

# Animatron Tutorial

Ronald Bourret  
<http://www.rpbouret.com>

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## Animatron

This tutorial introduces computer animation using Animatron. Animatron is a product of Animatron.com. A free, cloud-based version (as well as paying versions) is available at:

<http://www.animatron.com>

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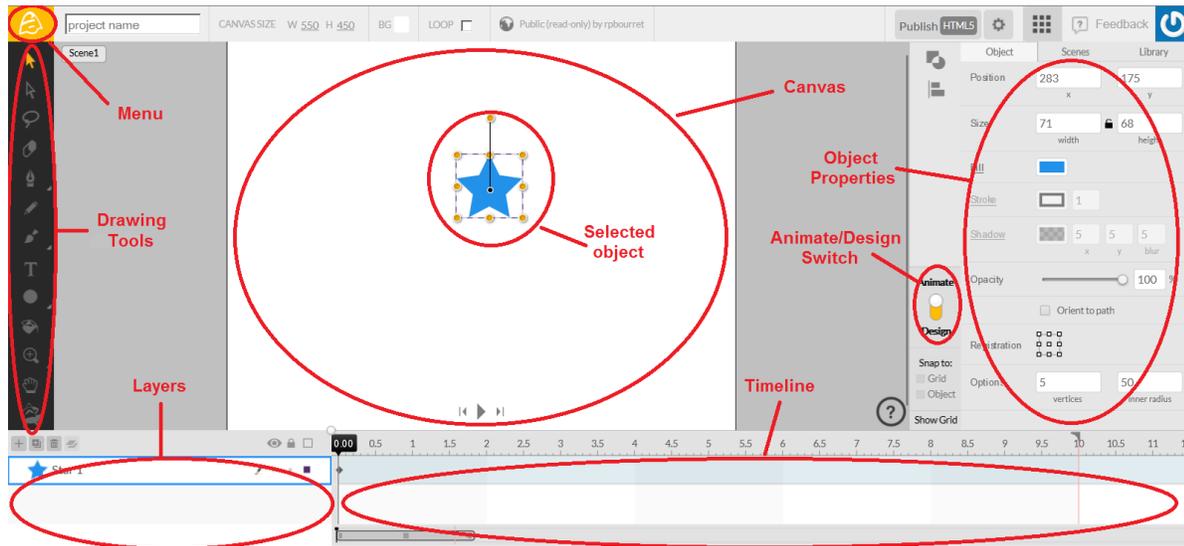
# Lesson 1: Getting Started

## 1.1 Create an Animatron Account

1. Go to <http://www.animatron.com>.
2. Click on Create Free Account.
3. Enter your email address. Click Create Account.
4. Go to your email account and get your mail. This should include a confirmation email from Animatron. Click the Activate Your Account button.
5. Go back to Animatron and log in.
6. Click Create.

## 1.2 Animatron Screen

The Animatron screen looks like this:



The main parts are circled in red:

- **Canvas.** Where you draw objects.
- **Drawing tools.** The tools you use to draw objects. For more information, see sections 2.1 and 2.4.
- **Object properties.** Properties of the currently selected object, such as fill color and shadow. For more information, see section 2.2.
- **Animate/Design switch.** Tells Animatron whether you are animating the objects on the canvas or just drawing them. For more information, see section 3.2.
- **Menu.** A list of useful commands, such as creating a new project or undoing an action.
- **Timeline.** Shows the current time in your animation and describes how objects move and change over time. For more information, see section 3.2.
- **Layers.** A list of the objects in your animation. For more information, see sections 3.8-3.10.

## Lesson 2: Drawing

### 2.1 Drawing objects

In this exercise, we will learn to draw simple objects.

1. Click on Create.
2. Make sure the Animate/Design switch (to the right of the canvas) is set to Design:



3. Draw something with each of the tools in the drawing menu:

Symbol	Name	Description	Notes
	Pen	Draws curved lines.	To draw straight lines, just click each new point on the line. To draw curved lines, press and hold the mouse button down at each new point on the curve. As you move the mouse around, the line will bend. The length of the blue handles control the radius of the curve and the direction of the handles control the direction of the curve. To end the line, choose a different drawing tool.
	Pencil	Draws free-form lines.	To draw a line, press the mouse button and hold it down as you move the mouse. To end the line, release the button.
	Brush	Like Pencil, but with different line styles.	Try the different options, which draw with squares, circles, triangles, feathers, rails, and ink.
	Text	Writes text.	
	Oval	Draws ovals.	On the same menu as rectangle, star, polygon, and line.
	Rectangle	Draws rectangles.	On the same menu as oval, star, polygon, and line. Set the roundness of the corners with the rectangle property sheet before drawing.
	Star	Draws stars.	On the same menu as oval, rectangle, polygon, and line. Set the number of vertices and the radius of the body of the star with the star property sheet (on the right) before drawing.
	Polygon	Draws polygons.	On the same menu as oval, rectangle, star, and line. Set the number of vertices of the polygon with the polygon property sheet (on the right) before drawing.
	Line	Draws straight lines.	On the same menu as oval, rectangle, star, and polygon. Single-click to add a point. Double-click to end the line.
	Shape	Draws different shapes.	Select a sub-menu from the top row and then select a shape.
	Bucket	Fills enclosed areas.	Each filled area is a new, separate object.

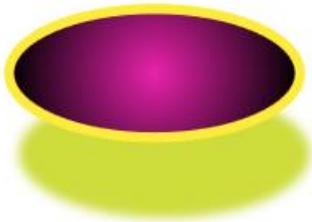
## 2.2 Object properties

In this lesson, we will learn to set object properties.

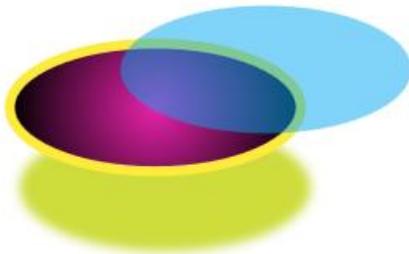
1. Click on the menu (the Animatron symbol in the upper left corner) and select Project, then select New Project.
2. Draw an oval on the canvas.



3. Use the Select tool (the arrow in the top left corner) to select the oval.
4. Change the properties (on the right side of the screen) until your oval looks like the following. **HINT:** You will need to change the Fill, Stroke, and Shadow properties. (*Fill* is the color inside the oval. *Stroke* is the border of the oval. To set the color, double-click on the colored rectangle showing the current color. After you change a color, click the Back button to return to the other properties.)



5. Draw a second oval and drag it partially over the first. Play with the slider for opacity (how much you can see through an object) to get the following. What happens as you slide the opacity slider back and forth?



6. Below the ovals, write the word Animatron and change its font, fill, stroke, and shadow to create the following:

**Animatron**  
Animatron

## 2.3 Moving, stretching, and rotating objects

In this lesson, we will learn to move, stretch, and rotate objects.

1. Create a new project and write “Animatron is cool” on two lines.
2. Click on the Select tool (the arrow at the top of the tools menu) and click on your text. It should look something like this:



3. Make three copies of your text. You can use CTRL+C (copy) and CTRL+V (paste), or use Copy and Paste in the Edit menu or right-click menu.
4. Drag each copy apart from the others.
5. Leave one copy like it is. Change the other copies as follows:
  - Make one copy short and wide. (Use the grab points on the sides of the selection box.)
  - Turn one copy upside down. (Use the rotation handle: the line sticking up from the center.)
  - Make a mirror image from the third copy. (Right-click on the copy and select Transform/Flip Vertically.) Next, use horizontal skew in the property sheet to slant the image and change the fill color to lighten it.

The result should look something like this:

**Animatron  
is cool**  
*Animatron  
is cool*

**Animatron  
is cool**  
**Animatron  
is cool**

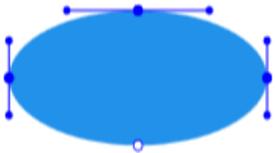
## 2.4 Reshaping objects

In this lesson, we will learn to reshape objects.

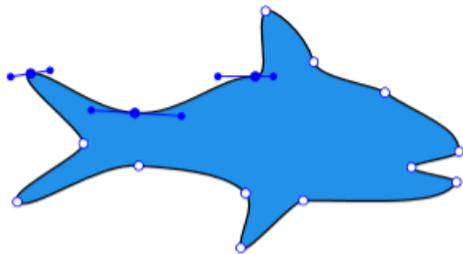
1. Create a new project and draw an oval.
2. Click on the Direct Select tool (the hollow arrow that is second from the top on the tool menu). Click on the oval. You will see four white dots on the edges.



3. Click on the top dot. Two blue handles will appear on the dot and on the two dots to either side. These handles determine the direction and curvature of the lines connecting the dots.



4. Try the following operations and see what happens:
  - Drag the dot.
  - Grab the end of one handle and rotate the handle around the dot.
  - Grab the end of one handle and drag it to make the handle longer or shorter.
5. Double-click somewhere on the edge of your object; this adds another dot. Now double-click the same dot; this deletes the dot.
6. By adding and moving dots and by playing with the handles, reshape your oval into a shark:

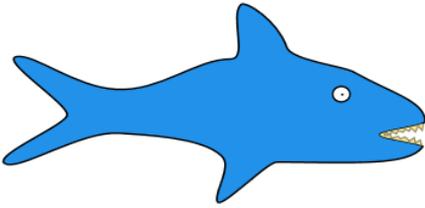


7. Type Shark in the Project Name box (upper left corner).

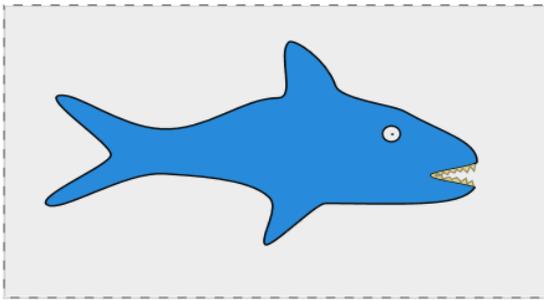
## 2.5 Grouping objects

In this lesson, we will learn to group objects.

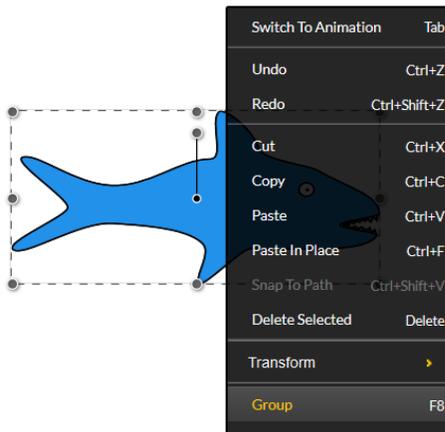
1. Add teeth and an eye to your shark. If you need to zoom in to draw the teeth, position the cursor where you want to zoom in (or out) and press Z to zoom in and X to zoom out.



2. Select your shark and drag it somewhere else on the canvas. What happened? Did it leave its eye and teeth behind? Hmmmm. Nobody wants a shark that needs dentures and a glass eye.
3. To solve this problem, first press CTRL+Z to undo your move and reunite your shark with its body parts. Next, use the select tool to draw a box around the entire shark. This will select everything in the box: the shark, its eye, and its teeth:



4. Right-click on the shark and select Group from the pop-up menu. You can also select Group from the Edit menu.



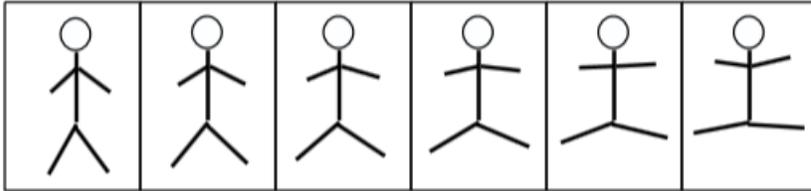
5. Drag the shark again. Notice that it didn't lose its teeth and eyeball this time. When you place multiple objects in a group, AnimateIt treats them as a single object. And if you want to ungroup them later, all you need to do is right-click and select Ungroup from the pop-up menu.

## Lesson 3: Animation

### 3.1 Terminology

Before computer animation, animators hand-painted each frame of the story on one or more pieces of clear plastic. They then stacked all of the pieces of plastic for a single frame -- background, foreground, characters -- under a piece of glass and photographed it. When the photos of all of the frames were played as a movie, the characters appeared to move.

Computer animation is not that different, except that computers make it easier to reuse work and can do some of the work themselves. For example, suppose you want to animate a stick figure doing jumping jacks. In traditional animation, you might have to draw the following frames:



In computer animation, you would only need to draw the first and last frames and tell the computer how to rotate the arms and the legs.

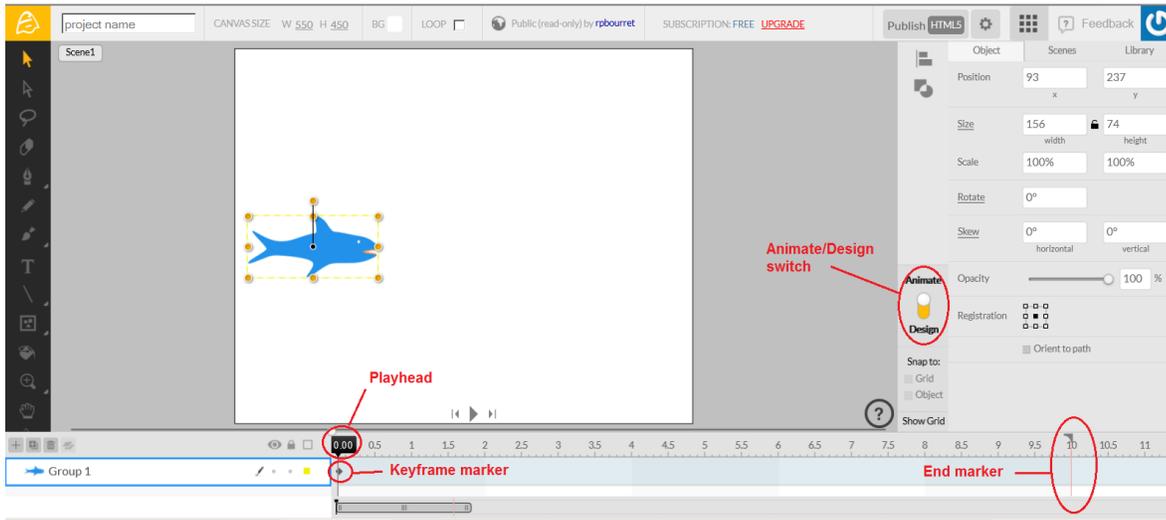
The frames that you actually draw are called **keyframes**, because they are “key” (important) frames. The instructions about how to move parts of your drawing between the keyframes are called **tweens**, because they tell the computer what to do *between* the key frames. Animateur supports four types of tweens:

- **Translate:** Moves an object from one place to another.
- **Rotate:** Rotates an object around its pivot point, which is called its **registration point**.
- **Scale:** Changes the size of an object.
- **Alpha (Opacity):** Changes an object’s opacity -- that is, how transparent it is.

