

Flash ActionScript Quick Reference

Author: Jialong He
Jialong_he@yahoo.com
<http://tiger.la.asu.edu>

Introduction

Using Flash to create animations on the web is popular because the flash player is installed on most computers and the published flash file (SWF file) is small. Flash has a powerful scripting language called ActionScript. You can use write script to manipulate and control objects on the stage. Its syntax is similar to JavaScript (or C++).

Note: this quick reference is based on ActionScript 2.0 language reference.

Script Example

A script can be associated with a keyframe or with an object. To test the following script, copy it to the action panel. Press "Ctrl + Enter" to start the flash file.

```
//=====
// A simple ActionScript
//=====
for (Cnt=1; Cnt<10; Cnt++) {
    trace(Math.random());
}
trace ("Hello, World!");
```

Operator

+, -, *, /, %	Add, Subtract, Multiply, Division, Remainder
+=, -=, *=, /=, %=	Combine with assignment operator
++, --, []	Increase, decrease, Array access
==, !=, <, <=, >, >=	Comparison, equal, not equal, less than, ...
!, &&,	Logical NOT, AND, OR
<<, >>, >>>	Bit shift, left, right, right unsigned
~, &, , ^	Bitwise NOT, AND, OR, XOR
new, delete	Allocate (delete) an object
typeof, instanceof	get expression type, test an instance
//, /* */	One line and multiple line comments

Constants and Compiler Directives

true, false, undefined, null, NaN, Infinity newline	Predefined constants
#initclip statements(s) #endinitclip	Initialization actions are executed only once when a SWF file is played
#include "filename.as"	Include external ActionScript

Program Flow Control

if (condition){ statement(s); } else { statement(s); }	if (age>=18) { trace("welcome, user"); } else { trace("sorry, junior"); }
for (init; condition; next) { statement(s); }	for (Cnt = 1; Cnt<10; Cnt++) { trace(Cnt); }
switch (expression){ caseClause: [defaultClause:] }	Switch (myChar) { case "A" : case "a" : trace("you pressed A or a"); break; default : trace("you did not press A"); }
for (var in object) { statement(s); }	var myObject:Object = {Name:"Tara", age:27, city:"San Francisco"}; for (var prop in myObject) { trace(myObject[prop]); }
while(condition) { statement(s); }	var Cnt:Number = 0; while (Cnt < 20) { trace(Cnt); i += 3; }
do { statement(s) } while (condition)	var myVar:Number = 0; do { trace(myVar); myVar++; } while (myVar < 5);
function FName(P){ statement(s) }	function mySquared(x:Number) { return Math.pow(x, 2); }
class, interface, implement, dynamic, extend, private, public, intrinsic	Define custom class related statements

Global Functions

play, stop, nextFrame, prevFrame gotoAndPlay, gotoAndStop nextScene, prevScene	Main timeline movie clip play head control
loadMovie, loadMovieNum unloadMovie, unloadMovieNum	Loads (unload) a SWF, JPEG, GIF, or PNG file from local disk or web server into a movie clip
loadVariables, loadVariablesNum	Reads data from an external file either on local disk or on web server

setInterval, clearInterval

Repeatedly execute a function (or an object).

\\===== Example=====

```
var intervalId:Number;  
var count:Number = 0;  
var maxCount:Number = 10;  
var duration:Number = 20;  
  
function myCallback():Void {  
trace(count);  
if(count >= maxCount) {clearInterval(intervalId);}  
count++;  
}  
intervalId = setInterval(this, "myCallback", duration);
```

escape, unescape

Converts the parameter to a string and encodes it in a URL-encoded format, where all nonalphanumeric characters are replaced with % hexadecimal sequences (e.g. @ %40).

getProperty, setProperty Get (set) movie clip property

getURL

Load a web page in browser

on (event) {

Mouse/keystroke event handler
Press, release, releaseOutside, rollOut, rollOver, dragOut, dragOver, keyPress

