

JUMBL 4 Migration Guide

Software Quality Research Laboratory

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About this Document

This document provides guidance for users of JUMBL 3 and 3.1 who are migrating to the JUMBL 4. Users of prior versions of the JUMBL should consult the JUMBL 3 migration guide as well.

In some cases the functionality of the JUMBL has not changed. In other cases the same functionality exists, but it is accessed in a different (hopefully simplified and more consistent) manner. Finally, the JUMBL 4 provides significant new features.

Development of JUMBL 4 focused on two goals:

- Increase usability of the tool. The number of commands has been reduced, and several commands have been merged. For example, there is just one `Write` and one `Analyze` command for both models and test records.
- Increase test generation and management capability. Ordered sequences of tests can now be stored in test records, and complicated tests can be generated using Test Generation Language (TGL) descriptions.

Consult the JUMBL web site for comprehensive JUMBL 4 documentation:

<http://www.cs.utk.edu/sqrl/esp/jumbl.html>

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1 General Notes

There have been several changes between versions 3 and 3.1 and version 4. These changes are targeted at improving usability and at testing complex systems. A few of the changes listed in the following sections were already present in version 3.1.

All JUMBL commands can now be accessed by typing the first few letters of the command. This must be unambiguous, so you can type “g” for `GenTest`, but you must type “an” for `Analyze` to distinguish it from `About`.

2 Upgrading Java

The JUMBL version 4 requires Java¹ 2 runtime version 1.4. Later versions of the Java 2 runtime should also be acceptable. See Chapter 2 of the JUMBL User’s Guide for installation instructions.

3 Working With Models

New Formats The JUMBL supports the DOT format used by the AT&T Graphviz tools, and the `.mod` format used by `ToolSET_Certify`². See Chapter 4 of the JUMBL User’s Guide.

The JUMBL supports writing models using EMMML, a usage-variable-oriented language for describing complex usage models. See Appendix C of the JUMBL User’s Guide.

Changed Commands The `WriteModel` command has been replaced with the more general `Write` command. See Section 4.1 of the JUMBL User’s Guide.

The `Check` command now verifies model references, checking that the referenced model is available, that any input trajectory is correct, and that the exit selector is correct. See Section 4.6 of the User’s Guide.

The `Flatten` command now automatically prunes the output (so it is not necessary to run `Prune` after `Flatten`). See section 4.8 of the User’s Guide.

4 Analyzing Usage Models

Changed Command The default suffix for a model analysis is now `_ma`. Note that the `Analyze` command can now be used on both models and the new test records. See Section 5.2 of the User’s Guide.

¹Java is a registered trademark of Sun Microsystems, Inc.

²`ToolSET_Certify` is a registered trademark of Q-Labs, Inc.

New Engine A new analytical engine, `Quick`, is provided with JUMBL 4, and is the default analytical engine for model analysis. This engine is significantly faster than the older `Simple` engine, and reports Mean First Passage times and their variances in units of test cases, instead of events. See Section 5.4 of the User's Guide.

Memory requirements for all analytical engines have been significantly improved.

5 Working With Tests

Test Records Tests are, by default, stored in test records, which have the file extension `.str`. They can be manipulated using the new `ManageTest` command. See Section 6.1 of the User's Guide.

Changed Commands The `GenMinCover` and `GenWeighted` commands have been merged with `GenTest`. To generate the coverage set, use `GenTest` with the `-min` switch. See Section 6.3 of the User's Guide. To generate test cases in order by weight, use `GenTest` with the `-weight` switch. See Section 6.5 of the User's Guide.

The `WriteTest` command has been eliminated. Its functionality is provided by the `ManageTest Export` command. See Section 6.1.5 of the User's Guide.

The `RecordResults` command now expects to receive references into a test record. See Chapter 7 of the User's Guide.

Deleted Command The `ApplyTest` command has been removed; it is no longer necessary. Test records can be analyzed directly using the `Analyze` command. See Section 8.1 of the User's Guide.

Test Generation Language (TGL) The `Tangle` command has been eliminated; its functionality is provided by the new Test Generation Language (TGL) files. These files describe how to generate complex test cases. See Section 6.7 of the User's Guide.

6 After You Upgrade

Requests for support can be directed to `help@sql.cs.utk.edu`. There is a user mailing list for discussion of the JUMBL. Visit the list's web site to subscribe or view the archive:

<http://sql.cs.utk.edu/mailman/listinfo.cgi/jumbl>

If you have feature requests or wish to discuss the JUMBL with other JUMBL users, please use the email list.