## 3.2 Translating (moving) objects

In this exercise, we will learn to move objects with the Translate (movement) tween.

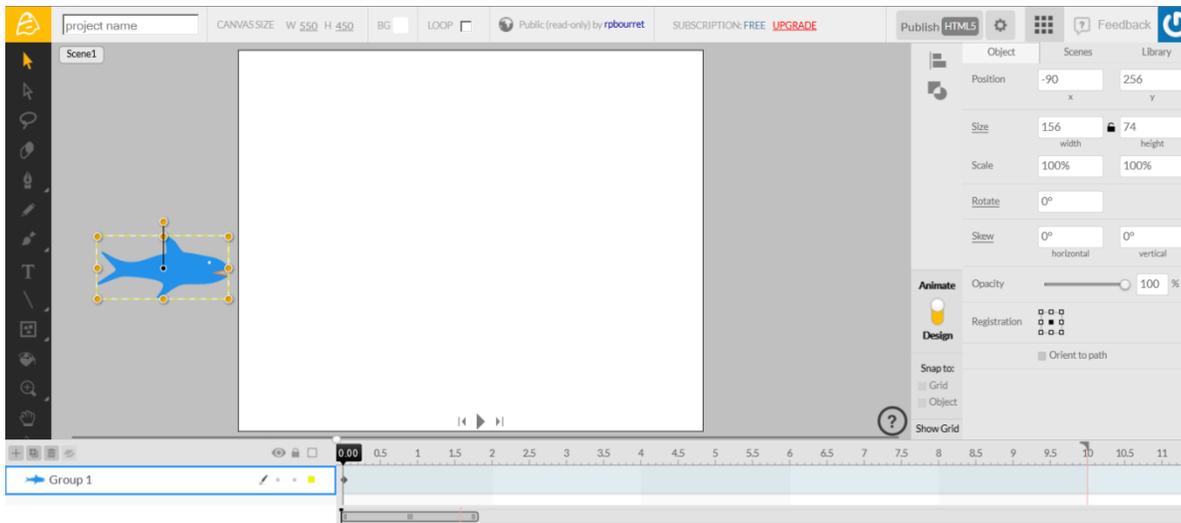
1. Set the Animate/Design switch to Animate and click on the shark to select it.



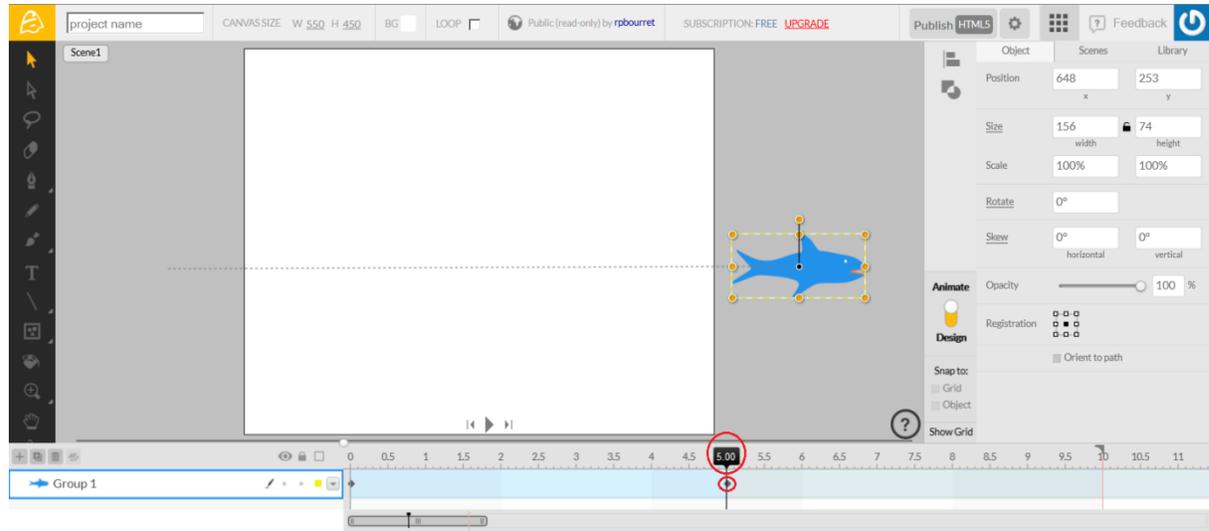
2. Look at the timeline on the bottom of the editor and look for the playhead and the keyframe marker (see figure above).

The playhead is set to 0.0 seconds, which means that the current picture shows how things will look at the start of the animation. The keyframe marker (a grey diamond) below the playhead means that the shark's current position is a key frame. That is, Animatron will use this position when figuring out how to move the shark.

Since we want the shark to swim from left to right across the canvas, move the shark off the canvas to the left



3. Now move the playhead to 5.0 seconds and move the shark off the canvas to the right. When you do this, you are telling Animatron where the shark will be at 5.0 seconds.



There are two important things to notice. First, Animatron inserted a keyframe marker (grey diamond) at 5.0 seconds. Second, Animatron drew a dotted blue line across the screen. This is the path that the shark will follow during the animation.

4. To watch the animation, click the back-to-start symbol (left of the “play” triangle). The playhead will move to 0.0 seconds and the shark will move back to the left, because that is its position at 0.0 seconds. Now click the play symbol. The shark will swim across the canvas from left to right.

If you want, you can drag the playhead back and forth and see where the shark will be at any point in time.

**It is important to understand what is happening here, because this is how you do animation in Animatron. There are two main concepts:**

- You can think of the Animatron editor as a film editor that displays one frame of an animated film at a time. The playhead tells you which frame you are currently looking at. For example, if you set the playhead to 3.2 seconds, Animatron displays the “frame” that will be shown 3.2 seconds into the animation.
- The keyframe markers tell you where the keyframes are. You use the keyframes to tell Animatron where an object -- in this case, the shark -- should be. Animatron figures out all the locations of the object between the keyframes.

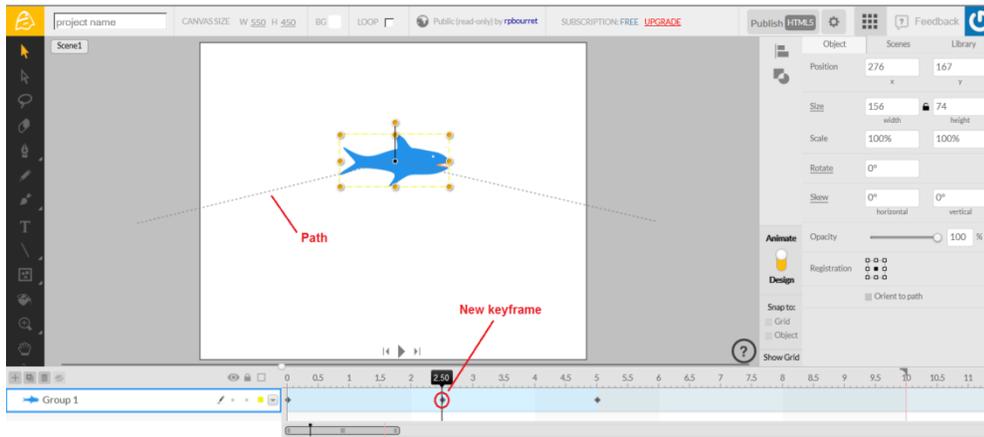
### 3.3 Inserting keyframes

In this exercise, we will learn to insert more keyframes.

1. Let's make our shark jump. To do this, we need to insert more keyframes.

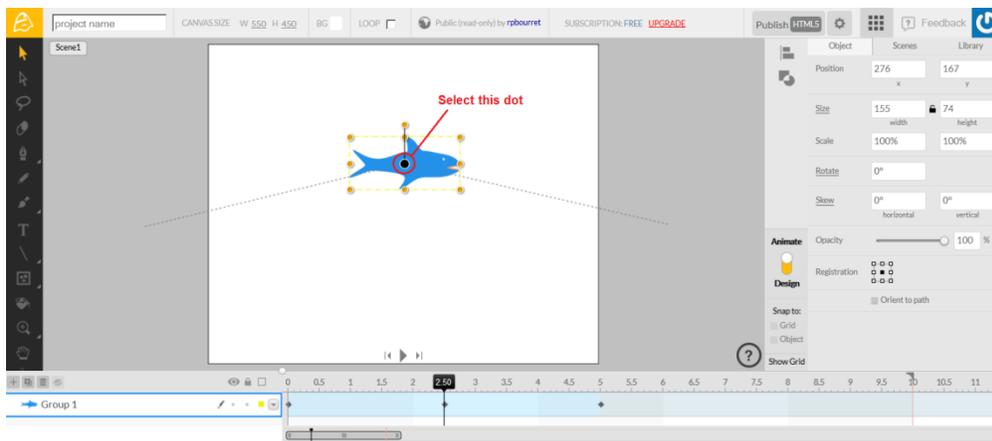
Move the playhead to 2.5 seconds. (Either click 2.5 on the timeline or drag the playhead to 2.5.) Now move the shark to the middle of the canvas, above the height of the start and end points. Two things happen:

- The dotted blue line diagonals up and then down, showing the new path.
- Animatron inserts a new keyframe (grey diamond) at 2.5 seconds.

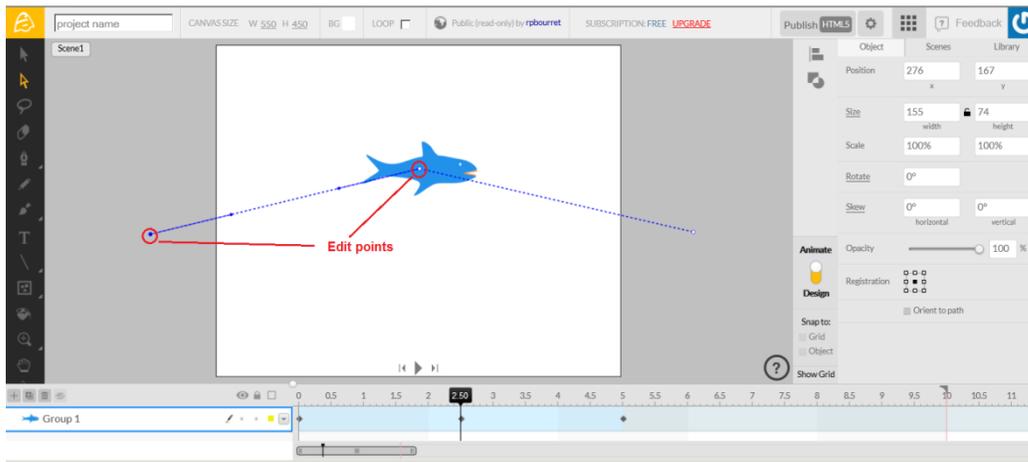


To watch the new animation, return the playhead to the start (press SHIFT+RETURN or click the back-to-start button) and then click the play button.

2. A shark swimming up- and downhill lacks drama. To make a more definitive leap, we'll edit the path directly. To do this, click the black dot in the center of the shark's selection box.

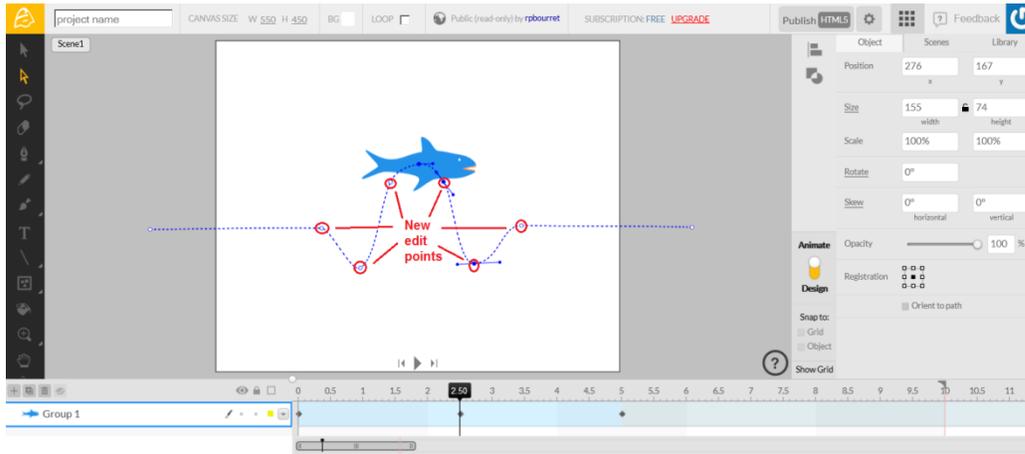


This selects the path and highlights edit points, just like those used to create the shark from an oval.