}

e.g.: on (press) { startDrag(this); }

onClipEvent(movieEvent: Object) {
statements;
}

```
onClipEvent (keyDown) {  
if (Key.getCode() == Key.RIGHT) {  
this._parent.nextFrame();  
} else if (Key.getCode() == Key.LEFT) {  
this._parent.prevFrame();  
}  
}
```

startDrag, stopDrag

Makes the target movie clip draggable while the movie plays.

```
my_mc.onPress = function () {  
startDrag(this);  
}  
my_mc.onRelease = function() {  
stopDrag();  
}
```

fscommand

Lets the SWF file communicate with either Flash Player or the program that is hosting Flash Player, such as a web browser.

isFinite, isNaN

e.g. fscommand("fullscreen", true);
Test number

getVersion , targetPath, trace, getTimer, removeMovieClip duplicateMovieClip	Miscellaneous functions.
---	--------------------------

Global Properties	
_global	A reference to the global object that holds the core ActionScript classes, such as String, Object, Math, and Array.
_parent	Specifies or returns a reference to the movie clip or object that contains the current movie clip or object.
_root	Specifies or returns a reference to the root movie clip Timeline.
This	References an object or movie clip instance.

Common Classes

Object	
constructor	Object
Properties	constructor, _proto_, prototype, _resolve,
Methods	addProperty, hasOwnProperty, isPrototypeOf, registerClass, toString, unwatch, valueOf, watch

Array	
Properties	CASEINSENSITIVE, DESCENDING, length, NUMERIC, RETURNINDEXEDARRAY, UNiquesort
Methods	concat, join, pop, push, reverse, shift, slice, sort, sortOn, splice, toString, unshift.
Example	<pre>var myA:Array = new Array("a","b","c"); var myN:Array = new Array(1,2,3); var myAN:Array =myA.concat(myN); trace(myAN.length); // Creates array [a,b,c,1,2,3].</pre>

Date	
Properties	Only have properties inherited from Object.
Methods	getDate, getDay, getFullYear, getHours, getMilliseconds, getMinutes, getMonth, getSeconds, getTime, getTimezoneOffset, getYear, setDate, setFullYear, setHours, setMilliseconds, setMinutes, setMonth, setSeconds, setTime, setYear, toString, valueOf, (most functions have UTC ones)
Example	<pre>var my_date:Date = new Date(2004,4,25); trace(my_date.getYear()); // output: 104 trace(my_date.getFullYear()); // output: 2004 my_date.setYear(99); trace(my_date.getYear()); // output: 99 trace(my_date.getFullYear()); // output: 1999</pre>

Math	
Properties	E, LN10, LN2, LOG10E, LOG2E, PI, SORT1_2, SORT2
Methods	abs, acos, asin, atan, atan2, ceil, cos, exp, floor, log, max, min, pow, random, round, sin, sqrt, tan
Example	<pre>trace(Math.log(0)); // output: -Infinity trace(Math.atan(-1)); // output: -0.785398163397448</pre>

String	
Properties	length
Methods	charAt, charCodeAt, concat, fromCharCode, indexOf, lastIndexOf, slice, split, substr, substring, toLowerCase, toString, toUpperCase, valueOf
Example	<pre>var my_str:String = new String("Hello world"); var mySubString:String = new String(); mySubString = my_str.substr(6,5); trace(mySubString); // output: world trace (mySubString.toUpperCase()); //WORLD</pre>

Stage	
Properties	align, height, scaleMode, showMenu, width
Event	onResize
Methods	addListener, removeListener
Example	<pre>Stage.scaleMode = "noScale" var myListener:Object = new Object(); myListener.onResize = function () { trace("Stage size is now " + Stage.width + " by " + Stage.height); } Stage.addListener(myListener);</pre>

