

# **24x7 Scheduler™ 6.1**

## **Multi-platform Edition**

### **JavaScript Reference**

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## About This Reference

This reference describes JavaScript language and extensions supported in 24x7 Scheduler Multi-platform Edition, an advanced cross-platform enterprise job scheduling and automation system. Information in this reference applies to the 24x7 Scheduler version 5.1 running on all supported operation systems. This reference contains information for experienced users of the 24x7 Scheduler and assumes that you have a working knowledge of JavaScript and also understand basic concepts of your operation system.

## Conventions Used in This Document

This section describes the style conventions used in this document.

### *Italic*

An *italic* font is used for filenames, URLs, emphasized text, and the first usage of technical terms.

### Monospace

A monospaced font is used for code fragments and data elements.

### **Bold**

A **bold** font is used for important messages, names of options, names of controls and menu items, and keys.

### Graphical marks



- This mark is used to indicate product specific options and issues and to mark useful tips.



- This mark is used to indicate important notes.

## Abbreviations and Terms

This guide uses common abbreviations for many widely used technical terms including FTP, HTTP, RAS, SQL, DBMS, SSH and other.

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# JavaScript Syntax

## JavaScript Statements

The statements used to control program flow in JavaScript are similar to statements available in Java and C. A statement can span several lines if needed, or several statements can be placed on the same line. A semicolon must be placed between all statements. Since JavaScript is not strict in its formatting, you must provide the line breaks and indentation to make sure the code is readable and easy to understand later.

### break

**Description:** Terminates the current for or while loop and passes control to the first statement after the loop.

**Syntax:**

```
while (condition)
{
    statements...
    if (condition) break;
    statements...
}
```

### comment

**Description:** Notes from the script author that are ignored by the interpreter. Single line comments are preceded by //. Multiple line comments begin with /\* and end with \*/.

### continue

**Description:** Passes control to the condition in a while loop and to the update expression in a for loop.

### for

**Description:** Creates a loop with three optional expressions enclosed in parentheses and separated by semicolons, followed by a set of statements to be executed during the loop:

**Syntax:**

```
for( initialExpression; condition; updateExpression)
{
    statements...
}
```

The initial expression is used to initialize the counter variable, which can be a new variable declared with var. The condition expression is evaluated on each pass through the loop. If the condition is true, the loop statements are executed. The update expression is used to increment the counter variable.

## for...in

**Description:** Iterates a variable for all of properties of an object:

**Syntax:**

```
for (variable in object)
{
    statements...
}
```

For each property, it executes the statement block.

## function

**Description:** Declares a JavaScript function with a name and parameters. To return a value, the function must include a return statement. A function definition cannot be nested within another function.

**Syntax:**

```
function name ([parameter] [..., parameter])
{
    statements...
}
```

## if...else

**Description:** A conditional statement that executes the first set of statements if the condition is true, and the statements following else if false. If...else statements can be nested to any level.

**Syntax:**

```
if (condition)
{
    statements...
}
[else
{
    statements...
}]
```

## return

**Description:** Specifies a value to be returned by a function.

**Syntax:**

```
return expression;
```

```
try {statements1} [catch (exception){statements2}]
```



## try...catch

**Description:** The try...catch statement is used to test a block of code for errors. The try block contains the code to be run, while the catch block contains the code to execute if there is an error. The exception argument is a variable in which to store the error.

**Syntax:**

```
try { ... statement block; } catch (er) { ... error handling block; }
```

**Example:** The following example attempts to FTP some file and generates an error if FTP fails. This error message is then displayed on the screen.

```
var error = "";

try {
    var server = "my server";
    var user = "test";
    var pass = "1111";
    FTP.deleteFile(server, user, pass, "/pub/1.txt, /pub/2.txt");
}
catch(error) {
    if(error == "Error 1")
        Scheduler.messageBox(error);
}
```

## var

**Description:** Declares a variable and optionally initializes it to a value. The scope of a variable is the current function or, when declared outside a function, the current document.

**Syntax:**

```
var variableName [=value] [..., variableName [=value]]
```

## while

**Description:** Repeats a loop while an expression is true.

**Syntax:**

```
while (condition)
{
    statements...
}
```

## with

**Description:** Establishes a default object for a set of statements. Any property references without an object are assumed to use the default object.

**Syntax:**

```
with (object)
{
    statements...
}
```

This statement is especially useful when applied to the Math object for a set of calculations. For example,

**Example:**

```
with (Math)
{
    var Value1 = cos(angle);
    var Value2 = sin(angle);
}
```

replaces

```
{
    var Value1 = Math.cos(angle);
    var Value2 = Math.sin(angle);
}
```

## Operators

JavaScript supports the following operators:

### Math

Operator	Meaning
+	Addition
-	Subtraction
*	Multiplication
/	Division
%	Modulus
++	Increment
--	Decrement
-	Negation

### Bitwise

Operator	Meaning
&	AND
~	NOT
	OR
^	exclusive OR
<<	Left shift
>>	Right shift
>>>	Right shift, fill with zeros

### Logical

Operator	Meaning
==	Equal
!=	No Equal
<	Less
<=	Less or Equal
>	Greater
>=	Greater or Equal
&&	AND
	OR
!	NOT
?	Conditional
,	Comma

## Operator Precedence

Precedence refers to the order in which compound operations are computed. Operators on the same level have equal precedence. Calculations are computed from left to right on all binary operations beginning with the operators at the top of the list and working down.

Call, member	.	[ ]	( )		
negation/increment	++	-	!	~	-
multiply/divide	*	/	%		
addition/subtraction	+	-			
shift	<<	>>	>>>		
relational	<	>	<=	>=	
equality	==	!=			
bitwise AND	&				
bitwise XOR	^				
bitwise OR					
logical AND	&&				
logical OR					
conditional	?:				
assignment	=	op=			
comma	,				

## JavaScript Objects

JavaScript is an object-oriented language, and as such, includes a set of built-in objects to represent the HTML document, especially form elements. Built-in objects can be accessed by both the client and server.

### Standard Objects

24x7 Scheduler Multi-platform Edition supports the following built-in standard JavaScript objects:

#### Array Object

**Description:** Contains an array of objects or values.

Array object supports the following properties and functions:

length	A read/write property indicating the current number of elements within the array. You may set this property to dynamically expand an array's length.
concat(val1, ...)	Concatenates all the argument values to the existing array, and returns the new array. Values can be another array.
join([separator])	Converts each element within the array to a string, and joins them into one large string. Pass in an optional separator as argument to be used to separate each array element. If none is passed, the default comma (',') is used.
pop( )	Deletes the last element within array and returns the deleted element. Original array is modified.
Push(..., ...)	Adds the argument values to the end of the array, and modifies the original array with the new additions. Returns the new length of the array.
Reverse( )	Reverses the order of all elements within the array. Original array is modified.
shift()	Deletes and returns the first element within the array. Original array is modified to account for the missing element (so 2nd element now becomes the first etc).
slice(start, [end])	Returns a "slice" of the original array based on the start and end arguments. The slice includes the new array referenced by the start index and up to but NOT including the end index itself. If "end" is not specified, the end of the array is assumed.
splice(startIndex, [how_many], [value1, ...])	Deletes array elements starting from startIndex, and replaces them with value1, value2 etc. Returns the elements deleted from array.
sort([SortFunction])	Sorts an array alphabetically and ascending. By passing in an optional Sort Function, you may sort numerically and by other criteria as well.
toSource()	Returns an array literal representing the specified array.
toString()	Returns a string representing the array and its elements.
unshift(value1, ...)	Adds the argument values to the beginning of the array, pushing existing arrays back. Returns the new length of the array. Original array is modified.
valueOf()	Returns the primitive value of the array.
shift()	Deletes and returns the first element within the array. Original array is modified to account for the missing element (so 2nd element now becomes the first etc).
slice(start, [end])	Returns a "slice" of the original array based on the start and end arguments. The slice includes the new array referenced by the start index and up to but NOT including the end index itself. If "end" is not specified, the end of the array is assumed.
splice(startIndex,	Deletes how_many array elements starting from startIndex, and replaces

[how_many], [value1, ...])	them with value1, value2 etc. Returns the elements deleted from array.
----------------------------	--

## String Object

**Description:** Contains a string of characters.

String object supports the following properties and functions:

length	This property returns the length of the string (# of characters).
charAt(x)	Returns the character at the "x" position within the string.
charCodeAt(x)	Returns the Unicode value of the character at position "x" within the string.
concat(v1, v2,...)	Combines one or more strings (arguments v1, v2 etc) into the existing one and returns the combined string. Original string is not modified.
fromCharCode(c1, c2,...)	Returns a string created by using the specified sequence of Unicode values (arguments c1, c2 etc). Method of String object, not String instance. For example: String.fromCharCode().
indexOf(substr, [start])	Searches and (if found) returns the index number of the searched character or substring within the string. If not found, -1 is returned. "Start" is an optional argument specifying the position within string to begin the search. Default is 0.
lastIndexOf(substr, [start])	Searches and (if found) returns the index number of the searched character or substring within the string. Searches the string from end to beginning. If not found, -1 is returned. "Start" is an optional argument specifying the position within string to begin the search. Default is string.length-1.
match(regexp)	Executes a search for a match within a string based on a regular expression. It returns an array of information or null if no match is found.
replace( regexp, replacetext)	Searches and replaces the regular expression portion (match) with the replaced text instead.
search(regexp)	Tests for a match in a string. It returns the index of the match, or -1 if not found.
slice(start, [end])	Returns a substring of the string based on the "start" and "end" index arguments, NOT including the "end" index itself. "End" is optional, and if none is specified, the slice includes all characters from "start" to end of string.
split(delimiter, [limit])	Splits a string into many according to the specified delimiter, and returns an array containing each element. The optional "limit" is an integer that lets you specify the maximum number of elements to return.
substr(start, [length])	Returns the characters in a string beginning at "start" and through the specified number of characters, "length". "Length" is optional, and if omitted, up to the end of the string is assumed.
substring(from, [to])	Returns the characters in a string between "from" and "to" indexes, NOT including "to" "To" is optional, and if omitted, up to the end of the string is assumed.
toLowerCase()	Returns the string with all of its characters converted to lowercase.
toUpperCase()	Returns the string with all of its characters converted to uppercase.

## Boolean Object

**Description:** This object is used to turn a value that is not boolean into a value that is boolean which is true or false.

JavaScript supports the following functions of the Boolean object:

toString()	Returns a string specifying the value of the Boolean, in this case, "true" or "false."
valueOf()	Returns the primitive value of a Boolean object.

## Number Object

**Description:** The number object must have an instance created in order to use it. The number object has no specific functions. The Number object exposes the following properties:

MAX\_VALUE - The largest value that may be used in JavaScript.

MIN\_VALUE - The smallest value that may be used in JavaScript.

NaN - Used to indicate a value is not a number. A number object may be set to this value to indicate that it is not really a number, for example:

```
if (Month < 1 || Month > 12)
{
    Month = Number.NaN;
}
```

NEGATIVE\_INFINITY - The value returned if a negative overflow occurs. Any numeric value divided by this is 0.

POSITIVE\_INFINITY - The value returned if a positive value overflow occurs. Any numeric value divided by this is 0.

prototype - For creating more properties.

## Math Object

**Description:** Provides numerical constants and mathematical functions.

JavaScript supports the following mathematical functions (methods of the Math object):

Math.abs(a)	the absolute value of a
Math.acos(a)	arc cosine of a
Math.asin(a)	arc sine of a
Math.atan(a)	arc tangent of a
Math.atan2(a,b)	arc tangent of a/b
Math.ceil(a)	integer closest to a and not less than a
Math.cos(a)	cosine of a
Math.exp(a)	exponent of a
Math.floor(a)	integer closest to and not greater than a
Math.log(a)	log of a base e
Math.max(a,b)	the maximum of a and b

Math.min(a,b)	the minimum of a and b
Math.pow(a,b)	a to the power b
Math.random()	pseudorandom number in the range 0 to 1
Math.round(a)	integer closest to a
Math.sin(a)	sine of a
Math.sqrt(a)	square root of a
Math.tan(a)	tangent of a

## Date Object

**Description:** Stores a date in the number of milliseconds since 1/1/1970, 00:00:00, and returns a date string in the format "Thu, 11 Jan 1996 06:20:00 GMT".

Date object supports the following constructors:

Date()	Use the current date and time to create an instance of the object date.
Date(dateString)	Use the date specified by the string to create the instance of the date object. String format is "month day, year hours:minutes:seconds".
Date(year, month, day)	Create an instance of date with the specified values. Year is 0 to 99.
Date(year, month, day, hours, minutes, seconds)	Create an instance of date with the specified values.

## Extension Objects

24x7 Scheduler Multi-platform Edition extends standard set of JavaScript objects with additional objects specific to scheduler operations and process management. All these functions are described in detail in the [JavaScript Automation Extensions](#) topic. The following extension objects are supported:

### Process Object

**Description:** Provides functions for starting, stopping and listing system processes. For more information see [Process Operations](#) topic.

