

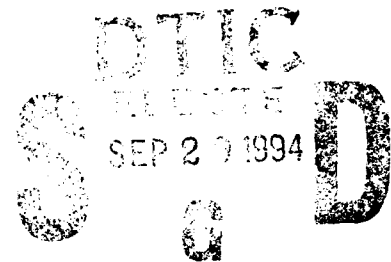
AD-A285 169



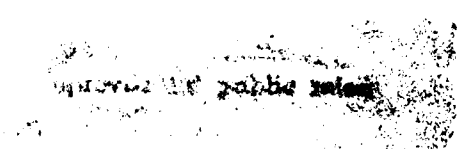
TASK: UU03
CDRL: 05156
March 1993

Reuse Library Framework Unix Binary Release Version 4.1 Version Description Document

Informal Technical Data



STARS-UC-05156/016/00
March 1993



55PX 94-30831

94 9 27 014

**Best
Available
Copy**

TASK: UU03
CDRL: 05156
March 1993

VERSION DESCRIPTION DOCUMENT
For
SOFTWARE TECHNOLOGY FOR ADAPTABLE, RELIABLE SYSTEMS
(STARS)

Reuse Library Framework
UNIX Binary Release Version 4.1
SunOS Implementation

STARS-UC-05156/016/00
March 1993

Data Type: A005, Informal Technical Data

CONTRACT NO. F19628-88-D-0031
Delivery Order 0008

Prepared for:
Electronic Systems Center
Air Force Systems Command, USAF
Hanscom AFB, MA 01731-5000

Prepared by:
Paramax Systems Corporation
12010 Sunrise Valley Drive
Reston, VA 22091

Accession For	
NTIS CRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

QUALITY INSPECTED 3

Distribution Statement "A"
per DoD Directive 5230.24
Authorized for public release; Distribution is unlimited.

Data ID: STARS-UC-05156/016/00

Distribution Statement "A"
per DoD Directive 5230.24
Authorized for public release; Distribution is unlimited.

Copyright 1993, Paramax Systems Corporation, Reston, Virginia
Copyright is assigned to the U.S. Government, upon delivery thereto, in accordance with
the DFAR Special Works Clause.

Developed by: Paramax Systems Corporation

This software, developed under the Software Technology for Adaptable, Reliable Systems (STARS) program, is approved for release under Distribution "A" of the Scientific and Technical Information Program Classification Scheme (DoD Directive 5230.24) unless otherwise indicated. Sponsored by the U.S. Defense Advanced Research Projects Agency (DARPA) under contract F19628-88-D-0031, the STARS program is supported by the military services, SEI, and MITRE, with the U.S. Air Force as the executive contracting agent.

Permission to use, copy, modify, and comment on this software and its documentation for purposes stated under Distribution "A" and without fee is hereby granted, provided that this notice appears in each whole or partial copy. This software retains Contractor indemnification to The Government regarding copyrights pursuant to the above referenced STARS contract. The Government disclaims all responsibility against liability, including costs and expenses for violation of proprietary rights, or copyrights arising out of the creation or use of this software.

In addition, the Government, Paramax, and its subcontractors disclaim all warranties with regard to this software, including all implied warranties of merchantability and fitness, and in no event shall the Government, Paramax, or its subcontractor(s) be liable for any special, indirect or consequential damages or any damages whatsoever resulting from the loss of use, data, or profits, whether in action of contract, negligence or other tortious action, arising in connection with the use or performance of this software.

TASK: UU03
CDRL: 05156
March 1993

VERSION DESCRIPTION DOCUMENT
Reuse Library Framework
UNIX Binary Release Version 4.1
SunOS Implementation

Approvals:

Task Manager *Richard E. Creps*

Date

(Signatures on File)

TASK: UU03
CDRL: 05156
March 1993

VERSION DESCRIPTION DOCUMENT

Reuse Library Framework

UNIX Binary Release Version 4.1

SunOS Implementation

Change Record:

<i>Data ID</i>	<i>Description of Change</i>	<i>Date</i>	<i>Approval</i>
STARS-UC-05156/016/00	Successor Volume: Upgrade for UNIX binary version 4.1	March 1993	<i>on file</i>
STARS-UC-05156/007/00	Successor Volume: Upgrade for binary version 4.0	30 November 1992	<i>on file</i>
STARS-TC-04045/001/00	Successor Volume: Upgrade for binary version 3.1	10 July 1992	<i>on file</i>
STARS-TS-004002/001/00	Original Issue	04 February 1992	<i>on file</i>

REPORT DOCUMENTATION PAGE

Form Approved
OMB No 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE		3. REPORT TYPE AND DATES COVERED Informal Technical Report	
4. TITLE AND SUBTITLE <i>Reuse Library Framework</i>				5. FUNDING NUMBERS F19628-88-D-0031	
6. AUTHOR(S) Paramax Corporation					
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Paramax Corporation 1210 Sunrise Valley Drive Reston, VA 22090				8. PERFORMING ORGANIZATION REPORT NUMBER STARS-UC-05156/016/00	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Department of the Air Force Headquarter, Electronic Systems Hanscom AFB, MA 01731-5000				10. SPONSORING / MONITORING AGENCY REPORT NUMBER 05156	
11. SUPPLEMENTARY NOTES					
12a. DISTRIBUTION / AVAILABILITY STATEMENT Distribution "A"				12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) The Reuse Library Framework (RLF) is an Ada system designed and implemented to support the production and installation of domain-specific software library systems. The RLF is based on two fundamental subsystems: AdaKNET (Ada Knowledge NETwork) and AdaTAU (TAU is an acronym for Think Ask Update) which are knowledge representation and inferencing systems derived from systems previously developed by Unisys in Prolog. These subsystems are supported by an integrating framework to allow them to be used in combination with each other. AdaKNET and AdaTAU are also equipped with interface specification languages (Library Model Definition Language (LMDL) and Rule Base Definition Language (RBDL) respectively) that are used to initialize domain models that describe the library (or application) domain. In addition to the support of library systems, the RLF was used to develop a prototype Ada unit test assistant during the STARS Foundations period and has been applied to the representation of software and reuse process models which are themselves machine processable.					
14. SUBJECT TERMS				15. NUMRFR OF PAGES	
				16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified		18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified		19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	
				20. LIMITATION OF ABSTRACT SAR	

Contents

1	SCOPE	1
1.1	Identification	1
1.2	System Overview	1
2	RELATED SOFTWARE	1
3	VERSION DESCRIPTION	1
3.1	Inventory of Contents	1
3.1.1	Directory: docs	2
3.1.1.1	Subdirectory: manuals	2
3.1.1.1.1	RLF Administrator's Manual.	3
3.1.1.1.2	RLF Installation Guide.	3
3.1.1.1.3	RLF Modeler's Manual.	3
3.1.1.1.4	RLF User's Manual.	3
3.1.1.2	Subdirectory: tutorials	3
3.1.1.2.1	RLF User Tutorial.	3
3.1.1.2.2	RLF Administrator Tutorial.	3
3.1.1.2.3	RLF Modeler Tutorial.	4
3.1.2	Directory: models	4
3.1.2.1	Subdirectory: models/ada_x	4
3.1.2.2	Subdirectory: models/animals	4
3.1.2.3	Subdirectory: models/asw	4
3.1.2.4	Subdirectory: models/common_data_model	4
3.1.2.5	Subdirectory: models/demo_actions	4
3.1.2.6	Subdirectory: models/window_manager	5
3.1.2.7	Subdirectory: models/software_technology	5
3.1.2.8	Subdirectory: models/sort_and_search	5
3.1.3	Directory: Libraries	5
3.1.4	Directory: unix/bin	5
3.1.4.1	Subdirectory: bin/bitmaps	6
Δ 3.2	Changes Installed for Version 4.1	6
3.2.1	<i>Library_Manager</i> Application Refinement	6
3.2.2	RLF Graphical Browser	6
3.2.3	RLF Sample Libraries	6
3.2.4	Installation Script Insertion	6
3.3	Adaptation Data	6
3.3.1	Operating Environment	6
3.3.2	Development Environment	7
3.4	Interface Compatibility	7
3.4.1	Previously Built RLF Libraries	7
3.4.2	Libraries Built with Different Compilers	7
3.5	Installation and Usage Instructions	7
3.5.1	Invoking RLF Applications	8

