Open Object Rexx™

Release Notes
Version 4.1.1

1. About The 4.1.1 Release

Open Object Rexx Version 4.1.1 is based on the previous version of ooRexx™ (4.1.0). Version 4.1.1 is a bug fix only release.

> **IMPORTANT:** If you have a version of IBM Object Rexx™ installed on your system, you must remove it before starting with the installation of this package. The two packages, Object Rexx and ooRexx can not be installed side-by-side.
>
> Note that a *true upgrade* type installation is not supported on any platform. If a previous version of ooRexx is installed, it must be completely uninstalled prior to installing 4.1.1. Failure to completely uninstall the previous version will produce unpredictable results. However, on Windows, a pseudo update type of install is provided with ooRexx 4.1.0 and later.
>
> On a Unix-like system use the appropriate package manager to uninstall the previous version. For instance, on Linux with a rpm install, you could use the command:
>
> ```
> rpm -iv ooRexx
> ```
>
> to uninstall ooRexx. On a Debian-based system you should use the `-P` option of `dpkg` to uninstall ooRexx:
>
> ```
> dpkg -P ooRexx
> ```
>
> On Windows, when the installation program is started, the installer will recognize that a previous version is installed. It will then present an option to uninstall the previous version before proceeding with the 4.1.1 install. Alternatively, you can completely uninstall the previous version prior to starting the 4.1.1 installation.

1.1. New in this Release

This section lists the new features and enhancements introduced since Open Object Rexx 4.1.0. However, Open Object Rexx 4.1.1 is a bug fix only release and there are no new features or enhancements. This section of the document is left as a template for future releases.

You should refer to the CHANGES document accompanying the release for a complete list of the bug fixes. In addition, there is a ReleaseNotes document that contains essentially the same information as this

section, but in a text format. These documents are accessible the SourceForge download page for each ooRexx release. They are also included in the source code for ooRexx when SourceForge is not used.

1.1.1. All Platforms

None

1.1.1.1. Builtin Classes

None

PlaceHoder

New methods in [Class]

1.1.1.2. Documentation

None.

1.1.2. Unix Platform

None.

1.1.2.1. Place Holder

1.1.3. Windows Platform

None.

1.1.3.1. Place Holder

1.1.3.1.1. Major Changes

1. None.
2. Place holder.
3. Place holder.

1.1.3.1.2. Minor Changes

1. None.

2. Place holder.

1.1.3.2. ooDialog

None.

Place holder.

2. Windows Requirements, Installation and Configuration

2.1. Hardware Requirements

In reality, there are no special hardware requirements for ooRexx on Windows. Any system capable of running Windows 2000 is sufficient to install ooRexx.

- Approximately 45 MB free disk space is needed for a complete installation.

- 8 MB free disk space for the core interpreter.

- 25 MB free disk space for online documentation.

- 7 MB free disk space for all samples.

- 1 MB free disk space for the API headers and libraries.

- IBM-compatible, Pentium or AMD processor, or higher. Both 32-bit and 64-bit processores are supported.

2.2. Software Requirements

- Windows 2000

- Windows Server 2003

- Windows XP

- Windows Vista

- Windows Server 2008

- Windows 7

ooRexx version 4.1.1 is not supported on Windows prior to Windows 2000. There is no known reason why this version of ooRexx will not work on Windows NT(R) 4.0, but it has not been tested. Likewise, ooRexx may work on Windows 98 or Windows Me, but it has not been tested and there is no support for it.

2.3. Installation and Configuration Information

2.3.1. Pre-installation Notes

Open Object Rexx cannot coexist with IBM Object REXX, or other versions of ooRexx. If IBM Object REXX is installed on the system you must first uninstall it.

If a previous version of ooRexx is installed, it *must* be uninstalled. If two different versions of ooRexx are installed on the same system, the results are not predictable and the interpreter will *not* work correctly.

However, beginning with ooRexx 4.1.0, a type of update install is supported. Technically, this is not a true update install because: rxapi must be stopped, all files from the previous installation are deleted. However, this type of install will preserve the current ooRexx registry settings, path entry, etc.

A previous version of ooRexx can be uninstalled before starting the new installation. However, the uninstall does not have to be done as a separate step. When the installation program is started it will detect a previous version of ooRexx and offer to uninstall it at that time. Note that an *update* type of install can **not** be done if the previous version of ooRexx has been uninstalled in a separate step. The update install must be initiated through the installation program and is not available if there is no previous version of ooRexx installed.

