729G26 Interaction programming

Lecture 5

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Lecture overview

- Project
- Describing interaction
- Assignment 4
  - The API documentation
  - jQuery UI
    - What is it? How do I set it up?
    - Widgets: How do I use them?
    - Interaction: Drag and drop
  - Using plugins/third party scripts
  - Github

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Todays lecture in the context of the course

- Knowing how to approach and *read API documentation is a core programming skill*.
- jQuery UI makes it easier to create standard UI components.
- jQuery plugins extend the functionality of jQuery.
- Using standard UI components and using plugins written by other people will be very useful when you get to your project!
- Lots of web related stuff can be found on **Github**, you should not be afraid of it.

Describing interaction

- Words are not enough. We need to use visual descriptions.
- Images are not enough. Interaction is movement.

- Wireframes
- State transition diagrams

Wireframes

Paper prototyping

Plan layout for content

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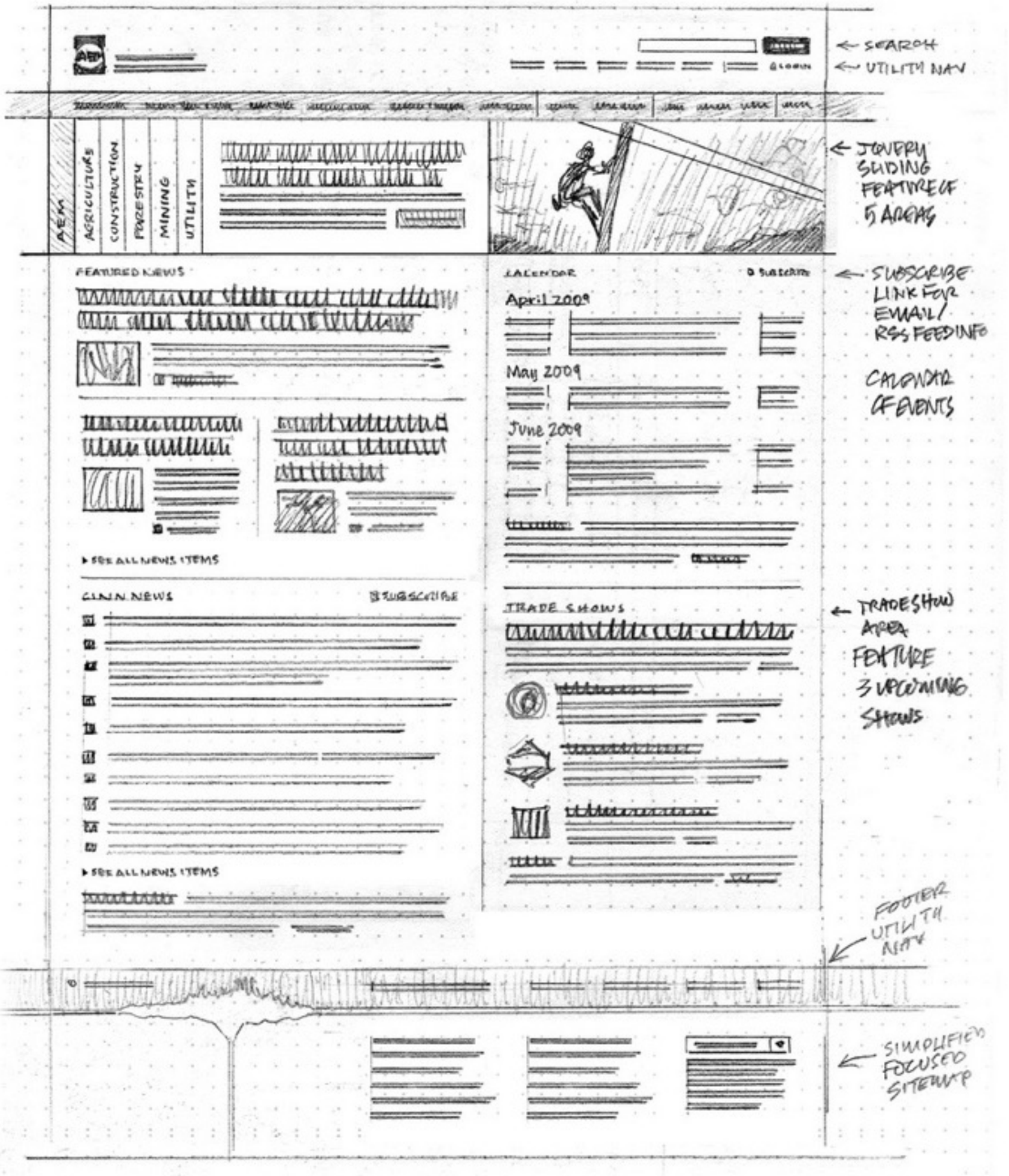
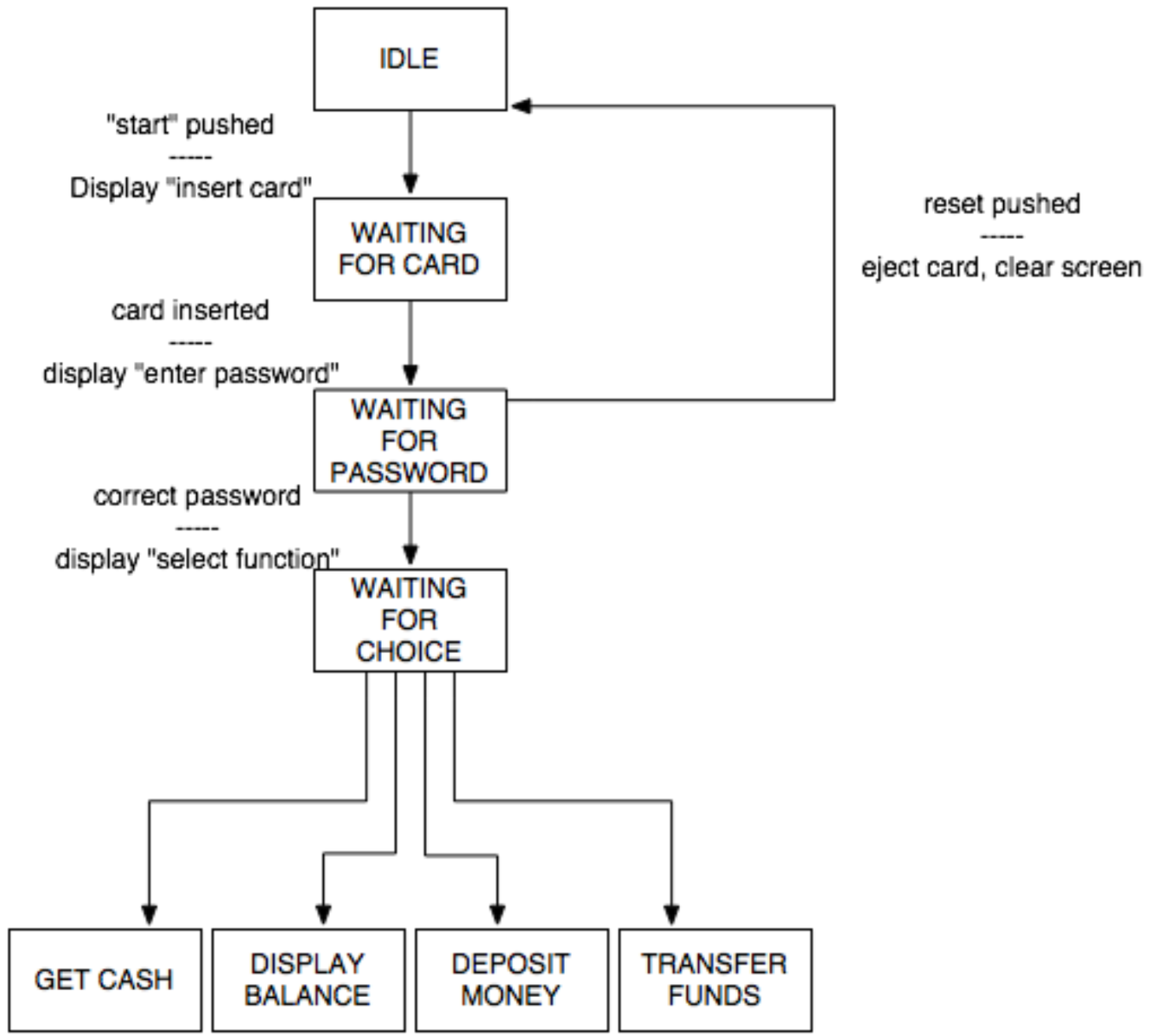
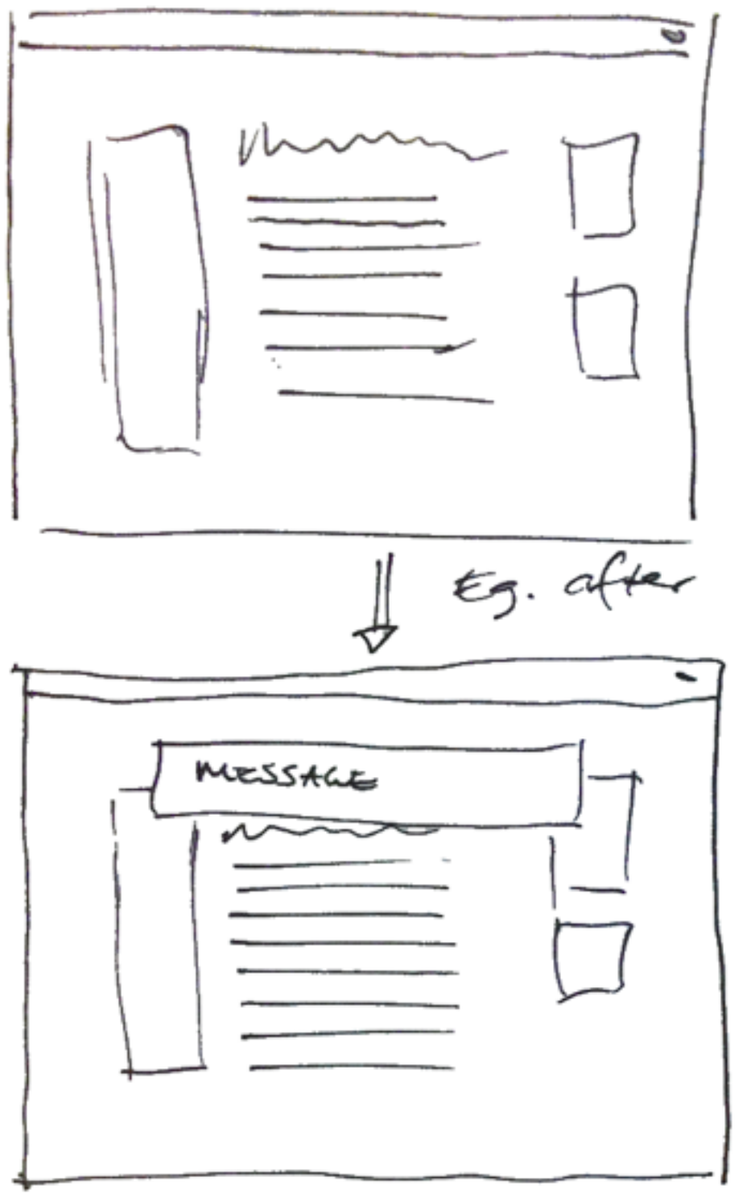
AEM MAINPAGE CONCEPT v|C