3.6	Potential Problems	8
3.6.1	Graphical Browser Known Problems	8
3.7	Future Enhancements	8
4	USER FEEDBACK	9
5	NOTES	10
A	Appendix: Inventory of Contents	11
B	Appendix: RLF Start-up Files	27
B.1	Sample RLF .rlfrc Start-up File	27
B.1.1	File: .rlfrc	27
B.2	RLF Graphical Browser Start-up Script	28
B.2.1	Script: RLF_GB	28
C	Appendix: UNIX Installation	33
C.1	Scripts for Installing the UNIX RLF Binary Release	33
C.1.1	Script: Install_Rlf_bin	33
C.1.2	Script: Install_Rlf.csh	37
C.1.3	File: Install_Plf.var	38
C.2	Scripts for Building Sample Networks	40
C.2.1	Script: Build_Ada_X_Lib.csh	40
C.2.2	Script: Build_Animals_Lib.csh	41
C.2.3	Script: Build_Asw_Lib.csh	42
C.2.4	Script: Build_Common_Data_Model_Lib.csh	43
C.2.5	Script: Build_Demo_Actions_Lib.csh	44
C.2.6	Script: Build_SW_Tech_Lib.csh	45
C.2.7	Script: Build_Sort_And_Search_Lib.csh	46
C.2.8	Script: Build_Move_Domain_Lib.csh	46

The distribution is organized as follows:

```
Libraries
Libraries/Taustuff
Libraries/Text
Libraries/Text/demo_animals
Libraries/Text/sort_and_search
docs
docs/manuals
docs/tutorials
bin
bin/bitmaps
man
man/cat1
man/man1
models
models/ada_x
models/ada_x/Text
models/ada_x/Text/Widgets
models/ada_x/Text/Xlib
models/ada_x/Text/Xmu
models/ada_x/Text/Xt
models/animals
models/animals/Text
models/asw
models/asw/Text
models/common_data_model
models/common_data_model/Text
models/demo_actions
models/demo_actions/Text
models/demo_actions/Text/sounds
models/demo_actions/Text/xbm
models/window_manager
models/window_manager/Text
models/software_technology
models/software_technology/Text
models/sort_and_search
models/sort_and_search/Text
```

A complete listing of the contents of this distribution is included in Appendix A.

3.1.1 Directory: docs

The two subdirectories of docs contain the RLF manuals and tutorials currently delivered in this RLF release.

3.1.1.1 Subdirectory: manuals

3.1.1.1.1 RLF Administrator's Manual. The *RLF Administrator's Manual* provides the information necessary for an RLF reuse library administrator to install, modify, and maintain a reuse library hosted on RLF.

3.1.1.1.2 RLF Installation Guide. The *RLF Installation Guide* informs the user how to install, build and start up the STARS RLF and its user interface applications, namely the *RLF Graphical Browser* and the *RLF Library Manager*.

3.1.1.1.3 RLF Modeler's Manual. The *RLF Modeler's Manual* provides the information necessary for an RLF reuse library domain modeler to model, encode, and build an RLF reuse library specification and the library itself. It also defines how to model, encode, and install the RLF library advice modules called "inferencers."

3.1.1.1.4 RLF User's Manual. The *RLF User's Manual* describes the use and basic customization of the *Graphical Browser* application. The reader is not expected to be a programmer, but familiarity with the UNIX C shell, and basic X Window System operations using the Motif Window Manager (*mwm*) or some other window manager is assumed. Some explanation of RLF concepts is provided, but only at an elementary level.

3.1.1.2 Subdirectory: tutorials This directory contains three PostScript file representations of the contents of three RLF training packages that will be used as hand-out material in support of the delivery of RLF training sessions. While the documents can be read on their own, and are formatted in an article-style format, they are oriented more for a presentation of the material by a speaker using transparencies. The tutorials are also designed to be supplemented by in-class demonstrations of RLF software and the conducting and monitoring of both in-class and out-of-class student exercises using the software.

3.1.1.2.1 RLF User Tutorial. The *RLF User Tutorial* presents a survey of the usage of the *RLF Graphical Browser* application which will enable new RLF users to quickly learn the user interface and the various RLF features which it presents.

3.1.1.2.2 RLF Administrator Tutorial. The *RLF Administrator Tutorial* provides an introduction to the installation and maintenance of RLF library systems. This tutorial assumes that the user is familiar with the basic RLF interface (for example, as presented in the *RLF User Tutorial*). A survey of the *Library Manager* application is also presented in the tutorial.

3.1.1.2.3 RLF Modeler Tutorial. The *RLF Modeler Tutorial* provides a thorough presentation of RLF modeling capabilities so that attendees can begin the construction of RLF models for application domains of interest to them. Familiarity with the material covered in the *RLF User Tutorial* is assumed. Modeling techniques are discussed and the use of the RLF model specification languages is taught through the use of a detailed example.

3.1.2 Directory: models

Sample libraries and their build scripts are found in the `models` directory, which contains the `ada_x`, `animals`, `asw`, `common_data_model`, `demo_actions`, `window_manager`, `software_technology` and `sort_and_search` subdirectories. The contents of these subdirectories are described in the following sections. This directory also contains the file `library_model_template.lmdl`, which contains an example LMDL specification for a library action subtree.

3.1.2.1 Subdirectory: models/ada_x ...contains the LMDL and RBDL specifications and associated text files for a sample RLF library describing the STARS Ada/Xt system. The specification files must be processed by the LMDL and RBDL translators to build the `ada_x` knowledge base.

3.1.2.2 Subdirectory: models/animals ...contains the LMDL specification and associated text files for a sample knowledge base describing a simple animals taxonomy. The specification files must be processed by the LMDL translator to build the animals knowledge base.

3.1.2.3 Subdirectory: models/asw ...contains the LMDL specification and associated text files for a sample RLF library addressing the anti-submarine warfare (ASW) domain. The specification files must be processed by the LMDL translator to build the `asw` library.

3.1.2.4 Subdirectory: models/common_data_model ...contains the LMDL specification and associated text files for a sample RLF library illustrating how the Common Data Model defined in the STARS ALOAF document can be expressed using RLF. The specification files must be processed by the LMDL translator to build the *Common Data Model* library.

3.1.2.5 Subdirectory: models/demo_actions ...contains the LMDL specification and associated text files for a sample RLF library addressing the modeling of LMDL actions. The sound actions contained in this library only work on a Sun workstation that has a sound board. The specification files must be processed by the LMDL translator to build the *Demo Actions* library.

3.1.2.6 Subdirectory: models/window_manager ...contains the LMDL and RBDL specifications and associated text files for a sample RLF library addressing the SEI's FODA example on move operations in the window manager domain. The specification files must be processed by the LMDL and RBDL translators to build the **Move Domain** library.

3.1.2.7 Subdirectory: models/software_technology ...contains the LMDL specification and associated text files for a sample RLF library providing both a functional- and product-oriented view into the domain and defining numerous attributes for describing software engineering components. The specification files must be processed by the LMDL translator to build the **Software Technology** library.

3.1.2.8 Subdirectory: models/sort_and_search ...contains the LMDL and RBDL specifications and associated text files for a sample RLF library describing a sort and search algorithms domain. The specification files must be processed by the LMDL and RBDL translators to build the **Sort and Search** library.

3.1.3 Directory: Libraries

The **Libraries** directory contains two prebuilt RLF version 4.1 libraries. The subdirectories **Taustuff**, **Text**, **Text/demo_action**, and **Text/sort_and_search** contain text and AdaTAU information for the two libraries.

3.1.4 Directory: unix/bin

The **unix/bin** directory contains the binaries and support files used to execute the UNIX Sun-4 version of the RLF. This directory contains the application resource file **RLF_Browser**, the **Graphical_Browser** start-up script **RLF_GB**, a sample RLF start-up file **.rlfrc**, and the associated bitmaps for the **RLF_Browser** file in the subdirectory **bitmaps**. These items are used with the **Graphical_Browser** application, with the **.rlfrc** also being used for the other RLF applications.

Included in the RLF 4.1 release is a **Sndl_to_Lmdl** translator for the conversion of the old **SNDL** syntax to the **LMDL** syntax for RLF library models.

This directory also contains public-domain executables that are used by the sample models included with this release, which are not part of the standard SunOS or X releases. The executables included are **less** and **xloadimage**. In addition, a script called **view_stp.csh** is provided as an example of an RLF action to view a Software Through Pictures (STP) diagram using STP.

The start-up script **RLF_GB** and the sample start-up file **.rlfrc** are included in this document in Appendix B.

3.1.4.1 Subdirectory: bin/bitmaps ...contains the bitmaps used in the execution of the **Graphical_Browser**.

Δ 3.2 Changes Installed for Version 4.1

The largest changes in RLF 4.1 from RLF 4.0 is the support for the operation of RLF on top of PCTE in addition to UNIX. However, these changes do not affect the UNIX Binary Release. Other changes include documentation updates (including UNIX-style *man* pages) and **Library_Manager** application refinement.

3.2.1 Library_Manager Application Refinement

The **Library_Manager** application introduced in RLF 4.0 has been refined in version 4.1 to replace some dynamic menus with scrollable list widgets and to desensitize button choices which would lead to the pop-up of an empty menu. A limit on the number of libraries the **Library_Manager** could process was also removed.

3.2.2 RLF Graphical Browser

No significant changes were made to the UNIX version of the **Graphical_Browser**.

3.2.3 RLF Sample Libraries

The old RLF model **move_domain** has been renamed to **window_managers**.