`rxapi` is an important part of ooRexx that runs as a daemon process. The installation program offers the option of installing `rxapi` as a Windows Service. Unless you are a knowledgable user, with a good reason not to, you should elect to install `rxapi` as a Windows Service.

ooRexx should be installed by a user with adminstrator rights. On Vista and later this is a requirement. It is also a requirement in order to install rxapi as a service. In addition, there are installations steps that are done to better integrate ooRexx into the operating system. Some of these steps can only be performed with adminstrator rights.

It is important that if ooRexx is installed by a user with administrator rights, that ooRexx is uninstalled by a user with administrator rights. Otherwise, the installation steps described above, including removal of rxapi as a service, will not be undone when ooRexx is uninstalled.

> **Note:** On Vista and later when a user starts the installation program, the user is prompted for an administrator password to continue. It is not necessary to actually be logged in as administrator when the installation is started.

ooRexx is compiled both as 32-bit application and as a native 64-bit application. The native 64-bit application can not be installed on a 32-bit version of Windows. Either the 32-bit or the 64-bit ooRexx can be installed on a 64-bit version of Windows . However, to take full advantage of both the operating system and ooRexx, the user should install the 64-bit version of ooRexx on a 64-bit version of Windows. The installation programs for the two types of ooRexx are clearly labeled: `ooRexx-4.1.1-x86_32.exe` and `ooRexx-4.1.1-windows.x86_64.exe`.

2.3.2. Running the Installation Program on Windows

Before starting the installation, review the pre-installation notes if you have not already done so.

The ooRexx installation program is a typical Windows installation program. Download the appropriate installation program, 32-bit or 64-bit. From Windows Explorer double-click the installation package: `ooRexx-4.1.1-windows.x86_32.exe` or `ooRexx-4.1.0-windows.x86_64.exe`. Follow the prompts in the installation dialog. Naturally, the program can also be run from a console window by typing the executable name at the command prompt.

A running rxapi process. If a previous version of ooRexx is installed and the rxapi daemon process is running, the user will be prompted to halt the process. The process *must* be halted to properly install the new version. If necessary, (because a Rexx program is running in the background and you are worried about possible data loss,) cancel the installation and take the appropriate steps to halt the process cleanly. Because it is known that running the installation without stopping rxapi will cause problems, the installer will not execute if rxapi is not stopped.

Update install. Beginning in ooRexx 4.1.0, an *update* type of install is available. This type of install preserves the current ooRexx options that are used to integrate ooRexx into the operating system. It is important to realize that the uninstall program is written at the time of installation. Therefore, if the installed ooRexx is a version prior to 4.1.0, the upgrade type of install is not available. However, once a 4.1.0, or later, version of ooRexx is installed. the upgrade type of install is then available going forward.

The upgrade type of install is dependent on a version of ooRexx being currently installed. If the current version of ooRex is uninstalled as a separate step, the upgrade install will no longer be available. The upgrade install must be initiated from within the install program. After the first introductory pages of the installation dialog, a page with the option to uninstall the previous version of ooRexx will appear. Select to uninstall the previous version. The upgrade option is presented on the next page.

When the upgrade install is used, the ooRexx options currently in effect can not be changed. When the upgrade option is selected, a second option to do a *quick* upgrade is presented. During a regular upgrade installation, the dialog pages for the installation options are displayed, but the dialog controls are disabled. This way the options in effect can be reviewed, but not changed. During a quick upgrade, these pages are not displayed at all.

Installation options. The installation program can, and normally does, add a number of items that better intergrate ooRexx into the operating system. In ooRexx 4.1.0 and later versions of ooRexx, the user is given more flexibility and choice in how, or if, these items are done. The options are presented during installation using several pages in the dialog. In general the options require that the installation is performed using administrative privileges. The option pages and some general recommendations follow:

1. **Uninstall previous version.** This page only appears if a previously installed version of ooRexx is detected. Select to uninstall the previous version.

2. **Perform an upgrade install.** The page only appears if the upgrade install is available. Selection depends upon the user preference. If selected, the option to do a quick upgrade is also presented.