Key	
Properties	BACKSPACE, CAPSLOCK, CONTROL, DELETEKEY, DOWN, END, ENTER, ESCAPE, HOME, INSERT, LEFT, PGDN, PGUP, RIGHT, SHIFT, SPACE, TAB, UP, _listeners
Events	onKeyDown, onKeyUp
Methods	addListener, getAscii, getCode, isAccessible, isDown, isToggled, removeListener
Example	<pre>var myListener:Object = new Object(); myListener.onKeyDown = function () { trace ("You pressed a key."); } myListener.onKeyUp = function () { trace ("You released a key."); } Key.addListener(myListener);</pre>

Mouse	
Events	onMouseDown, onMouseMove, onMouseUp, onMouseWheel
Methods	addListener, hide, removeListener, show
Example	<pre>var mouseListener:Object = new Object(); mouseListener.onMouseDown = function() { trace("Mouse down"); }; mouseListener.onMouseMove = function() { trace(_xmouse); trace(_ymouse); }; mouseListener.onMouseUp = function() { trace("Mouse up"); }; Mouse.addListener(mouseListener);</pre>

Button	
Properties	_alpha, blendMode, cacheAsBitmap, enabled, filters, _focusrect, _height, _highquality, menu, _name, _parent, _quality, _rotation, scale9Grid, _soundbuftime, tabEnabled, tabIndex, _target, trackAsMenu, _url, useHandCursor, _visible, _width, _x, _xmouse, _xscale, _y, _ymouse, _yscale
Events	onDragOut, onDragOver, onKeyDown, onKeyUp, onKillFocus, onPress, onRelease, onReleaseOutside, onRollOut, onRollOver, onSetFocus
Methods	getDepth
Example	<pre>myBtn1_btn.enabled = true; myBtn2_btn.enabled = false; myBtn1_btn.onRelease = function() { trace("you clicked : " + this._name); }; myBtn2_btn.onRelease = function() { trace("you clicked : " + this._name); };</pre>

TextFormat	
Constructor	TextFormat
Properties	align, blockIndent, bold, bullet, color, font, indent, italic, kerning, leading, leftMargin, letterSpacing, rightMargin, size, tabStops, target, underline, url
Methods	getTextExtent
Example	<pre>var my_fmt:TextFormat = new TextFormat(); my_fmt.bold = true; my_fmt.font = "Arial"; my_fmt.size = 12; my_fmt.color = 0xFF0000; this.createTextField("stats_txt", 5000, 10, 0, 530, 22); stats_txt.setTextFormat(my_fmt);</pre>

TextField	
Properties	_alpha, antiAliasType, autoSize, background, backgroundColor, border, borderColor, bottomScroll, condenseWhite, enbedFonts, filter, gridFitType, _height, _highquality, hscroll, html, htmlText, length, maxChars, maxhscroll, maxscroll, menu, mouseWheelEnabled, multiline, _name, _parent, password, _quality, restrict, _rotation, scroll, selectable, sharpness, _soundbuftime, styleSheet, tabEnabled, tabIndex, _target, text, textColor, textHeight, textWidth, thickness, type, _url, variable, _visible, _width, wordWrap, _x, _xmouse, _xscale, _y, _ymouse, _yscale
Event	onChanged, onKillFocus, onScroller, onSetFocus
Methods	addListener, getDepth, getFontList, getNewTextFormat, getTextFormat, removeLisener, removeTextField, replaceSel, replaceText, setNewTextFormat, setTextFormat
Example	<pre>my_txt.border = true; my_txt.type = "input"; my_txt.onChanged = function(textfield_txt:TextField) { trace(textfield_txt._name+" changed"); }; var txtListener:Object = new Object(); txtListener.onChanged = function(textfield_txt:TextField) { trace(textfield_txt._name+" changed and notified myListener"); }; my_txt.addListener(txtListener);</pre>

Sound	
constructor	Sound
Properties	duration, id3, position
Events	onID3, onLoad, onSoundComplete
Methods	attachSound, getBytesLoaded, getBytesTotal, getPan, getTransform, getVolume, loadSound, setPan, setTransform, setVolume, start, stop
Example	<pre>var my_sound:Sound = new Sound(); my_sound.attachSound("logoff_id"); my_sound.onSoundComplete = function() { trace("mySoundID completed"); }; my_sound.start();</pre>

