

# ooRexx Documentation 4.2

## Open Object Rexx™

Unix Extensions Function Reference



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### Edition 1

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# Preface

This book describes extensions to the Open Object Rexx Interpreter that are specific to Unix-like operating system. The extensions are in a number of categories.

This book is intended for people who plan to develop applications using ooRexx and one or more of the Unix specific classes. In general no special knowledge of Unix programming is needed to use the Unix extensions. Therefore this book is applicable for users ranging in experience from the novice ooRexx programmer, to the experienced application developer.

This book is a reference rather than a tutorial. It assumes the reader has some exposure to object-oriented programming concepts and Rexx programming.

## 1. Document Conventions

This manual uses several conventions to highlight certain words and phrases and draw attention to specific pieces of information.

In PDF and paper editions, this manual uses typefaces drawn from the [Liberation Fonts](https://fedorahosted.org/liberation-fonts/)<sup>1</sup> set. The Liberation Fonts set is also used in HTML editions if the set is installed on your system. If not, alternative but equivalent typefaces are displayed. Note: Red Hat Enterprise Linux 5 and later includes the Liberation Fonts set by default.

### 1.1. Typographic Conventions

Four typographic conventions are used to call attention to specific words and phrases. These conventions, and the circumstances they apply to, are as follows.

#### **Mono-spaced Bold**

Used to highlight system input, including shell commands, file names and paths. Also used to highlight keycaps and key combinations. For example:

To see the contents of the file **my\_next\_bestselling\_novel** in your current working directory, enter the **cat my\_next\_bestselling\_novel** command at the shell prompt and press **Enter** to execute the command.

The above includes a file name, a shell command and a keycap, all presented in mono-spaced bold and all distinguishable thanks to context.

Key combinations can be distinguished from keycaps by the hyphen connecting each part of a key combination. For example:

Press **Enter** to execute the command.

Press **Ctrl+Alt+F2** to switch to the first virtual terminal. Press **Ctrl+Alt+F1** to return to your X-Windows session.

The first paragraph highlights the particular keycap to press. The second highlights two key combinations (each a set of three keycaps with each set pressed simultaneously).

If source code is discussed, class names, methods, functions, variable names and returned values mentioned within a paragraph will be presented as above, in **mono-spaced bold**. For example:

---

<sup>1</sup> <https://fedorahosted.org/liberation-fonts/>

File-related classes include **filesystem** for file systems, **file** for files, and **dir** for directories. Each class has its own associated set of permissions.

### Proportional Bold

This denotes words or phrases encountered on a system, including application names; dialog box text; labeled buttons; check-box and radio button labels; menu titles and sub-menu titles. For example:

Choose **System** → **Preferences** → **Mouse** from the main menu bar to launch **Mouse Preferences**. In the **Buttons** tab, click the **Left-handed mouse** check box and click **Close** to switch the primary mouse button from the left to the right (making the mouse suitable for use in the left hand).

To insert a special character into a **gedit** file, choose **Applications** → **Accessories** → **Character Map** from the main menu bar. Next, choose **Search** → **Find...** from the **Character Map** menu bar, type the name of the character in the **Search** field and click **Next**. The character you sought will be highlighted in the **Character Table**. Double-click this highlighted character to place it in the **Text to copy** field and then click the **Copy** button. Now switch back to your document and choose **Edit** → **Paste** from the **gedit** menu bar.

The above text includes application names; system-wide menu names and items; application-specific menu names; and buttons and text found within a GUI interface, all presented in proportional bold and all distinguishable by context.

### *Mono-spaced Bold Italic* or *Proportional Bold Italic*

Whether mono-spaced bold or proportional bold, the addition of italics indicates replaceable or variable text. Italics denotes text you do not input literally or displayed text that changes depending on circumstance. For example:

To connect to a remote machine using ssh, type **ssh *username@domain.name*** at a shell prompt. If the remote machine is **example.com** and your username on that machine is john, type **ssh *john@example.com***.

The **mount -o remount *file-system*** command remounts the named file system. For example, to remount the **/home** file system, the command is **mount -o remount */home***.

To see the version of a currently installed package, use the **rpm -q *package*** command. It will return a result as follows: ***package-version-release***.

Note the words in bold italics above — *username*, *domain.name*, *file-system*, *package*, *version* and *release*. Each word is a placeholder, either for text you enter when issuing a command or for text displayed by the system.

Aside from standard usage for presenting the title of a work, italics denotes the first use of a new and important term. For example:

Publican is a *DocBook* publishing system.

## 1.2. Pull-quote Conventions

Terminal output and source code listings are set off visually from the surrounding text.

Output sent to a terminal is set in **mono-spaced roman** and presented thus:

```
books      Desktop  documentation  drafts  mss    photos  stuff  svn
books_tests Desktop1  downloads      images  notes  scripts svgs
```

Source-code listings are also set in **mono-spaced roman** but add syntax highlighting as follows:

```
package org.jboss.book.jca.ex1;

import javax.naming.InitialContext;

public class ExClient
{
    public static void main(String args[])
        throws Exception
    {
        InitialContext iniCtx = new InitialContext();
        Object          ref    = iniCtx.lookup("EchoBean");
        EchoHome         home   = (EchoHome) ref;
        Echo              echo   = home.create();

        System.out.println("Created Echo");

        System.out.println("Echo.echo('Hello') = " + echo.echo("Hello"));
    }
}
```

### 1.3. Notes and Warnings

Finally, we use three visual styles to draw attention to information that might otherwise be overlooked.