3. **Components to install.** Select which components to install. Since the individual components use up little disk space all the components are normally installed.

4. **Installation directory.** ooRexx can be installed whereever the user chooses. This is a matter of personal preference.

5. **Install rxapi as a Windows Service.** It is highly recommended that rxapi be installed as a service.

6. **Create file assoications.** Individual file associations can be created for each of the executables: rexx, rexxhide, and rexxpaws. When selected, pages are presented to customize the file associations. If not selected, no file associations will be created. Normally on Windows a file association is created for rexx and it is recommended that creating file associations be selected.

7. **Create file assoications.** Individual file associations can be created for each of the executables: rexx, rexxhide, and rexxpaws. When selected, pages are presented to customize the file associations. If not selected, no file associations will be created. Normally on Windows a file association is created for rexx and it is recommended that creating file associations be selected.

8. **Create send to items.** Send to items allow the user to right click on a Rexx program file in Windows explorer and *send* it to one of the Rexx excutables. The Rexx executable then runs the program. Some users may prefer send to items over than file assoications. Both send to items and file associations can be created, it is not an either or choice.

9. **Create rexx.exe file assoication.** This page only appears when the user has selected to create file associations. This page also allows the user to pick an editor to associate with the file types selected for file associations. The same editor is used for all of the Rexx file associations.

   The user can specify both the file extension and the file type name for the association. Normally a file association for rexx.exe is created using an extension of .rex and a file type name of RexxScript. It is suggested that the user stick with this.

10. **Create rexxhide.exe and rexxpaws file assoication.** This page only appears when the user has selected to create file associations. The user can specify both the file extension and the file type name for the either association. These options have not been avaialble in the past, so there is no real convention here. The text on the page offers some suggested extensions and file type names. They should be treated as suggestions only.

Unattended installation. The Windows installation program can be run from the command line with no user input. This is done by using the /S option. Note that in this mode default values are used for all options other than the installation directory. In addition, the *upgrade* installation is not currently integrated into a silent install and is therefore unavailble.

This mode can be used to script automatic installs or multiple installs on different machines. From a script, or from the command line, enter the installation program name followed by the /S parameter, and the /D parameter if the default installation directory should be changed:

/S : Silent mode

   This will install ooRexx without any user intervention using default values for all options.

/D : Default directory

   The default installation directory, (C:\Program Files\ooRexx), can be changed using this switch. This must be the last parameter used in the command line and must not contain any quotes, even if the path contains spaces. For example:

   ```
   ooRexx-4.1.1.x86_64.exe /S /D=C:\Program Files\Interpreters\ooRexx
   ```

2.3.3. Windows Uninstallation Information

From the Control Panel select "Add Remove Programs", then select "Open Object Rexx for Windows" and select "Remove".

Alternatively, the ooRexx installation places a menu item in the program folder that can be used to uninstall. Select "Start->All Programs->Open Object Rexx->Uninstall ooRexx". This is functionally equivalent to using "Add Remove Programs".

2.4. Running Open Object Rexx as a Child Process of a Service on Windows

`rxapi` in its role as the memory manager for ooRexx can share out some resources among all the ooRexx processes to enable global functions, system exits, subcommand handlers, and global queues. If you start ooRexx from a service, two or more processes might run under different user accounts. Therefore it is required that the memory manager is not protected and can be accessed by every user. This means that ooRexx global data is system global and unsecured.

Note that starting ooRexx from a sevice is different than installing `rxapi` as a service.

If you want ooRexx to be started from a service, ooRexx must be installed as a common program or you must modify the system path manually to include the directory where ooRexx has been installed.

If you are writing a service that calls RexxStart(), ensure that the SERVICE_INTERACTIVE_PROCESS flag is set for your service. To prevent access violations, use a NULL security descriptor and assign it to your service process.

2.5. Open Object Rexx and Other Rexx Interpreters

If you have other Rexx interpreters installed, you may have to set the PATH manually because ooRexx and the other Rexx interpreters may both use the name "rexx" for invoking the interpreter. Interpreter error messages that begin with "Rexx: " indicate that another Rexx interpreter was called instead of ooRexx. You can verify which Rexx interpreter is running either by the form of the error messages, by running `rexxtry.rex` and executing SAY VERSION, or by invoking `rexx /V`, which then should display information about the Rexx interpreter that is invoked. If no information is displayed, it is not ooRexx. If you don't want the other Rexx interpreter to be invoked, you should remove it from the PATH, delete it, or rename `rexx.exe` in the installation directory to `orx.exe` and use `orx` to invoke the interpreter.