### RunAndWaitInfo Object

**Description:** Helper object provides additional functions and attributed in process management operations. For more information see [runAndWait](#) topic.

### Directory Object

**Description:** Provides functions for manipulating file directories and listing directory contents. For more information see [Directory Operations](#) topic.



### File Object

**Description:** Provides functions and for manipulating files and reporting file attributes, including file creating, update, deletion and many other. For more information see [High-Level File Operations](#) and [Low-Level File Operations](#) topics.

### FTP Object

**Description:** Provides functions for performing common FTP operations, also functions for replicating files over FTP connections. For more information see [FTP Operations](#) topic.

### CompareInfo Object

**Description:** Helper object provides additional functions and attributed for FTP operations. For more information see [compareDir](#) topic.

### Mail Object

**Description:** Provides functions for sending email messages including messages with file attachments. For more information see [Mail Operations](#) topic.

### Scheduler Object

**Description:** Provides many functions for starting and stopping jobs, manipulating job properties, writing messages to the system job log, and other. For more information see [Scheduler Operations](#) topic.

### Web Object

**Description:** Provides functions for performing common Web operations, also common functions for converting String, JSON, and XML data. For more information see [Web Operations](#) topic.

## Reserved Words

The following words cannot be used as user objects or variables in coding JavaScript. Not all are currently in use by JavaScript-they are reserved for future use.

abstract	for	public
boolean	function	return
break	goto	short
byte	if	Static

case	implements	super
catch	import	Switch
char	in	synchronize
const	instanceOf	this
continue	int	throw
default	interface	Throws
do	long	transient
double	native	true
else	new	try
extends	null	var
false	package	void
final	private	while
finally	protected	with
float		

## JavaScript Automation Extensions

24x7 Scheduler provides a predefined set of embedded JavaScript automation objects and functions. To access these functions you can use already defined global JavaScript variables 'File', 'Process', 'Directory', 'Scheduler'. For example,

```
var pid = Process.run("notepad");
Scheduler.messageBox("pid: " + pid);
```

This job will run notepad application and show message box with the internal process ID.

## Process Operations

### run

**Prototype:** int Process.run(String command)

**Description:** Runs the specified program or command.

**Parameters:**

command – is a string whose value is the full or partial path and filename of a shell command or other executable file.

**Return:** returns the internal process ID. This ID can be used only in this job scope to kill the created process, for example.

**Example:**

```
var pid = Process.run("/bin/cp /home/trade/db.dat /home/backup");
```

### runAndWait

**Prototype:** RunAndWaitInfo Process.runAndWait(String command, int timeout)

**Description:** Runs the specified program or command and enters an efficient wait state until this process finishes or the timeout interval elapses. In the latter case, the 24x7 Scheduler forcibly terminates the process.

**Parameters:**

command – is a string whose value is the full or partial path and filename of a shell command or other executable file.

timeout – A number of milliseconds whose value is the maximum time interval within which you allow the specified process to run. Use 0 timeout to allow infinite waiting.

**Return:** returns **RunAndWaitInfo** structure that has the following functions:

String getOutput() – returns a string variable that receives the data written by the created process to the standard error and standard output.

int getProcessId() – returns the internal process ID.

**Example:**

```
var runInfo = Process.runAndWait("/bin/ls", 0);
Scheduler.messageBox("output: " + runInfo.getOutput());
```

**kill****Prototype:** Process.kill(int pid)**Description:** Terminates process by the internal pid.**Parameters:**

pid – the internal pid of the process to kill.

**Example:**

```
var pid = Process.run("/bin/sleep 60");
if (Scheduler.messageBox('Do you want to kill the program?'))
{
    Process.kill(pid);
}
```

**list****Prototype:** String Process.list()**Description:** Returns list of operation system processes including process IDs and names. Do not confuse system process IDs and names with IDs and names of 24x7 Scheduler jobs and internal processes.**Return:** Returns process list as a string. Each process is separated by a new line**Example:**

```
var processList = Process.list();
Scheduler.messageBox(processList);
```

## Directory Operations

**dir****Prototype:** String Directory.dir(String fileMask)**Description:** Returns comma-separated list of files in the current working directory.**Parameters:**

fileMask - a string whose value is the file mask to use for searching (\* - any word, ? – any symbol).

**Return:** Returns comma-separated list of files in the current working directory.

**Example:**

```
var files = Directory.dir("*.log");
Scheduler.messageBox("Log files: " + files);
```

## remoteDir

**Prototype:** String Dir.remoteDir(String agentName, String fileMask, String user, String password)

**Description:** Returns comma-separated list of files in the specified directory on the remote computer.

**Parameters:**

agentName - a string whose value is the name of the remote agent profile to use for remote computer connection.

fileMask - a string whose value is the file mask to use for searching (\* - any word, ? – any symbol).

user - a string whose value is the user name for authentication on the remote system.

Password - a string whose value is the user password for authentication on the remote system.

**Return:** Comma-separated list of files in the remote directory.

**Example:**

```
var files = Directory.remoteDir("agent DB2 server",
                               "/home/db2/logs/*.log",
                               "oscar", "secret");
Scheduler.messageBox("Log files: " + files);
```

## getWorkDir

**Prototype:** String Directory.getWorkDir()

**Description:** Reports name of the current working directory. The default working directory is the 24x7 Scheduler installation directory.

**Return:** Returns full path to the working directory.

**Example:**

```
var dir = Directory.getWorkDir();
Scheduler.messageBox("Working directory: " + dir);
```

## setWorkDir

**Prototype:** Directory.setWorkDir(String path)

**Description:** Changes current working directory. Each JavaScript job session runs in its own environment and has session logical working directory. Setting of working directory affects [Directory.dir](#), [Directory.getWorkDir](#), [Process.run](#), [Process.runAndWait](#) functions. It does not affect high-level or low-level operations.

**Parameters:**

path - a string whose value is the full or relative path to the new working directory.

**Example:**

```
Directory.setWorkDir("/home/test");  
var dir = Directory.getWorkDir();  
Scheduler.messageBox("Working directory: " + dir);
```

## clean

**Prototype:** void Directory.clean(String path)

**Description:** Deletes all files and subdirectories recursively in the specified directory.

**Parameters:**

path - A string whose value is the full or relative path to the directory.

**Example:**

```
Directory.clean("/home/test");
```

## create

**Prototype:** void Directory.create(String path)

**Description:** Creates the specified directory and recursively all subdirectories in the specified path.

**Parameters:**

path - A string whose value is the full or relative path to the directory.

**Example:**

```
Directory.create("/home/test/dir1/dir2/dir3");
```

## remove

**Prototype:** void Directory.remove(String path)

**Description:** Removes the specified directory and recursively all files and subdirectories in the specified path.

**Parameters:**

path - A string whose value is the full or relative path to the directory.

**Example:**

```
Directory.remove("/home/test/dir1 ");
```

## move

**Prototype:** void Directory.move(String sourcePath, String targetPath)

**Description:** Moves the specified directory and all its content to a different location. The new location can be on the same or different drive, volume, and/or file-system. If the target path already exists and non-empty, its content is replaced with the moved files and directories.

**Parameters:**

sourcePath - A string whose value is the full or relative path to the directory to move.

targetPath - A string whose value is the full or relative path to the new location.

**Example:**

```
Directory.move("C:\\data\\dir1", "D:\\archive");
```

## copyMerge

**Prototype:** void Directory.copyMerge(String sourcePath, String targetPath)

**Description:** Copies the specified directory and all its content to a different location. The target location can be on the same or different drive, volume, and/or file-system. If the target path doesn't exist, it is created. If the target path already exists, the content is merged - files from the source directory overwrite files with the same names in the target directory; files that exist in the target directory only, remain in that directory.

**Parameters:**

sourcePath - A string whose value is the full or relative path to the directory to copy.

targetPath - A string whose value is the full or relative path to the target location.

**Example:**

```
Directory.copyMerge("C:\\data\\dir1", "D:\\archive");
```

## copyReplace

**Prototype:** void Directory.copyReplace(String sourcePath, String targetPath)

**Description:** Copies the specified directory and all its content to a different location. The target location can be on the same or different drive, volume, and/or file-system. If the target path doesn't exist, it is created. If the target path already exists, the content is replaced with files and directories from the target directory.

**Parameters:**

sourcePath - A string whose value is the full or relative path to the directory to copy.

targetPath - A string whose value is the full or relative path to the target location.

**Example:**

```
Directory.copyReplace("C:\\data\\dir1", "D:\\archive");
```

## exists

**Prototype:** boolean Directory.exists(String dirName)

**Description:** Tests for existence of the specified directory.

**Parameters:**

dirName - A string whose value is the full or relative path to the directory to test.

**Return:** Returns TRUE if file exists or FALSE otherwise.

**Example:**

```
var dirFound = Directory.exists("/var/logs/load");  
if (dirFound ) Scheduler.messageBox("Directory found");
```

## size

**Prototype:** long Directory.size(String path)

**Description:** Reports total size of all files in the specified directory.

**Parameters:**

path - A string whose value is the full or relative path to the directory.

**Return:** Returns total size of all files.

**Example:**

```
var totalSize = Directory.size("/var/messages");
```



## zip

**Prototype:** void Directory.zip(String zipName, String path)

**Description:** Zips all files and recursively all directories in the specified path into a ZIP file.

**Parameters:**

zipName - A string whose value is the name of the target zip file.

path - A string whose value is the full or relative path to the directory.

**Example:**

```
Directory.zip("/home/archive/latest.zip", "/home/incoming/transactions");
Directory.clean("/home/incoming/transactions ");
```

## High-Level File Operations

### connectFile

**Description:** This high-level file operation is used to open Microsoft Excel and Microsoft Access files for read/write operations and work with them using SQL queries as if Excel worksheets were database systems containing tables. For more information see [connectFile](#) topic in the Database Operations chapter.

### exists

**Prototype:** boolean File.exists(String fileName)

**Description:** Checks if the specified file exists.

**Parameters:**

fileName - a string whose value is the name of the file that you want to check.

**Return:** Returns TRUE if file exists or FALSE otherwise

**Example:**

```
var fileFound = File.exists("/var/mail/message.txt");
if (fileFound ) Scheduler.messageBox("File found");
```

## remove

**Prototype:** File.remove(String fileName)

**Description:** Deletes the specified file. The file must exist.

**Parameters:**

fileName - a string whose value is the name of the file that you want to delete.

**Example:**

```
File.remove("/var/mail/message.txt");  
Scheduler.messageBox("File has been deleted");
```

## rename

**Prototype:** File.rename(String fileOldName, String fileNewName)

**Description:** Renames the specified file. The file must exist.

**Parameters:**

fileOldName - a string whose value is the name of the file that you want to rename.

fileNewName - a string whose value is the new name.

**Example:**

```
File.rename("/var/mail/message.txt", "/var/mail/message.old");  
Scheduler.messageBox("File has been renamed");
```

## copy

**Prototype:** File.copy(String sourceFileName, String targetFileName)

**Description:** Copies the specified file. The file must exist. The new file can be created in the same or different directory.

**Parameters:**

sourceFileName - a string whose value is the name of the file that you want to copy.

targetFileName - a string whose value is the name of the target file.

**Example:**

```
File.copy("/var/mail/message.txt", "/var/mail/message.bak");  
Scheduler.messageBox("File has been copied");
```

## move

**Prototype:** File.move(String sourceFileName, String targetFileName)

**Description:** Moves the specified file. The file must exist. The old file is copied first and if the copy operation success the old file is deleted.

**Parameters:**

sourceFileName - a string whose value is the name of the file that you want to move.

targetFileName - a string whose value is the name of the target file.

**Example:**

```
File.move("/var/mail/message.txt", "/var/mail.bak/message.txt");
Scheduler.messageBox("File has been moved");
```

## dateTime

**Prototype:** Date File.dateTime(String fileName)

**Description:** Reports the date and time that a file was last modified.

**Parameters:**

filename - a string whose value is the file name.

**Return:** Returns [Date](#) object with the following functions:

int getYear() – returns year.

int getMonth() – returns month.

int getDate() – returns day.

int getHour() – returns hour.

int getMinute() – returns minute.

int getSecond() – returns second.

**Example:**

```
var dateTime = File.dateTime('/var/log/messages');
Scheduler.messageBox(dateTime.getYear() + "." + dateTime.getMonth() + "." +
    dateTime.getDate() + " " + dateTime.getHour() + ":" +
    dateTime.getMinute() + ":" + dateTime.getSecond());
```

## save

**Prototype:** File.save(String fileName, String text)

**Description:** Saves text data in the specified file.

**Parameters:**

fileName - a string variable whose value is the file name into which you want to save the text.

text - a string whose value is the data want to save in the file.

**Example:**

```
var text = "The first line\nThe second line";  
File.save("/home/scheduler/test.txt", text);
```

## size

**Prototype:** long File.size(String fileName)

**Description:** Reports the length of a file in bytes.

**Parameters:**

fileName - a string whose value is the name of the file whose length you want to obtain. If file is not located in the current working directory, you must specify the fully qualified file name.

