Welcome!

- While we’re getting settled, help yourself to a sticky note.
- Write down an animation you encountered on your way to this workshop.
- We’ll compare notes in a bit.

Get the goods

- Demo code for this workshop is available as pens on Codepen.io: http://codepen.io/collection/AYWjLP/
- And as a repo on GitHub: https://github.com/littleberry/Code-Her-2016-animation-as-a-design-element
- You will need a laptop ready to go with your favorite text editor and browser.

Hi! I'm Patricia Kruep

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- Long-time lover of things animated and interactive

Animation as a Design Element

Code(Her) Conference 2016

Patricia Kruep, Littleberry Studio

What this is about

- We create designs to communicate an idea.
- Our designs are made up of many elements: color, line, shape, typography, texture, imagery.
- These elements each have characteristics that affect how they look.
- We make choices about these characteristics to affect how our design communicates to users.

What this is about

- We can treat animation the same way.
- Animation has a set of characteristics that affect how the animation is perceived.
- This workshop is about those characteristics and how we use them to create animations that help our designs communicate.

What we’re going to do

- Learn enough about animating HTML elements with CSS to be dangerous.
- Learn about animation craft and how we can incorporate it into our design work.
- Try out our new animation skills by creating animations that solve design problems.

What animation can do

- Grab, lead, or direct attention
- Reduce cognitive load
- Create spatial relationships or mental maps
- Instruct, inform, explain
- Communicate meaning or narrative

Time to put things in motion!

Who’s on first

- Animate state changes using CSS Transitions.
- Create a keyframe animation sequence using CSS Animation.

For Example…

CSS Transitions

- A CSS3 module.
- ‘Smooths out’ change from one property value to another over a period of time.
- Activated by state change.

CSS Transitions

- 4 CSS properties to control transitions:
  - **transition-duration** (how long the transition takes).
  - **transition-properties** (which CSS properties transition).
  - **transition-delay** (How long to delay the transition start).
  - **transition-timing-function** (Rate the CSS properties change over the duration).

Transition…
to the text editor

Animatable properties

- Rule of thumb: if a mid point between CSS style property values makes sense, the property can be animated.
- Ex: Transition from red to yellow has a mid point of orange.
- Ex: Transition from one background image to another doesn’t have a mid point.

Give it a whirl

- HTML and CSS is roughed in for some form elements.
- Add styles to :focus selector to indicate a state change.
- Add transitions to the default state to ‘smooth out’ the state change.
- Test in the browser. Tab or click through form elements to see transition animations.

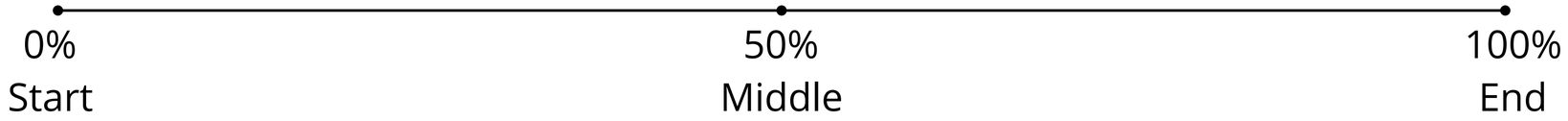
Time to move it

CSS Animation

- Greater flexibility to create and run animations.
- 2 components: a timeline with keyframes and a set of animation properties that control animation playback.

@keyframes

- @keyframes directive defines timeline for animation.
- Keyframes indicate a style property’s value at a particular point in time.
- Keyframes represented as percentage values:



Animation styles

- Animation style properties control playback of the timeline:
  - **animation-name**: Assign timeline to element
  - **animation-duration**: How long animation plays
  - **animation-iteration-count**: How many times to loop
  - **animation-direction**: Plays animation forward, reverse, or alternate direction
  - **animation-timing-function**: Controls rate of change for style properties

Have a go

- Open up the sliding box demo HTML and CSS files.
- HTML and styles are roughed in to create a simple box.
- Your mission is to animate the box moving across the screen.
- (p.s. we'll be using this sliding box for the next part of the workshop)

License to Animate

- You now know enough about CSS-based animation to be dangerous.
- We covered CSS transition styles, @keyframes timelines, and the animation styles.
- You've created some basic animations using those tools.

Next up: Animation craft

- Identify the characteristics that make up an animation.
- How we can manipulate those characteristics to create an animation that meets our design needs.

But first:
Time for a stretch

What typeface?

- Dependable and trustworthy
- Quirky and fun
- Creative and energetic
- Calm and serene
- Strong and active

What color?

- Dependable and trustworthy
- Quirky and fun
- Creative and energetic
- Calm and serene
- Strong and active

Greater than the sum

- Design elements work together to form the entirety of the design.
- The choices we make regarding those elements (hue, tint, stroke weight, letterform style, etc.) affect how the whole of the design is perceived.
- We can look at animation in a similar way.