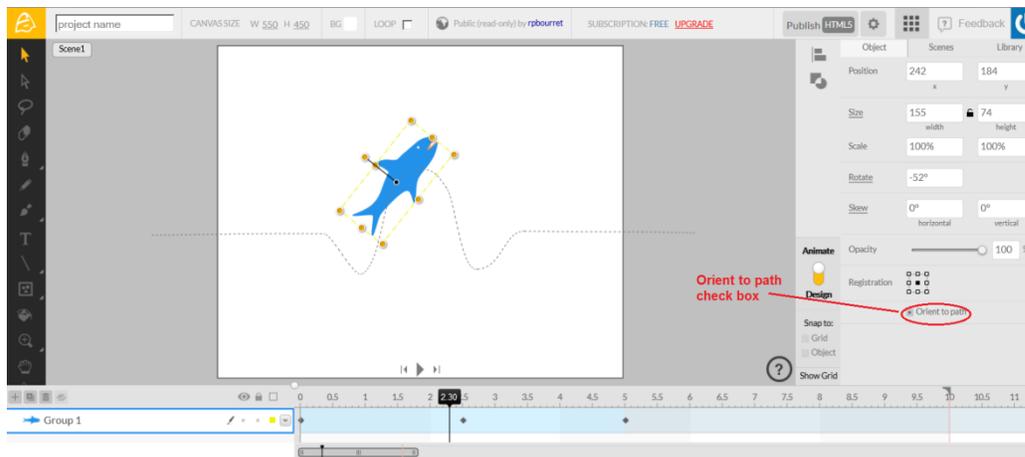


3. Double-click on the path to add new edit points and move edit points to reshape the path. The new path should make the shark dive, leap up, and splash down before swimming the rest of the way across the canvas. Click play to watch your shark dive and leap and splash.

Notice that editing the path does not insert new keyframes. It only changes the shape of the path between two keyframes.

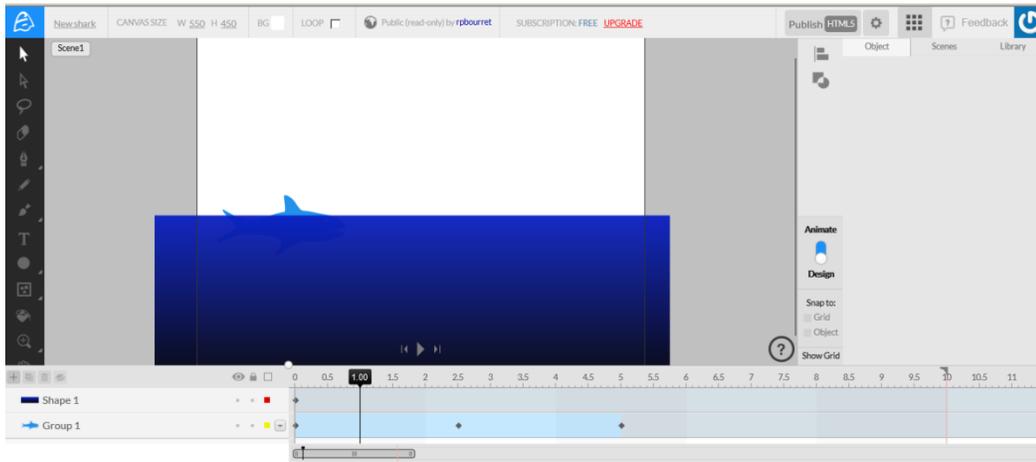


4. You may have noticed that our shark stays flat while leaping. Who wants a flat shark? To fix this, click the Orient to path box and rerun the animation. Notice how the shark now turns as it follows the path.

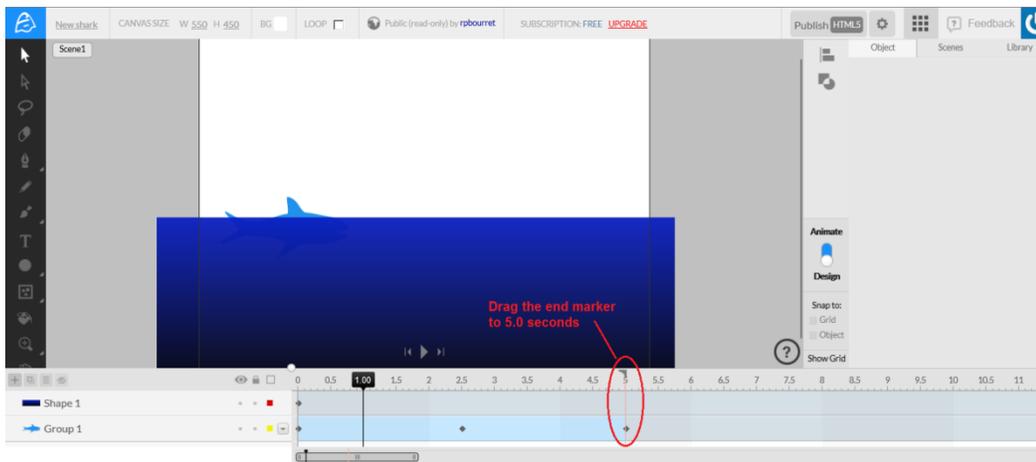


5. We're almost done, but we lack water. Air sharks are cool, but our shark wants to be in the ocean.

Set the Animate/Design switch to Design, add a blue rectangle across the bottom of the canvas and click Fill. Change the color to a darker blue, click the Gradient tab so the water gets darker as it gets deeper, and set the opacity to 95 so that the shark is just visible in the water.



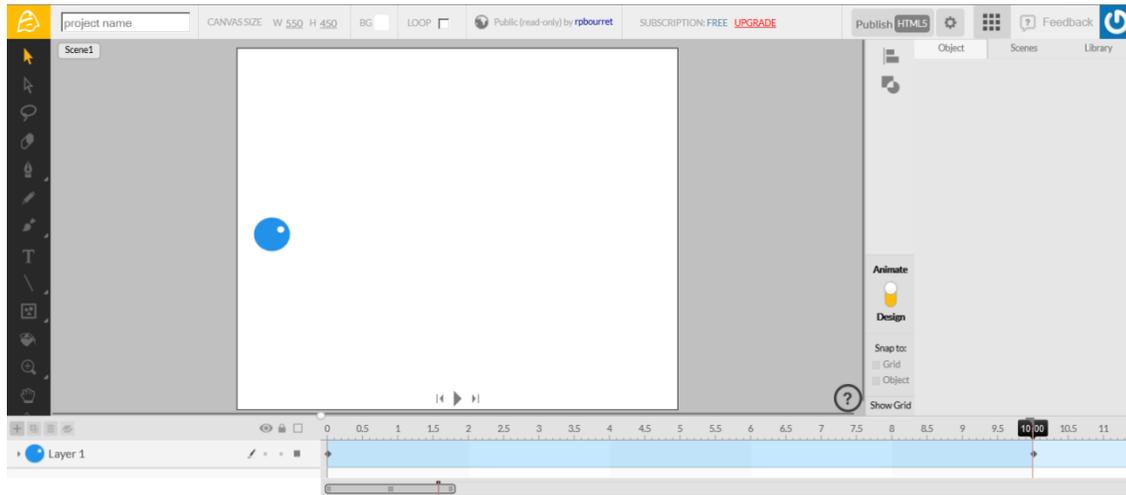
6. Our final problem is that, after five seconds, our shark doesn't move. A napping shark is a boring shark (unless you're in the water, in which case a napping shark is an excellent shark). But this is animation and we want action, so drag the end marker (the red line at 10 seconds on the timeline) to 5.0 seconds. Now sit back, click play, and watch your shark attack.



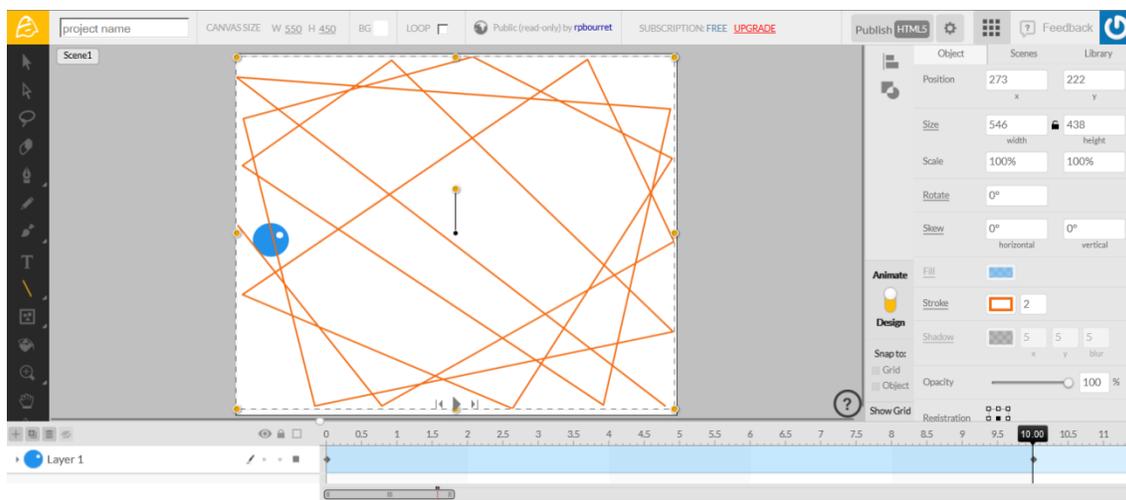
### 3.4 Following a path

In this exercise, we will look at another way to define an object's path: making it follow a path defined by another object.

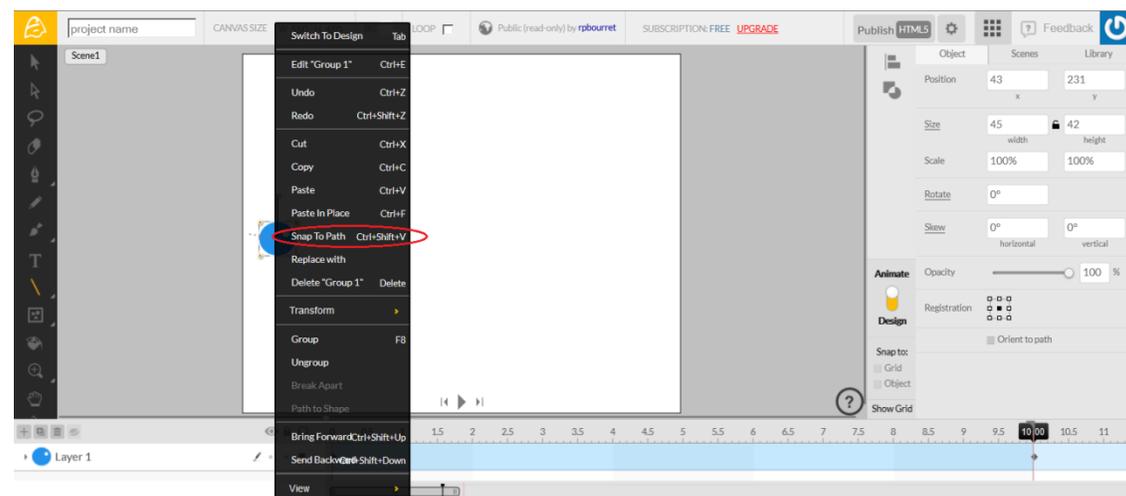
1. Create a new project and name it Path. Set the Animate/Design switch to Animate.
2. Using the oval tool, draw a ball and a white highlight and group them together.



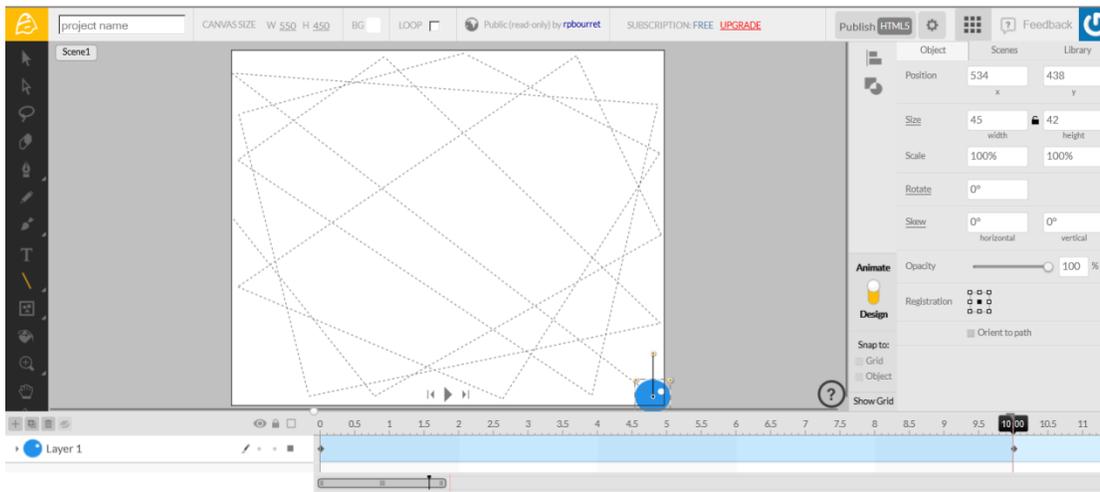
3. Using the line tool, draw a path that ricochets off the edges of the canvas.



4. Cut the path (CTRL-X), right-click on the ball, and select Snap To Path.



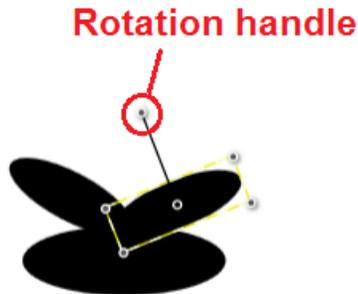
5. Look at the canvas. The ball's animation path is the path you just cut. Animatron has also inserted two keyframes: one at 0.0 and one at 10.0. Click play and watch your ball bounce around the screen.