#### Note

Notes are tips, shortcuts or alternative approaches to the task at hand. Ignoring a note should have no negative consequences, but you might miss out on a trick that makes your life easier.



#### Important

Important boxes detail things that are easily missed: configuration changes that only apply to the current session, or services that need restarting before an update will apply. Ignoring a box labeled 'Important' will not cause data loss but may cause irritation and frustration.



#### Warning

Warnings should not be ignored. Ignoring warnings will most likely cause data loss.

## 2. How to Read the Syntax Diagrams

Throughout this book, syntax is described using the structure defined below.

- Read the syntax diagrams from left to right, from top to bottom, following the path of the line.

The `>>- - -` symbol indicates the beginning of a statement.

The `- - ->` symbol indicates that the statement syntax is continued on the next line.

The `>- - -` symbol indicates that a statement is continued from the previous line.

The `- - -><` symbol indicates the end of a statement.

Diagrams of syntactical units other than complete statements start with the `>- - -` symbol and end with the `- - ->` symbol.

- Required items appear on the horizontal line (the main path).

```
>>-STATEMENT--required_item-----><
```

- Optional items appear below the main path.

```
>>-STATEMENT--+-+-----+-----><
                +-optional_item-+
```

- If you can choose from two or more items, they appear vertically, in a stack. If you must choose one of the items, one item of the stack appears on the main path.

```
>>-STATEMENT--+-required_choice1-+-+-----><
                +-required_choice2-+
```

- If choosing one of the items is optional, the entire stack appears below the main path.

```
>>-STATEMENT--+-+-----+-----><
                +-optional_choice1-+
                +-optional_choice2-+
```

- If one of the items is the default, it appears above the main path and the remaining choices are shown below.

```
                +-default_choice--+
>>-STATEMENT--+-+-----+-----><
                +-optional_choice-+
```

```
+--optional_choice--+
```

- An arrow returning to the left above the main line indicates an item that can be repeated.

```

      +-----+
      v       |
>>-STATEMENT---repeatable_item-+-----><

```

A repeat arrow above a stack indicates that you can repeat the items in the stack.

- A set of vertical bars around an item indicates that the item is a fragment, a part of the syntax diagram that appears in greater detail below the main diagram.

```
>>-STATEMENT--| fragment |-----><
```

*fragment:*

```
|--expansion_provides_greater_detail-----|
```

- Keywords appear in uppercase (for example, **PARM1**). They must be spelled exactly as shown but you can type them in upper, lower, or mixed case. Variables appear in all lowercase letters (for example, **parmx**). They represent user-supplied names or values.
- If punctuation marks, parentheses, arithmetic operators, or such symbols are shown, you must enter them as part of the syntax.

The following example shows how the syntax is described:

```

      +-,-----+
      v       |
>>-MAX(---number-+---)-----><

```

### 3. Getting Help and Submitting Feedback

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

### 3.1. The Open Object Rexx SourceForge Site

The *Open Object Rexx Project*<sup>2</sup> utilizes *SourceForge*<sup>3</sup> to house the *ooRexx Project*<sup>4</sup> source repositories, mailing lists and other project features. Over time it has become apparent that the Developer and User mailing lists are better tools for carrying on discussions concerning ooRexx and that the Forums provided by SourceForge are cumbersome to use. The ooRexx user is most likely to get timely replies from one of the mailing lists.

Here is a list of some of the most useful facilities provided by SourceForge.

#### The Developer Mailing List

You can subscribe to the oorexx-devel mailing list at [ooRexx Mailing List Subscriptions](#)<sup>5</sup> 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](#)<sup>6</sup> 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](#)<sup>7</sup> 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](#)<sup>8</sup> 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](#)<sup>9</sup> 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](#)<sup>10</sup> 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](#)<sup>11</sup> page.

---

<sup>2</sup> <http://www.oorexx.org/>

<sup>3</sup> <http://sourceforge.net/>

<sup>4</sup> <http://sourceforge.net/projects/oorexx>

<sup>5</sup> [http://sourceforge.net/mail/?group\\_id=119701](http://sourceforge.net/mail/?group_id=119701)

<sup>6</sup> [http://sourceforge.net/mail/?group\\_id=119701](http://sourceforge.net/mail/?group_id=119701)

<sup>7</sup> [http://sourceforge.net/mail/?group\\_id=119701](http://sourceforge.net/mail/?group_id=119701)

<sup>8</sup> [http://sourceforge.net/mail/?group\\_id=119701](http://sourceforge.net/mail/?group_id=119701)

<sup>9</sup> [http://sourceforge.net/tracker/?group\\_id=119701&atid=684730](http://sourceforge.net/tracker/?group_id=119701&atid=684730)

<sup>10</sup> [http://sourceforge.net/tracker/?group\\_id=119701&atid=1001880](http://sourceforge.net/tracker/?group_id=119701&atid=1001880)

<sup>11</sup> [http://sourceforge.net/tracker/?group\\_id=119701&atid=684733](http://sourceforge.net/tracker/?group_id=119701&atid=684733)

### Patch Reports

If you create an enhancement patch for ooRexx please post the patch using the [ooRexx Patch Report](#)<sup>12</sup> 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.

### 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](#)<sup>13</sup> page. There are currently three forums available: Help, Developers and Open Discussion. In addition, you can monitor the forums via email.

