



Flash

(And Actionscript)





What is flash?



<http://www.youtube.com/watch?v=gvdf5n-zl14>



<http://www.adamatomic.com/canabalt/>

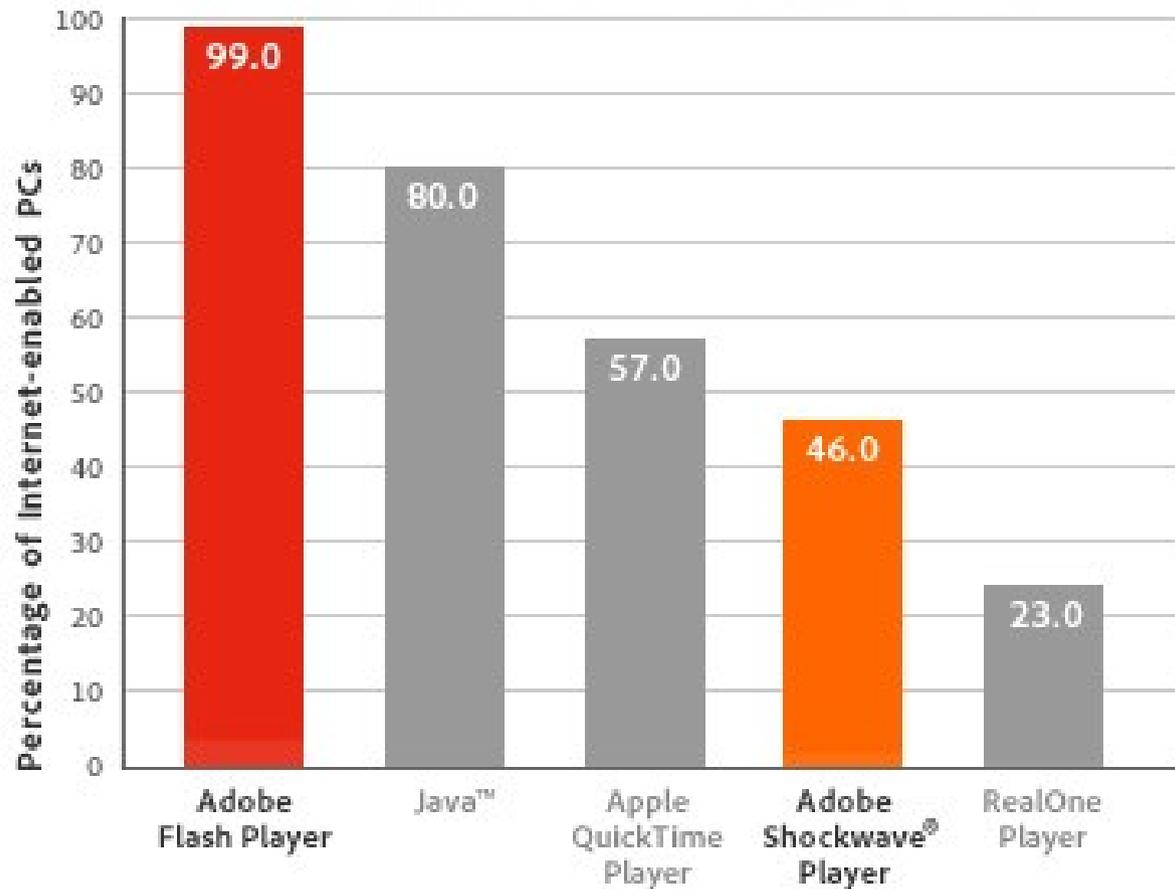


<http://www.homestarrunner.com/main15.html>



What is flash?

It's an incredibly popular platform for rich internet applications.



(Compare to competitors Java (applets) and HTML5)



What is flash?



Compiles to an executable .SWF file that contains all the content used by the flash “movie”.
(Like a .jar file for java)

Runs using the Adobe Flash Player
(free browser plugin available for all browsers)

Easily embeddable into web pages! (You'll see how later)



What is ActionScript?