### 3.5 Rotating objects

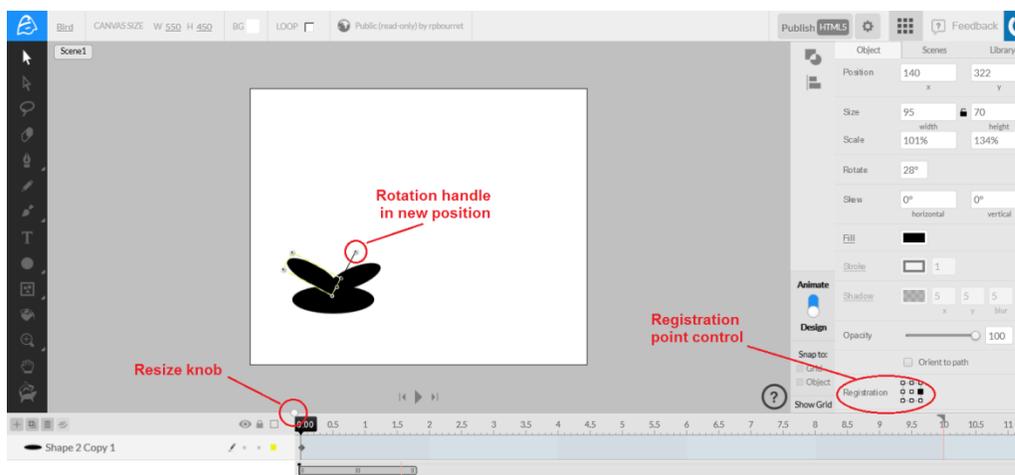
In this exercise, we will learn to rotate objects with the Rotate tween.

1. Create a new project and name it Bird. Set the Animate/Design switch to Design.
2. Create a simple bird from three black ovals. Use copy (CTRL+C) and paste (CTRL+V) to make a copy of the first wing, and use the rotation handles to position each wing at the correct angle.



3. So that the wings flap correctly, we need to change the **registration point**, or point that they rotate around.

Select the left wing and click on the right center registration point on the property sheet. (If you can't find the Registration control on the property sheet, drag the resize knob down to make the timeline smaller.) Notice how the rotation handle moves to the right center of the box. Repeat this process for the right wing, this time choosing the left center registration point.

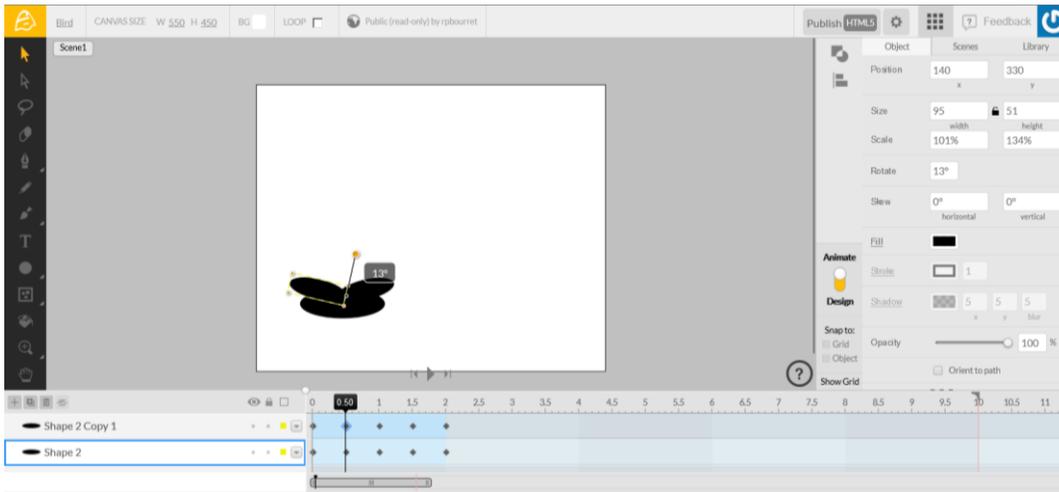


4. Let's make the wings flap.

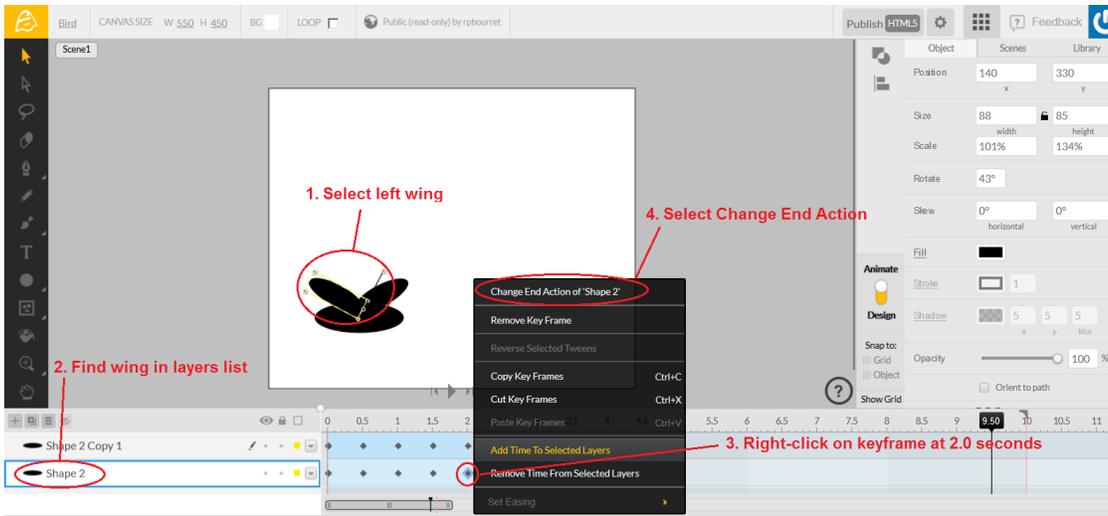
Set the Animate/Design switch to Animate and set the playhead to 0.5 seconds. Select the left wing and rotate it down by about 15°, then select the right wing and do the same. This adds Rotate tweens between 0.0 and 0.5 seconds, telling each wing to rotate from their position at 0.0 seconds to their position at 0.5 seconds.

Repeat the rotation process three more times -- at 1.0, 1.5, and 2.0 seconds. At 1.0 and 2.0 seconds, return the wings to their original positions. At 1.5 seconds, rotate them up by about 15°. The left wing in the picture on the next page started at 28°, so the rotations are 0.0 (28°), 0.5 (13°), 1.0 (28°), 1.5 (43°), and 2.0 (28°).

Run the animation and watch as the five Rotate tweens we set make the wings flap. If you need to adjust any of the rotation angles, you can set the exact rotation with the Rotate property on the property sheet.

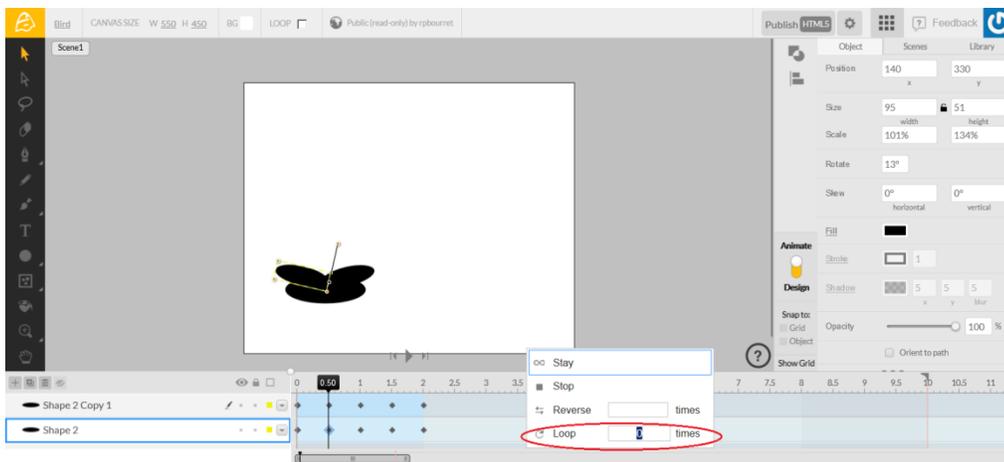


- To make your wings keep flapping, select the left wing and find it in the layers list on the lower left corner of the screen. (You might need to use the resize knob to see it.) Right-click on the keyframe marker at 2.0 seconds for the left wing and choose Change End Action.



- In the list of end actions, set Loop to 0. This means that the set of actions will loop (repeat) forever. Notice how Animatron inserts new keyframes for the repeated actions.

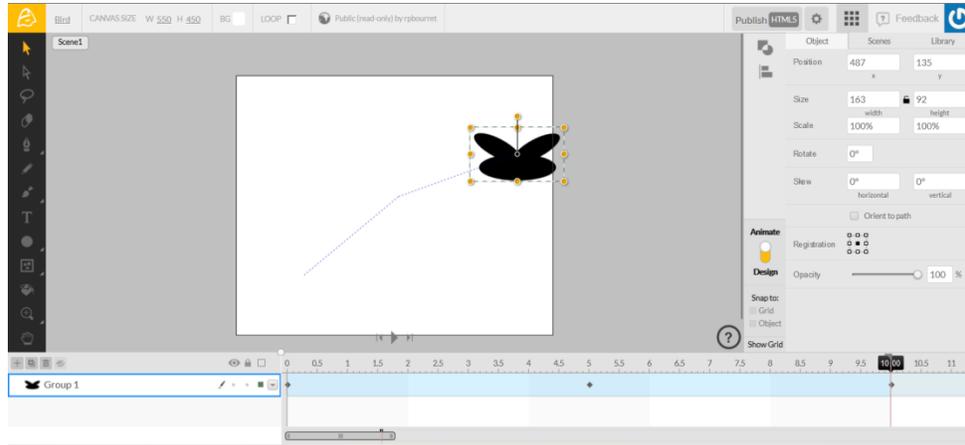
Repeat this for the right wing, then click play and watch your bird flap flap flap.



### 3.6 Scaling (resizing) objects

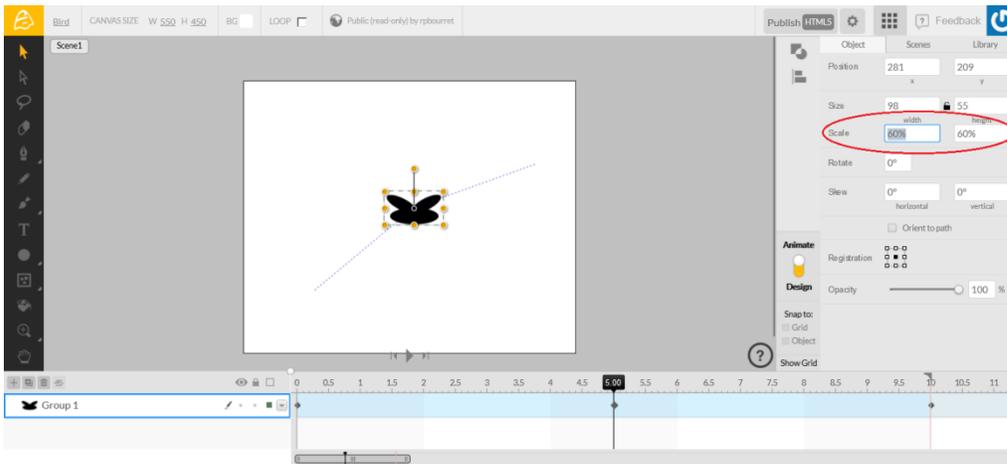
In this exercise, we will learn to scale (resize) objects with the Scale tween.

1. Choose the Select tool and draw a box around the bird's body and wings; this selects all three objects. Right-click on the selected objects and choose Group from the pop-up menu. This groups the body and wings together into a single object.
2. Set the playhead to 0.0 and move the bird to the lower left corner of the canvas. Set the playhead to 5.0 and move the bird to the center of the canvas or a bit higher. Finally, set the playhead to 10.0 and move the bird to the right side of the canvas at about three-quarters height. Play the animation and watch the bird flap its wings as it flies across the canvas.



It is important to understand what is happening. We animated the wings as separate objects, then grouped them together with the body and told the entire group how to move. Thus, the wings are flapping “inside” the group, while the entire group is moving across the canvas. This shows the importance of groups -- imagine having to move the body and each wing separately across the canvas and trying to make sure they all followed parallel paths.

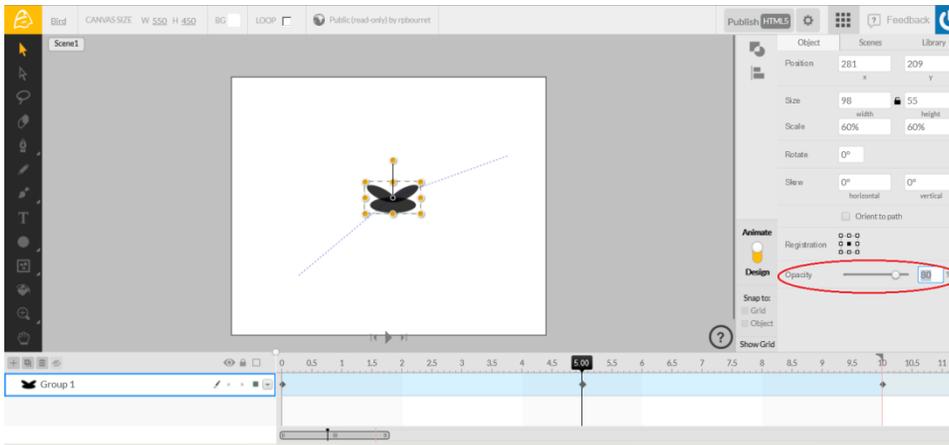
3. To make our bird look like it is flying away from us, we will shrink it as it flies. Set the playhead to 5.0 and set the width and height in the property sheet to 60%. This inserts a Scale tween between 0.0 and 5.0 seconds that will shrink the bird from 100% of its original size to 60%. Next, set the playhead to 10.0 and set the width and height to 10%. This inserts another Scale tween, this time between 5.0 and 10.0 seconds, that will shrink the bird from 60% of its original size to 10%. Now play the animation and watch as the bird flies into the distance.