## 3.2. The Rexx Language Association Mailing List

The [Rexx Language Association](#)<sup>14</sup> 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](#)<sup>15</sup> or the [RexxLA Membership Application](#)<sup>16</sup> page.

## 3.3. comp.lang.rexx Newsgroup

The [comp.lang.rexx](#)<sup>17</sup> 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.

## 4. Related Information

See also: *Open Object Rexx: Reference*

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<sup>12</sup> [http://sourceforge.net/tracker/?group\\_id=119701&atid=684732](http://sourceforge.net/tracker/?group_id=119701&atid=684732)

<sup>13</sup> [http://sourceforge.net/forum/?group\\_id=119701](http://sourceforge.net/forum/?group_id=119701)

<sup>14</sup> <http://www.rexxla.org/>

<sup>15</sup> <http://rexxla.org/>

<sup>16</sup> <http://www.rexxla.org/rexxla/join.html>

<sup>17</sup> <http://groups.google.com/group/comp.lang.rexx/topics?hl=en>



# Introduction

The RxUnixSys library provides access to some common native Unix APIs. Most of the function provided by this library should be available on most Unix/Linux systems. However, there are exceptions. For instance, the extended attribute function are not available on AIX or on any system that uses the JFS file system.

All the functions available in the RxUnixSys library require the program to contain a **::requires** directive in the source code for the program using the function(s). The statement should be coded as follows:

## Example 1.1. ::Requires Directive

```
::requires "rxunixsys" LIBRARY
```

This will provide access to all the functions in the library.



### Note

The examples contained in this book do not show the **::requires** directive. It is assumed that in a complete program the sample code and the directive will appear together.



# Process and Thread Functions

This chapter covers the available process and thread functions.

## 2.1. SysGetpid

```
>>-SysGetpid()-----><
```

Gets the current process id.

This function uses the **getpid()** C API to perform the action.

### Parameter:

None

### Returns

Returns the current numerical process id.

#### Example 2.1. SysGetpid

```
/* get the current process id */  
mypid = SysGetpid()
```

## 2.2. SysGetppid

```
>>-SysGetppid()-----><
```

Gets the parent process id of the current process.

This function uses the **getppid()** C API to perform the action.

### Parameter:

None

### Returns

Returns the current parent process id.

#### Example 2.2. SysGetppid

```
/* get the parent process id */  
myppid = SysGetppid()
```

### 2.3. SysGettid

```
>>-SysGettid()-----><
```

Gets the current thread id.

This function uses the **pthread\_self()** C API to perform the action.

#### Parameter:

None

#### Returns

Returns the current numerical thread id.

#### Example 2.3. SysGettid

```
/* get the current thread id */  
mytid = SysGettid()
```

### 2.4. SysKill

```
>>-SysKill(pid, sig)-----><
```

Kill the specified process using the specified signal.

This function uses the **kill()** C API to perform the action.

#### Parameter:

*pid*

The process id to kill.

*sig*

The signal to use (usually 0).

#### Returns

Returns the return code from the C kill() API.

#### Example 2.4. SysKill

```
/* kill the process */  
mytid = SysKill(27313, 0)
```



# User and Group Functions

This chapter covers the available user and group functions.

## 3.1. SysGetegid

```
>>-SysGetegid()-----<<
```

Gets the current numerical effective group id.

This function uses the **getegid()** C API to perform the action.

**Parameter:**

None

**Returns**

Returns the current numerical effective group id.

### Example 3.1. SysGetegid

```
/* get the current effective group id */  
myegid = SysGetegid()
```

## 3.2. SysGeteuid

```
>>-SysGeteuid()-----<<
```

Gets the current numerical effective user id.

This function uses the **geteuid()** C API to perform the action.

**Parameter:**

None

**Returns**

Returns the current numerical effective user id.

### Example 3.2. SysGeteuid

```
/* get the current effective user id */  
myeuid = SysGeteuid()
```

### 3.3. SysGetgid

```
>>-SysGetgid()-----<<
```

Gets the current numerical group id.

This function uses the **getgid()** C API to perform the action.

#### Parameter:

None

#### Returns

Returns the current numerical group id.

#### Example 3.3. SysGetgid

```
/* get the current group id */  
mygid = SysGetgid()
```

### 3.4. SysGetgrgid

```
>>-SysGetgrgid(gid, option)-----<<
```

This function uses the **getgrgid()** C API to perform the action.

#### Parameter:

*gid*

The numerical group id.

*option*

An option specifying the information to return. The values are all case insensitive and only the first letter of the option value is checked. Allowed values are:

"NAME"

The group name.

"GROUP"

The numerical group id.

"MEMBERS"

The members of the group are returned in an array.

"PASSWORD"

Always returns a zero-length string.

## Returns

Returns information about a group.

Returns information specified by the *option*.

### Example 3.4. SysGetgrgid

```
/* the following examples came from a Linux laptop running Fedora */

SysGetgrgid(100, "n")      --> users
SysGetgrgid(100, "g")      --> 100
SysGetgrgid(100, "m")      --> an ooRexx array with the member user names
SysGetgrgid(100, "p")      --> ""
```

## 3.5. SysGetgrnam

```
>>-SysGetgrnam(grpname, option)-----><
```

Returns information about a group.

This function uses the **getgrnam()** C API to perform the action.

### Parameter:

*grpname*

The group name.

