/testing.html

McCabe Visual Toolset quantifies the number of tests required for full path coverage and generates the associated test conditions at the unit and integration levels. The product will also monitor the testing and report on code coverage and list the untested paths.

Version: 5.11

Platforms: Win3.1, Sun Solaris/SunOS, AIX, Silicon Graphics IRIX, DEC VMS, Win 95/NT, Digital Unix, HP-UX

28. SofInst, SES Software-Engineering Service GmbH, http://www.testingfaqs.org/t-eval.htm#sofinst

Test Coverage Tool. SofInst is a test coverage tool for measuring mainframe COBOL and PL/I programs with CICS, DLI, SQL or DDL/DML macros. On the basis of the instrumentation technique, the programs can be instrumented at different 5 levels of instrumentation. The coverage report shows which probes were executed how many times together with a coverage ratio.
Platforms: IBM/MVS Mainframe

29. S-TCAT, Software Research, www.soft.com/Products/index.html, www.methods-tools.com/tools/testing.html

Test coverage tool. S-TCAT is a system test coverage analysis tool that can work alone or with the STW/Coverage tools. S-TCAT works on Ada and FORTRAN programs, measuring the consistency of function-call pairs at the system interface level.
Version: 8.2
Platforms: Sun Solaris/SunOS, AIX, Silicon Graphics IRIX, HP-UX, DOS, SCO Unix, Solaris X86

30. TCAT-PATH, Software Research, Inc., www.soft.com/Products/index.html, http://www.testingfaqs.org/t-eval.htm#TCATPATH

Path Coverage Analysis Tool. TCAT-PATH is a path coverage analysis tool that works as a stand-alone product or as part of the fully integrated TestWorks/Coverage tool suite. TCAT-PATH analyzes a large number of module paths (sequences of logical branches) by grouping paths into equivalence classes, including multiple instances of iterations. For critical modules, path coverage can be used to extend TestWorks/Coverage's TCAT logical branch coverage at the unit test level. While TCAT's C1 metric determines how many logical branches in a module are exercised, TCAT-PATH's Ct metric determines how many of the possible path combinations in a module are exercised.
Platforms: SPARC SunOS; SPARC Solaris; HP-9000; DEC-Alpha; NCR 3000; DOS; Windows 3.x; MSWindows NT; MSWindows 95

31. Test Center, Centerline Software, www.centerline.com, http://www.testingfaqs.org/t-eval.htm#testcenter

Memory access anomaly detection and coverage tool. TestCenter helps programmers thoroughly test their code early in their development process. TestCenter not only helps programmers detect run-time errors, but also helps them identify areas for further testing through a graphical code coverage analyzer. TestCenter is an ideal add-on to all programming environments.
 Platforms: Sun, HP, AIX

Static Analysis Tools

Java

1. CMTJava - Complexity Measures Tool for Java, www.testwell.fi

CMTJava, Complexity Measures Tool for Java, is a code metrics tool for Java language. It is intended for mature software development organizations striving for productive development process resulting in high quality products.
CMTJava Facilitates:
Calculating the basic code complexity metrics:
> McCabe's cyclomatic number.
> Halstead's software science metrics.
> Lines of code metrics.
Extremely fast processing:
> CMTJava can measure many thousands of Java source lines in a second.
Usage in the large:
> In one CMTJava session you can analyze a single file, a couple of files, or your whole application possibly containing hundreds of thousands of code lines.
Independent of the used Java development environment:
> CMTJava does not use, not even assume the presence, of a Java development environment. The tool only assumes that it can read the Java code from normal operating system source files.
Further processing of the measurements:
> CMTJava can write the measures into a text file, which is readily suitable input for Excel (or any other spreadheet program), by which the measures can can be processed further, say for various company summaries or for graphical representation.
Ease of use:
> CMTJava is outmost simple to use from the command line.
> Includes thorough on-line helps, man pages in Unix.
Platforms: Windows 2000/NT/9x and many Unix environments

2. CodeCompanion, Jenssoft, www.jenssoft.com, http://www.testingfaqs.org/t-static.htm#CodeCompanion

A software analysis tool that enforces coding conventions on Java source code. CodeCompanion checks Java source code against a set of carefully selected coding convention rules, and reports whether it complies to the rules or not.
Free demo.
Platforms: CodeCompanion is written entirely in Java, and is therefore available for all platforms with a Java 2 Virtual Machine.