Started out as simple code meant to manipulate animation timelines, now a fully powered object-oriented language in its own right.

A dialect of ECMAScript (like javascript), an object-oriented programming language that takes a lot of syntax from java.





ActionScript Syntax

Object Declaration

```
package {  
    import flash.display.*;  
  
    public class HelloWorld extends Sprite {  
  
        //Code goes here  
  
    }  
}
```

(Almost) the same as java.



ActionScript Syntax

Methods, Constructors and Returns

```
package {
    import flash.display.*;

    public class HelloWorld extends Sprite {

        public function HelloWorld():void {
            trace(returnTest());
        }

        public function returnTest():Number {
            return 5;
        }

    }
}
```

Note: In the compiled class, the constructor is run as the main.

(Almost) the same as java.



ActionScript Syntax

Trace (printing)

```
trace("Hello, world!");
```

Equivalent of System.out.println() in java.

If not using Flash CS, a bit harder to get.

(Somewhat)different from java..



ActionScript Syntax

Variable Declaration

(variable type)
`var name:Type = value;`
(variable name)

ex.

```
var age:Number = 50;  
var truthiness:Boolean = false;  
var name:String = "brozinsky";
```

(Somewhat)different from java.



ActionScript Syntax

Quick facts

All numbers (ints, floats, longs, doubles, etc) should use the Number type.

ActionScript has a sort of “tacked-on” strict typing (compare to variable declaration in Javascript and ECMAScript standard which is just

```
var test = 0; (NOTE: THIS IS COMPILER ERROR IN AS3)
```

“Truthiness” applies with variables used in boolean checks:

```
var test:Number = 0;  
if (test) {  
    trace("true");  
} else {  
    trace("false");  
}
```

Will print false.



ActionScript Syntax

loops and if's

```
for (var i = 0; i < 5; i++) {  
    trace("Hello world "+i);  
}
```

```
for each (var i:Number in myArray) {  
    trace(i);  
}
```

```
while(true) {  
    trace("Hello world?");  
}
```

```
if (something) {  
    trace("yes");  
} else if (something_else) {  
    trace("no");  
} else {  
    trace("maybe");  
}
```

(Almost) the same as java.



ActionScript Practice

Make an ActionScript class that `trace()` the first 20 numbers of Fibonacci's sequence.

(0, 1, 1, 2, 3, 5, 8, 13, 21...)



ActionScript Syntax

swf stage declarations

```
[SWF(backgroundColor="#0000FF", width="500", height="500")]
```

Put in between your import statements and the start of class, specifies the width, height and background color of the window.

Not in java.



ActionScript Syntax

sprite class and graphics

```
package {
    import flash.display.*;

    public class Pix extends Sprite {

        public function Pix() {
            graphics.beginFill(0x0000FF);
            graphics.drawCircle(0,0,20); //(xpos,ypos,radius)
            graphics.drawRect(100,100,20,20); //(xpos,ypos,wid,hgt)
            graphics.endFill();

            stage.addChild(this);

        }

    }
}
```

Note: the sprite class has a field that you inherit called “graphics”.

Why do we need to [stage.addChild](#), and why do we need to [extend Sprite](#)?
Find out next time!



ActionScript Syntax

more graphics methods

```
graphics.drawCircle(x,y,radius)
```

```
graphics.drawRect(x,y,width,height);
```

```
graphics.drawEllipse(x,y,width,height);
```

```
graphics.lineStyle(thickness,color;
```

```
graphics.moveTo(x, y);
```

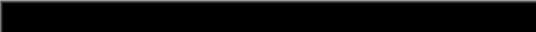
```
graphics.lineTo(x,y);
```

```
graphics.clear();
```



ActionScript Syntax

graphics miscellany

Color	Color HEX
	#000000
	#FF0000
	#00FF00
	#0000FF
	#FFFF00
	#00FFFF
	#FF00FF
	#C0C0C0
	#FFFFFF

Use HTML hex colors, replace # with 0x

ex.

```
graphics.beginFill(0xC0C0C0);  
(for grey)
```

Question on any specific method?
Check the API!