**Return:** Returns length of the file.

**Example:**

```
var fileSize = File.size("/var/log/messages");  
Scheduler.messageBox("log file size: " + fileSize);
```

## checksum

**Prototype:** long File.checksum(String fileName)

**Description:** Reports file CRC checksum.

**Parameters:**

fileName - A string whose value is the name of the file.

**Return:** Returns CRC checksum of the file.

**Example:**

```
var fileCRC = File.checksum("/var/log/messages");  
Scheduler.messageBox("Checksum: " + fileCRC);
```

## splitName

**Prototype:** String[2] File.splitName(String fileFullName)

**Description:** Separates file path part and file name part for a given full file name or file mask.

**Parameters:**

fileName - a string whose value is the full or partial file name.

**Return:** Returns string array containing 2 elements: element with index 0 contains file path, element with index 1 contains file name.

**Example:**

```
var parts = File.splitName("/home/data/archive/file1.gz");
Scheduler.messageBox("File path: " + parts[0]);
Scheduler.messageBox("File name: " + parts[1]);
```

## readAll

**Prototype:** String File.readAll(String fileName)

**Description:** Loads entire file contents into script variable.

**Parameters:**

fileName - a string whose value is the name of the file that you want to read.

**Return:** Returns the buffer with file contents

**Example:**

```
var content = File.readAll("/var/mail/message.txt");
Scheduler.messageBox(content);
```

## transfer

**Prototype:** void File.transfer(String agentName, String sourceFile, String targetFile, String user, String password)

**Description:** Copies the specified file from local to remote system. The file is automatically compressed and encrypted on the local system, and then after transmission it is automatically decrypted and decompressed on the remote system.

**Parameters:**

agentName - a string whose value is name of the remote agent profile to connect to.

sourceFile – a string whose value is the name of the file on the local system of network share to transfer.

targetFile - a string whose value is the name of the file on the remote system.

user – a string whose value is the user name for authentication on the remote system.

password – a string whose value is the user password for authentication on the remote system.

**Return:** None

**Example:**

```
File.transfer("RemoteServer", "c:\\data\\data01.csv",
             "/home/oracle/data/data01.csv", "oscar" , "secret");
```

## transferEx

**Prototype:** void File.transferEx(String agentName, String direction, String[] sourceFiles, String[] targetFiles, String user, String password)

**Description:** Copies the specified files from local to remote system or from remote to local. The files are automatically compressed and encrypted on the source system, and then after transmission, they are automatically decrypted and decompressed on the target system.

**Parameters:**

agentName - a string whose value is name of the remote agent profile to connect to.

direction - a string constant specifying direction in which to transfer the specified files. The value must be either [FromRemote](#) or [ToRemote](#).

SourceFiles[ ] – a string array of names of files to transfer."/>

TargetFiles[ ] – a string array of names of files to be updated or created on the target system. The number of files in this array must be the same as the number of files in the sourceFiles array. File names and locations can differ from the source.

user – a string whose value is the user name for authentication on the remote system.

password – a string whose value is the user password for authentication on the remote system.

**Return:** None

**Example:**

```
var srcFiles = new Array();
srcFiles[0] = "/home/oracle/data/data01.csv";
srcFiles[1] = "/home/oracle/data04/format.txt";
var dstFiles = new Array();
dstFiles[0] = "c:\\data\\data01.csv";
dstFiles[1] = "c:\\data\\format.txt";

File.transferEx("RemoteServer", "FromRemote", srcFiles, dstFiles,
               "oscar" , "secret");
```

## unzip

**Prototype:** void File.unzip(String zipName, String destDir)

**Description:** Unzips files from the specified ZIP archive. The specified ZIP file can have any extension but must be in the standard ZIP format.

**Parameters:**

zipName - a string whose value is the name of the zip file to unzip.

destFile – a string whose value is the name of the file on the local system or network share to transfer.

**Return:** None

**Example:**

```
File.unzip( "c:\\data\\data01.zip", "c:\\data\\unzipped" );
```

## zip

**Prototype:** void File.zip(String zipName, String files)

**Description:** Zips one or multiple files to the specified ZIP file.

**Parameters:**

zipName - a string whose value is the name of the target zip file.

files – a string whose value is the comma-separated list of names of files to zip.

**Return:** None

**Example:**

```
File.zip( "c:\\backup\\data@T"yyyyymmdd".zip",  
         "c:\\data\\file1,c:\\data\\file2,c:\\data\\file3" );
```

## zipEx

**Prototype:** void File.zipEx(String zipName, String[] files)

**Description:** Zips one or multiple files to the specified ZIP file.

**Parameters:**

zipName - a string whose value is the name of the target zip file.

files[ ] – a string array of names of files to zip.

**Return:** None

**Example:**

```
var srcFiles = new Array();  
srcFiles[0] = "/home/oracle/data/data01.csv";  
srcFiles[1] = "/home/oracle/data04/data02.csv";  
srcFiles[2] = "/home/oracle/data04/format.txt";  
File.zipEx( "/home/archive/data@T"yyyyymmdd".zip", srcFiles );
```

## Low-Level File Operations

### open

**Prototype:** int File.open(String fileName, String fileAccess, boolean append)

**Description:** Opens the specified file for reading or writing and assigns it a unique file number. You use this number to identify the file when you read, write, or close the file.

**Parameters:**

fileName - a string whose value is the name of the file you want to open. If fileName is not in the operating system's search path, you must enter the fully qualified name.

fileAccess – a string constant whose value specifies whether the file is opened for reading or writing. Values are:

- "Read" - Read-only access
- "Write" - Write-only access
- "ReadWrite" - Both read and write access

append - A boolean whose value specifies whether existing data in the file is overwritten when file is opened for write operation. 'append' is ignored if the fileAccess argument is "Read". Values are:

- True - Write data to the end of the file.
- False - Replace all existing data in the file.

**Return:** Returns the internal file number assigned to the opened file.

**Example:**

```
var data = "1234567890";
File.save("test.txt", data);
var fileNumber = File.open("test.txt", "Read", false);
var read = File.read(fileNumber, 4);
Scheduler.messageBox("read 4 symbols: " + read);
File.close(fileNumber);
```

### read

**Prototype:** String File.read(int fileNumber, int bytes)

**Description:** Reads data from the file associated with the specified file number, which was assigned to the file with the [File.open](#) operation.

**Parameters:**

fileNumber - a number whose value is the file number previously assigned to the file when it was opened by File.open operation.

Bytes - a number whose value indicates how many bytes you want to read from the file.

**Return:** returns a string variable with the read data

**Example:**

```
var data = "1234567890";
```



```
File.save("test.txt", data);
var fileNumber = File.open("test.txt", "Read", false);
var read = File.read(fileNumber, 4);
Scheduler.messageBox("read 4 symbols: " + read);
File.close(fileNumber);
```

## write

**Prototype:** File.write(int fileNumber, String data)

**Description:** Writes data to the file associated with the specified file number, which was assigned to the file with the [File.open](#) operation.

**Parameters:**

fileNumber a number whose value is the file number previously assigned to the file when it was opened by File.open operation.

data - a string whose value is the text that you want to write to the file.

**Example:**

```
var data = "1234567890";
File.save("test.txt", data);
var fileNumber = File.open("test.txt", "ReadWrite", true);
File.write(fileNumber, "_appended_string");
var read = File.readAll("test.txt");
Scheduler.messageBox("modified file: " + read);
File.close(fileNumber);
```

## close

**Prototype:** File.close(int fileNumber)

**Description:** Closes the file associated with the specified file number. The file number was assigned to the file with the [File.open](#) operation.

**Parameters:**

fileNumber - the number assigned to the file you want to close. The File.open operation returns the file number when it opens the file.

**Example:**

```
var fileNumber = File.open("log.txt", "ReadWrite", true);
File.write(fileNumber, "log message");
File.close(fileNumber);
```

## getPos

**Prototype:** int File.getPos(int fileNumber)

**Description:** Reports current position in the specified file previously opened by [File.open](#) operation.

**Parameters:**

fileNumber - the file number previously assigned to the file when it was opened by File.open operation.

**Return:** returns the file position after the read/write operation or zero if no operation has been performed after file opening.

**Example:**

```
var data = "1234567890";
File.save("test.txt", data);
var fileNumber = File.open("test.txt", "ReadWrite", true);
File.write(fileNumber, "_appended_string");
var filePos = File.getPos(fileNumber);
Scheduler.messageBox("Current file position: " + filePos);
File.close(fileNumber);
```

## setPos

**Prototype:** File.setPos(int fileNumber, int pos, String origin)

**Description:** Moves the file pointer to the specified position in a file previously opened by [File.open](#) operation. The file pointer is the position in the file at which the next read or write begins.

**Parameters:**

fileNumber - the file number previously assigned to the file when it was opened by File.open operation.

pos – numeric position to be set

origin - a string constant whose value specifies from where you want to set the position. Values are:

- "START" - At the beginning of the file.
- "CURRENT" - At the current position.
- "END" - At the end of the file.

**Example:**

```
var data = "1234567890";
File.save("test.txt", data);
var fileNumber = File.open("test.txt", "ReadWrite", false);
File.setPos(fileNumber, 5, "START");
File.write(fileNumber, "***");
var read = File.readAll("test.txt");
Scheduler.messageBox("modified file: " + read);
File.close(fileNumber);
```

## Database Operations

### connect

**Prototype:** void Database.connect(String profile)

**Description:** Establishes database connection using the specified database profile.



**Important Notes:**

- Database.connect method must be executed before other database actions can be processed.
- One job may have only one database connection open at a time. However, multiple jobs may have multiple database connections opened simultaneously. The same job can also open and close multiple connections sequentially.
- All other database methods executed after Database.connect are sent to the database specified in the profile.
- You are responsible for closing database connections. Failure to close connections may lead to resource leaks. Use [Database.disconnect](#) method to close previously opened connection.

**Parameters:**

profile - A string whose value is the name of the profile defined in system settings.

**Examples:**

```
// connect to database server and execute stored procedure
Database.connect( "PRODUCTION" );
Database.execute( "CALL MySchema.MyStoredProcedure('param1', 'param')" );
//retrieve some values from the database
var newVal = Database.retrieve( "SELECT * FROM MySchema.NyTable " +
                               "WHERE date_idx = trunc(sysdate)");
// disconnect from database server and save results in a local file
Database.disconnect();
File.save( "my_file.txt", newVal );
```

### disconnect

**Prototype:** void Database.disconnect()

**Description:** Disconnects from the database server.

**Parameters:**

None – this method has no parameters.

**Examples:**

```
// connect to database server and execute stored procedure
Database.connect( "PRODUCTION" );
Database.execute( "CALL MySchema.MyStoredProcedure('param1', 'param')" );
//retrieve some values from the database
var newVal = Database.retrieve( "SELECT * FROM MySchema.NyTable " +
                               "WHERE date_idx = trunc(sysdate)");
// disconnect from database server and save results in a local file
```

```
Database.disconnect( );  
File.save( "my_file.txt", newVal );
```

## connectFile

**Prototype:** void Database.connectFile(String fileName, String fileType)

**Description:** Establishes file-based database connection using the specified file name and type. **This method can be used with Microsoft Excel and Microsoft Access files only.** This method can be called on Windows based systems only. The Excel and Access interfaces implemented in 24x7 depend on the availability of Excel and Access database drivers, which are pre-installed by default on all Windows systems. Refer to Microsoft documentation for the functions and SQL command syntax supported by the version of the driver(s) installed on your system.



### Important Notes:

- Database.connectFile method can be used on Windows based systems only. be executed before other database actions can be processed.
- Database.connectFile method must be executed before other database actions can be processed.
- One job may have only one database connection open at a time. However, multiple jobs may have multiple database connections opened simultaneously. The same job can also open and close multiple connections sequentially.
- All other database methods executed after Database.connectFile are sent to the database specified in the profile.
- You are responsible for closing database connections. Failure to close connections may lead to resource leaks. Use [Database.disconnect](#) method to close previously opened connection.

### Parameters:

fileName - A string whose value is the fully qualified name of the file to connect to.

fileType - A string whose value is the type of the file to connect to. This parameter controls type of the database driver the script engine will attempt to load and use for the following database operations. The supported values are:

- Excel
- Access

### Examples:

```
// connect to Excel file and retrieve data from worksheet Transactions  
// for a given store  
Database.connectFile( "C:\\ExlFiles\\Trans\\August\\Store1.xls", "Excel" );  
//retrieve records for August 15  
var records = Database.retrieve( "SELECT * FROM [Transactions] " +  
                                "WHERE [Store Name] = 'Store 1'");  
// disconnect from the Excel file and save results in a local text file  
Database.disconnect( );  
File.save( "my_file.txt", records );
```

## execute

**Prototype:** int Database.execute(String sql)

**Description:** Executes SQL statement that does not produce a result set.

**Parameters:**

sql - A string whose value is a valid SQL command that you want to send to the database.