3. JavaPureCheck, Sun Microsystems, www.methods-tools.com/tools/testing.html

JavaPureCheck is a static testing tool, which reads class files and reports everything which might cause applications or applets to be unportable. JavaPureCheck is the official purity checker testing tool of JavaSoft's 100% Pure Java Initiative.
Version: 4.0.
Freeware.
Platforms: Java and JDK 1.1 platforms.

4. JStyle, (Man Machine Systems), http://www.mmsindia.com/

JStyle 4.6 is Java source critiquing system. Version 1.0 was introduced to Java developers community in March 1997. Since then it has been continually becoming better - thanks to our customers who have been offering many valuable suggestions to make the product useful in critical Java-based application development.
JStyle can fully analyze the entire JDK 1.3 source (over 1850 files) in under 9 minutes on a Celeron-based machine (466 Mhz) with 128 MB RAM, and in 4 minutes on a PIII (550 Mhz) with 512 MB RAM!

5. Krakatau, Power Software, http://www.powersoftware.com/, http://www.testingfaqs.org/t-static.htm#Krakatau

Metric Analyzer for Java and C/C++. Krakatau gives metric information on source code at the click of a button.
As well as a comprehensive (over 70 metrics) the user interface gives several graphical methods of sorting and viewing the metric results. This gives quick access to sections of your code with high values for given metrics.
The Project Manager version of the tool can compare versions of your projects and quickly highlight where your code has been changing.
Platforms: Windows NT/2000, Solaris

6. ParaSoft Jtest, Parasoft Corporation, www.parasoft.com, http://www.testingfaqs.org/t-static.htm#Jtest

Jtest is a complete automatic class testing tool for Java. Its purpose is to help you increase your Java[tm] software's reliability while dramatically reducing the amount of time you spend testing. Jtest is designed to reduce the burden on Java developers as they write and test their programs from the class level at the earliest stages of development. Jtest automates four essential types of Java testing and gives you the detailed error information you need to make your JavaBeans, APIs and libraries, applications and applets more robust. Jtest automatically performs white-box testing, black-box testing, regression testing, and static analysis (coding standard enforcement) of Java code.
Platforms: Windows NT/95/98/2000, Solaris, Linux

7. **Rational Purify, Rational Software Corp, <u>www.rational.com</u>**

Error detection. Rational Purify® for UNIX has long been the standard in error detection for Sun, HP, and SGI UNIX platforms. With patented Object Code Insertion technology (OCI), Purify provides the most complete error and memory leak detection available. It checks all application code, including source code, third party libraries, and shared and system libraries. With Purify, you can eliminate problems in all parts of your applications, helping you deliver fast, reliable code.
Free download.
Platforms: Sun, HP, SGI UNIX

3.7.2 C/C++

8. **ccount, Joerg Lawrenz, Universitaet Karlsruhe, <u>http://www.testingfaqs.org/t-static.htm#ccount</u>**

C "readability" analyser. 'ccount' is a set of simple tools for the analysis of the syntactic readability of C source programs. The attributes computed by the ccount tools are things such as length of modules/functions/blocks/ifs/whiles/switches, number of control structures, number of operators in expressions, nesting depth of blocks etc.
Freeware.
Platforms: Most Unix

9. **Cleanscape lint-Plus, Cleanscape Software International, <u>www.cleanscape.net/stdprod/lplus/index.html</u>, <u>http://www.testingfaqs.org/t-static.htm#lint-Plus</u>**

"C" Pre-compile Analysis Tool. A stand-alone source code analyzer that expedites software development by simplifying the debugging and maintenance of "C" programs. lint-Plus detects problems compilers cannot catch, such as "C" global-variable inconsistencies, as well as analyzes source files both individually and as a group.
Platforms: Linux(Alpha, Intel), Unix (Sun, Solaris, HP, IBM, , SGI, Compaq/Digital, Tru64), VMS (VAX, Alpha)

10. **CMT++, Testwell Oy, <u>www.testwell.fi</u>, <u>http://www.testingfaqs.org/t-static.htm#cmt</u>**

CMT++ (Complexity Measures Tool for C/C++) calculates the basic McCabe, Halstead and lines-of-code metrics for C and C++ code. Clear and compact report. Configurable alarm limits. Can measure non-preprocessed source code. Can produce Excel data file for customer specific analysis or for producing graphical representations. Processes 1000s of lines of code in a second and can manage huge code volumes. Does not require a C/C++ compiler, but if Visual C++ is available, CMT++ can be used via its GUI. Read more from http://www.testwell.fi/cmtdesc.html

