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CreateJS Suite

Sort of like Flash....Only More Flashy

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CreateJS

What is it?

- CreateJS is a suite of Javascript libraries & tools for building rich, interactive experiences with HTML5.
- Very similar to Flash, but becoming more widely accepted



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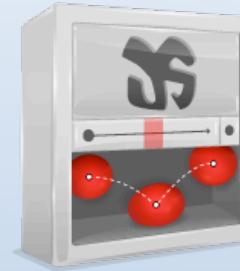
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CreateJS Suite

What's inside the box?



A LOT of good stuff!

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EaselJS

What goes on an easel? A Canvas!



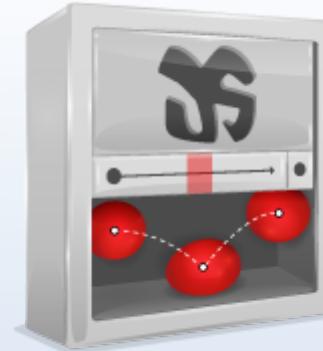
- It's the core of CreateJS
- Based on the Flash Hierarchical Display List
- Allows both Display List and Display List Object
- DOM Elements
- Mouse Events on objects, OnClick & onPress
- Offers Touch Support
- Basically, it makes working with Canvas much easier & faster



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TweenJS

Making those In-betweens



- Simple javascript library for tweening and animating HTML5 & Javascript properties
- Developed to integrate well into EaselJS, but is not dependent on or specific to it
- Chain commands together to create complex tweens
- Supports CSS properties
- Can inject function calls at any point in the tween chain



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SoundJS

Say Whaaaaat?



- A Javascript library that provides a simple API, and powerful features for working with audio.
- Consistent cross-browser support for audio is currently a mess in HTML5 (We will be covering this later)
- HTML5 fallback support covered out of the box
- Determines which audio type to load depending on the browser



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PreloadJS

.....loading.....



- A Javascript library that lets you manage and co-ordinate the loading of assets.
- Preload anything from Images, sounds, JS, data, & more
- Supports multiple queues
- Queue Pause & Resume
- Provides progress information and on complete events

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Zoë

SWF goes in Sprite Comes Out



- A stand alone AIR application for exporting SWF animations as EaselJS sprite sheets that can be used in Canvas and CSS.
- SWF is Flash's native file format

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EaselJS

We are going to focus on this today



- To get started with Easel, create a Stage
- This stage is then drawn onto the CANVAS element,
- Add DisplayObject instances as children to the stage

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EaselJS

New Classes



- Stage Class for managing the context
- Graphics class for drawing graphics
- Shapes class for managing transformations
- Ticker class for managing time

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DisplayObject

Types



- Images using **Bitmap**
- Vector graphics using **Shape** and **Graphics**
- Animated bitmaps using **SpriteSheet** and **Sprite**
- Simple text instances using **Text**
- Control HTML DOM elements using **DOMElement**
- Containers that hold other DisplayObjects using **Container**