*option*

An option specifying the information to return. The values are all case insensitive and only the first letter of the option value is checked. Allowed values are:

"NAME"

The group name.

"GROUP"

The numerical group id.

"MEMBERS"

The members of the group are returned in an array.

"PASSWORD"

Always returns a zero-length string.

### Returns

Returns information specified by the *option*.

#### Example 3.5. SysGetgrnam

```
/* the following examples came from a Linux laptop running Fedora */  
  
SysGetgrnam("users", "n")      -->  users  
SysGetgrnam("users", "g")      -->  100  
SysGetgrnam("users", "m")      -->  an ooRexx array with the member user names  
SysGetgrnam("users", "p")      -->  ""
```

## 3.6. SysGetpgrp

```
>>-SysGetpgrp()-----><
```

Gets the current numerical process group id.

This function uses the **getpgrp()** C API to perform the action.

### Parameter:

None

### Returns

Returns the current numerical process group id.

#### Example 3.6. SysGetpgrp

```
/* get the current process group id */  
  
mypgrp = SysGetpgrp()
```

## 3.7. SysGetpwnam

```
>>-SysGetpwnam(username, option)-----><
```

Returns information about a user.

This function uses the **getpwnam()** C API to perform the action.

**Parameter:**

*username*

The user name.

*option*

An option specifying the information to return. The values are all case insensitive and only the first letter of the option value is checked. Allowed values are:

"NAME"

The user name.

"USER"

The numerical user id.

"GROUP"

The numerical group id of the user.

"REALNAME"

The user's full (real) name.

"DIRECTORY"

The user's home directory.

"SHELL"

The user's default shell.

"PASSWORD"

Always returns a zero-length string.

**Returns**

Returns information specified by the *option*.

**Example 3.7. SysGetpwnam**

```
/* the following examples came from a Linux laptop running Fedora */

SysGetpwnam("dashley", "n")    --> dashley
SysGetpwnam("dashley", "u")    --> 500
SysGetpwnam("dashley", "g")    --> 500
SysGetpwnam("dashley", "r")    --> David Ashley
SysGetpwnam("dashley", "d")    --> /home/dashley
SysGetpwnam("dashley", "s")    --> bash
SysGetpwnam("dashley", "p")    --> ""
```

## 3.8. SysGetpwuid

---

```
>>-SysGetpwuid(uid, option)-----><
```

Returns information about a user.

This function uses the **getpwuid()** C API to perform the action.

### Parameter:

*uid*

The numerical user id.

*option*

An option specifying the information to return. The values are all case insensitive and only the first letter of the option value is checked. Allowed values are:

"NAME"

The user name.

"USER"

The numerical user id.

"GROUP"

The numerical group id of the user.

"REALNAME"

The user's full (real) name.

"DIRECTORY"

The user's home directory.

"SHELL"

The user's default shell.

"PASSWORD"

Always returns a zero-length string.

### Returns

Returns information specified by the *option*.

#### Example 3.8. SysGetpwuid

```
/* the following examples came from a Linux laptop running Fedora */

SysGetpwuid(500, "n")    --> dashley
SysGetpwuid(500, "u")    --> 500
SysGetpwuid(500, "g")    --> 500
SysGetpwuid(500, "r")    --> David Ashley
SysGetpwuid(500, "d")    --> /home/dashley
SysGetpwuid(500, "s")    --> bash
SysGetpwuid(500, "p")    --> ""
```

## 3.9. SysGetuid

```
>>-SysGetuid()-----><
```

Gets the current numerical user id.

This function uses the **getuid()** C API to perform the action.

**Parameter:**

None

**Returns**

Returns the current numerical user id.

[Example 3.9. SysGetuid](#)

```
/* get the current user id */  
myuid = SysGetuid()
```

## 3.10. SysSetegid

```
>>-SysSetegid(gid)-----><
```

Set the numerical effective group id.

This function uses the **setegid()** C API to perform the action.

**Parameter:**

*gid*

The new numerical effective group id.

**Returns**

Returns zero on success or -1 on an error.

[Example 3.10. SysSetegid](#)

```
/* set the effective group id to 520 */  
call SysSetegid 520
```

### 3.11. SysSeteuid

```
>>-SysSeteuid(euid)-----><
```

Set the numerical effective user id.

This function uses the **seteuid()** C API to perform the action.

#### Parameter:

*uid*

The new numerical effective user id.

#### Returns

Returns zero on success or -1 on an error.

#### Example 3.11. SysSeteuid

```
/* set the effective user id to 520 */  
call SysSeteuid 520
```

### 3.12. SysSetgid

```
>>-SysSetgid(gid)-----><
```

Set the numerical group id.

This function uses the **setgid()** C API to perform the action.

#### Parameter:

*gid*

The new numerical group id.

#### Returns

Returns zero on success or -1 on an error.

#### Example 3.12. SysSetgid

```
/* set the group id to 520 */
```

```
call SysSetgid 520
```

### 3.13. SysSetpgid

```
>>-SysSetpgid(pid, pgid)-----><
```

Set a numerical process id to use the specified process group id.

This function uses the **setpgid()** C API to perform the action.

**Parameter:**

*pid*

The process id to modify.

*pgid*

The new process group id.

**Returns**

Returns zero on success and -1 on an error.

**Example 3.13. SysSetpgid**

```
/* set process group id */
call SysSetpgid 9321, 520
```

### 3.14. SysSetpgrp

```
>>-SysSetpgrp()-----><
```

Sets the current numerical process user id to zero and the group id to zero.