**Return:** Returns number of records affected by the executed database command. This value is reported by the database server and makes sense only for commands updating, inserting or deleting data in the database.

**Examples:**

```
// connect to database server and execute stored procedure
Database.connect( "PRODUCTION" );
Database.execute( "CALL MySchema.MyStoredProcedure('param1', 'param')" );
// disconnect from the database
Database.disconnect( );
```

## retrieve

**Prototype:** String Database.retrieve(String sql)

**Description:** Retrieves data from the database.



**Important Notes:** Do not use this command to retrieve large volumes of data because the returned data is stored in memory. If you need to process large data volumes, use [Database.export](#) method.

**Parameters:**

sql - A string whose value is a valid SQL command that you want to send to the database and expect to return results. The command could be specified in a form of SELECT statement, a database stored procedure call, or a SQL batch, if supported by your database server.

**Return:** Returns result set as a tab-separated multi-line data value or a single data value, in case the command returns only a single value.



**Note:** NULL values are returned as empty strings. All non-string values are converted to string equivalents using default data conversion rules for the system running the scheduler and may depend on your local regional settings.

**Examples:**

```
// connect to database server and execute stored procedure
Database.connect( "PRODUCTION" );
var someValue = Database.retrieve("SELECT max(ColX) FROM MySchema.NyTable " +
                                "WHERE date_idx = trunc(sysdate)");
// disconnect from the database
Database.disconnect( );
```

## exportToFile

**Prototype:** void Database.exportToFile(String command, string localFile [, *String separator*])

**Description:** Retrieves data from the database and saves it into a local file.

**Parameters:**

command - A string whose value is either a valid SQL command that you want to send to the database and expect to return results or a name of a database table or view. The command could be in a form of SELECT statement, database stored procedure call or a SQL batch. In case the specified command consists of a single word, it is assumed to be a table or view name and the required SQL query is constructed automatically using this name.

localFile - A string whose value is the name of the file into which you want to write the exported data.

separator - This optional parameter can be used to specify column separator symbol(s). If not specified, tab character is used by default.

**Return:** Returns number of records exported.

**Examples:**

```
// connect to database server and execute stored procedure
Database.connect( "PRODUCTION" );
//retrieve values from the database using complete query
Database.exportToFile( "SELECT * FROM MyTable WHERE colA = 1 ORDER BY colB",
                      "/home/data_exports/data.txt" );
//retrieve values from the database using table name
Database.exportToFile( "MyTable", "/home/data_exports/mytable_data.txt" );
// disconnect from the database
Database.disconnect( );
```

## FTP Operations

### appendFile

**Prototype:** FTP.appendFile(String server, String user, String password, String source, String target)

**Description:** Transfers a file from local system to the specified remote FTP server and stores it under the specified file name, creating a new remote file in the process or appending data to an existing remote file.

**Parameters:**

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)

user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

source - A string whose value is the name of the file to transfer from the local system

target - A string whose value is the name of the file to create on the remote system. Both source and target file can be either partially or fully qualified file names relative to the current directory.



**Note:** To transfer multiple files in one pass, specify the source files as a comma separated list. The target files must be also specified as a comma separated list. Make sure to specify the same number of file names in the source and target file lists.

**Example:**

```
var server = "my server";
var user = "test";
var pass = "1111";
FTP.appendFile(server, user, pass, "c:\\1.txt, c:\\2.txt",
    "/pub/1.txt, /pub/2.txt");
```

## putFile

**Prototype:** FTP.putFile(String server, String user, String password, String source, String target)

**Description:** Transfers a file from local system to the specified remote FTP server and stores it under the specified file name, creating a new remote file in the process.

**Parameters:**

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)

user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

source - A string whose value is the name of the file to transfer from the local system

target - A string whose value is the name of the file to create on the remote system.



**Note:** To transfer multiple files in one pass, specify the source files as a comma separated list. The target files must be also specified as a comma separated list. Make sure to specify the same number of file names in the source and target file lists.

**Example:**

```
var server = "my server";
var user = "test";
var pass = "1111";
FTP.putFile(server, user, pass, "c:\\1.txt", "/pub/1.txt");
```

## getFile

**Prototype:** FTP.getFile(String server, String user, String password, String source, String target)

**Description:** Retrieves a file from the specified FTP server and stores it under the specified file name, creating a new local file in the process.

**Parameters:**

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)

user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

source - A string whose value is the name of the file to retrieve from the remote system.

target - A string whose value is the name of the file to create on the local system.



**Note:** To transfer multiple files in one pass, specify the source files as a comma separated list. The target files must be also specified as a comma separated list. Make sure to specify the same number of file names in the source and target file lists.

#### Example:

```
var server = "my server";
var user = "test";
var pass = "1111";
FTP.getFile(server, user, pass, "1.txt", "e:\\1.txt");
FTP.getFile(server, user, pass, "/pub/INSTALL", "e:\\INSTALL");
```

## resumeFile

**Prototype:** FTP.resumeFile(String server, String user, String password, String source, String target)

**Description:** Retrieves a file from the specified FTP server and stores it under the specified file name, creating a new local file in the process or appending to local file if it already exists. FTP.resumeFile statement is identical to [FTP.getFile](#) statement except that it attempts to resume broken downloads or perform incremental downloads of files whose size have increased since the last download.

#### Parameters:

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)

user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

source - A string whose value is the name of the file to retrieve from the remote system.

target - A string whose value is the name of the file to create on the local system.



**Note:** To transfer multiple files in one pass, specify the source files as a comma separated list. The target files must be also specified as a comma separated list. Make sure to specify the same number of file names in the source and target file lists.

#### Example:

```
var server = "my server";
var user = "test";
var pass = "1111";
FTP.resumeFile(server, user, pass, "1.txt", "e:\\1.txt");
```



## renameFile

**Prototype:** FTP.renameFile(String server, String user, String password, String oldname, String newname)

**Description:** Renames the specified remote file on the specified FTP server.

**Parameters:**

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)

user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

oldname - A string whose value is the name of the file to rename.

newname - A string whose value is the new name of the file.

**Example:**

```
var server = "my server";
var user = "test";
var pass = "1111";
FTP.renameFile(server, user, pass, "/pub/1.txt", "/pub/2.txt");
```

## deleteFile

**Prototype:** FTP.deleteFile(String server, String user, String password, String file)

**Description:** Renames the specified remote file on the specified FTP server..

**Parameters:**

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)

user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

file- A string whose value is the name of the file that you want to delete.



**Note:** FTP.deleteFile statement can delete multiple files in one pass. This is more efficient than calling FTP.deleteFile for each file separately, which requires a separate FTP connection for every file. To delete multiple files in one pass, specify multiple files names in the file parameter as a comma separated list.

**Example:**

```
var server = "my server";
var user = "test";
var pass = "1111";
FTP.deleteFile(server, user, pass, "/pub/1.txt, /pub/2.txt");
```

## fileSize

**Prototype:** int FTP.fileSize(String server, String user, String password, String file)

**Description:** Reports size of the specified file on the specified FTP server.

**Parameters:**

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)

user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

file - A string whose value is the name of the file that you want to check.

**Return:** Returns file size in bytes (-1 if file not found).

**Example:**

```
var server = "my server";
var user = "test";
var pass = "1111";
size = FTP.fileSize(server, user, pass, "/pub/1.txt");
Scheduler.messageBox(size);
```

## fileExists

**Prototype:** boolean FTP.fileExists(String server, String user, String password, String file)

**Description:** Reports whether the specified file exists on the specified FTP server.

**Parameters:**

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)

user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

file- A string whose value is the name of the file that you want to check.

**Return:** Returns TRUE if file exists, and FALSE otherwise.

**Example:**

```
var server = "my server";
var user = "test";
var pass = "1111";
if(FTP.fileExists(server, user, pass, "/pub/README"))
    Scheduler.messageBox("Found README file in the pub directory!");
```

## fileDateTime

**Prototype:** Date FTP.fileDateTime(String server, String user, String password, String file)

**Description:** Reports date and time of the specified file on the specified FTP server.

**Parameters:**

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)

user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

file - A string whose value is the name of the file that you want to check.

**Return:** Returns [Date object](#). You can use the following functions to obtain date and time parts:

```
int getYear()
int getMonth()
int getDate()
int getHour()
int getMinute()
int getSecond()
```

**Example:**

```
var server = "my server";
var user = "test";
var pass = "1111";
Date d = FTP.fileDateTime(server, user, pass, "/pub/1.txt");
var str = "Date is " + d.getMonth() + "/" + d.getDate() + "/" +
        d.getYear() + "/" + d.getHour() + ":" + d.getMinute() + ":" +
        d.getSecond();
Scheduler.messageBox(str);
```

## dir

**Prototype:** String FTP.dir(String server, String user, String password, String fileMask)

**Description:** Returns comma-separated list of files in the specified directory on the specified FTP server

**Parameters:**

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)


user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

fileMask – a string whose value is the file mask that you want to use to search for files. fileMask can contain standard wildcard characters (\* and ?). fileMask can contain full or partial file path.

**Return:** Returns comma-separated list of file names matching the specified mask.

**Usage:** On DOS/Windows based FTP hosts the FTP.dir statement is equivalent to DOS dir command. For most UNIX flavors, the FTP.dir statement is equivalent to UNIX ls command.

 **Note:** If you don't include file path to the fileMask then FTP.dir statement returns files from the FTP server current directory.

**Example:**

```
var server = "my server";
var user = "test";
var pass = "1111";
var list = FTP.dir(server, user, pass, "/pub/docs/*.html");
Scheduler.messageBox(list);
```

## dirCreate

**Prototype:** FTP.dirCreate(String server, String user, String password, String dir)

**Description:** Creates a new directory on remote FTP server.

**Parameters:**

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)

user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

dir - A string whose value is the full name of the directory to be created

**Example:**

```
var server = "my server";
var user = "test";
var pass = "1111";
FTP.dirCreate(server, user, pass, "/pub/dir1/dir2");
```

## dirDelete

**Prototype:** FTP.dirDelete(String server, String user, String password, String dir)

**Description:** Deletes an existing directory on remote FTP server. If the directory is not empty all contained files or subdirectories are deleted recursively.

**Parameters:**

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)

user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

dir - A string whose value is the full name of the directory to be deleted

**Example:**

```
var server = "my server";
var user = "test";
var pass = "1111";
FTP.dirDelete(server, user, pass, "/pub/dir1/dir2");
```

**command**

**Prototype:** FTP.command(String server, String user, String password, String command)

**Description:** Executes arbitrary commands directly on the specified FTP server.

**Parameters:**

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)

user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

command - A string whose value is the command that you want to execute on the server

**Usage:** The FTP.command statement allows you to execute commands directly on the FTP server. The available commands vary depending on the type of server, and can usually be determined by logging on to the server with the command line FTP client and using the "remotehelp" command. A typical output of "remotehelp" command looks like the following:

```
ftp> remotehelp
The following commands are recognized (* =>'s unimplemented).

USER      PORT      STOR      MSAM*    RNT0      NLST      MKD       CDUP
PASS      PASV      APPE      MRSQ*    ABOR      SITE      XMKD      XCUP
ACCT*     TYPE      MLFL*     MRCP*    DELE      SYST      RMD       STOU
SMNT*     STRU      MAIL*     ALLO     CWD       STAT      XRMD      SIZE
REIN*     MODE      MSND*     REST     XCWD      HELP      PWD       MDTM
QUIT      RETR      MSOM*     RNFR     LIST      NOOP      XPWD
```



**Note:** You can use SITE EXEC command to execute operation system commands and run batch files and other programs on the FTP server computer. In order for the host command to be successfully executed your FTP server must support SITE EXEC command and this feature must not be disabled.

**Example:**

```
var server = "my server";
var user = "test";
var pass = "1111";
FTP.command(server, user, pass,
    "SITE EXEC touch -mct 200506161400.05 test.txt");
```

**config**

**Prototype:** FTP.config(String property, String newValue)

**Description:** Set various parameters for subsequent FTP operations executed in the same job.

**Parameters:**

property - A string whose value is the name of the property that you want to change. The following properties are supported:

- "FTP PROTOCOL"
- "TRANSFER MODE"
- "LIST SEPARATOR"
- "PORT"
- "CONNECTION TYPE"
- "PRESERVE FILE TIMES"
- "SET TIME COMMAND"
- "TIME FORMAT"
- "TIME OFFSET"

new\_value - A string whose value is the new value for the property that you want to change.

**FTP PROTOCOL**

The following values are supported for the "FTP PROTOCOL " property:

"FTP" – this is used for the classic FTP protocol

"SFTP" – this is used for secure FTP protocol which is an extension to SSH protocol.

"FTPS" – this is used for FTP over SSL channel protocol.

"SECURE" – this is a synonym for "SFTP" used for compatibility with the protocol name and options supported by 24x7 Scheduler Windows Edition.

"SSL" – this is a synonym for "FTPS" protocol name.

The default value is "FTP".