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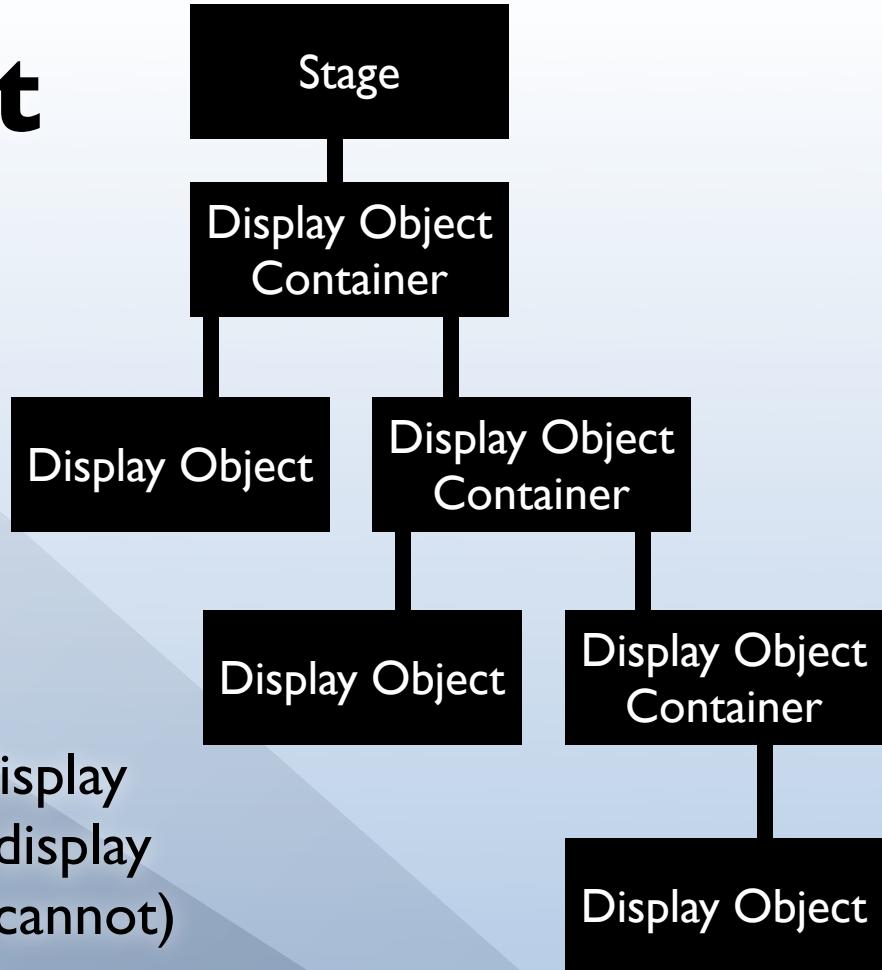


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Display List

What holds what?

- The Display List determines how Display Objects are stacked
- Things to note:
 - Display Object Containers are display objects AND can contain other display objects (simple Display Objects cannot)
 - Display objects can be text fields, buttons bitmaps, etc...





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Display List

Stacking Order

- The Display List constantly shifts like a stack of cards.
 - When the bottom card is removed, the card above it drops down to fill it's place.



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Display List

Stacking Order

- Each object in a display list has an index
- The lower on the list, the lower the index.
- Unlike an array there is never a gap in the list, the deck keeps shifting.

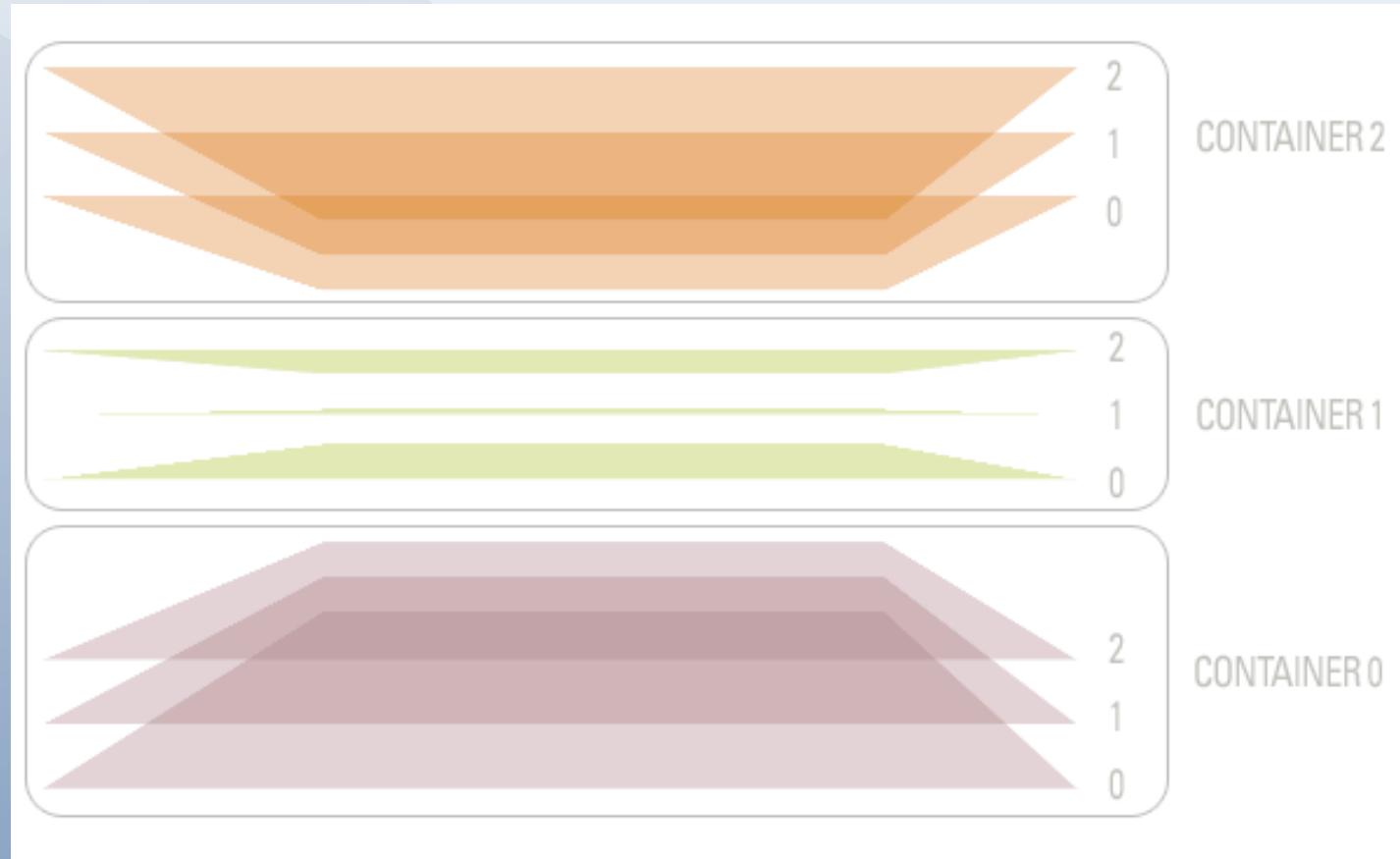
- Nested Display Lists
 - Display Object Containers can be within other Display Object Containers