Platforms: Windows 2000/NT/9x, HPUX, Solaris, Linux

11. CodeWizard, (ParaSoft), http://www2.parasoft.com/jsp/home.jsp

C/C++ source code analysis tool. CodeWizard, an advanced C/ C++ source code analysis tool, uses coding guidelines to automatically identify dangerous coding constructs that compilers do not detect. Containing over 240 rules that express industry-respected coding guidelines, CodeWizard allows for the suppression of individual guidelines and includes RuleWizard, a sophisticated tool for customizing these guidelines and creating new ones. CodeWizard is particularly effective on a daily basis at both individual and group levels to simplify code reviews and make code more readable and maintainable.
Platforms: Win NT/2000; Win 95/98/ME; IBM AIX 4.3.x; Compaq Tru64; Unix 5.x, HP-UX 11.x; Linux; HP-UX 10; DEC Alpha 4.x; Sequent 4.x

12. ObjectDetail, ObjectSoftware Inc., www.obsoft.com, http://www.testingfaqs.org/t-static.htm#objectdetail

Early defect analyzer and metrics generator tool. ObjectDetail is a software tool to help automate the metrics generation of C++ programs. ObjectDetail analyzes C++ programs to extract class level information. The following reports are generated: encapsulation metric report, inheritance metric report, polymorphism metric report, complexity metric report, miscellaneous metric report.
Platforms: SPARC - SunOs 4.1.X and Solaris 2.X.

13. ParaSoft CodeWizard, Parasoft Corporation, www.parasoft.com, http://www.testingfaqs.org/t-static.htm#codewizard

Code standardizing tool. CodeWizard is a unique coding standards enforcement tool that uses patented Source Code Analysis technology (patent #5,860,011) to help developers prevent errors and standardize C++ code automatically. CodeWizard spontaneously enforces C++ coding standards, saving hours of labor-intensive analysis.
CodeWizard Features:
    Enforces over 70 coding standards automatically.
    Pinpoints exact location of programming and design violations.
    Provides a full, detailed explanation for each error found.
    Allows you to edit code directly inside CodeWizard.
    Allows customization of existing coding standards and writing of new coding standards to suit each project or development team.
    Allows flexible suppressions to enforce only the coding standards that are relevant to the current project.
CodeWizard Benefits:
    Reduces bugs by 25%.
    Streamlines development process for quicker time to market.
    Reduces development and support costs.
    Helps improve overall design of code.
    Reduces time spent on maintenance and extension.
    Accelerates learning curve for C++.

Platforms: Windows NT/95/98/2000, Linux, DEC Alpha, IBM RS/6000 (AIX 4.x), HP (HP-UX 10 & 11), SGI (IRIX 6.x), Solaris

14. **PC-lint/FlexeLint, Gimpel Software, http://www.gimpel.com/, http://www.testingfaqs.org/t-static.htm#pc-lint**

Static Analysis. PC-lint and FlexeLint will check your C/C++ source code and find bugs, glitches, inconsistencies, non-portable constructs, redundant code, and much more. It looks across multiple modules, and so, enjoys a perspective your compiler does not have.
Platforms: Windows, MS-DOS, OS/2, Unix, Sun, HP, VMS, MVS, VM, OS-9, Mac, etc

15. **Plum Hall SQS, Plum Hall, Inc., www.plumhall.com, http://www.testingfaqs.org/t-static.htm#sqs**

Static Analysis and Code Coverage. For testing C and C++ code, two major components:
Guidelines Checker:
Checks source against Plum Hall Programming Guidelines. Terse report highlights fault-prone programming practice for early correction.
CTest++:
Incremental and cumulative code coverage, including correlation of test cases to chunks of code tested. Helps give insight into which code test cases exercise, eliminating unnecessary redundant tests, and speeding development of new tests.
Plum Hall SQS incorporates a parser, not just a lexical analyzer. Flexibly supports test harnesses, whether embedded code, standalone code, manual, or the easy GUI scripting provided, using A-Language.
Platforms: WIN32, (UNIX planned)

16. **PolySpace Verifier, PolySpace Technologies, www.polyspace.com, http://www.testingfaqs.org/t-static.htm#polyspace**