<http://livedocs.adobe.com/flash/9.0/ActionScriptLangRefV3/flash/display/Graphics.html>

Method

beginBitmapFill(bitmap:BitmapData, matrix:Matrix = null, repeat:Boolean = true, smooth:Boolean):void
Fills a drawing area with a bitmap image.

beginFill(color:uint, alpha:Number = 1.0):void
Specifies a simple one-color fill that subsequent calls to other Graphics methods (such as lineTo())

beginGradientFill(type:String, colors:Array, alphas:Array, ratios:Array, matrix:Matrix = null, spreadMethod:String):void
Specifies a gradient fill that subsequent calls to other Graphics methods (such as lineTo() or drawRect())

clear():void

Removes all content from the Graphics object, and resets fill and line style settings.

drawCircle(x:Number, y:Number, radius:Number, fillStyle:Object, strokeStyle:Object):void
; anchorX:Number, anchorY:Number):void

Draws a circle from the current drawing position to (anchorX, anchorY).

drawRect(x:Number, y:Number, width:Number, height:Number):void

Draws a circle.

drawEllipse(x:Number, y:Number, width:Number, height:Number):void
Draws an ellipse.

drawRect(x:Number, y:Number, width:Number, height:Number):void
Draws a rectangle.

drawRoundRect(x:Number, y:Number, width:Number, height:Number, ellipseWidth:Number, ellipseHeight:Number):void
Draws a rounded rectangle.

endFill():void

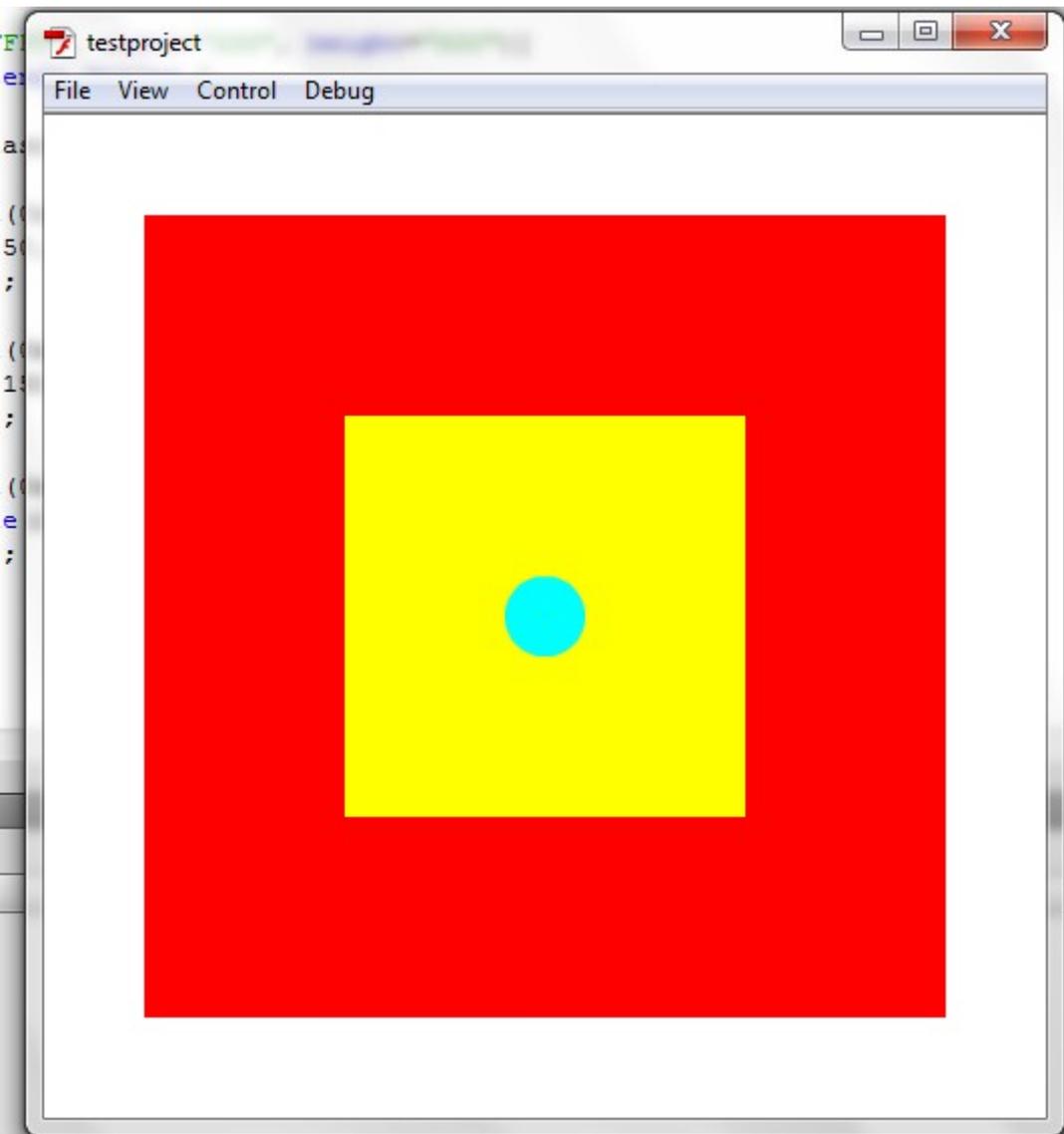
Applies a fill to the lines and curves that were added since the last call to the beginFill(), beginGradientFill(), or drawRect() method.