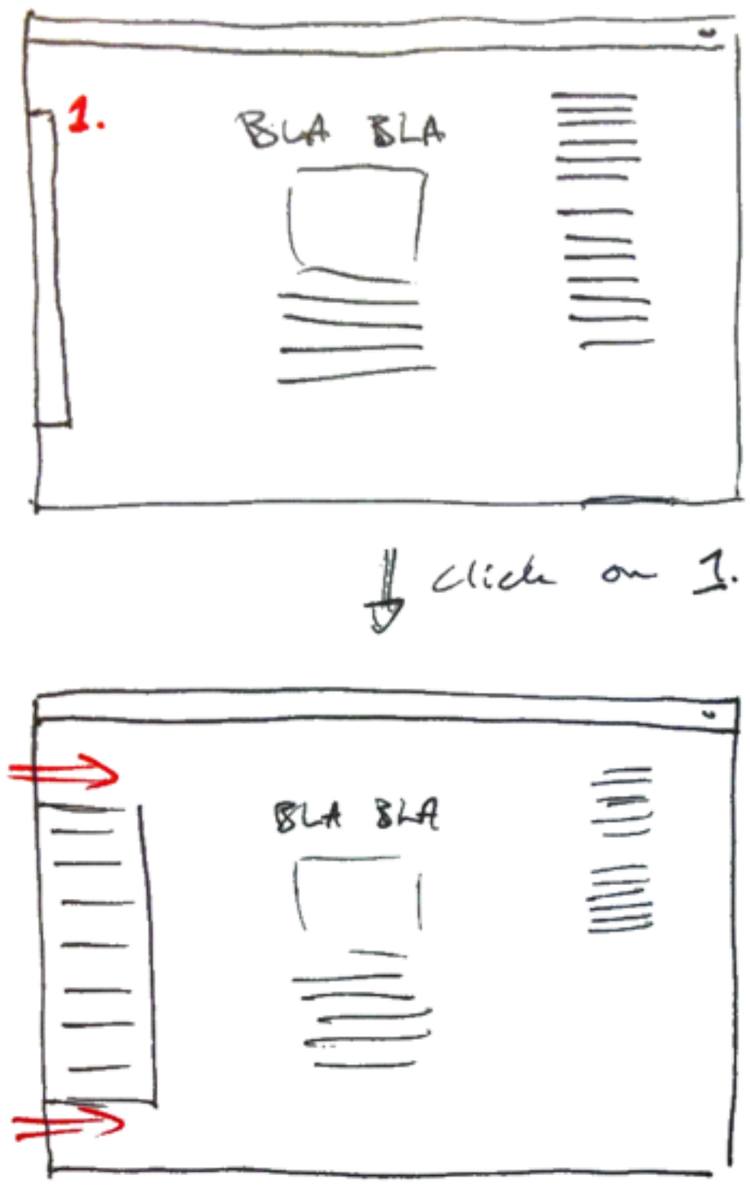


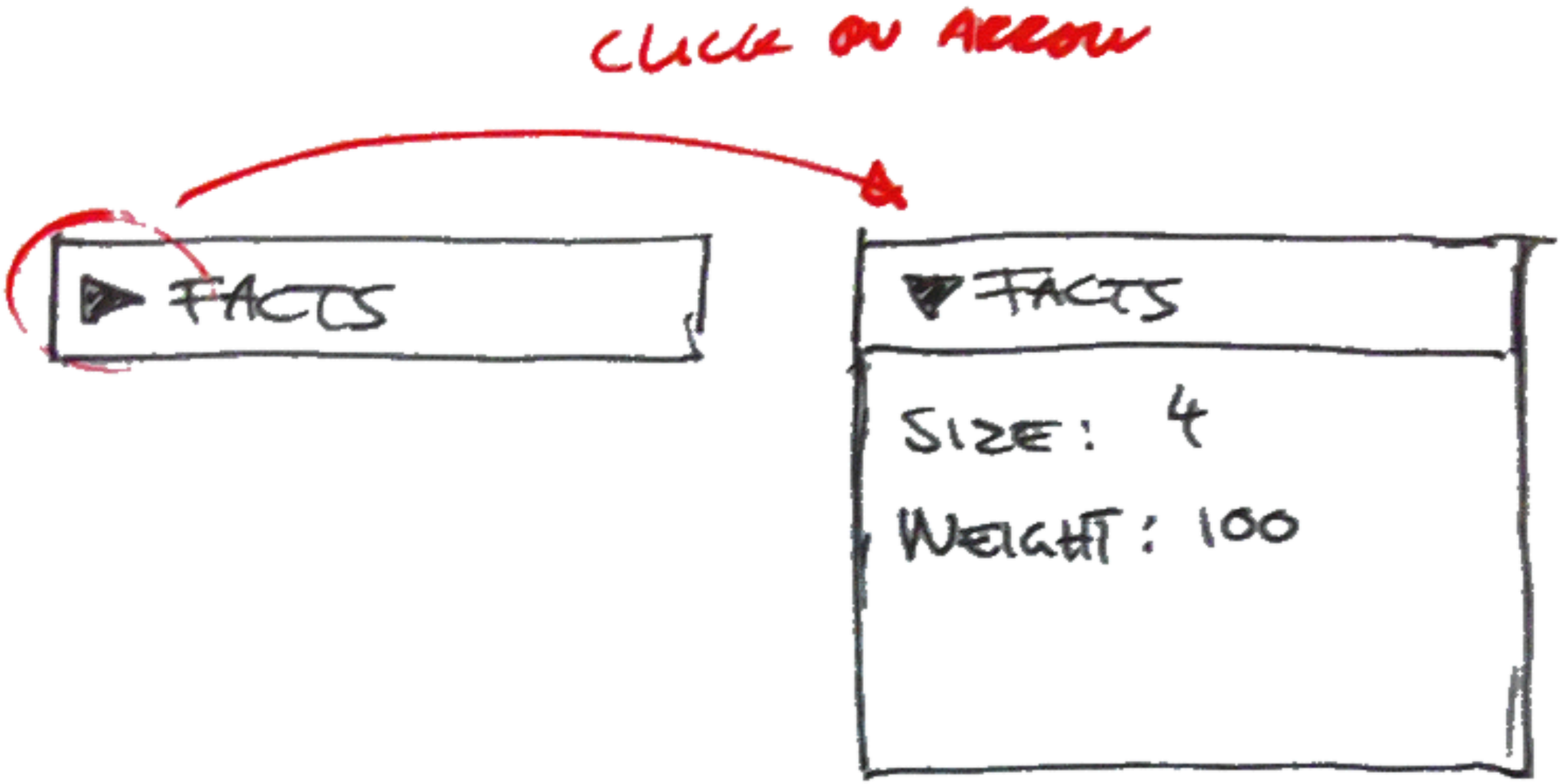

IDLE
"start" pushed

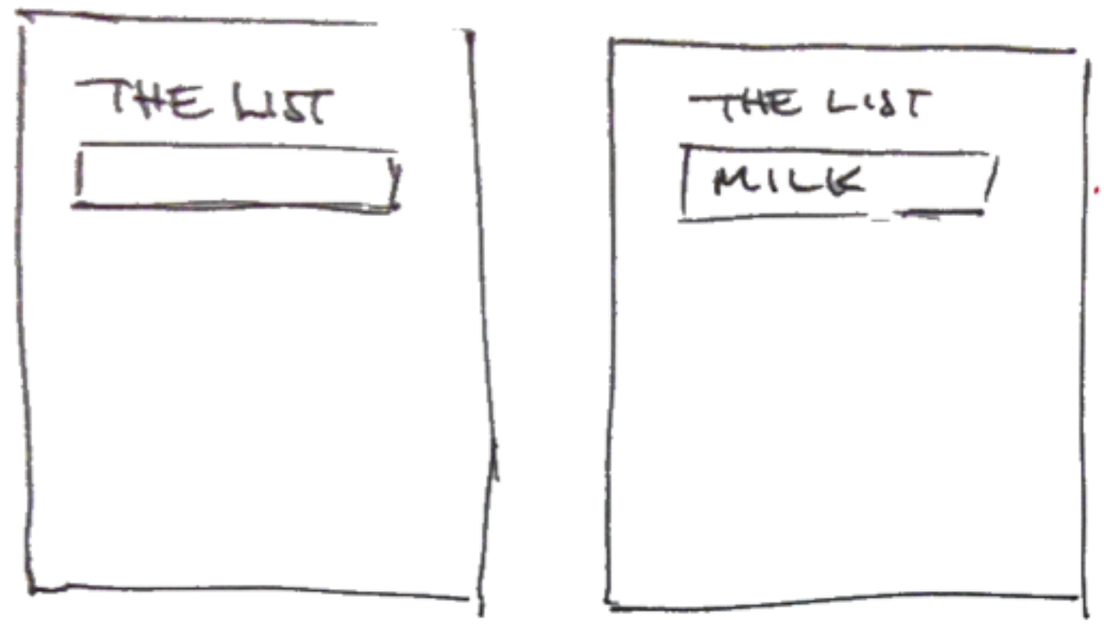
Display "insert card"
WAITING FOR CARD
card inserted
---
display "enter password"
WAITING FOR PASSWORD
correct password
---
display "select function"
WAITING FOR CHOICE
reset pushed
---
eject card, clear screen
GET CASH
DISPLAY BALANCE
DEPOSIT MONEY
TRANSFER FUNDS

For describing interaction,
we can combine these two


MESSAGE
BOX
Eg. after 10 seconds
MESSAGE


1.
BLA BLA
click on 1.
BLA BLA


CLICK ON ARROW
FACTS
FACTS
SIZE: 4
WEIGHT: 100



- WRITE MILK
PRESS ENTER

- MILK IS ADDED TO LIST
- MILK HAS CHECKBOX

Assignment 4

- You will use jQuery UI + plugins
- Reading plugin documentation
- Keeping track of jQuery and jQuery UI version requirements
- Keeping your folders tidy

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The API

- API - Application Programming Interface
- Specifies how to interact with software using code.
- Think “GUI” for software.

Examples from the jQuery API

- `.attr()` http://api.jquery.com/attr/
- `.animate()` http://api.jquery.com/animate/

.attr()

Categories: Attributes | Manipulation > General Attributes

Get the value of an attribute for the first element in the set of matched elements or set one or more attributes for every matched element.

Contents:

- .attr(attributeName)
  - .attr(attributeName)
- .attr(attributeName, value)
  - .attr(attributeName, value)
  - .attr(attributes)
  - .attr(attributeName, function(index, attr))

Return type is important!

.attr(attributeName) **Returns: String**

Description: *Get the value of an attribute for the first element in the set of matched elements.*

.attr(attributeName) **version added: 1.0**

attributeName
Type: String
The name of the attribu

Pay attention to parameter type!