2.6. Exploring Open Object Rexx

Once you have installed the ooRexx files you can run Rexx scripts by issuing the command `rexx` followed by the name of your Rexx script at the command prompt. In addition, if you installed ooRexx as recommended, a file type has been associated with the `.rex` extension which allows you to just type the name of your script, without the extension, to run it. For example, if your program was named `addressBook.rex`, the file association will allow you to execute the program as follows:

```
C:\work.ooRexx>addressBook
```

An execution of the program might look like this:

```
C:\work.ooRexx>addressBook
ooRexx Address Lookup, version 1.1.0
  Look up address for: gatch

Tom Gatch
3245 Westfield Dr
Mission Bay CA 92110

  Look up another address? [y/n] n

C:\work.ooRexx>
```

To interactively try Object Rexx statements, enter `rexx rexxtry.rex` on the command line. Enter `exit` to end the program.

To help you explore programming in Open Object Rexx, the following generic sample programs are provided:

`ccreply.rex`

concurrent program using REPLY

`complex.rex`

complex number class

`drives.rex`

demonstrates the usage of Sys functions

`factor.rex`

factorial program

`greply.rex`

concurrent program using WAIT and NOWAIT

`guess.rex`

a guessing game

`ktguard.rex`

concurrent program using START and GUARD

`makestring.rex`

demonstrated the usage of the makestring method

`month.rex`

displays a calendar for the month of January

`philfork.rex`

> program that demonstrates Open Object Rexx concurrency

`pipe.rex`

> a pipeline implementation

`properties.rex`

> shows usage of the .Properties class and some Sys functions

`qdate.rex`

> date query program

`qtime.rex`

> time query program

`rexxcps.rex`

> measures Rexx performance

`scclient.rex scserver.rex`

> a client / server demonstration using the .Socket class from socket.cls

`semcls.rex`

> semaphore class

`sfclient.rex sfserver.rex`

> a client / server demonstration using the external rxsock library

`stack.rex`

> program that uses a stack class

`usecomp.rex`

> program that uses the complex number class (see note below)

`usepipe.rex`

> program that uses the pipeline implementation (see note below)

> **Note:** To run these programs, you must either add the `samples` directory to the PATH or execute them directly from the `samples` directory.

To help you explore using the Windows `WinSystm.cls`, the following sample programs are provided:

`deskicon.rex`

> AddDesktopIcon method of the WindowsProgramManager class

`desktop.rex`

> uses the WindowsProgramManager class

`displayAnyMenu.rex`

> Displays the menu hierarchy for a window that the user picks. The example uses a mixture of ooDialog and WinSystm.

`displayWindowTree.rex`

> Allows the user to pick an open top-level window and then displays the window hiearchy for that window. The program uses both ooDialog and WinSystm classes.

`eventlog.rex`

> uses the WindowsEventLog class

`getTheWindow.rex`

> This example shows how to find a window without using the exact window title.

`menuCalc.rec`

> Uses the MenuObject class to display the menu hierarchy of the Windows Calculator application. The menu hierachy for both the Calculator's standard view and its scientific view are printed to the console.

`menuNotepad.rex`

> Uses the MenuObject class to displays the hierarchy of the Notepad menu.

`quickCalc.rex`

> Demonstrates how to control an application programmatically using the winsystm classes. Does some simple calculations using the Windows Calculator application. This program is similar to userwmgr.rex but more simple to better show what is going on.

`quickShowAllMenus.rex`

> Uses the windowsSystem.frm package to print out a menu outline of every open window that has a menu.

`registry.rex`

> uses the WindowsRegistry class

`usewmgr.rex`

> program that uses the WindowsManager class

`windowsSystem.frm`

> A collection of public routines and classes to help work with the winsystm.cls package. This is an example of how to extract common function into a package, and then use the package to help in writting similar programs. A number of the sample programs that use winsystm.cls make use of this framework.

`writeWithNotepad.rex`

> Uses classes in winsystm.cls to automate the Windows Notepad application. This is a subset of the usewmgr.rex program designed to be a little easier to understand.