lineGradientStyle(type:String, colors:Array, alphas:Array, ratios:Array, matrix:Matrix = null, spreadMethod:String):void



ActionScript Practice

Use a [sprite](#) class's [graphics](#) to try and reproduce this:



500 x 500 White stage

Red box starts at 50,50 and is 400x400

Yellow box starts at 150,150 and is 200x200

Blue circle centered at 250,250 and radius 20



How to compile? (Without CS5)

Compiling with FLEX (free command-line tool):

(NOT RECOMMENDED)

Download and Unzip FLEX SDK:

<http://www.adobe.com/cfusion/entitlement/index.cfm?e=flexsdk>

cd to your_flex_installation/bin

mxmhc.exe "Absolute path to your .AS file"

or

Drag and drop your .AS file onto your_flex_installation/bin/mxmhc.exe

Detailed guide by Alex Miller (**Highly** recommended if you do not get flash CS5):

http://www.cs.washington.edu/education/courses/cse190m/11sp/flash_install.shtml



How to debug? (Without CS5)

Compiler errors will show up when you try and run mxmlic.exe

```
C:\flex\bin>mxmlic.exe -debug=true C:\MyProgram.as ;; pause
Loading configuration file C:\flex\frameworks\flex-config.xml
C:\MyProgram.as(12): col: 19 Error: Access of undefined property ss.

        trace("lolll");ss
                        ^
Press any key to continue . . .
```

To view trace output:

Download the debug Flash Player here:

http://download.macromedia.com/pub/flashplayer/updaters/10/flashplayer_10_sa_debug.exe

compile with mxmlic.exe -debug=true "ABSOLUTE_PATH"

All trace() output will be in

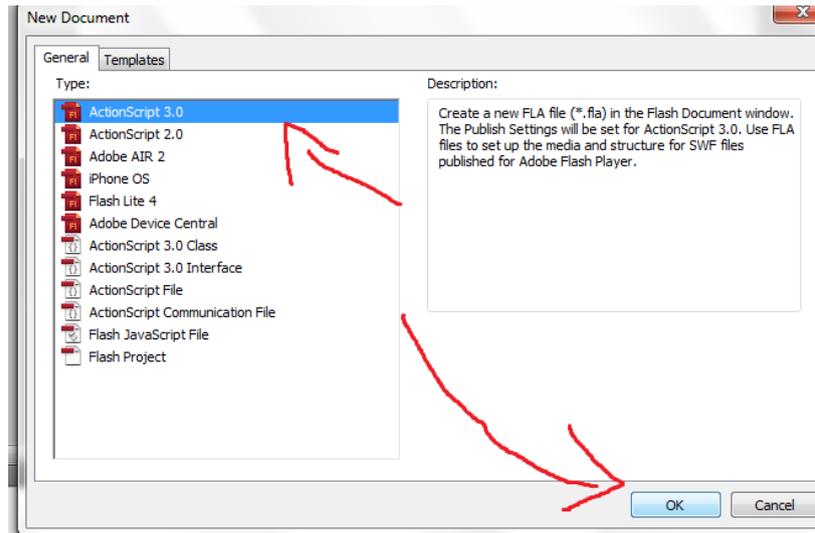
C:\Documents and Settings\USER_NAME\Application Data\Macromedia\Flash Player\Logs
flashlog.txt