This function uses the **setpgrp()** C API to perform the action.

**Parameter:**

None

**Returns**

Returns zero on success and -1 on an error.

### Example 3.14. SysSetpgrp

```
/* set the current process group id */  
call SysSetpgrp
```

## 3.15. SysSetuid

```
>>-SysSetuid(uid)-----><
```

Set the numerical user id.

This function uses the **setuid()** C API to perform the action.

### Parameter:

*uid*

The new numerical user id.

### Returns

Returns zero on success or -1 on an error.

### Example 3.15. SysSetuid

```
/* set the user id to 520 */  
call SysSetuid 520
```

# File and File System Functions

This chapter covers the available file and file system functions.

## 4.1. SysAccess

```
>>-SysAccess(file, mode)-----<<
```

Checks to see if the user has access permissions on a file.

This function uses the **access()** C API to perform the action.

### Parameter:

*file*

The path/file name to check access permissions.

*mode*

The access permissions to check on the file. Must be a decimal number.

### Returns

Returns zero on success (all access rights available) or -1 on an error.

#### Example 4.1. SysGetAccess

```
/* do others have write permission on the file? */
retc = SysAccess("/home/dashley/temp.txt", 2)
```

## 4.2. SysChmod

```
>>-SysChmod(file, mode)-----<<
```

Sets the mode bits of a file.

This function uses the **chmod()** C API to perform the action.

You must be the owner of the file or root in order for this function to be successful.

### Parameter:

*file*

The path/file name to to modify the mode bits.

*mode*

The new and complete list of bits. Note that it is not possible to unset bits with this function except through this argument. This parameter must be a decimal number.

### Returns

Returns zero on success (all access rights available) or -1 on an error.

#### Example 4.2. SysChmod

```
/* set the mode bits on a file */  
  
retc = SysChmod("/home/dashley/temp.txt", "rwxrwxr-x")  
retc = SysChmod("/home/dashley/temp.txt", "rwSrwsr-x")
```

## 4.3. SysChown

```
>>-SysChown(srcpath, uid, gid)-----<<
```

Change the user and group ownership attributes of a file.

This function uses the **chown( )** C API to perform the action.

You must be the owner of the file or root in order for this function to be successful.

### Parameter:

*srcpath*

The path/filename of the source file to change.

*uid*

The new numerical user id.

*gid*

The new numerical group id.

### Returns

Returns zero on success and -1 on an error.

#### Example 4.3. SysChown

```
/* change the ownership attributes of a file */  
  
call SysChown "/home/username/myfile", 501, 530
```

## 4.4. SysChroot

```
>>-SysChroot(srcpath)-----><
```

Change the root directory of the current process.

This function uses the **chroot()** C API to perform the action.

**Parameter:**

*srcpath*

The new root subdirectory base path.

**Returns**

Returns zero on success and -1 on an error.

**Example 4.4. SysChroot**

```
/* change the ownership attributes of a file */  
call SysChroot "/home/username/"
```

## 4.5. SysClose

```
>>-SysClose(fh)-----><
```

Close the specified file handle.

This function uses the **close()** C API to perform the action.

**Parameter:**

*fh*

The file handle to be closed.

**Returns**

Returns zero on success and -1 on an error.

**Example 4.5. SysClose**

```
/* close filehandle 0 */
```

```
call SysClose 0
```

### 4.6. SysEuidaccess (not available on all systems)

```
>>-SysEuidaccess(file, mode)-----><
```

Checks to see if the effective user has access permissions on a file.

This function uses the **euidaccess()** C API to perform the action.

#### Parameter:

*file*

The path/file name to check access permissions.

*mode*

The access permissions to check on the file. Must be a decimal number.

#### Returns

Returns zero on success (all access rights available) or -1 on an error.

#### Example 4.6. SysEuidaccess

```
/* do others have write permission on the file? */  
retc = SysEuidaccess("/home/dashley/temp.txt", 2)
```

### 4.7. SysGetdirlist

```
>>-SysGetdirlist(dir)-----><
```

Returns an ooRexx array of the file/directory name(s) contained in a subdirectory.

The returned array will contain ALL file and subdirectory names including files usually not displayed (hidden files/directories). The ooRexx array list of files is NOT sorted. The array will be empty if an error occurs opening the subdirectory.

This function uses the **opendir()**, **closedir()** and **readdir()** C APIs to perform the action.

#### Parameter:

*dir*

The subdirectory to be listed.

**Returns**

Returns an ooRexx array.

**Example 4.7. SysGetdirlist**

```
/* get the subdirectory entries */

arr = SysGetdirlist("./")
do entry over arr
  say entry
end
```

## 4.8. SysLchown

```
>>-SysLchown(srcpath, uid, gid)-----><
```

Change the user and group ownership attributes of a symbolic link.

This function uses the **lchown( )** C API to perform the action.

**Parameter:**

*srcpath*

The path/filename of the source file to change.

*uid*

The new numerical user id.

*gid*

The new numerical group id.

**Returns**

Returns zero on success and -1 on an error.

**Example 4.8. SysLchown**

```
/* change the ownership attributes of a symbolic link */

call SysLchown "/home/username/myfile", 501, 530
```

## 4.9. SysLink

```
>>-SysLink(srcpath, targetpath)-----><
```

Create a symbolic (hard) link.

This function uses the **link()** C API to perform the action.

