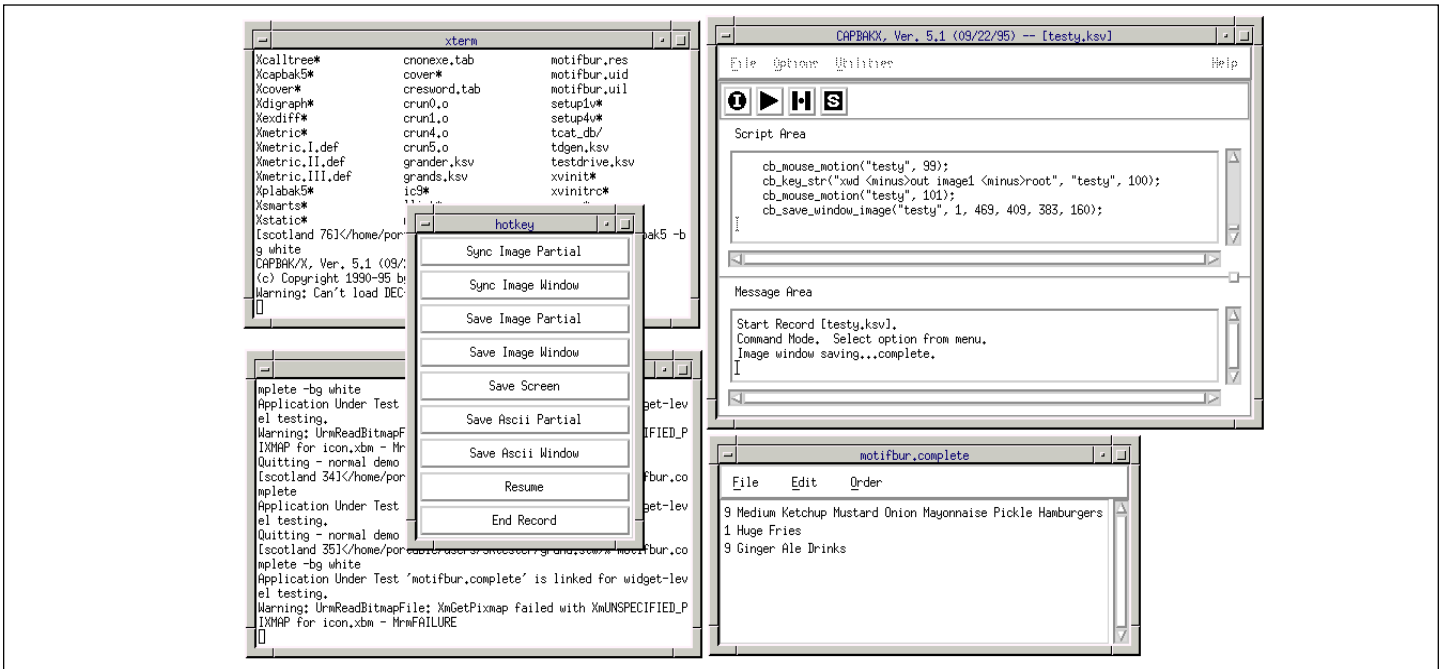




SOFTWARE RESEARCH, INC.

CAPBAK/X 5.1

CAPTURE/PLAYBACK TOOL FOR THE X WINDOW SYSTEM



CAPBAK/X 5.1 automatically executes recorded tests of software applications. CAPBAK/X can record in TrueTime mode, which reproduces precisely all GUI interactions and is sensitive to slight changes in the application, and in ObjectMode, which activates widgets directly and tolerates minor changes in the application under test.

PRODUCT DESCRIPTION

Testing as in other parts of the development process requires design and planning to ensure that goals are met, in this case the required test cases to fully exercise the application and give the best probability of releasing a bug free product. There is the other part of the process which is the actual creation and execution of the test cases. This is a time consuming and error-prone process, and once the tests are created they need to be run over and over as the software continues to be modified.

CAPBAK/X™ is designed to overcome this tedious process through automation. It captures all user activities during the testing process including keystrokes, mouse movements, captured bitmap images, captured widget (object) actions, and extracted ASCII characters into a test script. The images and characters provide baselines of expected behavior, against which future runs of the tests are compared.

Future test runs then entail the playing

back of these test sessions to determine if an application performs as expected. Each playback test session is executed as if the user is running the test. CAPBAK/X's automatic synchronization ensures a reliable playback, allowing tests to be run unsupervised as many times as the tester wants.

Response images and extracted characters corresponding to their baselines are automatically captured, with comparisons done on-the-fly in a batch process later.

Test sessions can also be played back on a "preview" display window. As a program traces through the recorded test script file, keyboard, mouse and widget events are shown, allowing the user to relate an event with its corresponding recorded test script code. When an error is detected, the user can directly modify the recorded test script.

With the virtual display capability, test runs can be done in the background freeing up the screen for other activities. This capability can also be used to invoke a single application multiple times on the same workstation thus allowing for load testing

in a client/server environment.