The `.attr()` method gets the attribute value for only the *first* element in the matched set. To get the value for each element individually, use a looping construct such as jQuery's `.each()` or `.map()` method.

Using jQuery's `.attr()` method to get the value of an element's attribute has two main benefits:

1. **Convenience**: It can be called directly on a jQuery object and chained to other jQuery methods.
2. **Cross-browser consistency**: The values of some attributes are reported inconsistently across browsers, and even across versions of a single browser. The `.attr()` method reduces such inconsistencies.

Note: Attribute values are strings with the exception of a few attributes such as value and tabindex.

Note: Attempting to change the `type` attribute (or property) of an `input` element created via HTML or already in an HTML document will result in an error being thrown by Internet Explorer 6, 7, or 8.

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.animate()

Categories: Effects > Custom

.animate(properties [, duration] [, easing] [, complete])

Returns: jQuery

Description: *Perform a custom animation of a set of CSS properties.*

.animate(properties [, duration] [, easing] [, complete])

version added: 1.0

Parameters in [brackets] are optional!

properties
Type: PlainObject
An object of CSS properties and values that the animation will move toward.

duration (default: `400`)
Type: Number or String
A string or number determining how long the animation will run.

easing (default: `swing`)
Type: String
A string indicating which easing function to use for the transition.

complete
Type: Function()
A function to call once the animation is complete.

.animate(properties, options)

version added: 1.0

properties
Type: PlainObject
An object of CSS properties and values that the animation will move toward.

PlainObject

```
var cssPlainObject = {
                       width: "200px",
                       height: "200px"
                     };
$(selector).animate(cssPlainObject);
```

A PlainObject has the form { attribute: value, attribute: value … }

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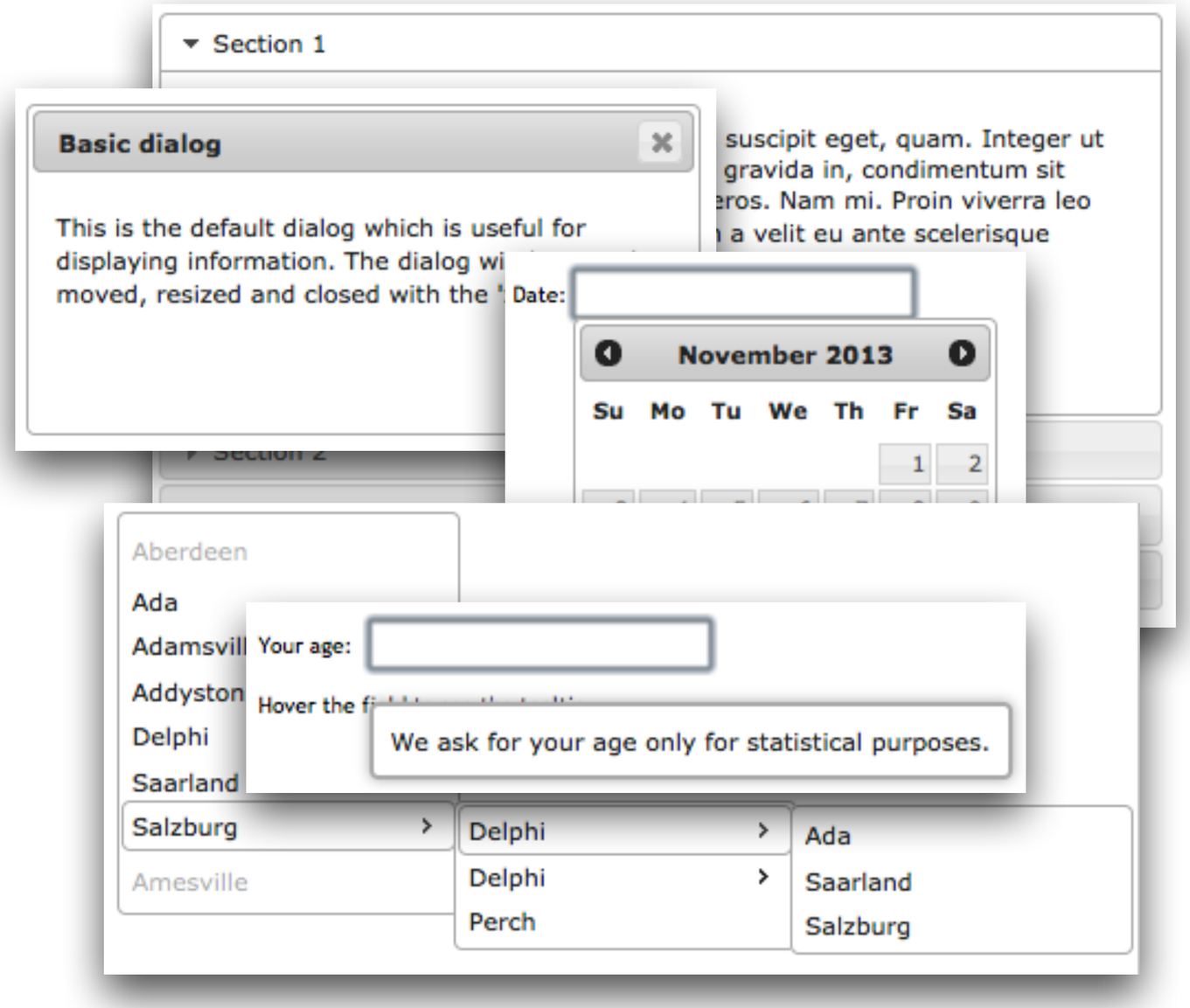
What is jQuery UI?