Static Runtime Error Detection Tool. PolySpace Verifier is a tool designed to directly detect run-time errors and non-deterministic constructs at compilation time. Further, PolySpace Verifier does not require execution and modification of the code or time-consuming test cases to be run. Instead, PolySpace Verifier exactly pinpoints the faulty code section that will cause a run-time error if the application was executed.
PolySpace Verifier is available for C and Ada.
Free source code analysis for all visitors.
Platforms: Sun - Solaris 2.6+, Linux - VA-RedHat 6.2.4+

17. **QA C, Programming Research Ltd, www.prqa.co.uk, http://www.testingfaqs.org/t-static.htm#PRLQAC**

Deep-flow static analyser. QA C is a deep-flow static analysis tool which automates your early-cycle testing and inspection processes. A unique feature of the tool is its ability to detect language implementation errors, automatically enforce company or industry programming standards and identify dangerous programming practice. Produces over 45 industry-accepted metrics including Cyclomatic Complexity, Static Path Count and Myer's

Interval and a variety of graphical output reports such as Call Trees, Control Structure and Demographic Analysis.
Platforms: PC (Win NT & 95), Sun (SunOS and Solaris), HP (HPUX), Dec Alpha (OSF1), IBM (AIX), SGI (IRIX), SNI (SINIX)

18. Safer C Toolset, Oakwood Computing Associates Ltd., www.oakcomp.co.uk/SoftwareProducts.html, http://www.testingfaqs.org/t-static.htm#safer-c

Static Analysis. The Safer C toolset is to be designed from the beginning using measurement-based feedback. Today, C is more widely used than ever and is the dominant language used in programmable embedded control systems for example. However, the cost of failure in such systems today can be very high indeed. C has many fault and failure modes, but this is balanced by the fact that more is known about how C programs fail than arguably any other language. By avoiding these fault and failure modes, C is capable of producing some of the most reliable systems ever measured, (Hatton (1995)) whilst retaining the many benefits of C such as efficiency, small footprint, portability, availability of experienced engineers and very wide-spread availability of good compilers.
Platforms: Windows, Linux and Sparc Solaris

19. STATIC, Software Research, Inc., www.soft.com/Products/index.html, http://www.testingfaqs.org/t-static.htm#STATIC

Syntac and semantic analysis. STATIC is the static analyzer system for the fully integrated TestWorks/Advisor suite of static source code analyzers and measurement tools. Working as a stand-alone product or as part of the tool suite, STATIC provides more comprehensive syntax and semantic analysis for C programs than most compilers, including locating non-portable constructs and dead code. STATIC also searches the entire program for inconsistencies across the modules that comprise an application. This feature is especially important when analyzing code in multi-programmer projects. STATIC processes a code file or multiple files and generates a report covering more than 300 possible syntactical, warning and informational messages.
Platforms: SPARC SunOS; SPARC; HP-9000

20. STW/Advisor, Software Research, www.soft.com/Products/index.html, www.methods-tools.com/tools/testing.html

Static analysis suite. The STW/Advisor suite provides static source code analysis and measurement. It comprises METRIC, STATIC, and TDGEN, each of which is also available separately. Seventeen metrics measure a program's data, logic, and size complexity. METRIC is available for C, C++, Ada, and FORTRAN and computes Halstead software science metrics, cyclomatic complexity metrics, and size metrics. STATIC provides syntax and semantic analysis for C programs, including location of dead code and non-portable constructs. TDGEN is a test data generator that takes an existing test script and substitutes new random or sequential data values to create additional tests that more fully exercise the application under test.

Platforms: Sun Solaris/SunOS, AIX, Silicon Graphics IRIX, HP-UX, Digital Unix, Alpha NT

21. TestBed, Eastern Systems Inc., www.easternsystems.com, http://www.testingfaqs.org/t-static.htm#TestBed

Static & Dynamic Analysis tool. TestBed is a complete, powerful, integrated tool set that enhances developer's understanding of C, C++, Ada, COBOL, NT, Solaris and Pascal source code and highlights areas of concern for attention. The result is greater software reliability, reduced maintenance costs, and easier re-engineering.

TestBed's Static Analysis capabilities include programming standards verification, structured programming verification, complexity metric measurement, variable cross-reference, unreached code reporting, static control flow tracing, and procedure call analysis. TestBed Dynamic Analysis executes an instrumented version of the source code to detect code coverage defects, statement execution frequency analysis, LCSAJ (Linear Code Sequence and Jump) subpath coverage, and multiple subcondition coverage.