**Parameter:**

*srcpath*

The path/filename of the source file.

*targetpath*

The new path/filename that will become the hard link.

**Returns**

Returns zero on success and -1 on an error.

### Example 4.9. SysLink

```
/* create a new link */  
call SysLink "/pub", "/home/username/myownpublink"
```

## 4.10. SysMkdir

```
>>-SysMkdir(dir, mode)-----><
```

Create a subdirectory.

This function uses the **mkdir()** C API to perform the action.

**Parameter:**

*dir*

The new subdirectory name.

*mode*

The mode (decimal number) for the new subdirectory.

**Returns**

Returns zero on success and -1 on an error.

### Example 4.10. SysMkdir

```
/* create a new subdir */
retc = SysMkdir("./pub", b2d("111111101"))
```

## 4.11. SysRmdir

```
>>-SysRmdir(dir)-----><
```

Remove a subdirectory.

This function uses the **rmdir()** C API to perform the action.

### Parameter:

*dir*

The subdirectory to remove.

### Returns

Returns zero on success and -1 on an error.

#### Example 4.11. SysRmdir

```
/* remove a subdir */
retc = SysRmdir("./pub")
```

## 4.12. SysStat

```
>>-SysStat(file, option)-----><
```

Returns information about a file.

This function uses the **stat64()** C API to perform the action.

### Parameter:

*file*

The path/file name.

*option*

An option specifying the information to return. The values are all case insensitive and only the first letter of the option value is checked. Allowed values are:

"DEVICE"

The file's owning device id.

"INODE"

The inode number.

"PERMISSIONS"

The permissions in a 10 character string similar to that produced by the shell command "ls -l".

"NUMBERLINKS"

The number of links to the file.

"UID"

The file's owner numerical user id.

"GID"

The file's numerical group id.

"REALDEV"

The file's real device id (if any).

"SIZE"

The file's size in bytes.

"ACCESS"

The file's last access timestamp in the form YYYY-MM-DD HH:MM:SS.

"MODIFIED"

The file's last modified timestamp in the form YYYY-MM-DD HH:MM:SS.

"CHANGED"

The file's last changed timestamp in the form YYYY-MM-DD HH:MM:SS.

### Returns

Returns information specified by the *option*.

#### Example 4.12. SysStat

```
/* the following examples came from a Linux laptop running Fedora 12 */  
  
SysStat("/home/dashley/temp.txt", "n") --> 1  
SysStat("/home/dashley/temp.txt", "u") --> 500  
SysStat("/home/dashley/temp.txt", "g") --> 500  
SysStat("/home/dashley/temp.txt", "s") --> 427  
SysStat("/home/dashley/temp.txt", "a") --> 2009-12-02 13:22:16
```

## 4.13. SysSymlink

```
>>-SysSymlink(srcpath, targetpath)-----><
```

Create a symbolic (soft) link.

This function uses the **symlink()** C API to perform the action.

**Parameter:**

*srcpath*

The path/filename of the source file.

*targetpath*

The new path/filename that will become the soft link.

**Returns**

Returns zero on success and -1 on an error.

[Example 4.13. SysSymlink](#)

```
/* create a new symlink */
call SysSymlink "/pub", "/home/username/myownpublink"
```

## 4.14. SysUmask

```
>>-SysUmask(umask)-----><
```

Set the umask.

This function uses the **umask()** C API to perform the action.

**Parameter:**

*umask*

The new umask. This MUST be a decimal number (not octal).

**Returns**

Returns zero on success or -1 on an error.

**Example:**

[Example 4.14. SysUmask](#)

```
/* set the umask */
call SysUmask 2
```

## 4.15. SysUname

```
>>-SysUname(--+-----+--)-----><
      +--option--+
```

Returns system information.

This function uses the **uname( )** C API to perform the action.

### Parameter:

#### *opt*

An option specifying the information to return. The values are all case insensitive and only the first letter of the option value is checked. Allowed values are:

"SYSTEM"

The system name. This is the default option if none is specified.

"NODE"

The system node (or default host) name.

"RELEASE"

The system release name.

"VERSION"

The system version.

"MACHINE"

The system machine type.

### Returns

Returns information specified by the *option*.

#### Example 4.15. SysUname

```
/* the following examples came from a Linux laptop running Fedora 12 */

SysUname()      --> Linux
SysUname("s")   --> Linux
SysUname("n")   --> bugs.ibm.com
SysUname("r")   --> 2.6.31.6-166.fc12.i686
SysUname("v")   --> #1 SMP Wed Dec 9 11:14:59 EST 2009
SysUname("m")   --> i686
```

## 4.16. SysUnLink

```
>>-SysUnLink(srcpath)-----><
```

Removes a hard link.

This function uses the **unlink()** C API to perform the action.

**Parameter:**

*srcpath*

The path/filename of the source file to be removed.

**Returns**

Returns zero on success and -1 on an error.

[Example 4.16. SysUnlink](#)

```
/* remove a link */
call SysUnLink "/home/username/myownpublink"
```

## 4.17. SysWordexp

```
>>-SysWordexp(exp)-----><
```

Performs a shell-like expansion of the input expression and returns the result in an array. This function will expand the characters "\*", "?" and "~" (the tilde).

This function uses the **wordexp()** C API to perform the action.

**Parameter:**

*exp*

The expression to expand.

**Returns**

Returns an array of the expanded results.