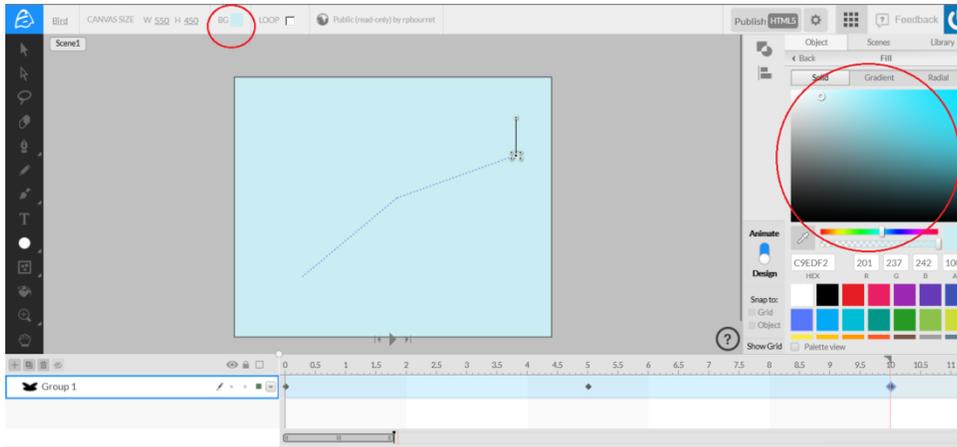
### 3.7 Making objects fade

In this exercise, we will learn to make objects fade with the Alpha (opacity) tween.

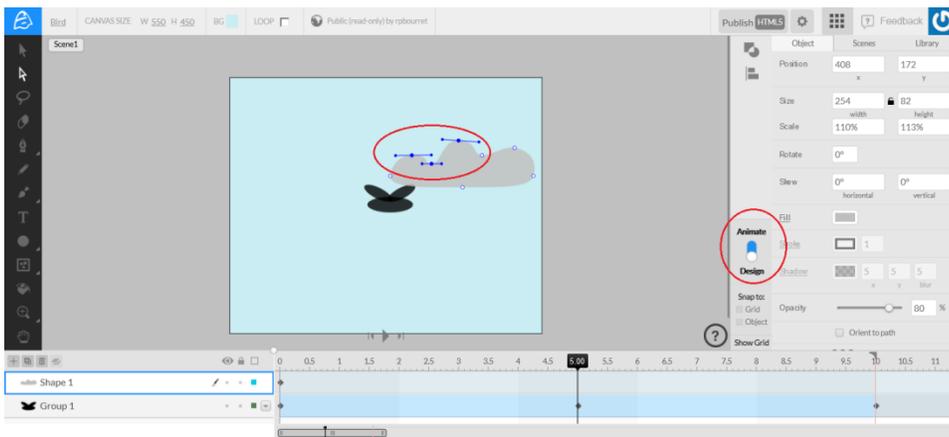
1. As the last part of our Bird project, we will make the bird fade away. Move the playhead to 5.0 and set the Opacity to 80%. This creates an Alpha (opacity) tween, changing the opacity from 100% opaque (solid) at 0.0 seconds to 80% opaque at 5.0 seconds. Next, move the playhead to 10.0 and set the Opacity to 0%. This inserts another Alpha (opacity) tween, changing the opacity from 80% opaque at 5.0 seconds to 0% opaque (invisible) at 10.0 seconds. Click play and watch the bird fade as it flies into the distance.



2. To finish our animation, we will add sky and clouds. To add the sky, click on BG (background) at the top of the screen and select your favorite sky blue.



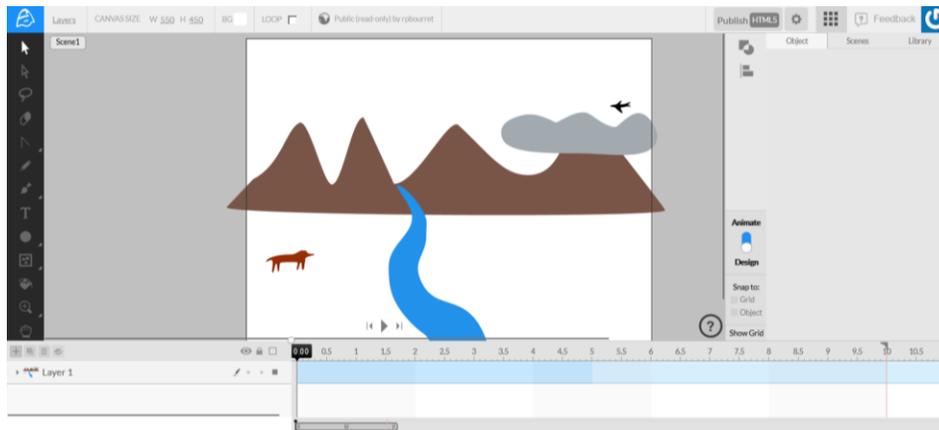
3. Now add a cloud. Set the Animation/Design switch to Design, then draw a light gray oval and set its opacity to 80%. Next, select the oval with the Direct Select tool (second tool from the top) and reshape it as a cloud. Remember to double-click on the outline to add a point and use the handles to reshape the object. Click play to watch the animation.



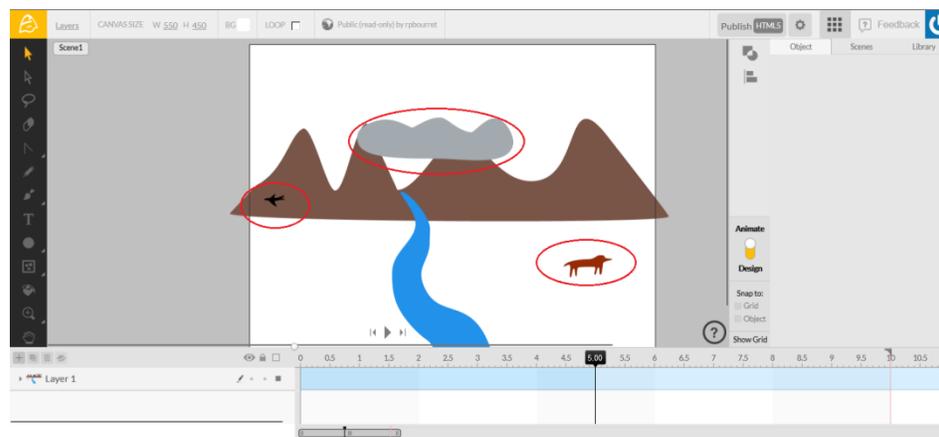
### 3.8 Using layers to simulate depth

In this exercise, we will learn to use layers to simulate depth on our canvas.

1. Create a new project and name it Layers. Set the Animate/Design switch to Design.
2. Draw (in this order) (1) a mountain range, (2) a cloud, (3) a stream, (4) a bird, and (5) a dog. They don't need to be very good; just make sure the mountain range has high peaks and low valleys and that the objects are in the positions shown.

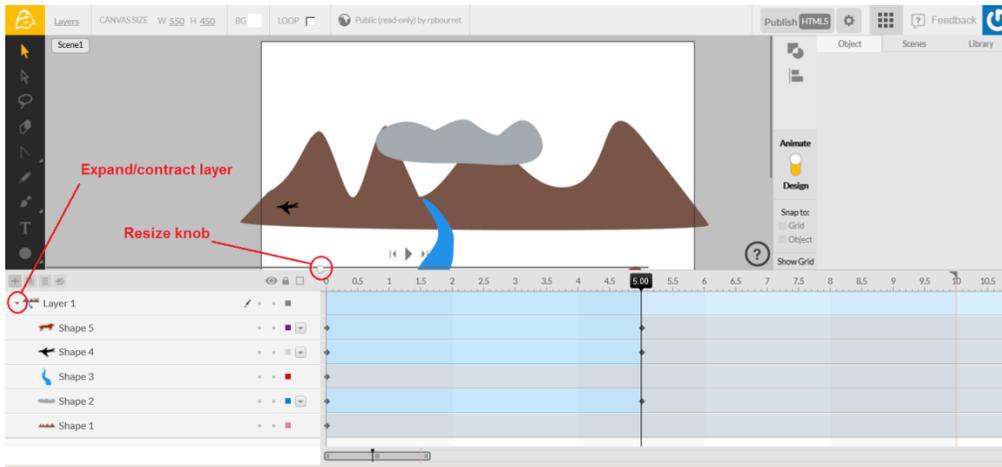


3. Switch to animate, set the playhead to 5.0 seconds, and move the bird, the cloud, and the dog to the positions shown.



4. Click play and watch as the cloud drifts in front of the mountain range, the bird flies in front of the cloud and the mountain range, and the dog walks over the stream.

5. Click the triangle left of Layer 1 to expand the list of objects in Layer 1 and use the resize knob to show the entire list.



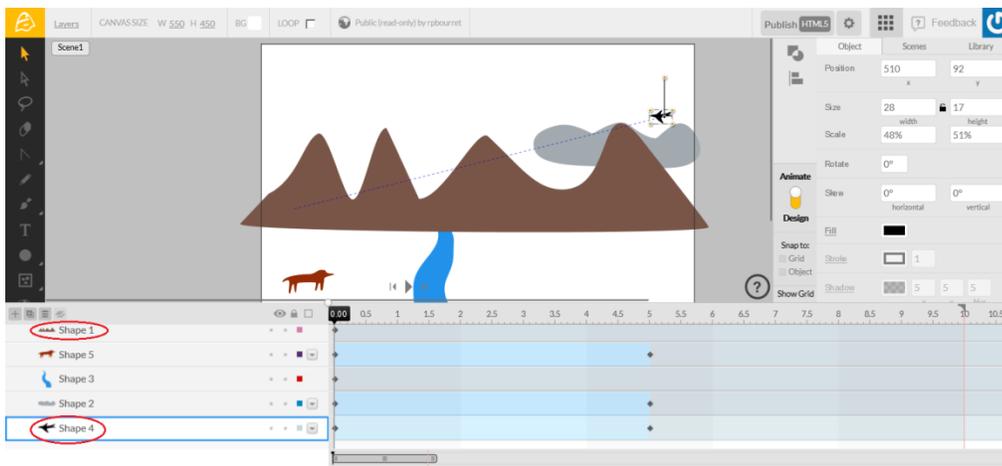
Each item in the list is a *layer*. The term layer comes from traditional animation (see section 3.1), where objects are painted on plastic sheets that are stacked on top of each other. Each sheet (and its object) is an individual layer in the stack. The important thing about layers is that an object in a higher layer can block the view of objects in lower layers.

The layers list shows how our objects are layered. Objects higher in the list block objects lower in the list. For example, the bird is higher in the list than the cloud, so it blocks the cloud and appears to fly in front of it.

6. You can change the order of the layers by moving them up and down in the list.

Set the playhead to 0.0 and drag the mountain range (Shape 1) to the top of the list. Now drag the bird (Shape 4) to the bottom of the list.

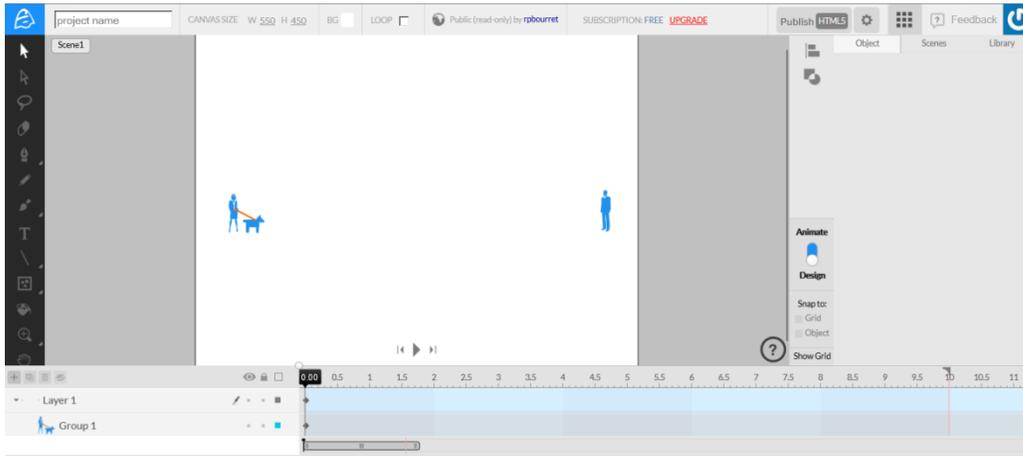
Replay the animation and watch what happens. The cloud drifts behind the mountain range (because the mountain range is higher in the list and blocks the cloud) and the bird flies behind the mountain range and the cloud (because the bird is lower in the list than both the mountain range and the cloud).



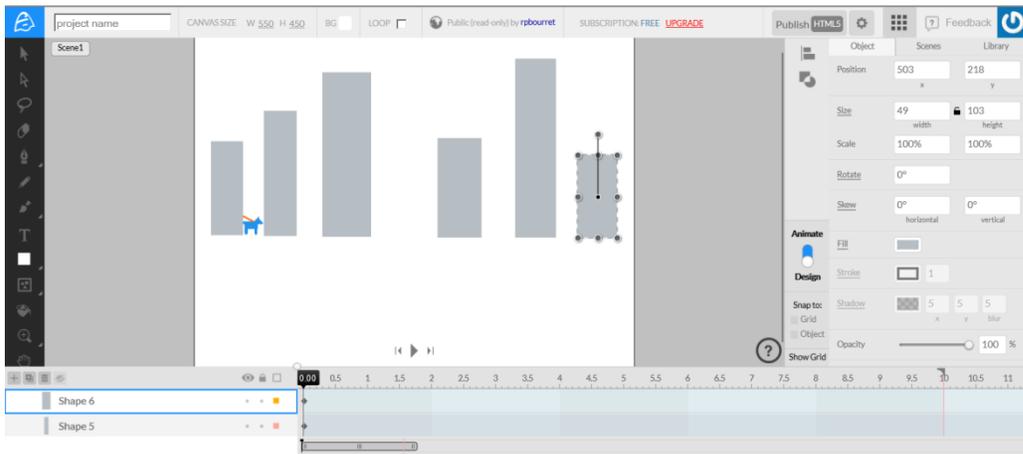
### 3.9 Using folders to collect related objects

In this exercise, we will learn to work with folders.