The combination of techniques provides a clear picture of the quality and structure of tested code. In addition, TestBed options such as Tbsafe help users achieve quality certifications including RTCA/DO178B and BS EN ISO9000/TickeIT. TestBed itself was produced under an ISO9000 quality management system of which TestBed is an important part.

3.7.3 Others

22. Aivosto Project Analyzer, Aivosto Oy, www.aivosto.com/vb.html, http://www.testingfaqs.org/t-static.htm#AivostoPA

Source code analyzer for Visual Basic. Project Analyzer runs an automated quality check on VB code. It calculates metrics and reports problems related to optimization, coding style and program functionality.

Free evaluation.

Platforms: Windows 95/98/NT/2000

23. CodeSurfer, GrammaTech, Inc, www.grammatech.com, http://www.testingfaqs.org/t-static.htm#CodeSurfer

Detailed dependence relations analysing tool. CodeSurfer® is an analysis and inspection tool that lets software developers and maintainers easily understand detailed dependence relations in source code. CodeSurfer provides access to a program's deep structure semantic properties and relationships discovered by global program analyses that conventional tools do not see.

Platforms: Windows, Solaris

24. Dependency Walker, Steve P. Miller, http://www.dependencywalker.com/, http://www.testingfaqs.org/t-static.htm#dependencywalker

A tool for troubleshooting system errors related to loading and executing modules. Dependency Walker is a free utility that scans any 32-bit or 64-bit Windows module (exe, dll, ocx, sys, etc.) and builds a hierarchical tree diagram of all dependent modules. For each module found, it lists all the functions that are exported by that module, and which of those functions are actually being called by other modules. Another view displays the minimum set of required files, along with detailed information about each file including a full path to the file, base address, version numbers, machine type, debug information, and more. Dependency Walker is also very useful for troubleshooting system errors related to loading and executing modules. Dependency Walker detects many common application problems such as missing modules, invalid modules, import/export mismatches, circular dependency errors, mismatched machine types of modules, and module initialization failures.
Freeware.
Platforms: Windows 95, 98, Me, NT 3.51, NT 4.0, and Windows 2000

25. Hindsight/SQA, IntegriSoft, Inc., www.integrisoft.com, http://www.testingfaqs.org/t-static.htm#hindsight

Metrics, static analysis. Hindsight/SQA generates metrics from the existing source code. User metrics can also be accepted for analysis. Metrics can be analyzed and printed out in a variety of report formats.
Platforms: SunOS, Solaris, HP/UX, and IBM AIX

26. McCabe QA, McCabe & Associates, www.mccabe.com, http://www.testingfaqs.org/t-static.htm#McCabeqa

Metrics tool.McCabe QA offers:
* Insight into software quality through module-by-module metric calculation. Metrics including cyclomatic complexity and essential complexity help identify where a program is more likely to contain errors. Metrics measurements are also traced over time to track program improvement.
* A visual environment for understanding software. Graphical displays represent the structure of code and the metrics rankings to provide valuable assessment of even large systems.
* A database of software characteristics including metrics and flowgraphs, used as a valuable resource for future software changes and upgrades.
Platforms: Sun - Solaris 2.5.1+, PC - Windows NT 4.0/95, IBM - AIX 4.2+, HP - HP-UX 10.2+, SGI - IRIX 5.3+

27. McCabe Visual Quality Toolset, McCabe and Associates, www.methods-tools.com/tools/testing.html

McCabe Visual Quality Toolset calculates McCabe metrics, Halstead metrics, object-oriented metrics, and other user customizable metrics. It produces structure charts, flow graphs, and metrics reports to display software structures visually. Version: 5.11. Platforms: Win3.1, Sun Solaris/SunOS, AIX, Silicon Graphics IRIX, DEC VMS, Win 95/98/NT, Digital Unix, HP-UX.