3.2.4 Installation Script Insertion

An installation script is now provided for the binary release of the RLF. This script installs the **RLF_Browser** resource file and its associated bitmaps in an appropriate directory.

The following files were added or changed to support automated installation:

```
Install_RLF.bin
Install_RLF.csh
Install_RLF.var
```

3.3 Adaptation Data

3.3.1 Operating Environment

Sun workstation with a minimum of 8 MB of main memory

SunOS Version 4.1 or later

X Window System, Version 11, Release 4

3.3.2 Development Environment

Sun-4 workstations with a minimum of 8 MB of main memory

SunOS Version 4.1 or later

SERC Ada/Motif, Version 1.0 for Sun Ada version 1.1

Reusable Graphical Browser, Version 1.0 (*Graphical_Browser* only)

X Window System, Version 11, Release 4

OSF/Motif version 1.1

Sun Ada Version 1.1

3.4 Interface Compatibility

3.4.1 Previously Built RLF Libraries

The 4.1 version of the RLF is compatible with version 4.0 RLF libraries, but is incompatible with pre-4.0 libraries. Post-4.0 versions of the RLF cannot accept RLF libraries built with pre-4.0 versions of RLF. LMDL now supercedes SNDL as the library modeling language.

3.4.2 Libraries Built with Different Compilers

Data representations are different between Ada compilers. As a result, RLF libraries created by old versions of the RLF built with other compilers are not compatible with libraries created by a version of the RLF built with the Sun Ada compiler.

3.5 Installation and Usage Instructions

All the executables for the RLF are located in the `unix/bin` directory. The file `Install_RLF_bin` is an executable UNIX C shell script, which can be used to install the UNIX binary version of the RLF. The complete installation and verification procedures are located in the *RLF Installation Guide*.

NOTE: Appendix C contains a listing of the UNIX installation scripts provided in this distribution.

3.5.1 Invoking RLF Applications

Once the RLF executables have been installed, any of the executables can be run by invoking them by name. Information about invoking the RLF `Graphical_Browser` application is located in the *RLF User's Manual*. Additional information about RLF applications and their uses may be found in the *RLF Modeler's Manual* and the *RLF Administrator's Manual*.

3.6 Potential Problems

3.6.1 Graphical_Browser Known Problems

During the execution of the `Graphical_Browser` a few infrequent errors may occur. The errors listed here are attributed to bugs in Motif version 1.1. It is expected that future versions of Motif will eliminate these errors.

The following is the list of known errors and thier descriptions:

1. **Warning: XtRemoveGrab asked to remove a widget not on the list** — This text message, which appears in the originating window, often occurs when a window in the `Graphical_Browser` is exited or canceled.
2. **Menu bar menu relocating to upper left hand corner of the screen** — This event can happen when the Node History menu option, which is in the Navigate View menu bar option, is selected. As the pointer passes over the menu entry the cascading menu may be placed in the upper left hand corner of the screen.
3. **Node menu creation error** — This display alert box randomly appears when a node is selected. If the node is selected again the error usually does not occur. Reselect the node and the correct menu should appear.

3.7 Future Enhancements

For the basic RLF capabilities, future enhancements may include:

1. Additional built-in Ada procedure actions.
2. Performance enhancements for the LMDL translator.
3. Better integration between library models and inferencer advice modules.

In the area of the `Library_Manager`, future enhancements may include:

1. The ability to manipulate several directories containing library model representations.

2. LMDL features to dump and display LMDL for library model entities.
3. Finer control of attribute and inferencer file representations and library representation permissions.
4. Fully implemented import and export capability for assets.
5. Extensive model editing capabilities.

In the area of the **Graphical Browser**, future enhancements may include:

1. Adding more sophisticated query capabilities to the simple pattern matcher of the Search function.
2. Adding a control panel to modify start-up variables, such as the aggregation view depth, after the application has started.
3. Improved view management, involving such capabilities as dynamic graph relayout, zooming, and more sophisticated filtering flexibility.

4 USER FEEDBACK

This version of RLF is considered an "alpha" release. One of the primary purposes of the release is to encourage experimentation with the software and to solicit feedback from the Ada user community to assist us in improving the product and advancing software reuse. Thus, we would greatly appreciate your comments, suggestions, and criticisms. Although we do not guarantee the applicability of the RLF to particular application needs at this time, we are interested in hearing about successes as well as failures.

We have included three forms in this release which we hope you will use to provide us with needed feedback:

- A registration form (in file **Registration_Form**) that we would like you to fill out and return to us so that we can keep track of our user base and can notify you of product upgrades and other important product news.
- A Program Problem Report (in file **Problem_Report**) that you should use to identify any specific problems you encounter in installing and using the software.
- A New Feature Request (in file **Feature_Request**) that you should use to describe specific enhancements that you believe should be incorporated into the product.

We have established three electronic mailing lists to facilitate RLF usage and feedback:

- **rlf@stars.rosslyn.paramax.com**

This list provides a public forum for discussing RLF issues. If you ask to be included in this list, you will receive all messages sent to the list and may respond accordingly.

- **rlf-request@stars.rosslyn.paramax.com**

You should send your completed *registration form* to this address, as well as requests to be added to or deleted from the rlf list (NOTE: Do NOT send add or delete requests to the rlf list itself).

- **rlf-bugs@stars.rosslyn.paramax.com**

You should send completed Program Problem Reports and New Feature Requests to this address.

If you do not have electronic mail access or wish to send us printed information, please send mail to:

RLF
Paramax STARS Center
12010 Sunrise Valley Drive
Reston, VA 22091

5 NOTES

Both AdaTAU and AdaKNET were designed for independent use by applications requiring knowledge representation and inferencing capabilities. The specification languages provided for these subsystems foster their transfer to diverse application areas and their programmatic interfaces enable their integration into general Ada applications. Additional applications will help determine system shortcomings and lead to their correction.

A Appendix: Inventory of Contents

NOTE: "*" identifies executables; "/" identifies directories

..:

Contents.tty

Install_RLF_bin*

Libraries/

README

VDDr1f_unix_bin.ps

VDDr1f_unix_bin.tty

docs/

man/

models/

unix/

Libraries:

2097153.HYB

3145729.HYB

ALL*

AdaNET_States*

KNET2097154MI_GEN_RESTR

KNET2097154MI_PAR_RESTR

KNET2097154SUBROLE

KNET3145730MI_GEN_RESTR

KNET3145730MI_PAR_RESTR

KNET3145730SUBROLE

NET2097155ACTION

NET2097155ACTION_ATTRS

NET2097155ACT_ATTR_TBL

NET2097155GC

NET2097155GEN_ACT_OWN_TBL

NET2097155GEN_OWN_TBL

NET2097155INDIV

NET2097155INDIV_TBL

NET2097155IND_ACT_OWN_TBL

NET2097155IND_OWN_TBL

NET2097155RNG_RESTR_TBL

NET2097155ROLE

NET2097155SATIS_TBL

NET2097155SPEC_TBL

NET2097155SUBROLE_TBL

NET2097155VAL_RESTR_TBL

NET3145731ACTION

NET3145731ACTION_ATTRS

NET3145731ACT_ATTR_TBL

NET3145731GC

NET3145731GEN_ACT_OWN_TBL

NET3145731GEN_OWN_TBL

NET3145731INDIV

NET3145731INDIV_TBL

NET3145731IND_ACT_OWN_TBL

NET3145731IND_OWN_TBL

NET3145731RNG_RESTR_TBL

NET3145731ROLE
NET3145731SATIS_TBL
NET3145731SPEC_TBL
NET3145731SUBROLE_TBL
NET3145731VAL_RESTR_TBL
STATE*
Taustuff/
Text/
UID_FILE*

Libraries/Taustuff:

10485885.A
10485885.C
10485885.CF
10485885.CL
10485885.F
10485885.FL
10485885.FPL
10485885.I
10485885.IF
10485885.IL
10485885.Q
10485885.QF
10485885.QL
10485885.S
10485885.SL
10485885.U
10485885.UL
10485885.UR
10485885.URF
11534344.A
11534344.C
11534344.CF
11534344.CL
11534344.F
11534344.FL
11534344.FPL
11534344.I
11534344.IF
11534344.IL
11534344.Q
11534344.QF
11534344.QL
11534344.S
11534344.SL
11534344.U
11534344.UL
11534344.UR
11534344.URF
12583025.A
12583025.C
12583025.CF
12583025.CL
12583025.F

12583025.FL
12583025.FPL
12583025.I
12583025.IF
12583025.IL
12583025.Q
12583025.QF
12583025.QL
12583025.S
12583025.SL
12583025.U
12583025.UL
12583025.UR
12583025.URF
13631496.A
13631496.C
13631496.CF
13631496.CL
13631496.F
13631496.FL
13631496.FPL
13631496.I
13631496.IF
13631496.IL
13631496.Q
13631496.QF
13631496.QL
13631496.S
13631496.SL
13631496.U
13631496.UL
13631496.UR
13631496.URF
14680072.A
14680072.C
14680072.CF
14680072.CL
14680072.F
14680072.FL
14680072.FPL
14680072.I
14680072.IF
14680072.IL
14680072.Q
14680072.QF
14680072.QL
14680072.S
14680072.SL
14680072.U
14680072.UL
14680072.UR
14680072.URF
15728682.A
15728682.C