Video	
Properties	_alpha, deblocking, _height, height, _name, _parent, _rotation, smoothing, _visible, _width, width, _x, _xmouse, _xscale, _y, _ymouse, _yscale
Methods	attachVideo, clear
Example	<pre>var my_video:Video; var my_nc:NetConnection = new NetConnection(); my_nc.connect(null); var my_ns:NetStream = new NetStream(my_nc); my_video.attachVideo(my_ns); my_ns.play("video1.flv");</pre>

MovieClip	
Properties	_alpha, blendMode, cacheAsBitmap, _currentframe, _droptarget, enabled, filters, focusEnabled, _focusrect, _framesloaded, _height, _highquality, hitArea, _lockroot, menu, _name, opaqueBackground, _parent, _quality, _rotation, scale9Grid, scrollRect, _soundbuftime, tabChildren, tabEnabled, tabIndex, _target, _totalframes, trackAsMenu, transform, _url, useHandCursor, _visible, _width, _x, _xmouse, _xscale, _y, _ymouse, _yscale
Methods	attachAudio, attachBitmap, attachMovie, beginBitmapFill, beginFill, beginGradientFill, clear, createEmptyMovieClip, createTextField, curveTo, duplicateMovieClip, endFill, getBounds, getBytesLoaded, getBytesTotal, getDepth, getInstanceAtDepth, getNextHightsDepth, getRect, getSWFVersion, getTextSnapshot, getURL, globalToLocal, gotoAndPlay, gotoAndStop, hitTest, lineGradientStyle, lineStyle, lineTo, loadMoive, loadVariables, localToGlobal, moveTo, nextFrame, play, prevFrame, removeMovieClip, setMask, setMask, startDrag, stop, stopDrag, swapDepths, unloadMovie
Events	onData, onDragOut, onDragOver, onEnterFrame, onKeyDown, onKeyUp, onKillFocus, onLoad, onMouseDown, onMouseMove, onMouseUp, onPress, onRelease, onReleaseOutside, onRollOut, onRollOver, onSetFocus, onUnload
Example	<pre>this.createEmptyMovieClip("triangle", this.getNextHighestDepth()); triangle.beginFill(0x0000FF, 100); triangle.moveTo(10, 10); triangle.lineTo(10, 100); triangle.lineTo(100, 10); triangle.lineTo(10, 10); triangle.onRollOver = function() { this._alpha = 50; }; triangle.onRollOut = function() { this._alpha = 100; };</pre>

XMLNode	
Constructor	XMLNode
Properties	attributes, childNodes, firstChild, lastChild,localName, namespaceURI, nextSibling, nodeName, nodeType, nodeValue, parendNode, prefix, previousSibling
Methods	appendChild, cloneNode, getnamespaceForPrefix, getPrefixForNamespace, hasChildNodes, removeNode, toString

XML	
Constructor	XML
Properties	contenttype, docTypeDecl, idMap, ignoreWhite, loaded, status, xmlDecl
Events	onData, onHTTPStatus, onLoad
Methods	addRequestHeader, createElement, createTextNode, getBytesLoaded, getBytesTotal, load, parseXML, send, sendAndLoad
Example	<pre>var myXML:XML = new XML(); myXML.ignoreWhite = true; myXML.onLoad = function () { trace(this.childNodes); } myXML.load ("flute.xml");</pre>

XMLsocket	
Constructor	XMLSocket
Events	onClose, onConnect, onData, onXML
Methods	close, connect, send
Example	<pre>var socket:XMLSocket = new XMLSocket() socket.onConnect = function (success:Boolean) { if (success) { trace ("Connection succeeded!") } else { trace ("Connection failed!") } } if (!socket.connect(null, 2000)) { trace ("Connection failed!") }</pre>