CAPBAK/X's editing utility inserts sleep commands or increases delays at button clicks and carriage returns, sets maximum and minimum delays on key clicks, pauses after certain defaults, strips extraneous mouse movements, and decomposes the recorded tests script into smaller sub-files.

Helped by its **TestWorks Regression™** companion tools, **EXDIFF™** and **SMARTS™**, CAPBAK/X can completely automate the testing process. The SMARTS test management system organizes CAPBAK/X's test sessions into an hierarchical structure for execution individually or as a part of a test suite and then conditionally evaluates each test according to the verification method selected. Discrepancies are reported by SMARTS for further analysis. Extraneous discrepancies can be discarded in the comparison process via the EXDIFF product. SMARTS' test execution reports and statistics show the PASS/FAIL results for a test or a test suite.

RECORD AND PLAYBACK MODES

- *True-Time* — Automatically records keyboard and mouse activity into an ASCII-format test script and plays back user input exactly as recorded.
- *Character Recognition* — Tolerates minor application changes to the graphical user interface (GUI), e.g. button locations, menu list orders, fonts and background colors.
- *Widget/Object mode* — Records and plays back actual widget (object) calls, regardless of screen location, color, size, or other setup.
- *Network Transparent* — Records and plays back test sessions on a host across a network, making test execution network transparent.

IMAGE CAPTURES

- *Verification Images* — Captures entire screens, windows, partial areas, and menus for playback verification.
- *Synchronization Images* — Saves windows and screen fragments for image synchronization.
- *Regenerated Baseline Images* — One command saves all or particular playback response images as baseline images.

INTERACTIVE PLAYBACK

- *Playback Interaction* — Pauses, resumes, terminates, speeds up, or slows down a test session.
- *Playback Editing* — Inserts or appends new test sessions to an existing script during playback.

FIVE SYNCHRONIZATION MODES

- *Automatic Output Synchronization* — Automatically synchronizes on event-sensitive environment differences, such as new windows popping up in varying locations.
- *Image and Window Synchronization* — Waits for the contents of a screen fragment or a window to update and matches the baseline image.
- *Automatic Event Synchronization* — Automatically handles event-sensitive application differences, such as menus appearing in varying locations.
- *Timing Synchronization* — Playback timing can be adjusted to different values, allowing playback to be slowed down overall or just after events such as mouse clicks and carriage returns.

- *Character String Synchronization* — Handles location changes of character segments. It searches for a character string and moves the cursor to the located character string.

MULTIPLE VERIFICATION MODES

- *Bitmap Verification* — Images captured during a recording session are automatically compared with the actual images at playback, creating an outcome log file.
- *Character Recognition Verification* — Determines a successful test based on the actual values, extracting the values from bitmap images using OCR technology and translating them into ASCII characters, regardless of font and background color.
- *Widget/Object Verification* — Determines a successful test based on the actual object call made, regardless of the location, size, color, etc. of the widget.

RECORDED TEST SCRIPT EDITING

- *Automatic Decomposition* — A test script automatically breaks down into a sequence of similar sub-sessions such as keyboard and mouse activities, facilitating script comprehension and error detection.
- *Test Script Programming* — Handles multiple test scenarios and responds to test environment variances with conditional expressions and loop constructs.
- *Including Tests* — Incorporates other recorded test scripts, allowing for a modular test development approach and the reuse of common test functions.
- *Inserting and Appending Tests* — Adds or appends new test script information to an existing test during playing back.
- *Previewing Tests* — Simulates test session behavior of playback, allowing the user to detect errors and directly modify a test script.

VIRTUAL DISPLAY CAPABILITIES

- *Multiple Test Simulation* — Runs multiple client-application tests on the same workstation for the purposes of load generation, performance assessment and multi-user test sessions.
- *Virtual X-Server* — A modified version of the X-server behaves just like a standard X-server, except it is simulated in memory and not tied to any physical screen. This allows playback activity to run in the background, freeing the

screen to continue executing other processes or commands.

- *Virtual Playbacks* — Plays back recorded keystrokes and mouse movements to the Virtual X-server. Screen image response files are saved to regular bitmap files that can be compared to the baseline images on a PASS/FAIL criteria.
- *Test Portability* — Confirms tests on one machine that were initially created on a different machine with a different display size, allowing for portability.

MULTIPLE INTERFACES

- *GUI* — Works from a graphical user interface.
- *Command Line* — Offers unique command line functionality.
- *Function Keys* — Issues record/playback commands from configurable keyboard function keys.

SUPPORTED PLATFORMS

- Sun SPARC
- x86 Solaris
- SGI
- IBM RS/6000
- HP 9000 - 700/800
- DEC Alpha
- UNIXWare
- SCO


TECHNICAL SUPPORT

- Telephone hot-line assistance for installation and technical questions is available.
- Maintenance contracts provide continuing product support and upgrades.

For more details on CAPBAK/X, contact:

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