Use this property, to specify whether you want to use secure or non-secure FTP protocol for all subsequent FTP commands executed in the same job. This setting applies to all statements that belong to the FTP group.

**TRANSFER MODE**

The following values are supported for the "TRANSFER MODE" property:

- "ASCII"
- "BINARY"

The default value is "BINARY".

**LIST SEPARATOR**

For the "LIST SEPARATOR" property, you can specify any desired symbol that you will use to separate multiple files when performing multi-file FTP operations. The default value is comma. For more information, see [FTP.getFile](#), [FTP.resumeFile](#), [FTP.appendFile](#), [FTP.putFile](#), and [FTP.deleteFile](#) statements.

## PORT

Use the "PORT" property, to specify which port you want to use for all subsequent FTP commands executed in the same job. This setting applies to all statements that begin with FTP prefix and also applies to the FTP.syncDir and FTP.compareDir statements. The default FTP port is 21.

## CONNECTION TYPE

The following values are supported for the "CONNECTION TYPE " property:

- "PASSIVE"
- "ACTIVE"

Use this property, to specify whether you want to use active or passive FTP connection mode. This setting applies to all statements that begin with FTP prefix and to the [FTP.syncDir](#) and [FTP.compareDir](#) statements. If you do not change this property, the "ACTIVE" mode is used by default.

## PRESERVE FILE TIMES SET TIME COMMAND TIME FORMAT TIME OFFSET

Properties "PRESERVE FILE TIMES", "SET TIME COMMAND", "TIME FORMAT", "TIME OFFSET" are used together as a group. They control when and how to set date/time of transferred files.



**Important Note:** Not all FTP servers support time commands. Check your FTP server documentation before attempting to use time-related properties.

The following values are supported for the "PRESERVE FILE TIMES" property:

- "TRUE"
- "FALSE"

Use this property, to specify whether you want to preserve times of uploaded and downloaded files. The default value is "FALSE" meaning that by default times of all uploaded and downloaded files are set to the current system time.

The following values are supported for the "SET TIME COMMAND" property:

- "" (an empty string)
- "[user specified host Operation System command]"

The default value is "" which instructs the script engine to use the extended version of the MDTM command supported by most modern FTP servers. If you specify some other non-empty value for the "SET TIME COMMAND" property the script engine will attempt to execute that command as a FTP host operation system command. For this purpose it executes FTP SITE EXEC command following by the specified host command. In order for the host command to be successfully executed your FTP server must support SITE EXEC command and this feature must not be disabled.

The "TIME FORMAT" property controls time format used with the user-defined command specified in the "SET TIME COMMAND" property. The default value for "TIME FORMAT" property is YYYYMMDDHHMM.SS.

The "TIME OFFSET" property can be used to specify the difference in time between the host and the target computer. In other words if the processing computer and the FTP server computer run in different time zones you can use this property to specify the time difference. Generally speaking you can use this property to affect how the file time is set when the value of "PRESERVE FILE TIMES" property is set to TRUE. Specify offset value in seconds. The default value of the "TIME OFFSET" property is 0. You can specify both positive and

negative values. A positive value causes the target file time to be adjusted forward; a negative value causes the target file time to be adjusted backward.

**Example:**

```
// Connect to the ftp server on port 25 with passive ftp and time
// diff -3 hours, and sync some directories.

FTP.config("PORT", 25);
FTP.config("CONNECTION TYPE", "PASSIVE");
FTP.config("PRESERVE FILE TIMES", "TRUE");
FTP.config("TIME OFFSET", "-10800");
FTP.config("TRANSFER MODE", "ASCII");
FTP.syncDir("LOCAL", "my.site.com", "testuser", "1111",
           "c:\\var\\www", "/pub/www/html/",
           true, false, true, true );
```

## compareDir

**Prototype:** CompareInfo FTP.compareDir(String server, String user, String password, String localDir, String remoteDir, boolean nameComparison)

**Description:** Compares files in two directories residing on local and remote computers using FTP protocol.

**Parameters:**

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)

user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

local\_dir - A string whose value is the name of the local directory containing files that you want to compare.

remote\_dir - A string whose value is the name of the remote directory on FTP server containing files that you want to compare.

name\_comparison - A boolean whose value should be TRUE if you want to compare files by name only, and FALSE if you want to compare them by name and date of the last modification.

**Return:** Returns [CompareInfo](#) object with the following functions:

String getLocalList () – Returns list of files from the local\_dir directory, which are different from files in the remote\_dir directory or could not be found in the remote directory.

String getRemoteList() – Returns list of files from the remote\_dir directory, which are different from files in the local\_dir directory or could not be found in the remote directory.

**Example:**

```
var server = "my server";
var user = "test";
var pass = "1111";
FTP.config("PRESERVE FILE TIMES", "TRUE");
FTP.config("TIME OFFSET", "-10800");
var result = FTP.compareDir(server, user, pass, "e:\\Interpub\\wwwroot",
                           "/", false);
```



```
Scheduler.messageBox("Local files that are different remote files " +  
    result.getLocalList());  
Scheduler.messageBox("Remote files that are different from local files" +  
    result.getRemoteList());
```

## syncDir

**Prototype:** FTP.syncDir(String master, String server, String user, String password, String sourceDir, String targetDir, boolean addNew, boolean deleteMissing, boolean updateOld, boolean subDir)

**Description:** Synchronizes and replicates files across two directories residing on local and remote computers using FTP protocol.

**Parameters:**

server - A string whose value is FTP server host name (for example, ftp.microsoft.com) or IP address in ASCII dotted-decimal format (for example, 11.0.1.45)

user - A string whose value is the name of the user to log on to the server

password - A string whose value is the password to use to log on to the server

master - A string whose value instructs 24x7 Scheduler which computer is the "master" computer containing files and subdirectories that you want to replicate. The following values are supported:

- "REMOTE" - remote FTP server computer contains the "master" directory
- "LOCAL" - the local computer contains the "master" directory

source\_dir - A string whose value is the name of the "master" directory containing files and subdirectories that you want to replicate

target\_dir - A string whose value is the name of the target directory to which files and subdirectories are replicated

add\_new - A boolean whose value should be TRUE if you want to replicate files that exist only in the source\_dir, and FALSE otherwise

delete\_missing - A boolean whose value should be TRUE if you want to delete from the target\_dir directory these files that exist in the target\_dir but do not exist in the source\_dir, and FALSE otherwise

update\_old - A boolean whose value should be TRUE if you want to update older versions of files in the target\_dir directory, and FALSE otherwise. A file is considered as old if it exists in both target\_dir and source\_dir directories and the target\_dir version of that file has a date time older than the version from the source\_dir directory.

subdir - A boolean whose value should be TRUE if you want to update recursive subdirectories. Note that if you enable recursion then all other replication options described above apply to all subdirectories of all nesting levels starting with the source\_dir.

**Usage:** Use FTP.syncDir statement to automate synchronization and replication for a group of files residing on different computers. The directory you are copying files from is also known as the master directory or primary site-replication



**Note:** To update only old files set update\_old parameter to TRUE and set both add\_new and delete\_missing parameters to FALSE.

To perform full 2-way file synchronization between 2 directories: run FTP.syncFTPDir using "REMOTE" for the master with delete\_missing set to FALSE and everything else set to TRUE. Repeat FTP.syncFTPDir using "LOCAL" for the master with delete\_missing set to FALSE and everything else set to TRUE.

**Example:**

```
var server = "my server";
var user = "test";
var pass = "1111";
FTP.config("PRESERVE FILE TIMES", "TRUE");
FTP.config("TIME OFFSET", "-10800");
FTP.syncDir("LOCAL", server, user, pass, "c:\\buf2", "/pub",
    true, // add new files
    false, // don't delete missing
    true, // update old
    true // recursively sync subdirectories
);
FTP.syncDir("REMOTE", server, user, pass, "/pub", "c:\\buf2",
    true, // add new files
    false, // don't delete missing
    true, // update old
    true // recursively sync subdirectories
);
```

## Mail Operations

### send

**Prototype:** void Mail.send( String sender, String password, String recipient, String subject, String message )

**Description:** Establishes a new mail session and sends the specified mail message. The message is sent using the email server specified in scheduler's settings.

**Parameters:**

sender - A string whose is the sender's email address

password - A string whose value is the user's mail system password

recipient - A string variable whose value is the email address of the recipient for the message.



**Note:** To send the same message to multiple recipients you can specify their addresses as a comma-separated list

subject - A string variable whose value is the subject line, displayed in the message header

message - A string variable whose value is the content of the message body

**Example:**

```
Mail.send("my@mycompany.com", "password", "operations@mycompany.com",
    "test subject", "test message" );
```

### sendWithAttachment

**Prototype:** void Mail.sendWithAttachment( String sender, String password, String recipient, String subject, String message, String attachments )


**Description:** Establishes a new mail session and sends the specified mail message. The message is sent using the email server specified in scheduler's settings.

**Parameters:**

sender - A string whose is the sender's email address

password - A string whose value is the user's mail system password


recipient - A string variable whose value is the email address of the recipient for the message.

 **Note:** To send the same message to multiple recipients you can specify their addresses as a comma-separated list

subject - A string variable whose value is the subject line, displayed in the message header

message - A string variable whose value is the content of the message body

attachment - A string variable whose value is the name of the file(s) to attach to the message.

 **Note:** To send multiple file attachments you can specify file names as a comma-separated list

**Example:**

```
Mail.sendWithAttachment("my@mycompany.com", "password",  
    "operations@mycompany.com", "test subject", "test message",  
    "/home/dir1/file1,/home/dir2/file2" );
```

## Web Operations

### callService

**Prototype:** void Web.callService(String endpoint, String requestType, String[] headers, String data, String outputType, int expectedResponseCode, String outputFile)

**Description:** Calls a Web service, optionally saving returned data to the specified file.

**Parameters:**

Endpoint - A string whose value is the service endpoint / URL ( Internet standard Uniform Resource Locator, e.g. service endpoint ).

requestType - A string whose value is the web request type, typically "POST" or "GET" value.

Headers - A string array containing colon-separated header name / value pairs, for example: ["Cache-Control:no cache", "Content-Type:application/json"].

Data - A string whose value is the data to be posted to the specified service. In case the no data is required which is typical for GET requests, specify an empty string.

outputType - A string whose value is MIME compatible data format name for the data returned by the service, for example, "application/xml" or "text/html". you can specify an empty string to use the default data format.

expectedResponseCode - A number whose value is expected code, typically this is 200 which means HTTP 200 indicating successful execution. To accept any response code without validation, specify zero.

outputFile - A string whose value is the name of the local file in which you want to save the returned web service data. If you specify an empty string, the output file is not going to be created.

**Examples:**

```
Web.callService("https://my-company.org/my-service/method1", "GET",
    : ["Content-Type:application/json"], "{ \"some-name\": \"George\" }",
    "text/html", 200, "");
Web.callService("https://my-company.org/my-service/method1", "GET",
    : ["Content-Type:application/json"], "{ \"some-name\": \"George\" }",
    "text/xml", 0, "C:\\MyFiles\\new_data.xml" );
```

## getFile

**Prototype:** void Web.getFile( String url, String localFile )

**Description:** Downloads file from the specified URL. Downloaded file can be an HTML file or a file of any other type, including binary files.

**Parameters:**

url - A string whose value is the URL ( Internet standard Uniform Resource Locator, e.g. Web address ) that points to the web file that you want to download.

localFile - A string whose value is the name of a local file in which you want to save the returned data.

**Examples:**

```
Web.getFile("http://www.mycompany.com/hello.htm", "/home/myfiles/hello.htm" );
Web.getFile("http://www.mycompany.com/data/data.xls ",
    "C:\\ExcelFiles\\new_data.xls" );
```

## postData

**Prototype:** void Web.postData( String url, String data, String localFile )

**Description:** Performs an HTTP POST, allowing a job to send a request through CGI, NSAPI, or ISAPI.

**Parameters:**

url - A string whose value is the URL ( Internet standard Uniform Resource Locator, e.g. Web address ) to post data to.

localFile - A string whose value is the name of the local file in which you want to save the web server response received after POST.

**Examples:**

```
Web.postData("http://www.mycompany.com/cgi-bin/add_customer.cgi",
    "name=Greg+Smith&company=ACME+Corp&phone=212-123-1234&" +
    "fax=212-123-5678&email=gsmith%40acme.com",
    "c:\\temp\\confirm.htm" );
```

## getDataWithLogin

**Prototype:** void Web.getDataWithLogin(String loginUrl, String loginData, String errorTokens, String dataUrl, String outputFile, String logoutUrl )

**Description:** Performs HTTP POST and then immediately HTTP GET, allowing a job to submit a request through CGI, NSAPI, or ISAPI call to a login form on a remote web site, and then, in the same authenticated user session download data from the same or a different location through second CGI, NSAPI, or ISAPI call.