(There are better ways to do this available on the internet. If you do not plan to get CS5, you probably should search them)

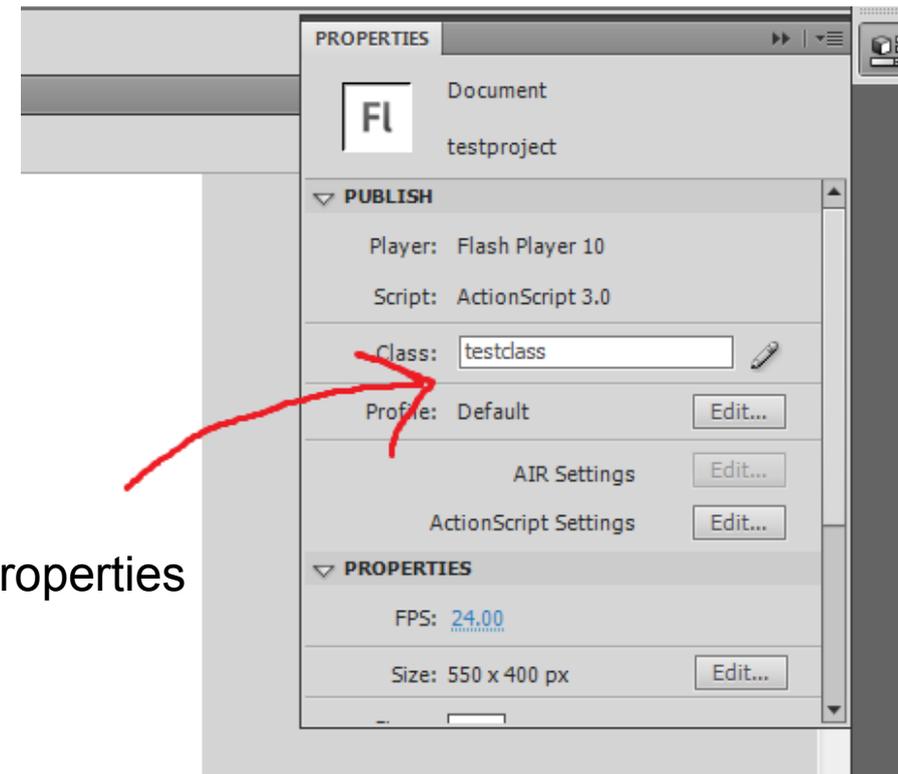


COMPILE FOR CS5

Much more recommended as a general development environment.
Get the trial, buy it or get it through other shadier means.



1. Make new .fla project



2. Type the name of your ActionScript “main” class into properties



Embedding into HTML

```
<object type="application/x-shockwave-flash"  
data="MyProgram.swf"  
width="400" height="400" menu=false>  
<param name="movie" value="MyProgram.swf"  
menu=false />  
</object>
```

Be sure to have MyProgram.swf in the linked path.



Homework

Make a AS3 class that **extends Sprite** and uses the **graphics** field.

REQUIREMENTS:

At least **5** different shapes with **3** different colors.

Use a **while** loop or **for** loop.

Declare at least **one** variable.

TURNIN:

Turn in both your **.AS file(s)** and the compiled **.SWF file**.

Webster turn in coming soon.

Find examples and this presentation at:

<http://spotcos.com/flash1.html>

or on the 190 course website (soon)