28. METRIC, Software Research, Inc., www.soft.com/Products/index.html, http://www.testingfaqs.org/t-static.htm#METRIC

Metric Analysis Tool. METRIC is the software metrics system for the fully integrated TestWorks/Advisor suite of static source code analysers and measurement tools. METRIC works as a stand-alone product or as part of the TestWorks/Advisor tool suite to quantitatively determine source code quality. After processing a source code file, METRIC automatically computes various software measurements. These metrics include the Halstead Software Science metrics, which measure data complexity in routines; the Cyclomatic Complexity metrics, which measure logic complexity in routines; and size metrics, such as number of lines, comments and executable statements.
Platforms: SPARC SunOS; SPARC; HP-9000; DEC-Alpha; NCR 3000; DOS

29. PC-Metric, SET Laboratories, Inc., www.molalla.net/~setlabs, http://www.testingfaqs.org/t-static.htm#pc-metric

Software measurement tool. PC-METRIC is a state-of-the-art software measurement tool which performs a variety of static measurements upon a program's source code. PC-METRIC's features do not stop there however. As most software measurement professionals know, the real work starts after the metrics are collected. PC-METRIC supports this task by providing an integrated analysis system that offers a variety of pre-defined reports, graphics and a custom report writing feature. PC-METRIC is the software measurement tool for today's serious software developer. Studies have shown that overly complex code is often less reliable and more difficult to maintain. PC-METRIC assesses the complexity of each function or procedure in an application using a set of industry standard measurement techniques.
Platforms: MS-DOS, UNIX, VMS

30. QA Fortran, Programming Research Ltd, www.prqa.co.uk, http://www.testingfaqs.org/t-static.htm#PRLQAF

Deep-flow static analyser. QA Fortran is a deep-flow static analysis tool which automates your early-cycle testing and inspection processes. A unique feature of the tool is its ability to detect language implementation errors, automatically enforce company or industry programming standards and identify dangerous programming practice. Produces industry-accepted metrics including Cyclomatic Complexity, Static Path Count and Myer's Interval

and a variety of graphical output reports such as Call Trees, Control Structure and Demographic Analysis.
Platforms: Sun (SunOS and Solaris), HP (HPUX), Dec Alpha (OSF1), IBM (AIX), SGI (IRIX).

31. SHOWFLOW, GRAY & GRAY Consulting Pty Ltd, http://www.testingfaqs.org/t-static.htm#SHOWFLOWDIS

Development information system (with coverage analysis). SHOWFLOW is a Development Information System for MVS (Multiple Virtual Storage) mainframe. It fully analyses applications written in COBOL, PLI, ASSEMBLER, JCL, REXX, CLIST, CICS, etc and creates a database of all inter-element relationships, along with nice visual flow diagrams to show the flow of control and inclusion relationships - both forwards and backwards. This then allows cumulative knowledge of all the elements that can be flowed to from a given starting point, or conversely, all the start points that can flow to a given element. Static coverage analysis options are included, eg to work out the best (ie minimum) set of test cases which can be used to execute a given set of elements, or list all of the elements that can be executed from a given set of test cases (which for example could then be compared to a list of elements changed for Y2K conversion...). The whole system is fronted by a comprehensive set of easy to use ISPF (Internet Service Providers Forum) panels and menus, including panels to simplify job submission for the analysis and diagramming.
Platforms: MVS Mainframe

32. SofAudit, SES Software-Engineering Service GmbH, www.soring.hu/index.html, http://www.testingfaqs.org/t-static.htm#SofAudit

Metrics and quality checks. Supports the evaluation of the legacy systems through metrics and quality checks. SofAudit is a tool for the static analysis of Assembler, COBOL, PL/I and NATURAL programs as well as for IMS, CODASYL, ADABAS and SQL databases. Besides checking the source against predefined rules, it also measures the size, complexity and quality of the programs and data bases. It produces a metric report and a deficiency report.
Platforms: PC Windows (Windows 3.11, Windows95 and Windows/NT)

33. WhiteBox, Reliable Software Technologies, http://www.cigital.com/, http://www.cigital.com/news/whitebox301.html

Metrics and code coverage. WhiteBox tool to perform software analysis that is needed to apply a complete WhiteBox methodology solution. The WhiteBox tool collects valuable static code metrics and dynamic code coverage information which are used to assist with test planning for software. Static code metrics provide insight into the complexity of different components of the software; they can be used to help determine where faults are likely to be hiding and therefore where to focus testing resources. Dynamic code coverage is used to determine how much of the code was reached when tests are performed. Using WhiteBox, you can track the code coverage levels obtained for a given test case or a suite of test cases

against the source code to determine missing or incomplete requirements, which when updated can be used to produce additional tests that cause the previously unreached code to be exercised.
Free evaluation.