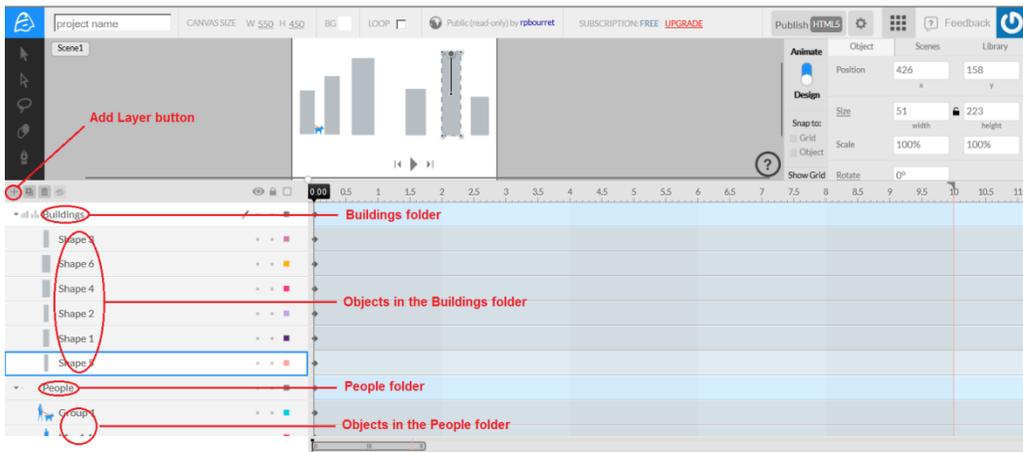
1. Create a new project, then use the figures tool to draw a man, a woman, and a dog. Use the line tool to draw a leash, then group together the woman, the dog, and the leash.



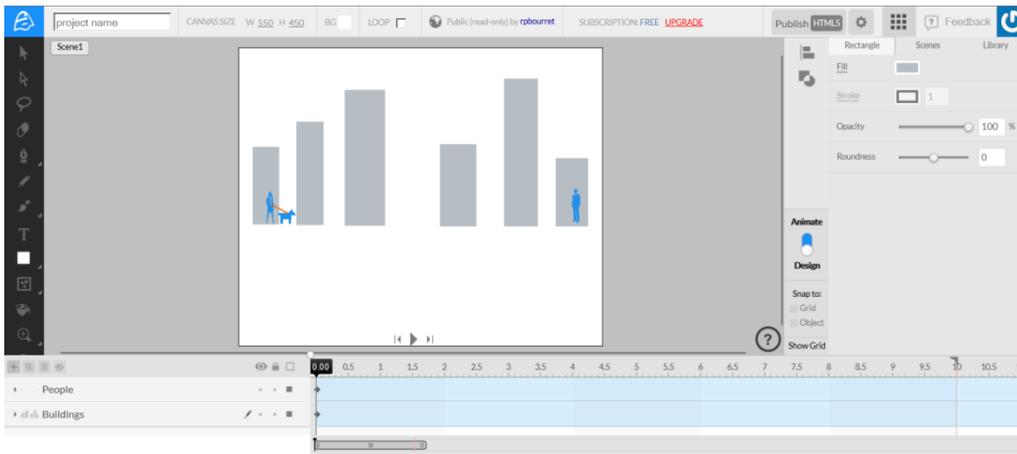
2. Using the rectangle tool, draw a set of simple buildings.



3. Unfortunately, the buildings hide the people. We have seen how to move individual objects in the layers list. In this lesson, we will see how to move sets of objects. Click the Add Layer button (the plus sign at the top left of the layers list) to add a new layer. (The name “Add Layer” is misleading, as what is added is a folder.) Rename the folder Buildings and drag the buildings into it. Leave the man, woman, dog, and leash in the original folder and rename it People.



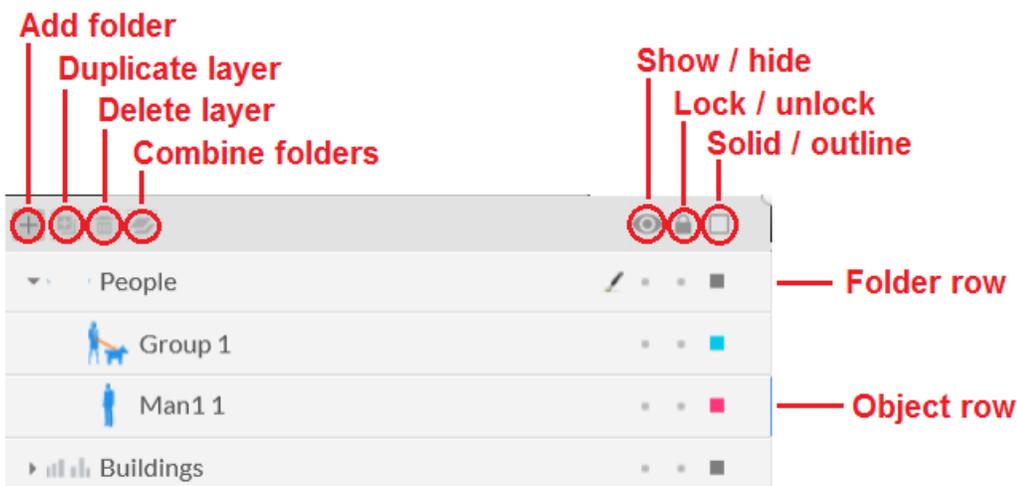
- Now we're ready to move the people to the foreground. Collapse (close) the Buildings and People folders by clicking the triangle left of the folder name, then drag the Buildings folder below the People folder. This moves all of the objects in the Buildings folder lower in the layers list than all of the objects in the People folder, displaying them behind the people.



- Folders are an easy way to place a set of related objects in one place. For example, you might put all of the background objects in one folder and the foreground objects in another folder. We have already seen how you can use folders to move collections of related objects up and down in the layers list. Some other things you can do with folders are:

- Hide all of the objects in the folder.
- Lock all of the objects in a folder.
- Display objects in a folder as an outline.

These operations are useful when there are too many objects on the canvas and it is difficult to select or see individual objects. When an object is hidden, locked, or displayed as an outline, it cannot be selected or modified. This makes it easier to work with the objects around it.

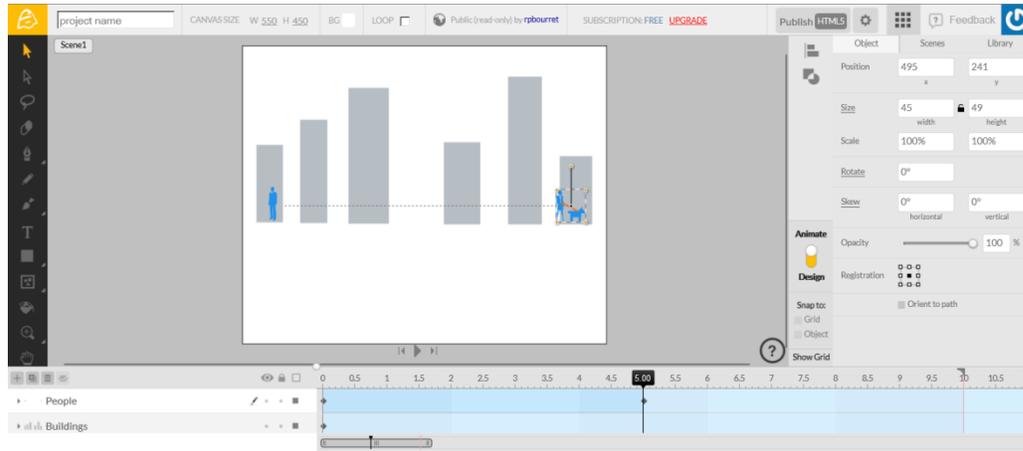


The show/hide, lock/unlock, and display as solid/outline operations can be applied to all objects (by clicking the icons at the top of the layers list), all of the objects in a single folder (by clicking the icon in the folder's row), or an individual object (by clicking the icon in the object's row).

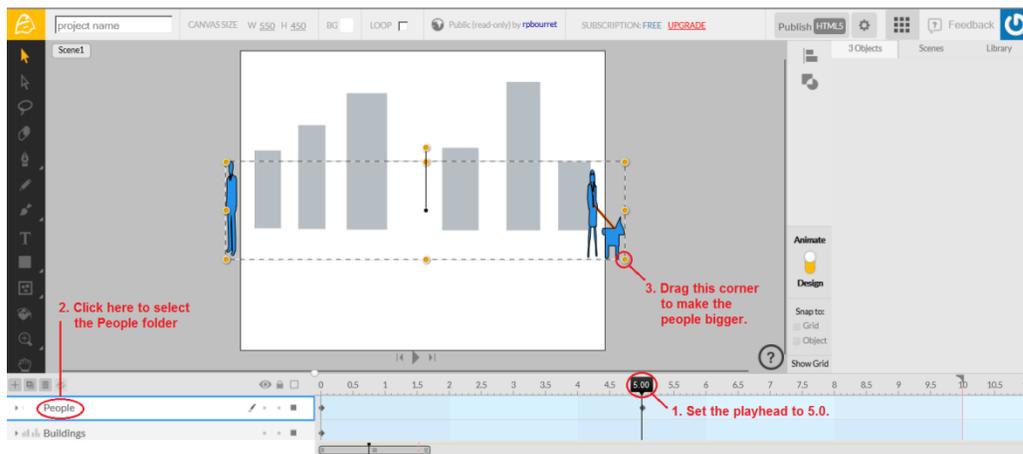
### 3.10 Understanding the difference between folders and groups

Folders and groups are both collections of layers. The difference between them is that a folder is collection of layers that acts as a set of individual objects, while a group is a collection of layers that acts as a single object. This is easiest to see when we apply tweens to folders and to groups.

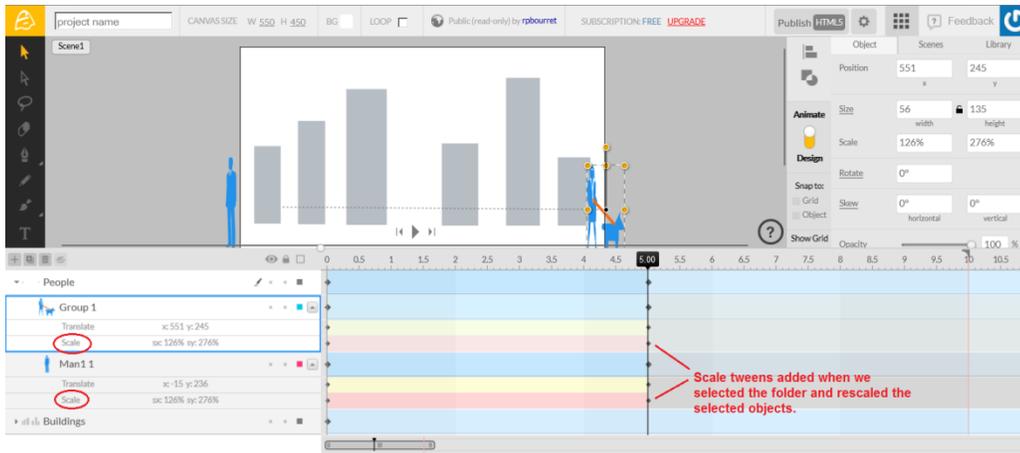
1. To start with, let's animate the scene. Set the Animate/Design switch to Animate, move the playhead to 5.0 and switch the positions of the man and woman. Click play and watch the people walk in front of the buildings.



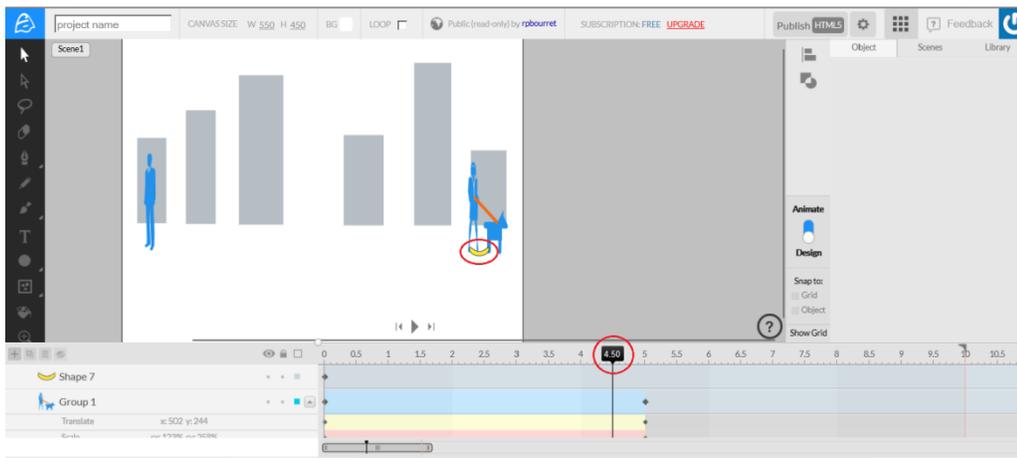
2. Set the playhead to 5.0 and select the People folder in the layers list. This selects all of the layers (objects and groups) in the People folder. Grab one corner of the selection box and make the people bigger.



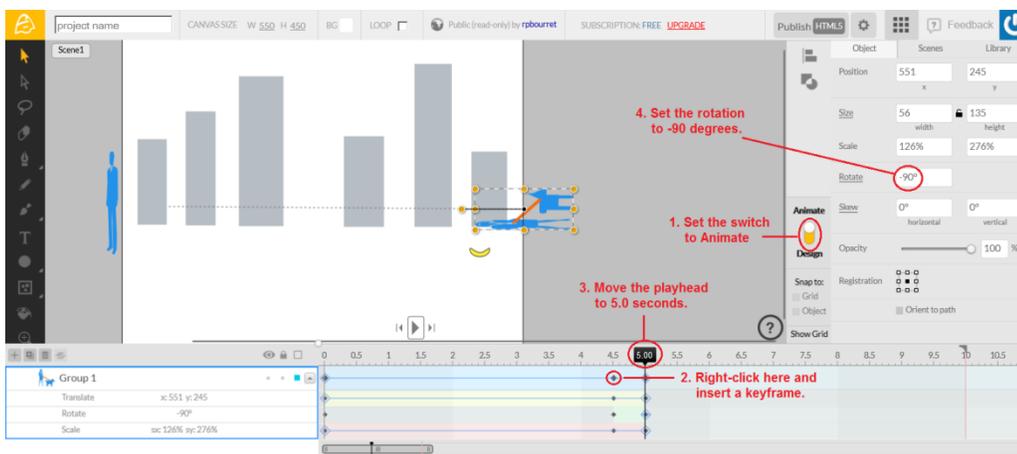
- Click on the arrow to the left of the People folder to look at the layers inside it. Click on the arrows to the right of the man and the woman to see the tweens that apply to them. Notice that both include a scale tween. What this means is that applying a tween to a folder applies the tween to each individual layer in that folder.