The directory `samples\ole\` and its subdirectories contain a number of samples for the ooRexx OLE / ActiveX interface. The sample programs contain comments to help with learning to use the OLEObject class.

The `samples\oodialog` and it subdirectories contain a relatively large number of example programs that demonstrate the use of OODialog. A subset of these examples can be launched from the ooRexx Program folder in the Start Menu. "Start->All Programs->Open Object Rexx->ooRexx Samples->ooDialog"

There are several examples provided to help with programming external function libraries using the ooRexx native API. These samples are located under the `samples\api` directory, along with two read me files:

- `sample\api\readme.txt`
- `sample\api\callrxnt`
- `sample\api\callrxwn`
- `sample\api\rexxexit`
- `sample\api\wpipe`
- `sample\api\wpipe\readme.txt`

Several of the API samples can be launched from the ooRexx Program folder in the Start Menu. "Start->All Programs->Open Object Rexx->ooRexx Samples->API"

3. Unix-Like (AIX, Linux, etc.,) Requirements, Installation and Configuration

3.1. Hardware Requirements

- 12 MB free disk space for the program (20 MB for AIX)
- 13.5 MB free disk space for online documentation
- IBM-compatible, Pentium or AMD processor, or higher, for an x86 32-bit or 64-bit platform.
- Any system capable of running AIX 5L 5.2/5.3 or AIX 6.1 for an AIX platform.
- Sparc processor for a SUN Solaris (Sparc) platform.

3.2. Software Requirements

- **Linux**

  - Linux ELF system (i386 or x86_64.) Linux kernel version 2.4.1 or higher, with support for System V IPC.
  - Linux PPC system. Linux kernel version 2.4.1 or higher, with support for System V IPC.

- **AIX**
  - AIX 5L 5.2 TL10 and up.
  - AIX 5L 5.3 TL7 and up.
  - AIX 6.1 TL1 and up.

- **Solaris**
  - Solaris V2.8 or higher.

3.3. Installation and Configuration Information

This new version of Open Object Rexx cannot coexist with a previous installed version of Open Object Rexx or IBM Object REXX on your system. If you have previously installed IBM Object Rexx or Open Object Rexx, you must first deinstall that program.

3.3.1. Installation/Removal of the RPM Package

Note: The installation of Open Object Rexx requires that all steps be run with root authority.

To install the `rpm` package, use your rpm package manager. Refer to your package manager for further information. The package manager adds orexx to your local rpm-database. Select the appropriate package for your system. Although the 32-bit version of ooRexx can be installed on some 64-bit Linux distributions it is recommended that the 64-bit version of ooRexx be installed on all 64-bit Linux systems.

There may be several rpm packages available. Each package name will indicate the processor architecture (i386, x86_64, ppc, etc.,) it is intended for, and the Linux distribution it was built on. In general, the Linux distribution the package was compiled on does not make a difference. The ooRexx rpm will install on any Linux system that supports rpms. However, sometimes, because of the libraries present on a system, the ooRexx rpm will not install. For instance, the Fedora Core 10 rpm may not install on a SuSE 9.3 system. Because of this, when resources are available, the ooRexx project will make available rpm packages built for older Linux distributions.

To install with the command line rpm package manager, a typical command line might be:

```
rpm -i ooRexx-4.1.1-1.x86_32.fedora15.rpm
```

or

```
rpm -i ooRexx-4.1.1-1.x86_64.fedora15.rpm
```

Open Object Rexx is installed in the directory `/opt/ooRexx`. Links are created in `/usr/lib` and `/usr/bin` for the ooRexx shared libraries and executables respectively. Additional links are created in `/usr/include` for the native API header files.

Use the rpm package manager to remove ooRexx from the system. The command line `rpm` can also be used to remove the package from the system. The command to enter is:

```
rpm -e ooRexx
```

3.3.2. Installation/Removal of the DEB Package

> **Note:** The installation of Open Object Rexx requires that all steps be run with root authority.

Debian based Linux distributions (Kubuntu, Ubuntu, etc.,) use the debian package manager. If you use one of the ... refer to the documentation for that tool. On the other hand, ooRexx installs easily from the command line. Use the following command to install a `.deb` package from the command line:

```
dpkg -i <packageFile>
```

For example:

```
tom@Loon:~/downloads$ dpkg -i ooRexx-4.1.1-1.x86_32.kubuntu810.deb
```

Open Object Rexx is installed in the directory `/opt/ooRexx`.