15728682.CF
15728682.CL
15728682.F
15728682.FL
15728682.FPL
15728682.I
15728682.IF
15728682.IL
15728682.Q
15728682.QF
15728682.QL
15728682.S
15728682.SL
15728682.U
15728682.UL
15728682.UR
15728682.URF
16777224.A
16777224.C
16777224.CF
16777224.CL
16777224.F
16777224.FL
16777224.FPL
16777224.I
16777224.IF
16777224.IL
16777224.Q
16777224.QF
16777224.QL
16777224.S
16777224.SL
16777224.U
16777224.UL
16777224.UR
16777224.URF
17825800.A
17825800.C
17825800.CF
17825800.CL
17825800.F
17825800.FL
17825800.FPL
17825800.I
17825800.IF
17825800.IL
17825800.Q
17825800.QF
17825800.QL
17825800.S
17825800.SL
17825800.U
17825800.UL
17825800.UR

17825800.URF
4194349.A
4194349.C
4194349.CF
4194349.CL
4194349.F
4194349.FL
4194349.FPL
4194349.I
4194349.IF
4194349.IL
4194349.Q
4194349.QF
4194349.QL
4194349.S
4194349.SL
4194349.U
4194349.UL
4194349.UR
4194349.URF
5242888.A
5242888.C
5242888.CF
5242888.CL
5242888.F
5242888.FL
5242888.FPL
5242888.I
5242888.IF
5242888.IL
5242888.Q
5242888.QF
5242888.QL
5242888.S
5242888.SL
5242888.U
5242888.UL
5242888.UR
5242888.URF
6291464.A
6291464.C
6291464.CF
6291464.CL
6291464.F
6291464.FL
6291464.FPL
6291464.I
6291464.IF
6291464.IL
6291464.Q
6291464.QF
6291464.QL
6291464.S
6291464.SL

6291464.U
6291464.UL
6291464.UR
6291464.URF
7340136.A
7340136.C
7340136.CF
7340136.CL
7340136.F
7340136.FL
7340136.FPL
7340136.I
7340136.IF
7340136.IL
7340136.Q
7340136.QF
7340136.QL
7340136.S
7340136.SL
7340136.U
7340136.UL
7340136.UR
7340136.URF
8388616.A
8388616.C
8388616.CF
8388616.CL
8388616.F
8388616.FL
8388616.FPL
8388616.I
8388616.IF
8388616.IL
8388616.Q
8388616.QF
8388616.QL
8388616.S
8388616.SL
8388616.U
8388616.UL
8388616.UR
8388616.URF
9437301.A
9437301.C
9437301.CF
9437301.CL
9437301.F
9437301.FL
9437301.FPL
9437301.I
9437301.IF
9437301.IL
9437301.Q
9437301.QF

9437301.QL
9437301.S
9437301.SL
9437301.U
9437301.UL
9437301.UR
9437301.URF
Inf_UID_Mapping

Libraries/Text:

1048659
1048660
1048661
2097235
2097236
2097237
3145842
3145843
3145844
3145845
3145846
3145847
3145848
3145849
3145850
3145851
3145852
3145853
animals/
sort_and_search/

Libraries/Text/animals:

del
dick
snoopy
teri
tim
xterm_pager.tool*

Libraries/Text/sort_and_search:

exchange_sort_desc
heap_spec..a
insertion_sort_desc
quick_sort..a
selection_sort_desc
shaker_sort..a
xterm_less.tool*
xterm_less_int.tool*

docs:

manuals/
tutorials/

docs/manuals:

AdministratorsManual.ps
 AdministratorsManual.tty
 InstallationGuide_Binary.ps
 InstallationGuide_Binary.tty
 InstallationGuide_Source.ps
 InstallationGuide_Source.tty
 ModelersManual.ps
 ModelersManual.tty
 UsersManual.ps
 UsersManual.tty

docs/tutorials:
 RLF_UM
 admin-art.ps
 admin-training.tex
 model-art.ps
 model-training.tex
 user-art.ps
 user-training.tex

man:
 cat1/
 man1/
 whatis

man/cat1:
 Graphical_Browser.1
 Library_Manager.1
 Lmdl.1
 RLF.1
 RLF_GB.1
 Rbdl.1
 rlf.1

man/man1:
 Graphical_Browser.1
 Library_Manager.1
 Lmdl.1
 RLF.1
 RLF_GB.1
 Rbdl.1
 rlf.1

models:
 ada_x/
 animals/
 asw/
 common_data_model/
 demo_actions/
 library_model_template.lmdl
 library_model_template_pcte.lmdl
 software_technology/
 sort_and_search/
 window_manager/

```
models/ada_x:
Build_Ada_X_Lib.csh*
Build_Ada_X_Lib.esh*
ada_x.lmdl*
ada_x_pcte.lmdl*
ada_xt_widget_package.rbd1*
ada_xt_widget_pkg.rbd1*
application_shell_widget_package.rbd1*
application_shell_widget_pkg.rbd1*
ascii_disk.rbd1*
ascii_disk_widget_package.rbd1*
ascii_disk_widget_pkg.rbd1*
ascii_string.rbd1*
ascii_string_widget_package.rbd1*
ascii_string_widget_pkg.rbd1*
bboard.rbd1*
bboard_widget_package.rbd1*
bboard_widget_pkg.rbd1*
command.rbd1*
command_widget_package.rbd1*
command_widget_pkg.rbd1*
composite_object_widget_package.rbd1*
composite_object_widget_pkg.rbd1*
composite_widget_package.rbd1*
composite_widget_pkg.rbd1*
constraint_widget_package.rbd1*
constraint_widget_pkg.rbd1*
core.rbd1*
core_widget_package.rbd1*
core_widget_pkg.rbd1*
dialog.rbd1*
dialog_widget_package.rbd1*
dialog_widget_pkg.rbd1*
form.rbd1*
form_widget_package.rbd1*
form_widget_pkg.rbd1*
label.rbd1*
label_widget_package.rbd1*
label_widget_pkg.rbd1*
manager.rbd1*
manager_widget_package.rbd1*
manager_widget_pkg.rbd1*
object_widget_package.rbd1*
object_widget_pkg.rbd1*
override_shell_widget_package.rbd1*
override_shell_widget_pkg.rbd1*
rect_object_widget_package.rbd1*
rect_object_widget_pkg.rbd1*
scroll.rbd1*
scroll_widget_package.rbd1*
scroll_widget_pkg.rbd1*
shell_widget_package.rbd1*
shell_widget_pkg.rbd1*
```

```
simple.rbd1*
simple_widget_package.rbd1*
simple_widget_pkg.rbd1*
text.rbd1*
text_widget_package.rbd1*
text_widget_pkg.rbd1*
top_level_shell_widget_package.rbd1*
top_level_shell_widget_pkg.rbd1*
transient_shell_widget_package.rbd1*
transient_shell_widget_pkg.rbd1*
vendor_shell_widget_package.rbd1*
vendor_shell_widget_pkg.rbd1*
viewport.rbd1*
viewport_widget_package.rbd1*
viewport_widget_pkg.rbd1*
widget.rbd1*
window_object_widget_package.rbd1*
window_object_widget_pkg.rbd1*
wm_shell_widget_package.rbd1*
wm_shell_widget_pkg.rbd1*
```

models/animals:

```
Build_Animals_Lib.csh*
Build_Animals_Lib.esh*
Text/
animals.lmdl*
animals_pcte.lmdl*
```

models/animals/Text:

```
del*
dick*
snoopy*
teri*
tim*
xterm_pager.tool*
```

models/asw:

```
Build_Asw_Lib.csh*
Build_Asw_Lib.esh*
Text/
asw.lmdl*
asw_pcte.lmdl*
```

models/asw/Text:

```
AGP_CommandsSada*
AGP_InputBada*
AGP_InputSada*
AGP_Memory_ManagerSada*
AGP_OutputBada*
AGP_OutputSada*
confirm_panel_package*
dialog_public_a*
dialog_publica*
dialog_publica2*
```

```
form_public_a*
form_publica*
viewport_public_a*
viewport_publica*
xterm_int.tool*
xterm_less.tool*

models/common_data_model:
Build_Common_Data_Model_Lib.csh*
Build_Common_Data_Model_Lib.esh*
Text/
common_data_model.lmdl*
common_data_model_pcte.lmdl*

models/common_data_model/Text:
astronomical_constants_s.a*
desc_astronomical_constants_s*
desc_math_interface_sb*
desc_overpass*
desc_sat_comp_sb*
desc_sat_io_b*
desc_sat_io_s*
desc_units_s*
math_interface_sb.a*
overpass.a*
restr_as_is_warranty*
sat_comp_sb.a*
sat_io_b.a*
sat_io_s.a*
units_s.a*

models/demo_actions:
Build_Demo_Actions_Lib.csh*
Build_Demo_Actions_Lib.esh*
Text/
demo_actions.lmdl*
demo_actions_pcte.lmdl*

models/demo_actions/Text:
building*
general_floorplan*
imprint.tool*
lpr.tool*
message*
my_floorplan*
play.tool*
sounds/
xbm/
xloadimage.tool*
xterm_less.tool*
xterm_vi.tool*

models/demo_actions/Text/sounds:
clint_eastwood.au*
```

completely_op.au*
goodcoffee.au*
kirk_spock_boundary.au*
klaxton.au*
mccoy_all.au*
phasars_3.au*
photons_3.au*

models/demo_actions/Text/xbm:

Jerry_Bob.xbm*
eye.xbm*
fist.xbm*
full_owl.xbm*
launch.xbm*
lips.xbm*
mandelbrot.xbm*
mandelbrot_seahorses.xbm*
nebula.xbm*
owl_head.xbm*
planet_miranda.xbm*
small_galaxy.xbm*
spock.xbm*

models/software_technology:

Build_SW_Tech_Lib.csh*
Build_SW_Tech_Lib.esh*
SW_Tech_Model_Description.txt*
Text/
sw_tech.lmdl*
sw_tech_pcte.lmdl*

models/software_technology/Text:

bob_pollack*
darpa_isto*
jack_chapman*
karen_roth*
payton_ssags_paper*
pollack_and_loftus*
pollack_mfpl_paper*
pollack_tree_transformation_paper*
q13_tools_clc.a*
q13_tools_clc.abs*
q13_tools_clc.con*
q13_tools_clc_build.csh*
q13_tools_clc_test.a*
q9-c300.abs*
q9-c300.con*
q9-c300.doc*
q9-c300.ref*
q9-c300.tem*
q9-c340.abs*
q9-c340.con*
q9-c340.doc*
q9-c340.ref*

q9-c340.tem*
q9-c350.abs*
q9-c350.con*
q9-c350.doc*
q9-c350.ref*
q9-c350.tem*
q9-c360.abs*
q9-c360.con*
q9-c360.doc*
q9-c360.ref*
q9-c360.tem*
software_a_and_e*
software_technology_inc*
ssags.abs*
ssags.con*
ssags.tem*
vfl_history*

models/sort_and_search:
Build_SaS_Lib.esh*
Build_Sort_And_Search_Lib.csh*
Text/
algorithms.rbd1*
binary_ins.rbd1*
diminishing_inc.rbd1*
exchange_sorts.rbd1*
heapsort.rbd1*
insertion_sorts.rbd1*
internal_sorts.rbd1*
quicksort.rbd1*
selection_sorts.rbd1*
shakersort.rbd1*
shellsort.rbd1*
sort_algorithms.rbd1*
sort_and_search.lmdl*
sort_and_search_pcte.lmdl*
straight_ins.rbd1*
straight_sel.rbd1*

models/sort_and_search/Text:
exchange_sort_desc*
heap_spec_.a*
insertion_sort_desc*
quick_sort_.a*
selection_sort_desc*
shaker_sort_.a*
xterm_less.tool*
xterm_less_int.tool*

models/window_manager:
Build_Window_Manager_Lib.csh*
Build_Window_Manager_Lib.esh*
Text/
move_domain.lmdl*

```
move_domain.rbd1*
move_domain_pcte.lmdl*
option_move_resize.rbd1*
sunview_move.rbd1*
x10_move.rbd1*

models/window_manager/Text:
abort_move.att*
constrained_move.att*
expose_after_move.att*
move_domain_concept.help*
move_icon.att*
partially_off_screen.att*
tiled_layout.descr*
xterm_less_12.tool*
xterm_less_40.tool*
```

```
unix:
bin/
```

```
unix/bin:
.rlfrc
Install_RLF.csh*
Install_RLF.var
RLF_Browser
RLF_GB*
Sndl_to_Lmdl*
bitmaps/
less*
view_stp.csh*
xloadimage*
```

```
unix/bin/bitmaps:
alert.xbm
alert_notice.xbm
bigquestion.xbm
box_AI_m.xbm
box_AI_rev_m.xbm
box_AI_rev_s.xbm
box_AI_rev_xs.xbm
box_AI_s.xbm
box_AI_xs.xbm
box_A_m.xbm
box_A_rev_m.xbm
box_A_rev_s.xbm
box_A_rev_xs.xbm
box_A_s.xbm
box_A_xs.xbm
box_I_m.xbm
box_I_rev_m.xbm
box_I_rev_s.xbm
box_I_rev_xs.xbm
box_I_s.xbm
box_I_xs.xbm
```

box_l.xbm
box_m.xbm
box_rev_m.xbm
box_s.xbm
box_sm.xbm
box_xl.xbm
box_xs.xbm
browser.xbm
checkmark.xbm
contents.xbm
cube_AI_m.xbm
cube_AI_rev_m.xbm
cube_AI_rev_s.xbm
cube_AI_rev_xs.xbm
cube_AI_s.xbm
cube_AI_xs.xbm
cube_A_m.xbm
cube_A_rev_m.xbm
cube_A_rev_s.xbm
cube_A_rev_xs.xbm
cube_A_s.xbm
cube_A_xs.xbm
cube_I_m.xbm
cube_I_rev_m.xbm
cube_I_rev_s.xbm
cube_I_rev_xs.xbm
cube_I_s.xbm
cube_I_xs.xbm
cube_l.xbm
cube_m.xbm
cube_rev_l.xbm
cube_rev_m.xbm
cube_s.xbm
cube_sm.xbm
cube_xl.xbm
cube_xs.xbm
dialog.xbm
init_browser.xbm
null_black.xbm
ok_button.xbm
ok_button_16x16.xbm
ok_button_32x32.xbm
ok_button_45x35.xbm
ok_button_46x32.xbm
point.xbm
point_rev.xbm
qmark.xbm
quit_button.xbm
quit_button_54x35.xbm
quit_button_75x32.xbm
small_circle.xbm
small_circle_5x5.xbm
small_circle_7x7.xbm
small_circle_rev_5x5.xbm

March 1993

STARS-UC-05156/016/00

small_solid_square.xbm
small_solid_square_5x5.xbm
small_solid_square_rev.xbm
small_solid_square_rev_5x5.xbm
small_thick_circle.xbm
square_24x23.xbm

B Appendix: RLF Start-up Files

B.1 Sample RLF .rlfrc Start-up File

B.1.1 File: .rlfrc

```
1  --|
2  --| Sample startup file for the Reuse Library Framework version 4.1
3  --|
4
5  --|
6  --| Library directory or name specifications
7  --|
8  --library directory : /path/Libraries
9  --library : "Sort and Search Algorithms"
10
11  --|
12  --| Parameters for the RLF Graphical Browser
13  --|
14  topology : off
15  cardinality : off
16  layout offset : x : 20
17  layout offset : y : 5
18  history length : 50
19  view type : specialization
20  view depth : relationship : 2
21
22  --|
23  --| AdaTau inferencing settings
24  --|
25  advice : explanations : all
26  advice : automatic move : false
27
28  --|
29  --| Bitmaps for nodes
30  --|
31  --node bitmap : category : /path/box_m.xbm
32  --node bitmap : category : inferencer : /path/box_I_m.xbm
33  --node bitmap : category : actions : /path/box_A_m.xbm
34  --node bitmap : category : inferencer actions : /path/box_AI_m.xbm
35  --node bitmap : object : /path/cube_m.xbm
36  --node bitmap : object : inferencer : /path/cube_I_m.xbm
37  --node bitmap : object : actions : /path/cube_A_m.xbm
38  --node bitmap : object : inferencer actions : /path/cube_AI_m.xbm
39
40  --|
41  --| Specification translator settings
42  --|
43  translator: Lmdl: quiet: no
44  translator: Rbd1: quiet: no
```