**Parameters:**

loginUrl - A string whose value is the URL ( Internet standard Uniform Resource Locator, e.g. Web address ) of the login form which can be used to login to the web site.

loginData- A string whose value is the data to be posted to the specified loginURL.

errorTokens – A string containing comma-separated substrings that you want to check in the results returned by the login form in to verify whether the login succeeded or not. If you do not want to check the login form output, specify an empty string for this argument. Note that the search for substrings is case-insensitive.

dataUrl – A string whose value is the URL ( Internet standard Uniform Resource Locator, e.g. Web address ) to get data from.

outputFile - A string whose value is the name of the local file in which you want to save the returned web server response and data.

logoutUrl - A string whose value is the URL ( Internet standard Uniform Resource Locator, e.g. Web address ) of the logout page, which can be used to logout from the web site. The logoutURL argument value is optional. In case logout is not required, specify an empty string as value for this argument.

**Examples:**

```
Web.getDataWithLogin ( "http://www.mycompany.com/cgi-bin/login.cgi",  
    "user=George&password=secret&action=status&job=triggerJobA", "failed",  
    "http://www.mycompany.com/cgi-bin/status.cgi",  
    "c:\\temp\\status.htm", "http://www.mycompany.com/cgi-bin/logout.cgi");
```

## postDataWithLogin

**Prototype:** void void Web.postDataWithLogin( String loginUrl, String loginData, String errorTokens, String dataUrl, String data, String outputFile, String logoutUrl )

**Description:** Performs double HTTP POST, allowing a job to submit a request through CGI, NSAPI, or ISAPI call to a login form on a remote web site, and then, in the same authenticated user session upload data to the same or a different location through second CGI, NSAPI, or ISAPI call.

**Parameters:**

loginUrl - A string whose value is the URL ( Internet standard Uniform Resource Locator, e.g. Web address ) of the login form which can be used to login to the web site.

loginData- A string whose value is the data to be posted to the specified loginURL.

errorTokens – A string containing comma-separated substrings that you want to check in the results returned by the login form in to verify whether the login succeeded or not. If you do not want to check the login form output, specify an empty string for this argument. Note that the search for substrings is case-insensitive.

dataUrl – A string whose value is the URL ( Internet standard Uniform Resource Locator, e.g. Web address ) to get data from.

data - A string whose value is the data to be posted to the specified dataURL"/>

outputFile - A string whose value is the name of the local file in which you want to save the returned web server response and data.

logoutUrl - A string whose value is the URL ( Internet standard Uniform Resource Locator, e.g. Web address ) of the logout page, which can be used to logout from the web site. The logoutURL argument value is optional. In case logout is not required, specify an empty string as value for this argument.

**Examples:**

```
Web.postDataWithLogin ( "http://www.mycompany.com/cgi-bin/login.cgi" ,  
    "user=George&password=secret" , "failed" ,  
    "http://www.mycompany.com/cgi-bin/submit.cgi" ,  
    "name=Greg+Smith&company=ACME+Corp&phone=212-123-1234&" +  
    "fax=212-123-5678&email=gsmith%40acme.com" ,  
    "c:\\temp\\status.htm" ,  
    "http://www.mycompany.com/cgi-bin/logout.cgi" );
```

## HTMLEncode

**Prototype:** String Web.HTMLEncode(String data)

**Description:** Applies HTML-encoding to the specified text string. This function provides convenient means for encoding data to be used in HTML and XML files.

**Parameters:**

data - A string value that you want to encode.

return - HTML encoded string. The encoding replaces characters that cannot be used in HTML/XML data with their encoded values.

**Examples:**

```
var encodedText = Web.HTMLEncode( "A \"test string\" here & there" );  
Web.postData( "http://www.mycompany.com/cgi-bin/add_customer.cgi" ,  
    encodedText , "c:\\temp\\confirm.htm" );
```

## URLEncode

**Prototype:** String Web.URLEncode(String data)

**Description:** Applies URL-encoding to the specified text string. This function provides convenient means for encoding strings to be used in a data for posting to web sites in URL parameters.

**Parameters:**

data - A string value that you want to encode.

return - URL encoded string. The encoding is performed according to RFC 1738 standard.

**Examples:**

```
var encodedValue = Web.URLEncode( "A \"test string\" here & there" );
Web.getFile( "http://www.mycompany.com/cgi-bin/add_customer.cgi? " +
    "data=" + encodedValue, "c:\\temp\\confirm.htm" );
```

## stripHTML

**Prototype:** String Web.stripHTML(String data)

**Description:** Removes HTML tags from the specified string and converts it to plain text, replacing special HTML codes with regular characters.

**Parameters:**

data - An HTML text that you want to convert.

return - Converted HTML text..

**Examples:**

```
var valueWithoutTags = Web.stripHTML( "<p><b>Test&nbsp;1 and 2</br></p>" );
```

## openPage

**Prototype:** void Web.openPage(String url)

**Description:** Opens default Web browser, displaying the specified URL.

**Parameters:**

url - Web page URL.

**Examples:**

```
Web.openPage( "https://google.com" );
```

## stringToJson

**Prototype:** JSONObject Web.stringToJson(String data)

**Description:** Deserializes String data to JSON object

**Parameters:**

data - String data that you want to convert to JSON.

Return - Returns JSON object.

**Examples:**

```
JSONObject json = Web.stringToJson( "{ \"person_name\": \"George\" }" );
var name = json.person_name;
```

## jsonToString

**Prototype:** String Web.jsonToString(JSONObject json)

**Description:** Serializes JSON object to string.

**Parameters:**

json - JSON data that you want to convert to String.

return - String representation of JSON object.

**Examples:**

```
JSONObject json = { "person_name": "George" };  
var str = Web.jsonToString( json );
```

## xmlStringToJson

**Prototype:** JSONObject Web.xmlStringToJson(String xml)

**Description:** Converts XML data to JSON object.

**Parameters:**

xml - XML data in string format that you want to convert to JSON.

return - Returns JSON object.

**Examples:**

```
JSONObject json = Web.xmlToJson( "{ "<root><person name=\"George\"/></root>"}");
```

## xmlFileToJson

**Prototype:** Web.xmlFileToJson(String file)

**Description:** Converts data saved in an XML file to JSON object.

**Parameters:**

file - Full file path to XML file whose contents you want to convert to JSON.

return - JSON object.

**Examples:**

```
JSONObject json = Web.xmlFileToJson( "/home/24x7/data/customerA.xml");
```

## jsonFileToJson

**Prototype:** JSONObject Web.jsonFileToJson(String file)

**Description:** Converts data saved in a JSON file to JSON object.



**Parameters:**

file - Full file path to JSON file whose contents you want to convert to JSON.

return - Returns JSON object.

**Examples:**

```
JSONObject json = Web.jsonFileToJson( "/home/24x7/data/customerA.json" );
```

## jsonToXmlString

**Prototype:** String Web.jsonToXmlString(JSONObject json)

**Description:** Converts JSON object to XML

**Parameters:**

json - JSON object that you want to convert to XML.

return - String representation of XML data.

**Examples:**

```
JSONObject json = Web.jsonFileToJson( "/home/24x7/data/customerA.json" );  
String xml = Web.jsonToXmlString( json );
```

## stringToJsonArray

**Prototype:** JSONArray Web.stringToJsonArray(String data)

**Description:** Deserializes String to JSONArray.

**Parameters:**

data - A String representation of JSON array. Strings in the array could be simple or could be string representations of complex JSONObject(s).

return - Returns JSONArray object..

**Examples:**

```
JSONArray jsonArray = Web.stringToJsonArray( "[ { \"person_name\": \"George\" },  
      { \"person_name\": \"Matt\" }  
      { \"person_name\": \"Julie\" } ]" );  
JSONObject firstPerson = Web.stringToJson( jsonArray.get(0) );  
var name = firstPerson.person_name;
```

## jsonArrayToString

**Prototype:** String Web.jsonArrayToString(JSONArray data)

**Description:** Serializes JSONArray to string

**Parameters:**

data - A JSON array. Elements in the array could be simple or could be complex JSONObject(s).

return - Returns String.

**Examples:**

```
JSONArray jsonArray = [
    { "person_name" : "George" },
    { "person_name" : "Matt" },
    { "person_name" : "Julie" } ];
var str = Web.jsonArrayToString( jsonArray );
```

## stringArrayToJsonArray

**Prototype:** JSONArray Web.stringArrayToJsonArray(String[] dataArray)

**Description:** Deserializes String array to JSONArray

**Parameters:**

dataArray - Array of String objects that you want to convert to JSONArray. Strings in the array could be simple or could be string representations of complex JSONObject(s).

return - Returns JSONArray object.

**Examples:**

```
var stringArray = [
    "{ \"person_name\" : \"George\" }",
    "{ \"person_name\" : \"Matt\" }",
    "{ \"person_name\" : \"Julie\" }" ];
JSONArray jsonArray = Web.jsonArrayToString( stringArray );
```

## jsonArrayToStringArray

**Prototype:** String[] Web.jsonArrayToStringArray(JSONArray jsonArray)

**Description:** Serializes JSONArray object to String array

**Parameters:**

jsonArray - JSONArray that you want to convert to String array. Converted Strings in the array could be simple or could be string representations of complex JSONObject. Individual String array elements can be deserialized to JSONObject(s) using stringToJson() function.

return - Returns String array.

**Examples:**

```
JSONArray jsonArray = [
    { "person_name" : "George" },
    { "person_name" : "Matt" },
    { "person_name" : "Julie" } ];
var strArray = Web.jsonArrayToStringArray( jsonArray );
```

## Scheduler Operations

### messageBox

**Prototype:** Scheduler.messageBox(String text)

**Description:** Displays graphical interactive message box containing user-defined message.



**Important Notes:** Because the messageBox requires user intervention you should use this statement for job debugging purposes only and comment it out in production jobs. Also note that messageBox cannot be used in detached jobs and when 24x7 Scheduler is run in command console or run as a background daemon or Windows service.

**Parameters:**

text – text to be displayed.

**Example:**

```
Scheduler.messageBox("test message");
```

### pause

**Prototype:** Scheduler.pause(int seconds)

**Description:** Causes the job to enter an efficient wait state until the specified time elapses.

**Parameters:**

seconds – pause duration in seconds.

**Example:**

```
Scheduler.pause(30);
```

### logAddMessage

**Prototype:** void Scheduler.logAddMessage(String type, int jobId, String jobName, String message)

**Description:** Adds new message to the job log. The message can be viewed using the Log Viewer utility. If the job id matches an existing job the message also appears in the filtered job log.

**Parameters:**

type – A string constant indicating message type. Must be one of the following:

- "INFO"

- "WARNING"
- "ERROR"

jobId - ID of an existing job. If you don't want to hard-code job id of the active job you can use @V"job\_id" macro in place of this parameter. Use zero for generic messages, not associated with any job.

jobName - name of an existing job. If you don't want to hard-code job name of the active job you can use @V"job\_name" macro in place of this parameter.

message – the message you want to add to the log.

**Example:**

```
Scheduler.logAddMessage('WARNING', 10, 'Test job',  
    'No files found for processing. The job will abort now');
```

## runJob

**Prototype:** int Scheduler.runJob(int jobId)

**Description:** Immediately runs the specified job and waits for the job to complete.

**Parameters:**

jobId - ID of an existing job.

**Return:** Returns unique run-time job number of the launched job.

**Example:**

```
var runId = Scheduler.runJob(125);
```

## runRemoteJob

**Prototype:** int Scheduler.runRemoteJob(int jobId, String agent)

**Description:** Immediately runs the specified job and waits for the job to complete. The job execution place is controlled by the agent parameter.

**Parameters:**

jobId - ID of an existing job.

agent – Name of an agent profile configured in the scheduler settings for running remote jobs.

**Return:** Returns unique run-time job number of the launched job.

**Example:**

```
var runId = Scheduler.runRemoteJob(125, "QA server");
```

## queueJob

**Prototype:** int Scheduler.queueJob(int jobId)

**Description:** Submits the specified job to the associated job queue according to the job priority. All currently running jobs continue running and not affected by the submitted job. The queue begins running the submitted job as soon as it completes running all jobs previously queued in the same queue with the same or higher priority and already running.

**Parameters:**

jobID - ID of an existing job.

**Return:** Returns unique run-time job number of the queued job.

**Example:**

```
var runId = Scheduler.queueJob(125);
```

## queueRemoteJob

**Prototype:** int Scheduler.queueJob(int jobID, String agent)

**Description:** Submits the specified job to the associated job queue according to the job priority. All currently running jobs continue running and not affected by the submitted job. The queue begins running the submitted job as soon as it completes running all jobs previously queued in the same queue with the same or higher priority and already running.

**Parameters:**

jobID - ID of an existing job.

agent – Name of an agent profile configured in the scheduler settings for running remote jobs.

**Return:** Returns unique run-time job number of the queued job.

**Example:**

```
var runId = Scheduler.queueJob(125);
```

## killJob

**Prototype:** Scheduler.killJob(int jobRunID)

**Description:** Terminates the specified job and in case of a program type job also removes the associated child processes. If the job is still queued and not yet started, killJob simply removes the job from the queue.