The command `dpkg --purge` is used to remove ooRexx from the system. For example:

```
tom@Loon:/$ dpkg --purged ooRexx
```

Or, use the same package manager you used to install to remove ooRexx from a debian based system.

3.3.3. Detailed Installation/Removal Information for AIX

Installation location

This build is installed in `/opt/ooRexx`.

The following links are created from `/opt/ooRexx/bin` to `/usr/bin`:

```
/usr/bin/rexx
/usr/bin/rexx.img
/usr/bin/rxftp.cls
/usr/bin/rxregexp.cls
```

```
/usr/bin/socket.cls
/usr/bin/rxapi
/usr/bin/oorexx-config
/usr/bin/rexxc
/usr/bin/rxqueue
/usr/bin/rxsubcom
/usr/bin/rexximage
```

Required xlC.rte runtime level

xlC runtime 9.0.0.9 or higher

This runtime is contained in the April 2009 XL C/C++ Enterprise Edition V8.0 for AIX PTF.
IBM support (http://www-
01.ibm.com/support/docview.wss?rs=2239&context=SSJT9L&dc=D400&uid=swg24022586&loc=en_US&cs=u
&&lang=en)

xlC runtime 10.1 or higher

This runtime is contained in the Jannuary 2009 IBM C++ Runtime Environment Components
for AIX. *IBM support* (http://www-
01.ibm.com/support/docview.wss&rs=2239&context=SSJT9L&dc=D400&uid=swg24022049&loc=en_US&cs=
&&lang=en)

Installed services

The ooRexx 4.1.1.1 LPP will install the `rxapi` daemon. This package integrates seamlessly into the
AIX SRC (System Resource Controller). The daemon is started automatically after the installation.
The daemon will be started upon system boot via an entry in `/etc/inittab`.

Comments

If you have any comments or questions please do not hesitate to ask. See the Getting Help sections
for places to ask questions. The AIX maintainer can be reached by posting questions to The
Developer Mailing List.

To install the LPP package, use smitty.

```
 smitty
 -> Software Installation and Maintenance
   -> Install and Update Software
     -> Install Software
```

To remove the LPP package, use smitty.

```
 smitty
 -> Software Installation and Maintenance
   -> Software Maintenance and Utilities
     -> Remove Installed Software
```

3.3.4. Configuration

There is nothing to configure for a Unix/Linux installation.

3.3.5. Open Object Rexx and Other Rexx Interpreters

If you have other Rexx interpreters installed, you may have to set the PATH manually because Open Object Rexx and the other Rexx interpreters may both use the name "rexx" for invoking the interpreter. Interpreter error messages that begin with "Rexx: " indicate that another Rexx interpreter was called instead of Open Object Rexx. You can verify which Rexx interpreter is running either by the form of the error messages, by running `rexxtry` and executing SAY VERSION, or by invoking `rexx -v`, which then should display information about the Rexx interpreter that is invoked. If no information is displayed, it is not Open Object Rexx. If you don't want the other Rexx interpreter to be invoked, you should remove it from the PATH, delete it, or rename the `rexx` binary in the `/usr/bin` directory to `orx` and use `orx` to invoke the interpreter.

3.3.6. Exploring Open Object Rexx for Unix/Linux

Once you have installed the Open Object Rexx files you can run Rexx scripts by issuing the command `rexx` followed by the name of your script at the command prompt. To interactively try Rexx statements, from a command prompt type `rexx rexxtry`. Enter `exit` to end the program.

To help you explore programming in Open Object Rexx, the following sample programs are provided in the `/opt/ooRexx/share/ooRexx`:

`ccreply.rex`

concurrent program using REPLY

`complex.rex`

complex number class

`factor.rex`

factorial program

`greply.rex`

concurrent program using WAIT and NOWAIT

`guess.rex`

a guessing game

`ktguard.rex`

concurrent program using START and GUARD

`makestring.rex`

demonstrated the usage of the makestring method

`month.rex`

> displays a calendar for the month of January

`pipe.rex`

> a pipeline implementation

`properties.rex`

> shows usage of the .Properties class and some Sys functions

`qdate.rex`

> date query program

`qtime.rex`

> time query program

`rexxcps.rex`

> measures Rexx clauses per second

`rexxtry.rex`

> interactively try out Rexx statements

`scclient.rex scserver.rex`

> a client / server demonstration using the .Socket class from socket.cls

`semcls.rex`

> implements a semaphore class on ooRexx

`sfclient.rex sfserver.rex`

> a client / server demonstration using the external rxsock library

`stack.rex`

> program that uses a stack class

`usecomp.rex`

> program that uses the complex number class

`usepipe.rex`

> program that uses the pipeline implementation

Note: To run these programs, you must either add the `/opt/ooRexx/share/ooRexx` directory to the PATH or execute them directly from the `/opt/ooRexx/share/ooRexx` directory.

3.4. The `rxapi` **Daemon Process**

Part of ooRexx is `rxapi` which is a daemon process that manages all data that can persist across interpreter invocations or is used for cross-process communications. The `rxapi` process manages the Rexx data queues, the macrospace, and all of the external function, subcommand handler and exit registrations.

In ooRexx 4.0.0 and later versions, the interpreter and `rxapi` communicate through a socket interface. In versions prior to 4.0.0, the communication was through shared memory.

Ideally, `rxapi` should run as a service. When you install ooRexx from a package on Linux, `rxapi` will be set up to run as a system service. When installing the Windows package, the default is to install `rxapi` as a Windows service. In this scenario, the operating system will start the `rxapi` daemon on boot up and shut the daemon down when the system is halted.

If `rxapi` is not installed as a service, the first time the interpreter executes, and needs the function provided by `rxapi`, the intepreter will start the daemon process. Once started, the `rxapi` process will continue to run until the system is halted.

There is little or no point in stopping the `rxapi` process once it is started. **Be aware** that if you do stop the `rxapi` process, all queues, all registered subcommand handlers, system exits, and external functions, and the macrospace, disappear.

When `rxapi` is installed as a service, it can be started and stopped by the user, if the user has the proper authority, in the same manner as other services. On Windows, the services manager can be used to start or stop `rxapi`. Or, from the command line, net stop or net start can also be used:

```
C:\work.ooRexx>net stop rxapi
The RXAPI service is stopping.
The RXAPI service was stopped successfully.

C:\work.ooRexx>net start rxapi

The RXAPI service was started successfully.

C:\work.ooRexx>
```

On Linux, the following can be used from the command line:

```
[root@Falcon work.ooRexx]# /etc/init.d/rxapid stop
Stopping rxapi:                                    [  OK  ]
[root@Falcon work.ooRexx]# /etc/init.d/rxapid start
Starting rxapi:                                    [  OK  ]
[root@Falcon work.ooRexx]#
```

It is likely that your installation of Linux also has a graphical means of starting or stopping services.

On AIX, the following can be used from the command line:

```
[root@myhost]# stopsrc -s rxapi
0513-044 The rxapi Subsystem was requested to stop.
[root@myhost]# startsrc -s rxapi
0513-059 The rxapi Subsystem has been started. Subsystem PID is 1134614.
[root@myhost]# lssrc -s rxapi
```

```
Subsystem         Group           PID         Status
 rxapi                            1134614     active
[root@Falcon work.ooRexx]#
```

If `rxapi` is not installed as a service, it can be stopped by using an appropriate process killer for your platform. Typically the Task Manager on Windows and `kill` on a unix-like system.

3.5. Known Limitations, Problems and Workarounds

- The global directory .environment is process local, not global to the system.
- Under Unix/Linux only piped "|" input and redirected output (">") can be evaluated by Open Object Rexx. Redirected input ("<") can not be evaluated.

3.6. Documentation

All documentation is contained in PDF files and zipped HTML package files and is available online at http://www.oorexx.org/docs.html.

The following documents are available:

rexxref.pdf

    This is the *Open Object Rexx: Reference*.

rexxpg.pdf

    This is the *Open Object Rexx: Programming Guide*.

rexxextensions.pdf

    This is the *Open Object Rexx: Rexx Extensions Library Reference*.

winextensions.pdf

    This is the *Open Object Rexx: Windows Extensions Reference*.

unixextensions.pdf

    This is the *Open Object Rexx: Unix Extensions Reference*.

oodialog.pdf

    This is the *Open Object Rexx: Windows OODialog Reference*.

rxsock.pdf

    This is the *Open Object Rexx: TCP/IP Socket Library Functions Reference*.

rxftp.pdf

>   This is the *Open Object Rexx: FTP Class Library Reference*.

rxmath.pdf

>   This is the *Open Object Rexx: Mathematical Functions Reference*.

readme.pdf

>   This document is in PDF and HTML format.