- “jQuery UI is a **widget and interaction library built on top of the jQuery JavaScript Library** that you can use to build highly interactive web applications.”

Example widgets

- Accordion
- Dialog
- Date picker
- Menu
- Tooltip



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Accordion

```
<div id="accordion">
  <h3>Section 1</h3>
  <div>
    <p>Mauris mauris ante, blandit et, ultrices a, suscipit
eget, quam. Integer ut neque. Vivamus nisi metus, molestie vel,
gravida in, condimentum sit amet, nunc.</p>
  </div>
  <h3>Section 2</h3>
  <div>
    <p>Sed non urna. Donec et ante. Phasellus eu ligula.
Vestibulum sit amet purus. Vivamus hendrerit, dolor at aliquet
laoreet, mauris turpis porttitor velit, faucibus interdum
tellus libero ac justo.</p>
  </div>
  <h3>Section 3</h3>
  <div>
    <p>Nam enim risus, molestie et, porta ac, aliquam ac,
risus. Quisque lobortis. Phasellus pellentesque purus in massa.
Aenean in pede. Phasellus ac libero ac tellus pellentesque
semper.</p>
    <ul>
      <li>List item one</li>
      <li>List item two</li>
      <li>List item three</li>
    </ul>
  </div>
  <h3>Section 4</h3>
  <div>
    <p>Cras dictum. Pellentesque habitant morbi tristique
senectus et netus et malesuada fames ac turpis egestas.</p>
    <p>Suspendisse eu nisl. Nullam ut libero. Integer dignissim
consequat lectus.</p>
  </div>
</div>
```



```
<h3>Section 1</h3>
<div>
  <p>Mauris mauris ante, blandit et,
ultrices a, suscipit eget, quam. Integer ut
neque. Vivamus nisi metus, molestie vel,
gravida in, condimentum sit amet, nunc.</p>
</div>
```

```
<script>
    $(function() {
        $( "#accordion" ).accordion();
    });
</script>
```

Accordion example

https://trinket.io/html/0d9ed71d12

Basic pattern to use jQuery UI element

1. Add content using specified structure
2. Add jQuery UI call in script, associating content with a jQuery widget:

```
$(selector).jQueryUIfunction()
```

Accordion

```
<div id="accordion">
  <h3>Section 1</h3>
  <div>
    <p>Mauris mauris ante, blandit et, ultrices a, suscipit
eget, quam. Integer ut neque. Vivamus nisi metus, molestie vel,
gravida in, condimentum sit amet, nunc.</p>
  </div>
  <h3>Section 2</h3>
  <div>
    <p>Sed non urna. Donec et ante. Phasellus eu ligula.
Vestibulum sit amet purus. Vivamus hendrerit, dolor at aliquet
laoreet, mauris turpis porttitor velit, faucibus interdum
tellus libero ac justo.</p>
  </div>
  <h3>Section 3</h3>
  <div>
    <p>Nam enim risus, molestie et, porta ac, aliquam ac,
risus. Quisque lobortis. Phasellus pellentesque purus in massa.
Aenean in pede. Phasellus ac libero ac tellus pellentesque
semper.</p>
    <ul>
      <li>List item one</li>
      <li>List item two</li>
      <li>List item three</li>
    </ul>
  </div>
  <h3>Section 4</h3>
  <div>
    <p>Cras dictum. Pellentesque habitant morbi tristique
senectus et netus et malesuada fames ac turpis egestas.</p>
    <p>Suspendisse eu nisl. Nullam ut libero. Integer dignissim
consequat lectus.</p>
  </div>
</div>
```



```
<h3>Section 1</h3>
<div>
  <p>Mauris mauris ante, blandit et,
ultrices a, suscipit eget, quam. Integer ut
neque. Vivamus nisi metus, molestie vel,
gravida in, condimentum sit amet, nunc.</p>
</div>
```

```
<script>
    $(function() {
        $( "#accordion" ).accordion();
    });
</script>
```