[Example 4.17. SysWordexp](#)

```
/* process an expansion */
arr = SysWordexp("./*.txt")
do mem over arr
```

```
say mem  
end
```

# Extended Attribute Functions

This chapter covers the available extended attribute functions. These functions are probably not available on anything but a Linux system. They are definately not available for AIX.

## 5.1. SysGetxattr (not available on all systems)

```
>>-SysGetxattr(fname, xname)-----><
```

Gets an extended attribute from the specified file.

This function uses the **getxattr()** C API to perform the action.

### Parameter:

*fname*

The file name.

*xname*

The extended attribute name.

### Returns

Returns the extended attribute value on success or a zero-length string on an error.

#### Example 5.1. SysGetxattr

```
/* get an extended attribute */
mimetype = SysGetxattr('/home/dashley/example.txt', 'mimetype')
```

## 5.2. SysListxattr (not available on all systems)

```
>>-SysListxattr(fname)-----><
```

Returns an array of the extended attribut names from the specified file.

This function uses the **listxattr()** C API to perform the action.

### Parameter:

*fname*

The file name.

### Returns

Returns an array of the extended attribute names on success. The array will be empty on an error.

#### Example 5.2. SysListxattr

```
/* list the extended attribute names */  
  
names = SysListxattr('/home/dashley/example.txt')  
do name over names  
  say name  
end
```

### 5.3. SysRemovexattr (not available on all systems)

```
>>-SysRemovexattr(fname, xname)-----><
```

Removes an extended attribute from the specified file.

This function uses the **removexattr()** C API to perform the action.

#### Parameter:

*fname*

The file name.

*xname*

The extended attribute name.

### Returns

Returns 0 on success or -1 on an error.

#### Example 5.3. SysRemovexattr

```
/* remove an extended attribute */  
  
retc = SysRemovexattr('/home/dashley/example.txt', 'mimetype')
```

### 5.4. SysSetxattr (not available on all systems)

```
>>-SysSetxattr(fname, xname, val)-----><
```

Sets/replaces an extended attribute on the specified file.

This function uses the **removexattr()** C API to perform the action.

**Parameter:**

*fname*

The file name.

*xname*

The extended attribute name.

*val*

The value to be set for the extended attribute.

**Returns**

Returns the 0 on success or -1 on an error.

**Example 5.4. SysSetxattr**

```
/* set an extended attribute */  
retc = SysSetxattr('/home/dashley/example.txt', 'mimetype', 'text/plain')
```



# Name Lookup Functions

This chapter covers the available name lookup functions. These functions can look up a server/service name and return information about that server/service.

## 6.1. SysGethostname

```
>>-SysGethostname()-----><
```

Returns the hostname of the machine.

This function uses the **gethostname()** C API to perform the action.

### Parameter:

None.

### Returns

Returns the hostname of the machine.

#### Example 6.1. SysGethostname

```
/* the following example comes from a Linux laptop running Fedora */
SysGethostname()      -->  "wda.holmes4.com"
```

## 6.2. SysGetservbyname

```
>>-SysGetservbyname(name, proto, option)-----><
```

Returns information about a service.

This function uses the **getservbyname()** C API to perform the action.

### Parameter:

#### *name*

The service name.

#### *proto*

The protocol name, usually TCP or UDP.

### *option*

An option specifying the information to return. The values are all case insensitive and only the first letter of the option value is checked. Allowed values are:

"NAME"

The service name.

"PORT"

The service port number.

"ALIASES"

The services alias names are returned in an array.

### Returns

Returns information specified by the *option*.

#### Example 6.2. SysGetservbyname

```
/* the following examples came from a Linux laptop running Fedora */  
  
SysGetservbyname("HTTP", "TCP", "n")    --> HTTP  
SysGetservbyname("HTTP", "TCP", "p")    --> 80
```

## 6.3. SysGetservbyport

```
>>-SysGetservbyport(port, proto, option)-----><
```

Returns information about a service.

This function uses the **getservbyport()** C API to perform the action.

### Parameter:

#### *port*

The service port number.

#### *proto*

The protocol name, usually TCP or UDP.

#### *option*

An option specifying the information to return. The values are all case insensitive and only the first letter of the option value is checked. Allowed values are:

"NAME"

The service name.

"PORT"

The service port number.

"ALAISES"

The services alias names are returned in an array.

### Returns

Returns information specified by the *option*.

#### Example 6.3. SysGetservbyport

```
/* the following examples came from a Linux laptop running Fedora */
SysGetservbyport(80, "TCP", "n")    -->  HTTP
SysGetservbyport(80, "TCP", "p")    -->  80
```

## 6.4. SysGettzname1

```
>>-SysGettzname1()------><
```

Returns the time zone name.

This function uses the **time.h** C header file to obtain the time zone name and is sensitive to the environment variable TZ.

### Parameter:

None.

### Returns

Returns the time zone name.

#### Example 6.4. SysGettzname1

```
say SysGettzname1()
```

## 6.5. SysGettzname2

```
>>-SysGettzname2()------><
```

Returns the daylight savings time zone name.

## Chapter 6. Name Lookup Functions

---

This function uses the `time.h` C header file to obtain the time zone name and is sensitive to the environment variable TZ.

### Parameter:

None.

### Returns

Returns the daylight savings time zone name.

#### Example 6.5. SysGettzname2

```
say SysGettzname2()
```

# Miscellaneous Functions

This chapter covers the available miscellaneous functions.