B.2 RLF Graphical Browser Start-up Script

B.2.1 Script: RLF_GB

```

1  #!/bin/csh -f
2  #
3  #-----
4  # RLF_GB - Startup script for the RLF Graphical Browser, v.4.1
5  #
6  # 1.) Check that an X environment is present and running.
7  #
8  # 2.) Ensure the environment variables (RLF_LIBRARIES, DISPLAY, and possibly
9  #      XAPPLRESDIR) are properly set.
10 #
11 # 3.) Invoke the Graphical Browser with all command line arguments specified
12 #      by the user.
13 #
14 # If either an environment variable is not set or incorrectly set or X is not
15 #      running, then abort the script and notify the user of the problem.
16 #
17 #-----
18
19 echo ""
20 echo " ====="
21 echo "   RLF v.4.1 Graphical Browser Startup Script "
22 echo " ====="
23 echo ""
24
25 #-----
26 # Determine if the DISPLAY environment variable is set;
27 # if it is set, then proceed;
28 # if it is not set, attempt to set it to a meaningful value.
29 #-----
30 if ( ! $?DISPLAY ) then
31     set host_name = 'hostname'
32     setenv DISPLAY ${host_name}:0
33 endif
34
35
36 echo ""
37 echo " Ensure the DISPLAY environment variable is"
38 echo " set correctly; the correct format is <host_name>:0,"
39 echo " where the host_name indicates what CPU your X server "
40 echo " is running on."
41 echo ""
42 echo "Currently, DISPLAY = "
43 echo " $DISPLAY"
44 echo ""
45 set local_host = `echo $DISPLAY | sed 's/:.*/'`
46 echo "This means the graphical output will be sent to host: "
47 echo " $local_host"
48 echo ""
49
50 #-----

```

```

51 # Query the X resource database to determine whether $DISPLAY is valid.
52 #-----
53 xrdp -query >& /dev/null
54
55 #-----
56 # The DISPLAY environment variable was set incorrectly
57 # if the status is not 0.  Notify the user.
58 #-----
59 if ( ! $status == 0 ) then
60     unsetenv DISPLAY
61     echo ""
62     echo "    There's a problem with your X server."
63     echo "    There's probably no X server running on host 'hostname'."
64     echo "    Determine where your X server is running,"
65     echo "    then issue the following command: "
66     echo ""
67     echo "        setenv DISPLAY <hostname>:0 "
68     echo ""
69     echo "    where <hostname> is the host where your "
70     echo "    X server is running."
71     echo ""
72 endif
73
74 #-----
75 # If RLF_LIBRARIES environment variable not already set, or
76 # incorrectly set exit the script and notify the user.
77 #-----
78 if ( ! $?RLF_LIBRARIES ) then
79
80     #
81     # Check the command line options to see if the user
82     # specified a library
83     #
84     if ( $#argv >= 2 ) then
85
86         @ index = 1
87
88         while ( $#argv >= $index + 1 )
89
90             @ index2 = $index + 1
91
92             if ( $argv[$index] == "-I" ) then
93                 if ( ( -d $argv[$index2]/Text ) && \
94                     ( -d $argv[$index2]/Taustuff ) ) then
95                     echo "Library directory to be used is $argv[$index2]"
96                     echo ""
97                     goto Library_Found
98                 else
99                     echo ""
100                    echo "FATAL ERROR:"
101                    echo "    The RLF library ($argv[$index2]) you"
102                    echo "    indicated from the command line is invalid."
103                    echo "    You must set it to a proper RLF library location."
104                    echo ""

```

```

105
106             exit(-1)
107
108             endif
109         endif
110
111         @ index++
112
113     end
114
115 endif
116
117 echo ""
118 echo "FATAL ERROR:"
119 echo "    RLF_LIBRARIES is currently unset."
120 echo "    You must set it to the proper location"
121 echo "    or specify a library directory with "
122 echo "    a command line option."
123 echo ""
124
125 exit(-1)
126
127 else if ( ( ! -d $RLF_LIBRARIES/Text) || ( ! -d $RLF_LIBRARIES/Taustuff) ) then
128
129     echo ""
130     echo "FATAL ERROR:"
131     echo "    RLF_LIBRARIES is incorrectly set."
132     echo "    There are missing elements in the libraries."
133     echo "    You must set it to the proper location."
134     echo ""
135
136     exit(-1)
137
138 endif
139
140 echo "Currently, RLF_LIBRARIES = "
141 echo " $RLF_LIBRARIES"
142 echo ""
143
144 Library_Found:
145
146 #-----
147 # Set other X Window System environment variables (besides DISPLAY).
148 #
149 # Make a couple of guesses as to where the RLF_Browser file resides.
150 # If the RLF_Browser is not found, then alert the user.
151 #-----
152 if ( ! $?XAPPLRESDIR ) then
153
154     No_Browser_File:
155
156     if ( -e RLF_Browser ) then
157
158         setenv XAPPLRESDIR '/bin/pwd'

```

```
159
160     else
161         if ( ! -e /usr/lib/X11/app-defaults/RLF_Browser ) then
162
163             echo ""
164             echo "WARNING: "
165             echo "     Environment variable XAPPLRESDIR is undefined."
166             echo "     You need to find the pathname to the RLF_Browser file."
167             echo "     Then issue the following command:"
168             echo "         setenv XAPPLRESDIR <pathname>"
169             echo ""
170             echo ""
171
172         else
173
174             echo ""
175             echo "You will be using the following RLF_Browser resource file"
176             echo " /usr/lib/X11/app-defaults/RLF_Browser"
177             echo ""
178             setenv XAPPLRESDIR /usr/lib/X11/app-defaults
179
180         endif
181
182     endif
183
184 else
185     if ( ! -e $XAPPLRESDIR/RLF_Browser ) then
186
187         goto No_Browser_File
188
189     endif
190
191 endif
192
193 #-----
194 # Check if a "bitmaps" directory resides beneath $XAPPLRESDIR.
195 #-----
196 if ( $?XAPPLRESDIR ) then
197     echo ""
198     echo "Currently, XAPPLRESDIR = "
199     echo " $XAPPLRESDIR"
200     echo ""
201
202     if ( ! -d $XAPPLRESDIR/bitmaps ) then
203         echo ""
204         echo "WARNING: "
205         echo "     Bitmaps directory not found:"
206         echo "     $XAPPLRESDIR/bitmaps was not found.""
207         echo ""
208         echo "     The RLF Graphical Browser will not be able to display"
209         echo "     its bitmaps for the graph nodes. This may make the"
210         echo "     graph display less aesthetically pleasing."
211         echo ""
212         echo "     The 'bitmaps' directory should exist as a subdirectory"
```

```
213         echo "      from the location of the 'RLF_Browser' file."
214         echo "      (This is a Motif limitation.)"
215         echo ""
216     endif
217 endif
218
219 #-----
220 # If the user has not already defined the environment variables
221 # RLF_PAGER and RLF_EDITOR, the script will default the to be
222 # "more" and "vi", respectively.
223 #-----
224 if ( ! $?RLF_PAGER ) then
225     setenv RLF_PAGER    more
226 endif
227
228 if ( ! $?RLF_EDITOR ) then
229     setenv RLF_EDITOR   vi
230 endif
231
232 echo ""
233 echo "RLF_PAGER = $RLF_PAGER"
234 echo "RLF_EDITOR = $RLF_EDITOR"
235 if ( ! $?RLF_WORKING_DIR ) then
236     echo ""
237     echo "RLF_WORKING_DIR undefined, so default to current working directory."
238     echo ""
239     setenv RLF_WORKING_DIR 'pwd'
240 endif
241 echo "RLF_WORKING_DIR = $RLF_WORKING_DIR"
242 echo ""
243
244 #-----
245 # Invoke the RLF Graphical_Browser with any command line arguments
246 # entered by the user.
247 #-----
248 echo ""
249 echo "Starting the RLF Graphical Browser..."
250 echo ""
251 Graphical_Browser $argv
```

C Appendix: UNIX Installation

C.1 Scripts for Installing the UNIX RLF Binary Release

C.1.1 Script: InstallRlf_bin

```

1  #! /bin/csh -f
2  #-----
3  #
4  # Install_RLF_bin - C Shell script to install RLF v.4.1 Binary Release.
5  #                   This script installs the software.
6  #
7  # Usage: Install_RLF_bin
8  #
9  #-----
10
11 set config_file = "unix/bin/Install_RLF.var"      # name of installation
12                                           # configuration file
13 set interactv_install = "unix/bin/Install_RLF.csh" # name of interactive
14                                           # installation file
15
16 stty ignbrk          # ignore break on input
17 stty -brkint         # don't signal SIGINT on break
18
19 set cmdname = $0
20 if ( $#argv != 0 ) then          # check cmd line usage
21     echo "Usage: $cmdname:t"    # print only tail of cmd name
22     exit
23 endif
24
25 /usr/ucb/clear          # clear the screen
26
27                          # Display initial menu
28 cat << X_SCREEN_X
29
30 +-----+
31 |                                     |
32 |               RLF 4.1 Installation Script |
33 |               Binary Release           |
34 |                                     |
35 +-----+
36
37     You must choose one of the following installation options:
38
39
40     1) Interactive installation
41
42         * You are prompted for all necessary
43         configuration values (i.e., pathnames).
44
45
46     2) Edit the file that contains the configuration values
47