**Parameters:**

jobRunID - Run-time number of the job returned by [Scheduler.runJob](#), [Scheduler.queueJob](#), [runRemoteJob](#) statements.

**Example:**

```
var runID = Scheduler.queueJob(125);
Scheduler.pause( 60 );
Scheduler.killJob( runID );
```

## deleteJob

**Prototype:** Scheduler.deleteJob(int jobID)

**Description:** Deletes the specified job from the job database. Any already queued or running instances of that job will remain in the job queue.

**Parameters:**

jobID - ID of an existing job.

**Example:**

```
Scheduler.deleteJob( 125 );
```

## createJob

**Prototype:** int Scheduler.createJob( String JDL)

**Description:** Creates a new job and saves its definition in the job database.

**Parameters:**

JDL - The Job definition in JDL format. For a wide variety of examples see job templates available in the [24x7 install directory]\Template subdirectory. For a list and description of supported JDL commands see [Job Properties in JDL Format](#) topic.

**Usage:** Use Scheduler.createJob in your scripts to programmatically create new jobs. Use [Scheduler.setJobProperty](#) method to modify properties of existing job.

**Return:** Returns unique number identifying the created job in the job database.

**Example:**

```
var JDL = "NAME=My job\n" +
"JOB_TYPE=P\n" +
"COMMAND=/bin/sh -c /home/john/mybatch.sh\n" +
"SCHEDULE_TYPE=O\n" +
"START_TIME=12:00\n" +
"START_DATE=2005-10-17"
var jobID = Scheduler.createJob( JDL );
```

## disableJob

**Prototype:** Scheduler.disableJob(int jobID)

**Description:** Disables the specified job in the job database. This will prevent the job from starting again. Any already queued or running instances of that job will remain in the job queue. As opposite to [Scheduler.deleteJob](#), this statement does not delete the job definition.

**Parameters:**

jobID - ID of an existing job.

**Example:**

```
Scheduler.disableJob( 125 );
```

## enableJob

**Prototype:** Scheduler.enableJob(int jobID)

**Description:** Enabled the specified job in the job database.

**Parameters:**

jobID - ID of an existing job

**Example:**

```
Scheduler.enableJob( 125 );
```

## setJobProperty

**Prototype:** Scheduler.setJobProperty( int jobID, String propertyName, String newValue )

**Description:** Changes value of the specified job property in the job database. The change does not affect already queued or running instances of that job.

**Parameters:**

jobID - ID of an existing job

propertyName - The name of job property whose value you want to change For a list and description of supported JDL commands see [Job Properties in JDL Format](#) topic.

newValue - The new value for the specified property

**Example:**

```
Scheduler.setJobProperty( 125, "QUEUE", "Reports" );  
Scheduler.setJobProperty( 125, "COMMAND", "/bin/sh -c /batch/report2.sh" );
```

## getJobProperty

**Prototype:** String Scheduler.getJobProperty( int jobID, String propertyName )

**Description:** Returns value of the specified job property.

**Parameters:**

jobID - ID of an existing job

propertyName - The name of job property whose value you want to obtain. For a list and description of supported JDL commands see [Job Properties in JDL Format](#) topic.

**Return:** Returns current value of the requested job property

**Example:**

```
var command = Scheduler.getJobProperty( 125, "COMMAND" );
```

## setJobVariable

**Prototype:** Scheduler.setJobVariable( int jobID, String variableName, String newValue )

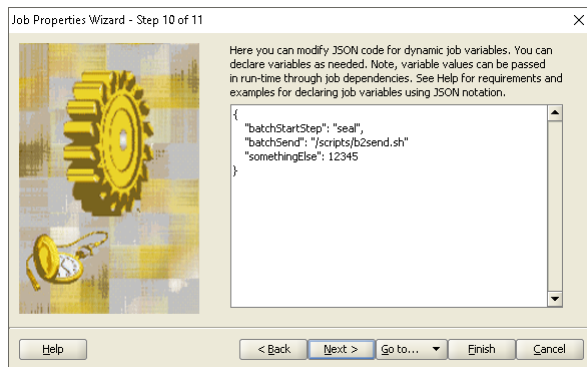
**Description:** Changes value of the specified job dynamic variable. The change does not affect already queued or running instances of that job.

**Parameters:**

jobID - ID of an existing job

variableName - The name of job dynamic variable whose value you want to change. Note that you define job variables in the JSON object created in the **Job Variables** property – also see Variables page in the Job Wizard.

newValue - The new value for the specified variable in string format regardless of the variable's data type



**Example:**

```
Scheduler.setJobVariable( 125, "batchStartStep", "unpack" );
Scheduler.setJobVariable( @V" job_id", "batchSend", "/scripts/b2send.sh" );
```



## getJobVariable

**Prototype:** String Scheduler.getJobVariable( int jobID, String variableName )

**Description:** Returns value of the specified job property.

**Parameters:**

jobID - ID of an existing job

variableName - The name of job dynamic variable whose value you want to retrieve. Note that you define job variables in the JSON object created in the **Job Variables** property – also see Variables page in the Job

**Return:** Returns current value of the requested job variable or an error value in case the specified name cannot be found.

**Example:**

```
var batchSendCommand = Scheduler.getJobProperty( @V"job_id", "batchSend" );
```

## findJob

**Prototype:** Scheduler. int Scheduler.findJob(String name)

**Description:** Finds a job with the specified name.

**Parameters:**

name - A string whose value is the job name to search.

**Return:** Returns unique identifier for the found job or -1 if no match found. In case multiple jobs match the specified name, id of the first matching job is returned.

**Example:**

```
var jobId = Scheduler.findJob("File Mover" );
if (jobId != -1)
    Scheduler.runJob(jobId);
else
    Scheduler.raiseError(1001, "Unable to find File Mover job!");
```

## getJobs

**Prototype:** int[] Scheduler.getJobs( )

**Description:** Returns array of job ids in the current job database.

**Parameters:**

none

**Return:** Returns unique identifiers for all jobs as an array of integer values.

**Example:**

```
// retrieve job command lines and disable all jobs
var jobArray = Scheduler.getJobs( );
for( var j = 0; j < jobArray.length; j ++ )
{
    var command = Scheduler.getJobProperty(jobArray[j], "COMMAND" );
    Scheduler.disableJob( jobArray[j] );
}
```

## getFolders

**Prototype:** int[] Scheduler.getFolders ( )

**Description:** Returns array of folder ids in the current job database.

**Parameters:**

none

**Return:** Returns unique identifiers for all folders as an array of integer values.

**Example:**

```
// retrieve array of folder identifiers
var folderArray = Scheduler.getFolders( );
```

## raiseError

**Prototype:** Scheduler.raiseError( int errorCode, String errorMessage )

**Description:** Makes the job script to fail with the specified error code and message

**Parameters:**

erroCode - Numeric code value associated with the error

errorMessage – Text of the error message.

**Example:**

```
var server = "my server";
var user = "test";
var pass = "1111";
if (!FTP.fileExists(server, user, pass, "/pub/README"))
    Scheduler.raiseError(1001, "README file not found!");
```

## stdError

**Prototype:** void Scheduler.stdError(String text)

**Description:** Prints message to the standard error stream, typically the console.

**Parameters:**

text - Text to output.

**Return:** None

**Example:**

```
Scheduler.stdError("Unable to delete file xyz.txt");
```

## stdOutput

**Prototype:** void Scheduler.stdOutput(String text)

**Description:** Prints message to the standard output stream, typically the console.

**Parameters:**

text - Text to output.

**Return:** None

**Example:**

```
Scheduler.stdOutput("Successfully deleted file xyz.txt");
```

## stdInput

**Prototype:** String Scheduler.stdInput()

**Description:** Reads text from the standard input stream, typically from the console.

**Parameters:**

None

**Return:** Returns text line from the input stream. **WARNING:** If the input stream is empty, the process will pause and wait for the input data.

**Example:**

```
var input = Scheduler.stdInput();
Scheduler.messageBox("You entered: " + input);
```

## **exitProcess**

**Prototype:** void Scheduler.exitProcess(int exitCode)

**Description:** Terminates job process. Can be called in detached jobs only.

**Parameters:**

exitCode - Exit code of the terminated process.

**Return:** None

**Example:**



```
// terminate the current process with exit code 5
Scheduler.exitProcess(5);
```




## Job Properties in JDL Format






All job properties are documented in the 24x7 Scheduler User's Guide. This topic can be used as a quick reference for supported job properties and their JDL names.

Job Definition Language (JDL) supports the following property names:



Property Name	Meaning
<b>ACCOUNT</b>	E-mail Account such as user ID, profile, or e-mail address (e-mail watch job). The actual value may differ for different e-mail interfaces. For a MAPI interface you should use the name of the MAPI profile you use when logging on to the e-mail system. For Lotus Notes you should use the name of the user (or ID) you use when logging on to the Lotus Notes. For SMTP you should use your e-mail address.
<b>ALL_DAY_TYPE</b>	All Day Schedule Type, one of the following: <b>R</b> , <b>L</b> ( <b>R</b> - recursive, repeat at specified intervals; <b>L</b> - fixed time list)
<b>AGENT</b>	Same as Host (see Host description)
<b>ASYNC</b>	Asynchronous Process, one of the following: <b>Y</b> , <b>N</b> (yes, no)
<b>AS_GROUP</b>	Name of Auto-scaling group assigned to the job
<b>BACKUP_AGENT</b>	Same as Backup Host (see Backup Host description)
<b>BACKUP_HOST</b>	Backup Remote Host (e.g. Backup Remote Agent name)
<b>CALENDAR</b>	Name of the Calendar object assigned to the job
<b>COMMAND</b>	Program Command Line
<b>DAY_END_TIME</b>	Daily End Time for "all day" jobs with limited run-time interval
<b>DAY_LIST</b>	Monthly Schedule List of fixed Day Numbers, numbers must be in 1..31 range. Example: 1,3,5,7,14. This property is shared with TIME_LIST property for All Day Schedule.
<b>DAY_NAME</b>	Monthly Schedule Day Name, one of the following: <b>Monday</b> , <b>Tuesday</b> , <b>Wednesday</b> , <b>Thursday</b> , <b>Friday</b> , <b>Saturday</b> , <b>Sunday</b> , <b>Weekend</b> , <b>Weekday</b>
<b>DAY_NUMBER</b>	Monthly Schedule Day Number, a number from 1 – 31 range
<b>DAY_START_TIME</b>	Daily Start Time for "all day" jobs with limited run-time interval
<b>DELAY</b>	Allowed Job Delay Interval (minutes)
<b>DELETE_RULE</b>	Delete, Move, and Rename Semaphore File Rules, one of the following: <b>D</b> , <b>A</b> , <b>B</b> , <b>M</b> , <b>E</b> , <b>R</b> , <b>C</b> , <b>F</b> , <b>G</b> ( <b>D</b> - do not delete, move, rename; <b>A</b> - delete after job run; <b>B</b> - delete before job run; <b>M</b> - move before job run; <b>E</b> - move after job run; <b>R</b> - rename before job run; <b>C</b> - rename after job run; <b>F</b> - move and rename before job run; <b>G</b> - move and rename after job run)
<b>DESCRIPTION</b>	Job Description
<b>DISABLE_ON_ERROR</b>	Disable Job on Error, one of the following: <b>Y</b> , <b>N</b> (yes, no)
<b>DISABLED</b>	Job Disabled Status, one of the following: <b>Y</b> , <b>N</b> (yes, no)
<b>DETACHED</b>	Detached Job, one of the following: <b>Y</b> , <b>N</b> (yes, no).




	 <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition.
<b>END_DATE</b>	Last Job Start Date
<b>END_TIME</b>	Last Job Start Date
<b>EXIT_CODE</b>	Exit Code Condition (as a string expression)
<b>FILE</b>	Semaphore File Names(s) for file-watch jobs; Module Name for process-watch job
<b>FOLDER</b>	Job Folder ID. This is read-only property. It may not be changed using <b>SET</b> command. It can be retrieved using <b>GET</b> command
<b>FOLDER_NAME</b>	Job Folder Name. This is read-only property. It may not be changed using <b>SET</b> command. It can be retrieved using <b>GET</b> command
<b>FRIDAY</b>	Execute Job On Fridays, one of the following: <b>Y, N</b> (yes, no)
<b>HOST</b>	Remote Host (Remote Agent Name)
<b>ID</b>	Job ID, This is read-only property. It may not be changed using <b>SET</b> command. It can be retrieved using <b>GET</b> command with Job Name parameter.
<b>IGNORE_ERRORS</b>	Ignore Errors, one of the following: <b>Y, N</b> (yes, no)
<b>INIT_TIMEOUT</b>	Initial Timeout before sending keystroke (seconds)
<b>INTERVAL</b>	Repeat Interval for Job having Schedule Type <b>T</b>
<b>JOB_PASSWORD</b>	<p>Job Protection State and Password. Sets or removes job protection state and password. This is a write-only property. It can be changed using <b>SET</b> command, but it cannot be retrieved using <b>GET</b> command. The value in this property must be specified in the following format : [old password][tab character][new password][tab character][protection state]</p> <p>If the job is not protected, the [old password] is ignored, otherwise a valid password must be specified in order to remove or change job password or protection state. If the protection exists and the new protection state is specified as an empty string the protection will be removed. The protection code must one of the following: <b>F, E, R</b>, an empty string (<b>F</b> – full protection; <b>E</b> – execute only; <b>R</b> – read only; an empty string indicates that a job is not protected).</p>
<b>JOB_TYPE</b>	Job Type, one of the following: <b>P, D, S</b> (program, database, script)
<b>KEYSTROKE</b>	Keystroke to send to the launched program.  <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition.
<b>LOG</b>	Log Job Execution, one of the following: <b>Y, N</b> (yes, no)
<b>MESSAGE</b>	E-mail Message Text (e-mail watch job).  WARNING: This is used in email-watch jobs only. Do not confuse this with Message triggers. The legacy property named Message is preserved for backward compatibility reasons.
<b>MESSAGE_ACTION_TYPE</b>	Type of Action that the job should perform after being triggered by a Message, one of the following <b>D, B, A</b> (do nothing, delete message before starting job execution, delete message after job executions completes.