- Set the playhead to 0.0, set the Animate/Design switch to Design, and draw a banana on the right side of the canvas. Set the playhead to 4.5 and move the banana so it is at the woman's feet.

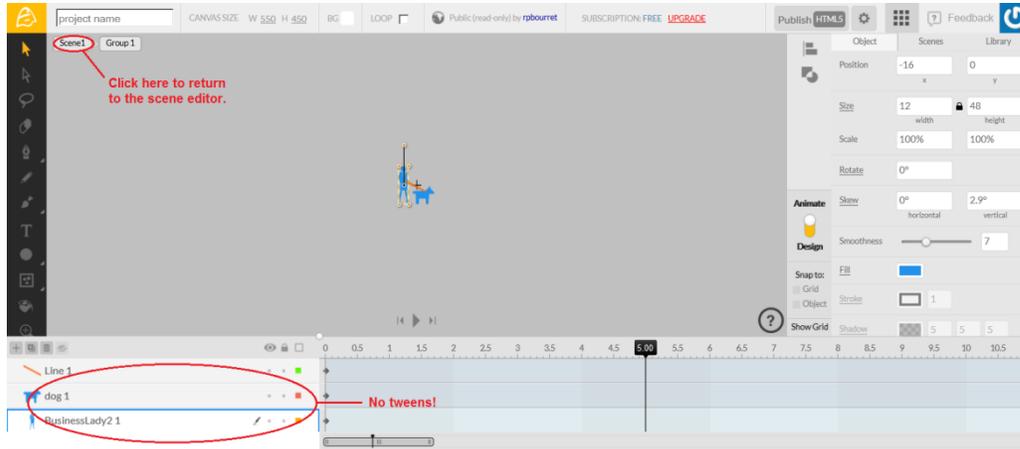


- To make the woman and her dog slip on the banana, set the Animate/Design switch to Animate, right-click in the woman's row in the timeline, and insert a keyframe. This provides a starting point for the slip. Next, move the playhead to 5.0 and enter a rotation of  $-90^\circ$ . This inserts a rotation tween between 4.5 and 5.0 seconds. Click play to see the slip.



6. Remember how applying a tween to a folder applied that tween to all of the objects in the folder? Let's see what happened when we applied a tween to the woman's group.

If you look at the tweens for the woman's group in the figure in step 5, you will see that a rotate tween has been added. This means that the rotate tween applies to the group as a whole. Just to check that rotate tweens weren't added to the objects in the group (the woman, the dog, and the leash), click on the lady/dog/leash icon to the left of the group's name in the layers list. This displays the group editor for the woman's group. Notice that none of the objects (woman, dog, or leash) has any tweens.

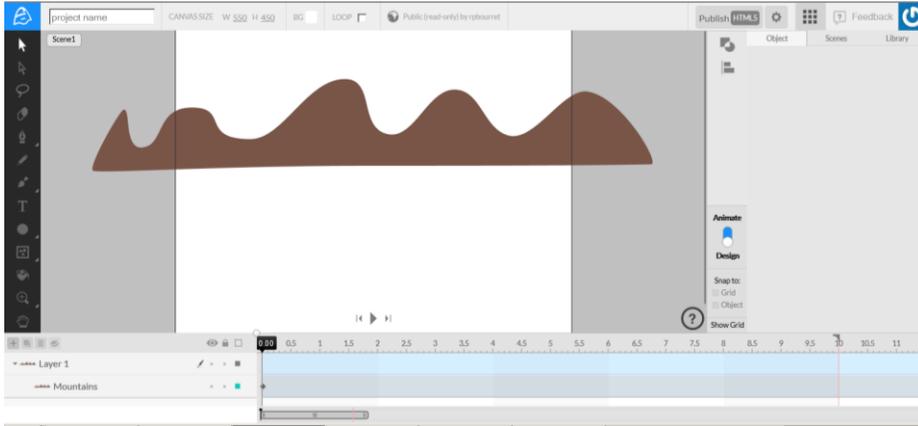


Click on the Scene1 icon in the upper left corner of the screen to return to the scene editor.

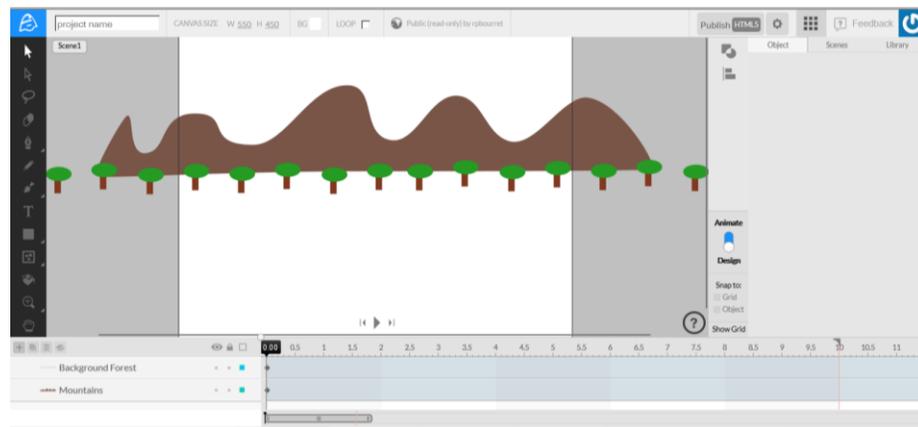
### 3.11 Panning

In this exercise, we will learn to pan. **Panning** is the act of moving a camera across a scene, such as to follow a car driving along a road. In animation, it is common to simulate this effect by keeping the object of interest in one place and moving the scenery behind it.

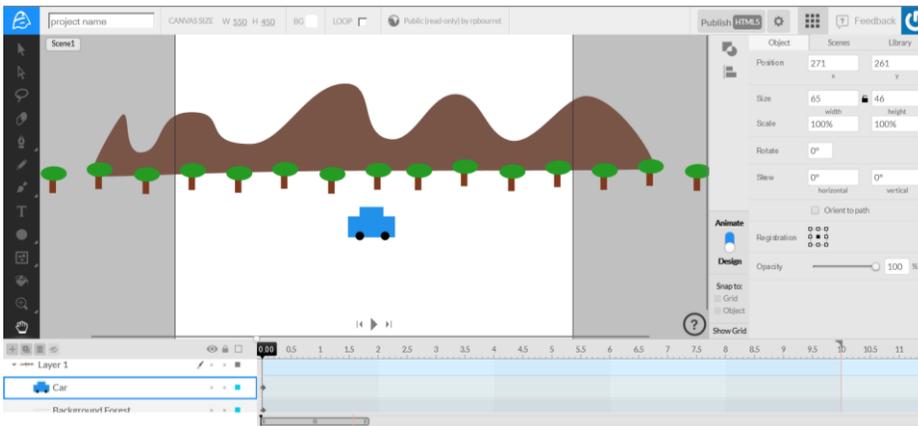
1. Create a new project and name it Panning. Set the Animate/Design switch to Design.
2. Draw a mountain range and name it Mountains. Make sure the mountains extend past both edges of the canvas.



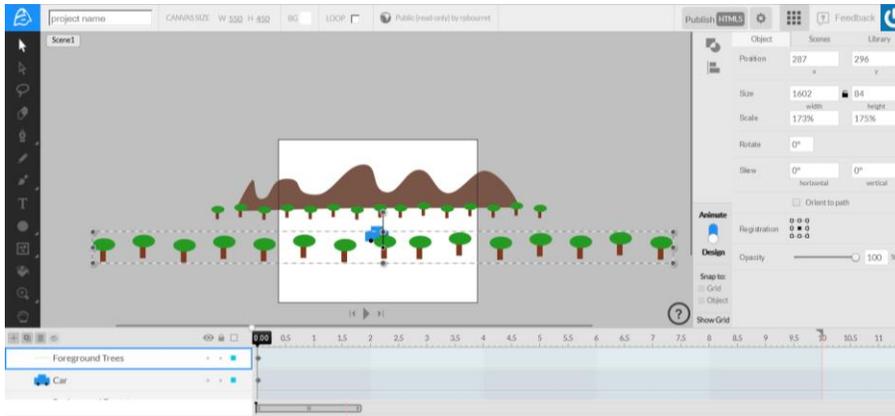
3. Draw a green oval and a brown rectangle and combine these to make a group. Copy the group to make a forest of trees that extends past the ends of the mountain range. (It's fastest to copy and paste one tree, then two trees, then four trees, and so on.) Group all of these trees together and name the new group Background Forest.



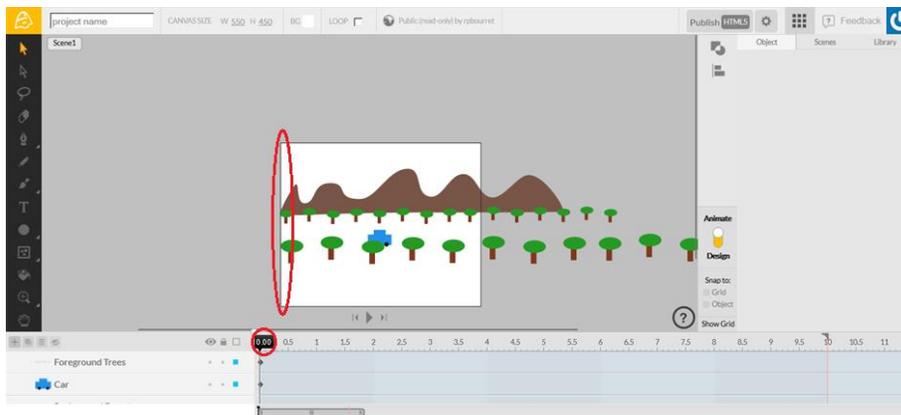
4. Make a simple car from two rectangles and two circles, then group these together and name the group Car. Place the car in the center foreground.



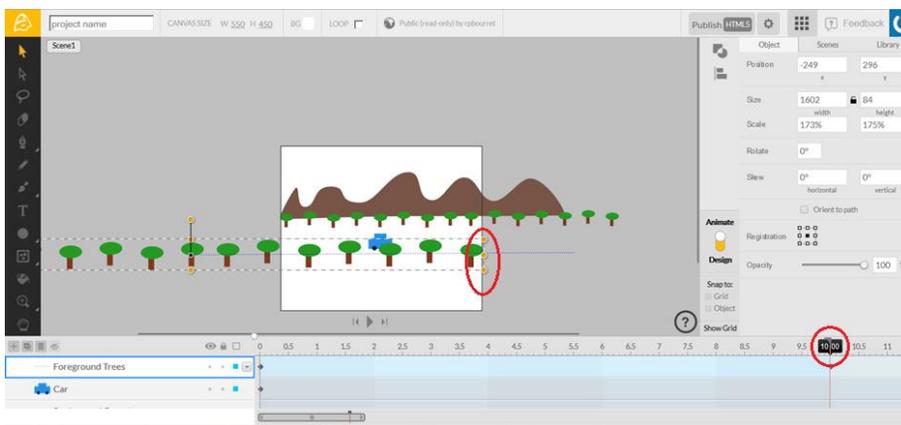
5. Make a copy of Background Forest, name it Foreground Forest, and resize it so it is about 50% larger than Background Forest. You can use the Z and X keys to zoom in and out as needed.



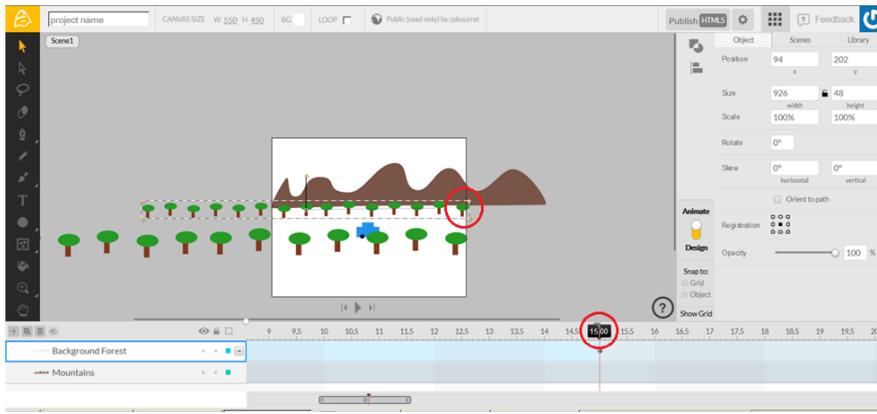
6. Set the Animate/Design switch to Animate, set the playhead to 0.0, and move the left edges of Mountain, Background Forest, and Foreground Forest to the left edges of the canvas.