Animation characteristics

- Animation has a set of characteristics that determine or influence how it is perceived by the viewer:
  - **Time**
  - **Delta (change)**
  - **Rate of delta (rate of change)**

Time

- Duration: How long something changes from one state to another.
- How much time influences perception of animation:
  - Shorter time = faster change
  - Longer time = slower change
  - (assumes same amount of change)

Delta

- The amount something changes
- Animations always have something that changes: location, rotation, scale, color, opacity, shape, etc.)
- Simpler animation may change only one or two properties.
- Complex animations may have multiple layers of many properties changing.

How much delta

- Amount or range of delta affects animation perception:
  - Greater delta = bigger motion
  - Less delta = subtle motion
  - (assuming same amount of time for change)

Rate of change

- Time and delta combined.
- Relative speed a property changes over time.
- Expressed as easing or timing functions.
- Rate can be linear: Pace of change is steady over the duration.
- Rate can be variable: Pace of change varies in speed over the duration.

May the forces be with you

- Almost nothing in our universe moves at a steady, linear rate.
- Forces like gravity or friction affect the rate of change.
- We have an innate expectation of how something should behave, based on our experience of the world.
- In animation, we use easing to simulate the physics we’re used to.

Timing is everything

- “12 Principles of Animation” considered a must for animators. Highly worth getting to know.
- This workshop, however, will focus specifically on manipulating timing and easing.
- We’ll look at overall duration and timing within an animation.
- We’ll break out those sliding boxes to play with easing.

Time Lords

- There are two ways we can manipulate time…in animation:
  - Adjusting the overall duration of the animation.
  - Adjusting duration between keyframes in the timeline.
- We’re going to manipulate time for a finger-tapping experience.

Overall duration

- Changing the duration changes the perceived speed of the overall animation.
- Find a duration value that ‘fits’ the animation.

Timeline timing

- Within an animation timeline, we can adjust timing by adding, removing, or shifting keyframes.
- Same principle as overall duration:
  - Shorter distance between keyframes = faster change.
  - Longer distance between keyframes = slower change.

Kick it up a notch

- The animation sequence can be refined even more. Here are some ideas:
  - Make one of the fingers move a little higher than the other (might need a second @keyframes timeline for that finger).
  - Move the thumb.
  - Reverse the sequence.
  - Exaggerate the motion by adjusting the translate values.

Ease into the slide

- Easing is about the rate of change over a period of time.
- We’re going to experiment with easing using the sliding box you animated earlier.

The big easing

- Easing is about the rate of change over a period of time.
- We’re going to experiment with easing using the sliding box you animated earlier.
- Along with easing, we’ll also look at adjusting the amount of change.
- Amount of change is controlled by the style property values being animated.

Ease into the slide

- Easing is useful for simulating the forces of physics in animation.
- In CSS animation easing is set by the animation-timing-function property.
- Values include: ease (default), ease-in, ease-out, ease-in-out, step(n), and cubic-bezier(x1, y1, x2, y2).

Ease along the path

- cubic-bezier(x1, y1, x2, y2) defines a curved path for easing.
- Allows more nuanced easing curves.
- easings.net and cubic-bezier.com are great resources for finding and defining easing curves.

Animate happy boxes

- Create 5 versions of the sliding box that convey the following:
  - Happy, sad, calm, sneaky, and rushed
- Keep the overall shape and style of the box.
- Focus on adjusting duration, keyframes, easing, and style values

Time for a quick break.
Stand up. Stretch.
Greet your neighbors.

You are here

- First half of the workshop we learned how to create CSS-based animations.
- We also learned time, delta, and rate are the primary characteristics for designing animation.
- Second half of the workshop focusses on folding animation into our designs.

A review

What can animation help?

- Grabbing and directing attention.
- Instruct or demonstrate.
- Lead through a process, interface, or context.
- Provide feedback.

How can animation hinder?

- Distract
- Delay
- Annoy

AnimationGO

- Interface elements
- Modals
- Graphics and illustrations
- Branding

Start with a purpose

- Why animation is needed.
- What parts of the design are helped by animation.
- Think about animation early in the design process.

Plan

- Animation in planning is similar to UX planning.
- Tools include storyboards and prototypes.
- Storyboards are like wireframes for animation.
- Prototypes are samples that show the animation in action.

Storyboards

- Series of sketches that broadly show animation sequence.
- Show key points in sequence.
- Show just enough to communicate idea.
- Pixar art they are not!

To the whiteboard!

Storyboard this

- UX need: Limited space to put a navigation menu. Menu can be partially hidden, when not needed. User needs to know menu is available. Menu appears when activated and returns to ‘holding spot’ when dismissed.

- UX need: App has multiple, distinct sections for user tasks. Help the user keep track of context and awareness of location while navigating between main screen and task sections.

Sketch

Present

Feedback

Repeat

Prototype that

- Demonstrate animation concept
- Create a rough HTML/CSS prototype
- This is a code sketch to focus on the animation

Prototype
Present
Feedback
Repeat

What next?

- As with any creative endeavor, the key to animation craft is to practice and observe.
- There’s more to learn, the deeper you go.
- Small collection of reading and resources listed on the GitHub repo.

Thank you!

Keep in touch

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