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Display List

Stacking Order



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Display Objects

Properties & Methods

properties	details
alpha	a transparency. 0 is transparent, 1 is opaque
x, y	position of the shape on the stage
regX, regY	registration point around which transformations are performed
scaleX, scaleY	stretch factor...2 is twice as big, .5 is half
skewX, skewY	skew the object in either x or y direction



Display Object Containers

Properties & Methods

Properties

- (all the properties Display Objects have)
- `getNumChildren`

Methods

- `addChild()`, `addChildAt()`
- `removeChild()`, `removeChildAt()`
- `contains()`
- `swapChildren()`, `swapChildrenAt()`



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EaselJS

We are going to focus on this today



- We can use it off of the CDN (Content Delivery Network)
 - <http://code.createjs.com/createjs-2013.09.25.min.js>
- OR Download a copy
 - <http://www.createjs.com>



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EaselJS

The Basics

- Example



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Fills

How do we *fill* our shapes?

type	method
solid fill	<code>beginFill(color);</code>
linear gradient	<code>beginLinearGradientFill(colors, ratios, x0, y0, x1, y1)</code> <code>colors = [color1, color2], ratios = [0-1, 0-1]</code> <code>origin x/y, destination x/y</code>
radial gradient	<code>beginRadialGradientFill (colors, ratios, x0, y0, r0, x1, y1, r1)</code> <code>colors = [color1, color2], ratios = [0-1, 0-1]</code> <code>origin x/y, destination x/y</code>

- Colors - list of colors inside brackets and separated by commas
- Ratios is the beginning and ending position of the gradient within the shape as a number from 0 to 1
- X and Y positions, first for where the gradient begins within the shape and then where it ends.



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Fills

_ in the blank

- Example



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Strokes

Outlines

- `beginStroke("Color")`
- `setStrokeStyle(thickness, caps, joints, miter)`

primitive	method
<code>thickness</code>	width of the stroke in pixels
<code>caps</code> (optional)	caps at the end of open line segments: "butt"-0 (default), "round"-1, or "square"-2
<code>joints</code> (optional)	shape where two lines meet: "miter"-0 (default), "round"-1, "bevel"-2
<code>miter</code> (optional)	if joint is set up to miter, then this is a value that specifies when miter will be clipped