```

```
48             * You edit the file "Install_RLF.var" and
49             set the configuration values appropriately
50             for your site.
51
52
53             3) EXIT this script.
54
55
56
57             (If you do not edit the "Install_RLF.var" file, or specify
58             invalid values, you will be prompted for the configuration
59             values anyway.)
60
61
62             Which installation option do you prefer?
63
64             X_SCREEN_X
65
66             #
67             # Read input from user.
68             #
69             set answer = 0
70             echo -n "Please enter 1, 2, or 3 > "
71             set noglob
72             set answer = ( $< )
73             set answer = ( $answer )
74             set answer = $answer[1]
75
76
77             Get_Valid_Input:
78             while ( $answer[1] != 1 && $answer[1] != 2 && $answer[1] != 3 )
79                 echo ""
80                 echo "I*** Invalid input. Please try again. ***"
81                 echo ""
82                 echo -n "Please enter A NUMBER: 1, 2, or 3 > "
83                 set answer = ( $< )
84                 set answer = ( $answer )
85                 set answer = $answer[1]
86
87             end
88             while ( $answer[1] < 1 || $answer[1] > 3 )
89                 echo ""
90                 echo "I*** Invalid input. Please try again. ***"
91                 echo ""
92                 echo -n "Please enter 1, 2, or 3 > "
93                 set answer = ( $< )
94                 set answer = ( $answer )
95                 set answer = $answer[1]
96             end
97
98             echo ""
99             echo "You chose: $answer[1]"
100
101             #
```

```

102 # Process input, execute appropriate procedure.
103 #
104 switch ( "$answer[1]" )      # look at char
105     case [1]:                # Interactive
106         echo ""
107         echo "+-----+"
108         echo "|   Executing interactive installation script.   |"
109         echo "+-----+"
110         echo ""
111         source $interactv_install
112         breaksw
113
114     case [2]:                # Edit the 'var' file
115         #
116         # Calculate string lengths for proper display.
117         #
118         set beginning = "      |                      $config_file"
119
120         @ line = 'expr length "      +-----+" '
121         @ remainder = $line - 'expr length "$beginning"'
122
123         echo ""
124         echo "      +-----+"
125         echo "      |   To install the Reuse Library Framework binary   |"
126         echo "      |   release in batch mode, you must edit the       |"
127         echo "      |   installation configuration file:                   |"
128         echo "      |                                                                 |"
129
130         set ctr = 1
131
132         set line = "${beginning}"
133         while ( $ctr < $remainder )
134             set line = "${line} "
135             @ ctr = $ctr + 1
136         end
137         echo -n "$line"
138         echo "|"
139         echo "      |   Then execute the command:                           |"
140         echo "      |                                                                 |"
141         echo "      |                      Install_RLF.csh >& LOG &           |"
142         echo "      |                                                                 |"
143         echo "      |   Once the job is finished, check the LOG file for     |"
144         echo "      |   errors.                                                 |"
145         echo "      |                                                                 |"
146         echo "      +-----+"
147         breaksw
148
149     case [3]:                # Exit
150         echo ""
151         echo "Exiting installation script."
152         breaksw
153
154     case [!%]:

```

```
155         echo ""
156         echo "Pathological input."
157         echo "Of course C shell scripts are breakable, please be kind."
158         echo "T"
159         exit -1
160         breaksw
161
162     default:
163         # if here, something's wrong
164         echo "*** Invalid input. ***"
165         goto Get_Valid_Input
166         breaksw
167 endsw
168
169
170 echo ""
171 exit 1
172
173
```

C.1.2 Script: InstallRlf.csh

```
1  #!/bin/csh -f
2  #-----
3  #
4  # Install_RLF.csh - C Shell script to install the Source Code Release
5  #                  of the RLF 4.1 software.
6  #
7  #-----
8  #
9  # Uncomment the following two lines if you need to increase the
10 # system resources on your host; else ignore.
11 #
12 ###limit stacksize unlimited
13 ###limit datasize unlimited
14
15 #
16 # Read in the site-dependent data from the 'var' file.
17 #
18 echo ""
19 echo "Define the site-dependent environment variables."
20 echo "-----"
21 echo ""
22 source ./Install_RLF.var
23
24 echo ""
25 echo "Moving the RLF GB resource file (RLF_Browser) to: "
26 echo "  $APPDEFAULTS"
27 echo ""
28 mv -f $RLFBIN/RLF_Browser $APPDEFAULTS
29
30 echo ""
31 echo "Moving the RLF GB bitmap files to: "
32 echo "  $BITMAPS"
33 echo ""
34 if ( ! -e $BITMAPS ) mkdir $BITMAPS
35 mv -f $RLFBIN/bitmaps/* $BITMAPS
36
37 echo ""
38 echo "Installation Complete"
39 echo ""
```

C.1.3 File: Install_Rlf.var

```

1  #-----
2  #
3  # Install_RLF.var - RLF software installation configuration file.
4  #
5  #-----
6
7  #
8  # Directory for installation of the RLF Graphical Browser resource file
9  # and the bitmaps sub-directory.
10 # Note: You usually need root privilege to write in this directory,
11 # Installation of the resource file and the bitmaps sub-directory will fail
12 # if write permission is denied.
13 #
14 setenv APPDEFAULTS /usr/lib/X11/app-defaults
15 setenv BITMAPS $APPDEFAULTS/bitmaps
16
17 #
18 # Uncomment and edit these lines if you do not want to
19 # be prompted for the environment variables (i.e., if you
20 # want to run the script in batch mode instead of interactively.)
21 #
22
23 #setenv RLFHOME /myhome/test/rlf/4.0
24
25 #
26 # Uncomment (but do not edit) these lines.
27 #
28
29 #setenv RLFBIN $RLFHOME/bin
30
31 #-----
32 # END OF REQUIRED EDITING FOR BATCH MODE
33 #-----
34
35 #
36 # Define the location of RLFHOME
37 #
38 setRLFHOME:
39 if ( $?RLFHOME == 0 ) then # if NOT set
40     echo ""
41     echo "Specify path to top-level RLFHOME directory "
42     echo "----- "
43     echo " Examples: "
44     echo " /mybase/RLF "
45     echo " /afs/myhome/see/rlf "
46     echo " /usr/tools/rlf "
47     echo " etc. "
48     echo ""
49     echo ""
50     echo -n " RLFHOME = "
51     set noglob
52     setenv RLFHOME $<

```

```
53     echo ""
54 endif
55
56 if ( $RLFHOME == "" ) then
57     unsetenv RLFHOME
58     goto setRLFHOME
59 endif
60
61 if ( ! -e $RLFHOME ) then
62     echo ""
63     echo "T*** $RLFHOME does not exist ***"
64     echo "*** Please try again. ***"
65     echo ""
66     unsetenv RLFHOME
67     goto setRLFHOME
68 else
69     if ( ! $?RLFBIN ) then
70         if ( $PCTE == Y ) then
71             setenv RLFBIN $RLFHOME/pcte/bin
72         else
73             setenv RLFBIN $RLFHOME/unix/bin
74         endif
75     end if
76
77 endif
78
79 echo ""
80 echo "          RLFHOME = $RLFHOME"
81 echo "          RLFBIN = $RLFBIN"
82 echo ""
83 echo "          APPDEFAULTS = $APPDEFAULTS"
84 echo "          BITMAPS = $BITMAPS"
85 echo ""
```

C.2 Scripts for Building Sample Networks

C.2.1 Script: BuildAda_XLib.csh

```
1  #!/bin/csh -f
2  ###limit stacksize unlimited
3  ###limit datasize unlimited
4
5  #
6  # This script builds the "Paramax STARS Ada/X" library for the RLF.
7  #
8
9  #
10 # Locate the RLF Libraries
11 #
12 set RLF_LIBRARIES:
13 if (! $?RLF_LIBRARIES) then
14     echo ""
15     echo "Specify path to the RLF libraries"
16     echo "(e.g. /afs/reston/see/rlf/4.0/Libraries)"
17     echo ""
18     echo -n " RLF_LIBRARIES = "
19     setenv RLF_LIBRARIES $<
20     echo ""
21 endif
22
23 echo ""
24 echo "Creating required sub-directories"
25 echo ""
26 if ( ! -d $RLF_LIBRARIES/Text/ada_x ) mkdir -p $RLF_LIBRARIES/Text/ada_x
27 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
28
29 echo ""
30 echo "Initializing text files"
31 echo ""
32 cp -r Text/* $RLF_LIBRARIES/Text/ada_x
33
34 echo ""
35 echo "Building library model from ada_x.lmdl"
36 echo ""
37 Lmdl ada_x.lmdl
38
39 foreach i (*rbd1)
40     echo ""
41     echo "Creating Inferencer from $i"
42     echo ""
43     Rbd1 < $i
44 end
```