jQuery UI Widgets: options, methods, events

- **Options**

  PlainObject passed on initialization

- **Methods**

  Call by passing a string to the jQuery UI function

  e.g.

  ```
  $("#accordion").accordion("disable");
  ```

- **Events**

  Specify event handlers in options during init

Accordion Widget

Categories: Widgets

Accordion Widget **version added: 1.0**

Description: *Convert a pair of headers and content panels into an accordion.*

QuickNav

Examples

Options

- active
- animate
- collapsible
- disabled
- event
- header
- heightStyle
- icons

Methods

- destroy
- disable
- enable
- option
- refresh
- widget

Events

- activate
- beforeActivate
- create

The markup of your accordion container needs pairs of headers and content panels:

```
<div id="accordion">
  <h3>First header</h3>
  <div>First content panel</div>
  <h3>Second header</h3>
  <div>Second content panel</div>
</div>
```

Accordions support arbitrary markup, but each content panel must always be the next sibling after its associated header. See the `header` option for information on how to use custom markup structures.

The panels can be activated programmatically by setting the `active` option.

Events

activate(event, ui)

Type: `accordionactivate`

Triggered after a panel has been activated (after animation completes). If the accordion was previously collapsed, `ui.oldHeader` and `ui.oldPanel` will be empty jQuery objects. If the accordion is collapsing, `ui.newHeader` and `ui.newPanel` will be empty jQuery objects.

Note: Since the `activate` event is only fired on panel activation, it is not fired for the initial panel when the accordion widget is created. If you need a hook for widget creation use the `create` event.

- **event**
  Type: Event

- **ui**
  Type: Object
  - **newHeader**
    Type: jQuery
    The header that was just activated.
  - **oldHeader**
    Type: jQuery
    The header that was just deactivated.
  - **newPanel**
    Type: jQuery
    The panel that was just activated.
  - **oldPanel**
    Type: jQuery
    The panel that was just deactivated.

Code examples:

Initialize the accordion with the activate callback specified:

```
1 $( ".selector" ).accordion({
2   activate: function( event, ui ) {}
3 });
```

Menu

https://trinket.io/html/fc3d097bd2

Button

http://jqueryui.com/button/

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Slider

http://jqueryui.com/slider/

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jQuery UI setup

1. Download/link to jQuery library
2. Download/link to jQuery UI library
3. Download/link to jQuery UI CSS theme

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jQuery UI themes

- Different jQuery UI themes can be used.
- A theme is a CSS.
- Themes can be downloaded and created at http://jqueryui.com/themeroller/

Drag and drop using jQuery UI

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Making something draggable

- Call

```
$(selector).draggable()
```

Droppable - a target for something draggable

```
$( ".selector" ).droppable({
  drop: function( event, ui ) {
            // ui.draggable is the jQuery of the element dragged
        }
});
```

The drop option specifies the function handler for the drop event.

UI is a plain object with the property draggable.

The drop target is **`$(this)`**

Drag and drop Trinket

https://trinket.io/html/71ea1f4fcf

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jQuery plugins

- jQuery plugins extend the functionality of jQuery using a pattern similar to jQuery UI
- In fact, jQuery UI can be seen as a jQuery plugin.

Example plugins

- jQuery Waypoints: `http://imakewebthings.com/waypoints`
- jQuery Knob: `http://anthonyterrien.com/knob/`
- PowerTip: `http://stevenbenner.github.io/jquery-powertip/`
- Isotope: `http://isotope.metafizzy.co/`
- Transit: `http://ricostacruz.com/jquery.transit/`
- AnimateScroll: `http://plugins.compzets.com/animatescroll/`
- Masonry: `http://masonry.desandro.com/`
- Datedropper: `http://felicegattuso.com/projects/datedropper/`
- Animsion: `http://git.blivesta.com/animsition/`

Using a plugin

1. Find a plugin you want to use
2. Visit the plugin web page
3. Read the install guide
4. Download the plugin
5. Follow instructions either on the plugin web page or look for a README file in the unpacked archive.

What is this thing called github?

http://www.github.com

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Project

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