Strokes

Stroke Fills

type	method
solid fill	<code>beginFill(color);</code>
linear gradient	<code>beginLinearGradientFill(colors, ratios, x0, y0, x1, y1)</code> <code>colors = [color1, color2], ratios = [0-1, 0-1]</code> <code>origin x/y, destination x/y</code>
radial gradient	<code>beginRadialGradientFill (colors, ratios, x0, y0, r0, x1, y1, r1)</code> <code>colors = [color1, color2], ratios = [0-1, 0-1]</code> <code>origin x/y, destination x/y</code>



Strokes

LineTo Methods

properties	details
quadratic curves	<code>quadraticCurveTo(cpx, cpy, x, y)</code>
arcs	<code>arcTo(x1, y1, x2, y2, radius)</code>
bezier curves	<code>bezierCurveTo(cp1x, cp1y, cp2x, cp2y, x ,y)</code>



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Strokes

Its what gets boats moving



- Example

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EaselJS Graphic Primitives

What can we draw?

properties	details
rectangles	rect(x, y, w, h) or fillRect(x, y, w, h)
rounded rectangles	drawRoundRect(x, y, w, h, radius)
circle	drawCircle(x, y, radius)
ellipse	drawEllipse(x, y, w, h)
stars & starbursts	drawPolyStar(x, y, radius, sides, pointSize, angle)



Rectangles

Don't box me in

type	method
rectangles	<code>rect(x, y, w, h);</code> x and y coordinates, plus width and height can also be called as <code>drawRect()</code> to match canvas. you can also use <code>drawRect();</code>
round rectangles	<code>drawRoundRect(x, y, w, h, radius)</code> rectangles with equal corner radius x/y coordinates, width, height and corner radius
complex round rectangles	<code>drawRoundRectComplex(x, y, w, h, radiusTL, radiusTR, radiusBR, radiusBL)</code> like round rect, but lets you specify top left, top right, bottom right and bottom left radius separately



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Rectangles

Code

- Example



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Ellipses & Arcs

Fancy names for ovals & circles

type	method
circles	<code>drawCircle(x, y, radius)</code> x and y coordinates, plus distance from center
ellipses	<code>drawEllipse(x, y, w, h)</code> x and y coordinates, plus width and height
arcs	<code>arc(x, y, radius, startAngle, endAngle, anticlockwise)</code> draws part of or a complete circle. x/y origin, distance from center, start and end angles in radians, and an optional direction of the arc



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Ellipses & Arcs

Code

- Example



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Polygons & Stars

STOP and look to the sky

drawPolyStar(x,y,radius, sides, pointSize, angle)

type	method
origin (x, y)	vertical and horizontal position on the stage
radius	distance from origin
sides	number of points of star or sides of polygon
pointSize	describes a star's pointiness as a number from 0-1 0 draws polygons, 1 draws spikes
angle	angle of the first point or corner of the shape -90 will draw it pointing up



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Polygons & Stars

Code

- Example



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Compacting Code

Making it SMALLER

- Multiple lines of code can be stitched together if the front part is the same.

```
shape.graphics.moveTo(50, 50);
```

```
shape.graphics.lineTo(250, 250);
```

```
//becomes
```

```
shape.graphics.moveTo(50, 50).lineTo(250, 250);
```



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Code Shortcuts

Say more with less

method	shortcut
origin (x, y)	bf
radius	bs
sides	f
pointSize	If
angle	ls

method	shortcut
beginStroke	s
drawPolyStar	dp
drawRect	r or dr
lineTo	lt
moveTo	mt

Parameters: 0 - default or first, 1 - Second, 2 - Third



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Compacting Code

Code

- Example



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Transforms

More than meets the eye

properties	details
alpha	a transparency. 0 is transparent, 1 is opaque
x, y	position of the shape on the stage
regX, regY	registration point around which transformations are performed
scaleX, scaleY	stretch factor...2 is twice as big, .5 is half
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Transforms

Code

Example

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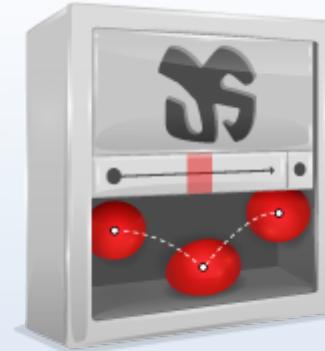
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TweenJS

Making those In-betweens



- Link tweenJS.js file
- Use 2 main methods
 - to() where do you want to go
 - wait() hold here
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