C.2.2 Script: Build_Animals_Lib.csh

```
1  #!/bin/csh -f
2  ###limit stacksize unlimited
3  ###limit datasize unlimited
4
5  #
6  # This script builds a demonstration animals library for the RLF.
7  #
8
9  #
10 # Locate the RLF Libraries
11 #
12 set RLF_LIBRARIES:
13 if ( ! $?RLF_LIBRARIES ) then
14     echo ""
15     echo "Specify path to the RLF libraries"
16     echo "(e.g. /afs/reston/see/rlf/4.0/Libraries)"
17     echo ""
18     echo -n "  RLF_LIBRARIES = "
19     setenv RLF_LIBRARIES $<
20     echo ""
21 endif
22
23 echo ""
24 echo "Creating required sub-directories"
25 echo ""
26 if ( ! -d $RLF_LIBRARIES ) mkdir $RLF_LIBRARIES
27 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
28 if ( ! -d $RLF_LIBRARIES/Text ) mkdir $RLF_LIBRARIES/Text
29 if ( ! -d $RLF_LIBRARIES/Text/animals ) mkdir -p $RLF_LIBRARIES/Text/animals
30
31
32
33 echo ""
34 echo "Initializing text files"
35 echo ""
36 cp Text/* $RLF_LIBRARIES/Text/animals
37
38 echo ""
39 echo "Building Lmdl Network from animals.lmdl"
40 echo ""
41 Lmdl animals.lmdl
```

C.2.3 Script: Build_Asw_Lib.csh

```
1  #!/bin/csh -f
2  ###limit stacksize unlimited
3  ###limit datasize unlimited
4
5  #
6  # This script builds a sample Anti-Submarine Warfare library for the RLF.
7  #
8
9  #
10 # Locate the RLF Libraries
11 #
12 setRLF_LIBRARIES:
13 if (! $?RLF_LIBRARIES) then
14     echo ""
15     echo "Specify path to the RLF libraries"
16     echo "(e.g. /afs/reston/see/rlf/4.0/Libraries)"
17     echo ""
18     echo -n " RLF_LIBRARIES = "
19     setenv RLF_LIBRARIES $<
20     echo ""
21 endif
22
23 echo ""
24 echo "Creating required sub-directories"
25 echo ""
26 if ( ! -d $RLF_LIBRARIES/Text/asw ) mkdir -p $RLF_LIBRARIES/Text/asw
27 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
28
29 echo ""
30 echo "Initializing text files"
31 echo ""
32 cp Text/* $RLF_LIBRARIES/Text/asw
33
34 echo ""
35 echo "Building library model from asw.lmdl"
36 echo ""
37 Lmdl asw.lmdl
```

C.2.4 Script: Build_Common_Data_Model_Lib.csh

```
1  #!/bin/csh -f
2  ###limit stacksize unlimited
3  ###limit datasize unlimited
4
5  #
6  # This script builds a demo Common Data Model library for the RLF.
7  #
8
9  #
10 # Locate the RLF Libraries
11 #
12 setRLF_LIBRARIES:
13 if (! $?RLF_LIBRARIES) then
14     echo ""
15     echo "Specify path to the RLF libraries"
16     echo "(e.g. /afs/reston/see/rlf/4.0/Libraries)"
17     echo ""
18     echo -n " RLF_LIBRARIES = "
19     setenv RLF_LIBRARIES $<
20     echo ""
21 endif
22
23 echo ""
24 echo "Creating required sub-directories"
25 echo ""
26 if ( ! -d $RLF_LIBRARIES/Text/satText ) mkdir -p $RLF_LIBRARIES/Text/satText
27 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
28
29 echo ""
30 echo "Initializing text files"
31 echo ""
32 cp Text/* $RLF_LIBRARIES/Text/satText
33
34 echo ""
35 echo "Building LMDL Network from cdm.lmdl"
36 echo ""
37 Lmdl < common_data_model.lmdl
```

C.2.5 Script: BuildDemoActionsLib.csh

```
1  #!/bin/csh -f
2  ###limit stacksize unlimited
3  ###limit datasize unlimited
4
5  #
6  # This script builds a demonstration actions library for the RLF.
7  #
8
9  #
10 # Locate the RLF Libraries
11 #
12 set RLF_LIBRARIES:
13 if ( ! $?RLF_LIBRARIES ) then
14     echo ""
15     echo "Specify path to the RLF libraries"
16     echo "(e.g. /ais/reston/see/rlf/4.0/Libraries)"
17     echo ""
18     echo -n " RLF_LIBRARIES = "
19     setenv RLF_LIBRARIES $<
20     echo ""
21 endif
22
23 echo ""
24 echo "Creating required sub-directories"
25 echo ""
26 if ( ! -d $RLF_LIBRARIES/Text/demo_actions ) then
27     mkdir -p $RLF_LIBRARIES/Text/demo_actions
28 endif
29 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
30
31 echo ""
32 echo "Initializing text files"
33 echo ""
34 cp -r Text/* $RLF_LIBRARIES/Text/demo_actions
35
36 echo ""
37 echo "Building LMDL Network from demo_actions.lmdl"
38 echo ""
39 lmdl demo_actions.lmdl
```

C.2.6 Script: Build_SW_Tech_Lib.csh

```
1  #!/bin/csh -f
2  ###limit stacksize unlimited
3  ###limit datasize unlimited
4
5  #
6  # This script builds the Software Technology library for the RLF.
7  #
8
9  #
10 # Locate the RLF Libraries
11 #
12 setRLF_LIBRARIES:
13 if (! $?RLF_LIBRARIES) then
14     echo ""
15     echo "Specify path to the RLF libraries"
16     echo "(Defaults to $RLF/Libraries)"
17     echo ""
18     echo -n "  RLF_LIBRARIES = "
19     setenv RLF_LIBRARIES $<
20     echo ""
21     if ($RLF_LIBRARIES ==) setenv RLF_LIBRARIES $RLF/Libraries
22 endif
23
24 echo ""
25 echo "Creating required sub-directories"
26 echo ""
27 if ( ! -d $RLF_LIBRARIES/Text/sw_tech ) mkdir -p $RLF_LIBRARIES/Text/sw_tech
28 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
29
30 echo ""
31 echo "Initializing text files"
32 echo ""
33 cp -r Text/* $RLF_LIBRARIES/Text/sw_tech
34
35 echo ""
36 echo "Building LMDL Network from sw_tech.lmdl"
37 echo ""
38 Lmdl sw_tech.lmdl
```

C.2.7 Script: Build_Sort_And_SearchLib.csh

```

1  #!/bin/csh -f
2  ###limit stacksize unlimited
3  ###limit datasize unlimited
4
5  #
6  # This script builds the "Sort and Search Algorithms" library for the RLF.
7  #
8
9  #
10 # Locate the RLF Libraries
11 #
12 set RLF_LIBRARIES:
13 if ( ! $?RLF_LIBRARIES ) then
14     echo ""
15     echo "Specify path to the RLF libraries"
16     echo "(e.g. /afs/reston/see/rlf/4.0/Libraries)"
17     echo ""
18     echo -n "   RLF_LIBRARIES = "
19     setenv RLF_LIBRARIES $<
20     echo ""
21 endif
22
23 echo ""
24 echo "Creating required sub-directories"
25 echo ""
26 if ( ! -d $RLF_LIBRARIES/Text/sort_and_search ) \
27     mkdir -p $RLF_LIBRARIES/Text/sort_and_search
28 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
29
30 echo ""
31 echo "Initializing text files"
32 echo ""
33 cp -r Text/* $RLF_LIBRARIES/Text/sort_and_search
34
35 echo ""
36 echo "Building library model from sort_and_search.lmdl"
37 echo ""
38 Lmdl sort_and_search.lmdl
39
40 foreach i (*rbd1)
41     echo ""
42     echo "Creating Inferencer from $i"
43     echo ""
44     Rbd1 < $i
45 end

```

C.2.8 Script: Build_Move_Domain_Lib.csh

```

1  #!/bin/csh -f
2  ###limit stacksize unlimited
3  ###limit datasize unlimited
4

```

```
5 #
6 # This script builds the Cathy Lin's Window Manager library for the RLF.
7 #
8
9 #
10 # Locate the RLF Libraries
11 #
12 setRLF_LIBRARIES:
13 if (! $?RLF_LIBRARIES) then
14     echo ""
15     echo "Specify path to the RLF libraries"
16     echo "(Defaults to $RLF/Libraries)"
17     echo ""
18     echo -n "   RLF_LIBRARIES = "
19     setenv RLF_LIBRARIES $<
20     echo ""
21     if ($RLF_LIBRARIES ==) setenv RLF_LIBRARIES $RLF/Libraries
22 endif
23
24 echo ""
25 echo "Creating required sub-directories"
26 echo ""
27 if ( ! -d $RLF_LIBRARIES/Text/wm_move ) mkdir -p $RLF_LIBRARIES/Text/wm_move
28 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
29
30 echo ""
31 echo "Initializing text files"
32 echo ""
33 cp -r Text/* $RLF_LIBRARIES/Text/wm_move
34
35 echo ""
36 echo "Building LMDL Network from move_domain.lmdl"
37 echo ""
38 Lmdl move_domain.lmdl
39
40 foreach i (*rbd1)
41     echo ""
42     echo "Creating Inferencer from $i"
43     echo ""
44     Rbd1 < $i
45 end
```