## 7.1. SysCrypt

```
>>-SysCrypt(str, salt)-----><
```

Returns an encrypted version of *str*.

This function uses the **crypt()** C API to perform the action.

### Parameter:

*str*

The string to be encrypted.

*salt*

The two character encryption salt.

### Returns

Returns the encrypted string or a zero-length string on an error.

#### Example 7.1. SysCrypt

```
/* encrypt a string */  
encstr = SysCrypt("String to encrypt.", "3A")
```

## 7.2. SysGetsid

```
>>-SysGetsid()-----><
```

Gets the current session id.

This function uses the **getsid()** C API to perform the action.

### Parameter:

None

### Returns

Returns the current sid or -1 on an error.

### Example 7.2. SysGetsid

```
/* get the session id */  
mysid = SysGetsid()
```

## 7.3. SysGeterrno

```
>>-SysGeterrno()-----><
```

Returns the errno numeric value.

### Parameter:

None

### Returns

Returns the numeric errno value.

### Example 7.3. SysGeterrno

```
/* get the errno */  
errno = SysGeterrno()
```

## 7.4. SysGeterrnomsg

```
>>-SysGeterrnomsg(errno)-----><
```

Returns a short description of the errno value.

### Parameter:

*errno*

The numeric errno value.

### Returns

Returns a short description of the errno value. If the message is not available it returns the string "Unknown".

#### Example 7.4. SysGeterrnomsg

```
/* get the errno message */
say SysGeterrnomsg(26)
```

## 7.5. SysGetsizeofptr

```
>>-SysGetsizeofptr()-----><
```

Gets the size (in bits) of a pointer.

This function uses the **sizeof(void \*)** C macro to perform the action.

#### Parameter:

None

#### Returns

Returns 32 or 64 in most cases.

#### Example 7.5. SysGetsizeofptr

```
/* get the pointer size */
addrmode = SysGetsizeofptr()
```

## 7.6. SysSetsid

```
>>-SysSetsid()-----><
```

Set the session id.

This function uses the **setsid()** C API to perform the action.

#### Parameter:

None.

### Returns

Returns the new sid or -1 on an error.

#### Example 7.6. SysSetsid

```
/* set the session id to zero */  
call SysSetsid 0
```

## 7.7. SysSignal

```
>>-SysSignal(signum, option)-----<<
```

Sets the disposition of a signal to either SIG\_IGN (ignore) or SIG\_DFL (default).



### Note

You should be VERY carefull when calling this function as it can cause problems with the Rexx interpreter. If you don't know what you are doing then you should not call this function.

This function uses the **signal()** C API to perform the action.

### Parameter:

#### *signum*

The signal number to change. This is an integer and cooresponds to the set of system signal numbers. The following is a partial list of valid values:

SIGHUP	1 Hangup (POSIX)
SIGINT	2 Terminal interrupt (ANSI)
SIGQUIT	3 Terminal quit (POSIX)
SIGILL	4 Illegal instruction (ANSI)
SIGTRAP	5 Trace trap (POSIX)
SIGIOT	6 IOT Trap (4.2 BSD)
SIGBUS	7 BUS error (4.2 BSD)
SIGFPE	8 Floating point exception (ANSI)
SIGKILL	9 Kill(can't be caught or ignored) (POSIX)
SIGUSR1	10 User defined signal 1 (POSIX)
SIGSEGV	11 Invalid memory segment access (ANSI)
SIGUSR2	12 User defined signal 2 (POSIX)
SIGPIPE	13 Write on a pipe with no reader, Broken pipe (POSIX)
SIGALRM	14 Alarm clock (POSIX)
SIGTERM	15 Termination (ANSI)
SIGSTKFLT	16 Stack fault
SIGCHLD	17 Child process has stopped or exited, changed (POSIX)
SIGCONT	18 Continue executing, if stopped (POSIX)

SIGSTOP	19	Stop executing(can't be caught or ignored) (POSIX)
SIGTSTP	20	Terminal stop signal (POSIX)
SIGTTIN	21	Background process trying to read, from TTY (POSIX)
SIGTTOU	22	Background process trying to write, to TTY (POSIX)
SIGURG	23	Urgent condition on socket (4.2 BSD)
SIGXCPU	24	CPU limit exceeded (4.2 BSD)
SIGXFSZ	25	File size limit exceeded (4.2 BSD)
SIGVTALRM	26	Virtual alarm clock (4.2 BSD)
SIGPROF	27	Profiling alarm clock (4.2 BSD)
SIGWINCH	28	Window size change (4.3 BSD, Sun)
SIGIO	29	I/O now possible (4.2 BSD)
SIGPWR	30	Power failure restart (System V)

*option*

An option specifying the signal action. The values are all case insensitive and only the first letter of the option value is checked. Allowed values are:

"DEFAULT"

The default action is to be set.

"IGNORE"

Ignore this signal.

**Returns**

Returns previous signal value. This is meaningless to the Rexx programmer.

**Example 7.7. SysSignal**

```
/* Cause alarm signals to be ignored */
call SysSignal 14, "ignore"

/* Cause terminal interrupts to take the default action */
call SysSignal 2, "default"

/* Cause HUPs to be ignored */
call SysSignal 1, "I"
```



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# Appendix A. Notices

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## Version 1.0

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# Appendix C. Revision History

**Revision 0-0**    **Tue Aug 7 2012**

**David Ashley**

Initial creation of book by publican



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