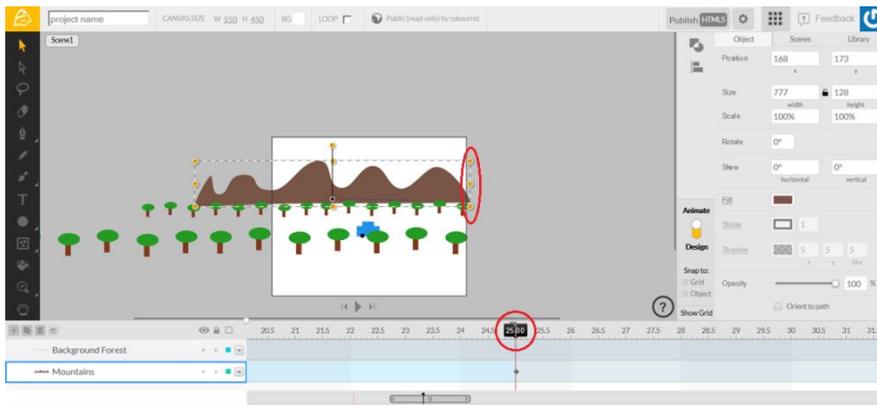
7. Set the playhead to 10.0 and move the right side of Foreground Trees to the right edge of the canvas.



- Set the playhead to 15.0 and move the right side of Background Trees to the right edge of the canvas.

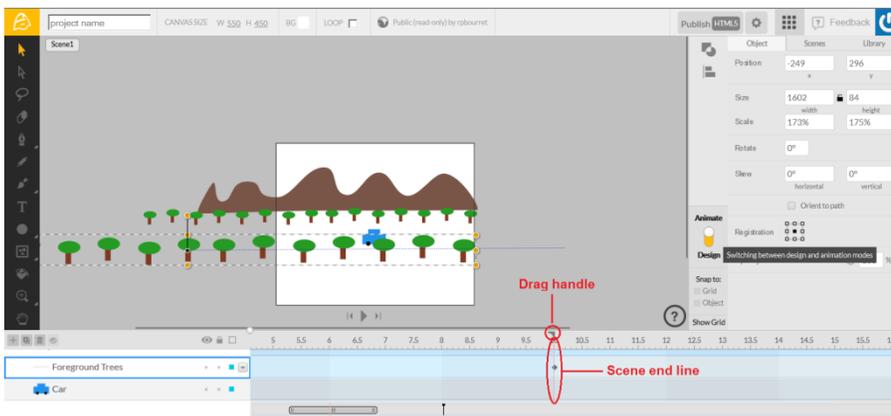


- Set the playhead to 25.0 and move the right side of Mountains to the right edge of the canvas.



- Drag the red scene-end line on the timeline from 25.0 seconds back to 10.0 seconds.

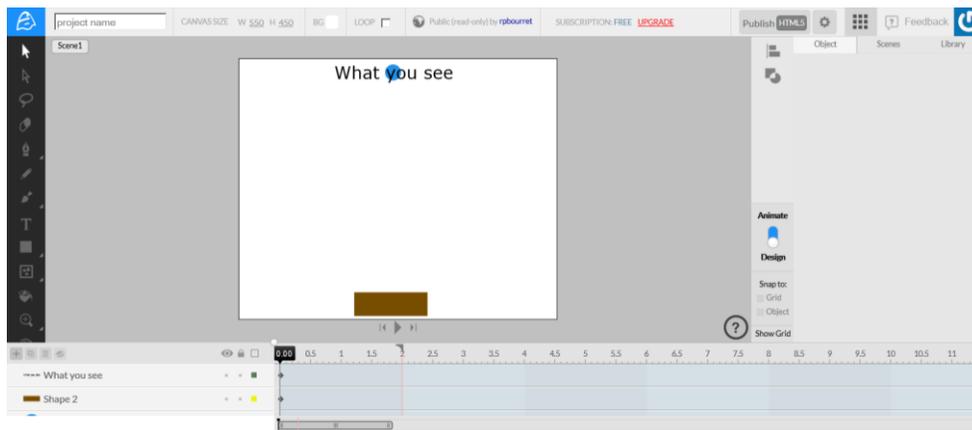
Play the animation and notice two things. First, the car appears to be moving because the scenery in front of and behind it are moving. Second, items in the foreground move faster than items in the background. This is because, as we move through a landscape (such as when driving in a car), items further away from us appear to move more slowly than items close to us.



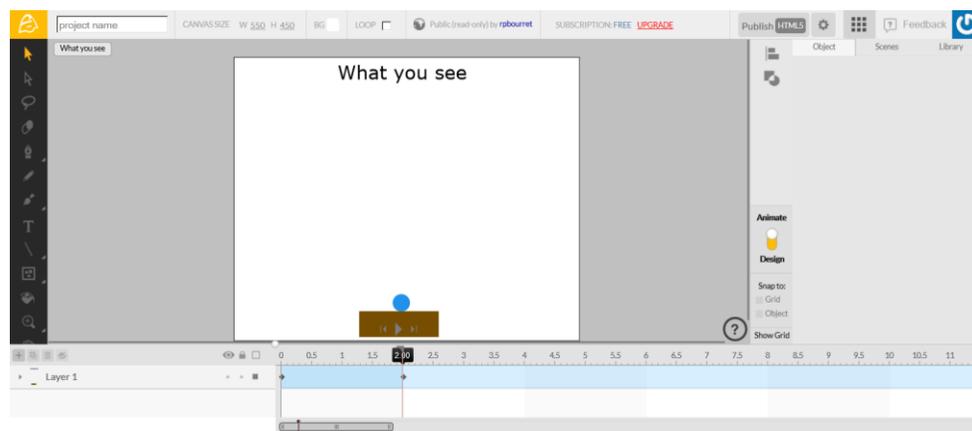
## 3.12 Creating a movie with multiple scenes

In this exercise, we will learn to create movies with multiple scenes.

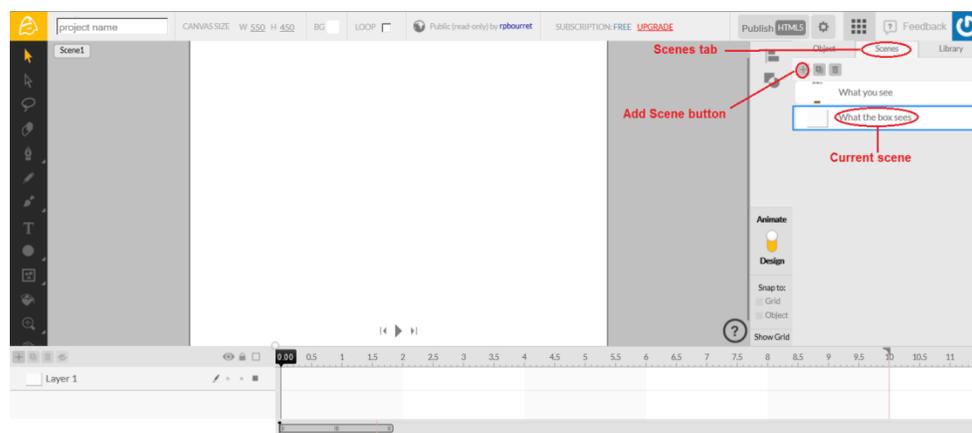
1. Create a new project and draw a ball, a box, and the words “What you see”.



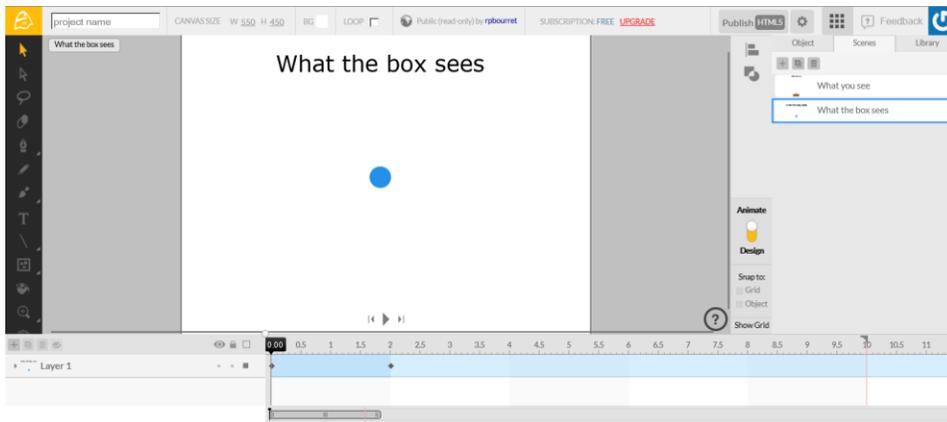
2. Set the Animate/Design switch to Animate, set the playhead to 2.0 seconds, and move the ball straight down so it is sitting on top of the box. Set the end marker to 2.0 seconds.



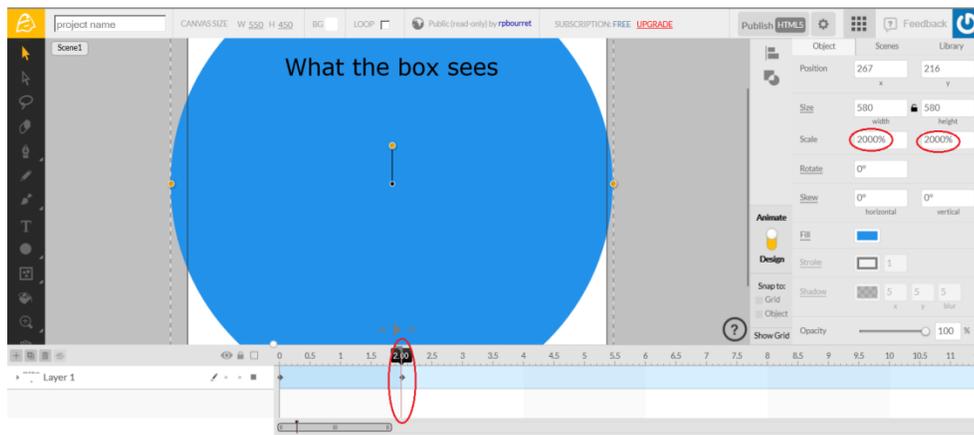
3. Click on the Scenes tab and click Add Scene (the plus sign in the upper left corner of the tab), then rename the first scene “What you see” and the second scene “What the box sees”.



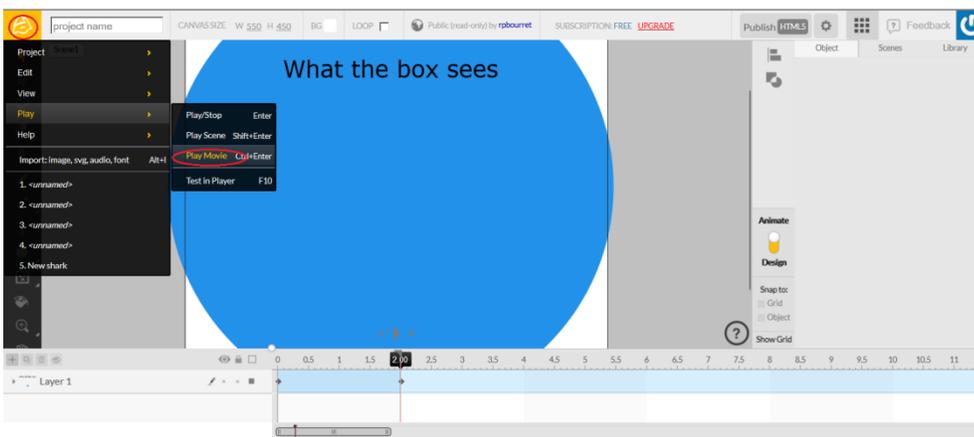
4. Set the playhead to 0.0, draw a ball in the center of the screen and write “What the box sees” across the top of the canvas.



5. Move the playhead to 2.0 seconds and change the ball’s width and height scales to 2000%. Move the end marker to 2.0.



6. Click on the Animatron symbol in the upper left corner of the screen to show the Animatron menu. Click on Play and select Play Movie. Animatron will play both scenes, one after the other. (If you click the play button, it will only play the current scene.)

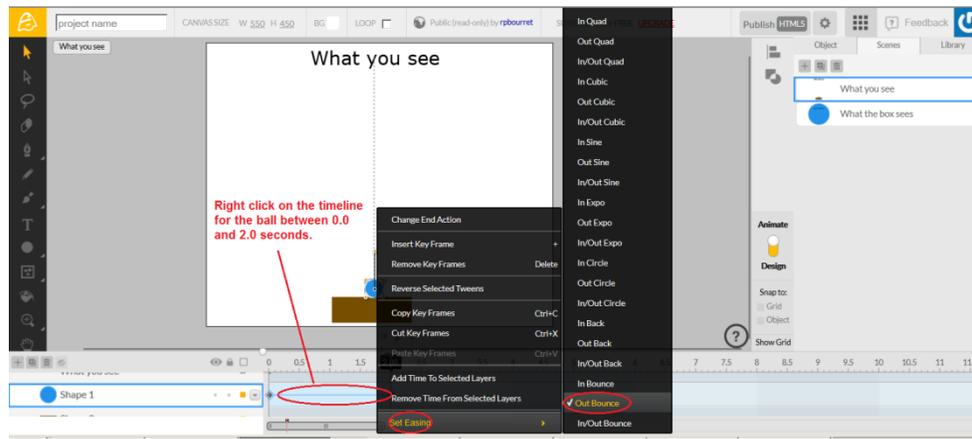


You can create a movie with as many scenes as you like. The order they occur in the scenes list determines the order in which they are played.

### 3.13 Changing tween speed with easing

In this exercise, we will learn how to change the speed of a tween with *easing*. Normally, a tween is applied smoothly. That is, an object will move or grow or rotate or fade at a constant speed. With easing, you can change the rate at which a tween is applied. For example, you can have an object move faster and faster as it moves along a path.

1. To start with, let's change the easing for the falling ball in scene 1. On the Scenes tab, click on the "What you see" scene. Next right click on the timeline for the ball and select Easing and Out Bounce. Click play and watch what happens.



On the Set Easing menu, In, Out, and In/Out refer to whether the action is applied at the start (In), end (Out), or both start and end (In/Out) of the tween. The main part of the easing name tells you what action will be applied. For example, Bounce causes the tween to bounce back along its path. Expo means it will change speed exponentially. And so on.

2. On the Scenes tab, click on the "What the box sees" scene and apply Out Bounce easing to the ball in that scene as well. This means that the scale tween will be applied with a bounce. Select Play/Play Movie from the menu and watch your movie.

Feel free to play with the other easing settings to see what effects you can create.