3.7. Getting Help and Submitting Feedback

The Open Object Rexx Project has a number of methods to obtain help and submit feedback for ooRexx. These methods, in no particular order of preference, are listed below.

3.7.1. The Rexx Language Association Mailing List

The *Rexx Language Association* (http://www.rexxla.org/) maintains a mailing list for its members. This mailing list is only available to RexxLA members thus you will need to join RexxLA in order to get on the list. The dues for RexxLA membership are small and are charged on a yearly basis. For details on joining RexxLA please refer to the *RexxLA Home Page* (http://rexxla.org/) or the *RexxLA Membership Application* (http://www.rexxla.org/rexxla/join.html) page.

3.7.2. The Open Object Rexx SourceForge Site

The Open Object Rexx Project (http://www.oorexx.org/) utilizes *SourceForge* (http://sourceforge.net/) to house the *ooRexx Project* (http://sourceforge.net/projects/oorexx) source repositories, mailing lists and other project features. Here is a list of some of the most useful facilities.

The ooRexx Forums

>   The ooRexx project maintains a set of forums that anyone may contribute to or monitor. They are located on the *ooRexx Forums* (http://sourceforge.net/forum/?group_id=119701) page. There are currently three forums available: Help, Developers and Open Discussion. In addition, you can monitor the forums via email.

The Developer Mailing List

>   You can subscribe to the oorexx-devel mailing list at *ooRexx Mailing List Subscriptions* (http://sourceforge.net/mail/?group_id=119701) page. This list is for discussing ooRexx project development activities and future interpreter enhancements. It also supports a historical archive of past messages.

The Users Mailing List

>   You can subscribe to the oorexx-users mailing list at *ooRexx Mailing List Subscriptions* (http://sourceforge.net/mail/?group_id=119701) page. This list is for discussing using ooRexx. It also supports a historical archive of past messages.

The Announcements Mailing List

You can subscribe to the oorexx-announce mailing list at *ooRexx Mailing List Subscriptions* (http://sourceforge.net/mail/?group_id=119701) page. This list is only used to announce significant ooRexx project events.

The Bug Mailing List

You can subscribe to the oorexx-bugs mailing list at *ooRexx Mailing List Subscriptions* (http://sourceforge.net/mail/?group_id=119701) page. This list is only used for monitoring changes to the ooRexx bug tracking system.

Bug Reports

You can create a bug report at *ooRexx Bug Report* (http://sourceforge.net/tracker/?group_id=119701&atid=684730) page. Please try to provide as much information in the bug report as possible so that the developers can determine the problem as quickly as possible. Sample programs that can reproduce your problem will make it easier to debug reported problems.

Documentation Feedback

You can submit feedback for, or report errors in, the documentation at *ooRexx Documentation Report* (http://sourceforge.net/tracker/?group_id=119701&atid=1001880) page. Please try to provide as much information in a documentation report as possible. In addition to listing the document and section the report concerns, direct quotes of the text will help the developers locate the text in the source code for the document. (Section numbers are generated when the document is produced and are not available in the source code itself.) Suggestions as to how to reword or fix the existing text should also be included.

Request For Enhancement

You can suggest ooRexx features at the *ooRexx Feature Requests* (http://sourceforge.net/tracker/?group_id=119701&atid=684733) page.

Patch Reports

If you create an enhancement patch for ooRexx please post the patch using the *ooRexx Patch Report* (http://sourceforge.net/tracker/?group_id=119701&atid=684732) page. Please provide as much information in the patch report as possible so that the developers can evaluate the enhancement as quickly as possible.

Please do not post bug fix patches here, instead you should open a bug report and attach the patch to it.

3.7.3. comp.lang.rexx Newsgroup

The comp.lang.rexx (news:comp.lang.rexx) newsgroup is a good place to obtain help from many individuals within the Rexx community. You can obtain help on Open Object Rexx or on any number of other Rexx interpreters and tools.

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