<b>MESSAGE_ID</b>	Message ID of the Message to monitor. This is used in Message-watch job triggers. Do not confuse this with email messages.
<b>MODIFY_TERMINAL</b>	Network name of the computer from which the job was last modified. This is a read-only property. It cannot be changed using <b>SET</b> command. It can be retrieved using <b>GET</b> command.  <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition.
<b>MODIFY_TIME</b>	Date and time when the job was modified. This is a read-only property. It cannot be changed using <b>SET</b> command. It can be retrieved using <b>GET</b> command.  <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition.
<b>MODIFY_USER</b>	Name of the user who last modified the job. This is a read-only property. It cannot be changed using <b>SET</b> command. It can be retrieved using <b>GET</b> command.  <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition.
<b>MONDAY</b>	Execute Job On Mondays, one of the following: <b>Y</b> , <b>N</b> (yes, no)
<b>MONTHLY_TYPE</b>	Monthly Schedule Type, one of the following: <b>D</b> , <b>T</b> , <b>L</b> ( <b>D</b> - by day number; <b>T</b> - by day name; <b>L</b> - fixed day list)
<b>MOVE_DIR</b>	Name of the destination directory for semaphore file move and rename operations.
<b>MSG_ACCOUNT</b>	E-mail Account for Notification Action of E-mail Type E-mail (user ID, profile, or e-mail address). The actual value may differ for different e-mail interfaces. For the MAPI interface you should use the name of the MAPI profile you use when logging on to the e-mail system. For Lotus Notes you should use the name of the user (or ID) you use when logging on to Lotus Notes. For SMTP you should use your e-mail address.
<b>MSG_ACTIONS</b>	Map of Notification Actions and Events in text format. The map is represented as a comma-separated list of 2-character values where in every list item the first character represents Notification Event Type and the second character represents Notification Action Type. The following characters can be used for the event type: <b>S</b> - job start, <b>F</b> - job finish, <b>E</b> - job error, <b>N</b> - job file not found, <b>L</b> - job is late. The following characters can be used for the action type: <b>E</b> - send email, <b>P</b> - send page, <b>N</b> - send network popup message, <b>D</b> - execute database commands, <b>F</b> - create semaphore files, <b>M</b> - send Message; <b>T</b> - send SNMP trap, <b>J</b> - run job, <b>R</b> - run program, <b>S</b> -run script. Example map:  SE,FE,EE,FD  This example map represents the following Notification Events and Events: 1. Send notification email on job start. 2. Send notification email on job finish. 3. Send notification email on job error. 4. Execute database commands on job finish.
<b>MSG_DATABASE</b>	Execute Notification Action of Database Type, one of the following: <b>Y</b> , <b>N</b> (yes, no)

<b>MSG_EMAIL</b>	Execute Notification Action of E-mail Type, one of the following: <b>Y, N</b> (yes, no)
<b>MSG_ERROR</b>	Execute Notification Action on Job Execution Error, one of the following: <b>Y, N</b> (yes, no)
<b>MSG_FILE</b>	Execute Notification Action of Semaphore File Type, one of the following: <b>Y, N</b> (yes, no)
<b>MSG_FILE_NAME</b>	File name(s) for Notification Action of Semaphore File Type
<b>MSG_FINISH</b>	Execute Notification Action on Job Finish, one of the following: <b>Y, N</b> (yes, no)
<b>MSG_JOB</b>	Execute Notification Action of Run Job Type, one of the following: <b>Y, N</b> (yes, no)
<b>MSG_JOB_ID</b>	Job name or job id for Notification Action of Run Job Type
<b>MSG_MESSAGE</b>	Execute Notification Action of Message Type, one of the following: <b>Y, N</b> (yes, no)
<b>MSG_MESSAGE_DATA</b>	The data to send in Notification Action of Message Type. The data format is user defined. The size of the data shouldn't exceed 1 MByte.
<b>MSG_MESSAGE_ID</b>	Message ID of the Message sent in Notification Action of Message Type
<b>MSG_LATE</b>	Execute Notification Action on Job Late Start, one of the following: <b>Y, N</b> (yes, no)
<b>MSG_NET</b>	Execute Notification Action of Network Message Type, one of the following: <b>Y, N</b> (yes, no)  <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition.
<b>MSG_NET_RECIPIENT</b>	Message Recipient for Notification Action of Network Message Type  <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition.
<b>MSG_NOTFOUND</b>	Execute Notification Action on Job Executable Not Found Error, one of the following: <b>Y, N</b> (yes, no)
<b>MSG_PAGE</b>	Execute Notification Action of Page Type, one of the following: <b>Y, N</b> (yes, no)  <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition.
<b>MSG_PAGER</b>	Page Recipient's Pager Number  <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition.
<b>MSG_PASSWORD</b>	E-mail Password for Notification Action of E-mail Type
<b>MSG_PROFILE</b>	Database Profile for Notification Action of Database Type
<b>MSG_PROGRAM</b>	Execute Notification Action of Run Program Type, one of the following: <b>Y, N</b> (yes, no)
<b>MSG_PROGRAM_NAME</b>	Program name for Notification Action of Run Program Type
<b>MSG_PROGRAM_TIMEOUT</b>	Process Timeout (seconds) for Notification Action of Run Program Type  <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition.



<b>MSG_RECIPIENT</b>	E-mail Recipient for Notification Action of E-mail Type
<b>MSG_SCRIPT</b>	Execute Notification Action of Run Script Type, one of the following: <b>Y</b> , <b>N</b> (yes, no)
<b>MSG_SCRIPT_CODE</b>	JavaScript script for Notification Action of Script Type
<b>MSG_SCRIPT_TYPE</b>	Type of Script for Notification Action of Script Type, Only <b>JS</b> (JavaScript) is supported in 24x7 Scheduler Multi-platform Edition for notification actions.
<b>MSG_START</b>	Execute Notification Action on Job Start, one of the following: <b>Y</b> , <b>N</b> (yes, no)
<b>MSG_SQL</b>	SQL script for Notification Action of Database Type
<b>MSG_TRAP</b>	Execute Notification Action of Send SNMP Trap Type, one of the following: <b>Y</b> , <b>N</b> (yes, no)
<b>MULTI_INSTANCE_CONTROL</b>	Job queuing rule for handling multiple job instances, one of the following: <b>R</b> – always queue and run, <b>T</b> – terminate already running and queued job instances if any, and add new instance, <b>S</b> – if there are already running or queued job instances, skip new instance and do nothing, <b>E</b> – if there are already running or queued job instances, skip new instance and raise an error.
<b>NAME</b>	Job Name
<b>NUMBER_OF_RETRIES</b>	Maximum Number of Retries Before Job Gets Marked as Failed (number)
<b>PASSWORD</b>	E-mail Password (e-mail watch job)
<b>POLLING_INTERVAL</b>	Polling Interval (minutes)
<b>PRIORITY</b>	Job Priority, one of the following: <b>-1</b> – low, <b>0</b> – normal, <b>1</b> – high
<b>PROFILE</b>	Database Profile
<b>PROTECTION</b>	Job Protection State, one of the following: <b>F</b> , <b>E</b> , <b>R</b> , an empty string ( <b>F</b> – full protection; <b>E</b> – execute only; <b>R</b> – read only; an empty string indicates that a job is not protected). This is a read-only property. It cannot be changed using <b>SET</b> command. It can be retrieved using <b>GET</b> command.
<b>QUEUE</b>	Job Queue
<b>REBOOT</b>	Reboot Computer After Job Finished, one of the following: <b>Y</b> , <b>N</b> (yes, no)  <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition.
<b>RETRY_INTERVAL</b>	Retry Interval (seconds)
<b>RENAME_SUFFIX</b>	Retry Interval (seconds)
<b>RETRY_ON_ERROR</b>	The name suffix used in semaphore file names for rename operations.
<b>RUNAS_DOMAIN</b>	Domain Name for authentication of jobs to be run using another user account.  <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition. In that version the <b>RUNAS_USER</b> must contain both the domain and user names in <b>domain\user</b> format.
<b>RUNAS_PASSWORD</b>	Password for authentication of jobs to be run using another user

	account.
<b>RUNAS_USER</b>	User Name for authentication of jobs to be run using another user account.
<b>SATURDAY</b>	Execute Job On Saturdays, one of the following: <b>Y, N</b> (yes, no)
<b>SAVE_ATTACHMENT</b>	Save E-mail Attachments (e-mail watch job), one of the following: <b>Y, N</b> (yes, no)
<b>SCHEDULE_TYPE</b>	Schedule Type, one of the following: <b>O, D, T, M, F, P, A, E, I, L, S</b> (Time trigger: <b>O</b> – run once, <b>D</b> – repeat daily, <b>T</b> – repeat at specified time interval, <b>M</b> – repeat monthly; File trigger: <b>F</b> – check semaphore files; Process trigger: <b>P</b> – check process presence, <b>A</b> – check process absence; E-mail trigger: <b>E</b> - check e-mail message; User trigger: <b>I</b> – wake up on "user idle" event, <b>L</b> - wake up on log-off event, <b>S</b> – wake up on shutdown event)
<b>SCRIPT</b>	Job Script
<b>SCRIPT_TYPE</b>	Job Script Type, one of the following: <b>JAL, VBS, JS</b> (Job Automation Language, Visual Basic Script, JavaScript)  <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition.
<b>SEND_KEYSTROKE</b>	Send Keystroke, one of the following: <b>Y, N</b> (yes, no)  <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition.
<b>SIZE_CHECK_INTERVAL</b>	File Size Stability Check Interval (used in File-watch jobs)
<b>SKIP</b>	Skip Late Job, one of the following: <b>Y, N</b> (yes, no)
<b>SKIP_HOLIDAY</b>	Skip Job on Holiday, one of the following: <b>Y, N</b> (yes, no)
<b>SLIDE_HOLIDAY</b>	Slide Job Execution Time on the next non-holiday if it falls on holiday, one of the following: <b>Y, N</b> (yes, no)
<b>SQL</b>	SQL Command(s)
<b>START_DATE</b>	First Start Date
<b>START_IN</b>	Program Start-up Directory
<b>START_TIME</b>	First Start Time
<b>SUBJECT</b>	E-mail Message Subject for (e-mail watch job)
<b>SUNDAY</b>	Execute Job On Sundays, one of the following: <b>Y, N</b> (yes, no)
<b>TIME_LIST</b>	All Day Schedule List of fixed Times, values must be in valid 24-hour time format. Example: 11:10,12:10,17:10,18:10. This property is shared with DAY_LIST property for Monthly Schedule.
<b>THURSDAY</b>	Execute Job On Thursdays, one of the following: <b>Y, N</b> (yes, no)
<b>TIMEOUT</b>	Timeout (seconds)
<b>TUESDAY</b>	Execute Job On Tuesdays, one of the following: <b>Y, N</b> (yes, no)
<b>WEDNESDAY</b>	Execute Job On Tuesdays, one of the following: <b>Y, N</b> (yes, no)
<b>WINDOW</b>	Window Style, one of the following: <b>N, M, I, H</b> (normal, maximized, iconic, hidden)  <b>Note:</b> This property is not used in 24x7 Scheduler Multi-platform Edition.



## Additional Java Script Documentation and Examples

Online JavaScript documentation is available at these sites:

<http://developer.netscape.com> - Netscape's JavaScript Guide, Reference, and more

<http://msdn.microsoft.com/workshop> - Microsoft's JScript documentation

In addition, you can find lots of JavaScript discussions, online tutorials, links, code examples, and hundreds of thousands of useful scripts at many other sites. Some useful sites are

<http://javascript-reference.info>

<http://www.javascripts.com>

<http://www.javascripter.net>

[www.regular-expressions.info/javascript.html](http://www.regular-expressions.info/javascript.html)

[www.webreference.com/programming/javascript](http://www.webreference.com/programming/javascript)