GEO 309 – Intro to GIS

Joe Blankenship
Department of Geography
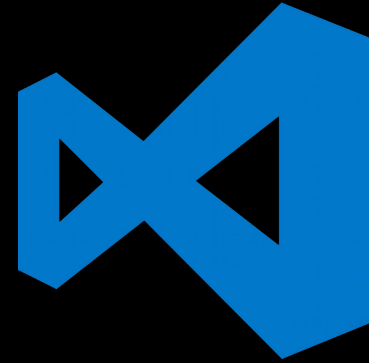University of Kentucky

Topics

- Discussion – Crampton
- Web Cartography
  - HTML, CSS, JS
  - Leaflet
  - Mapbox
  - VCS on Github

Discussion – Crampton

- Crampton, J.W. (2009). Cartography: Performative, participatory, political. Progress in Human Geography, 33(6): 840-848.
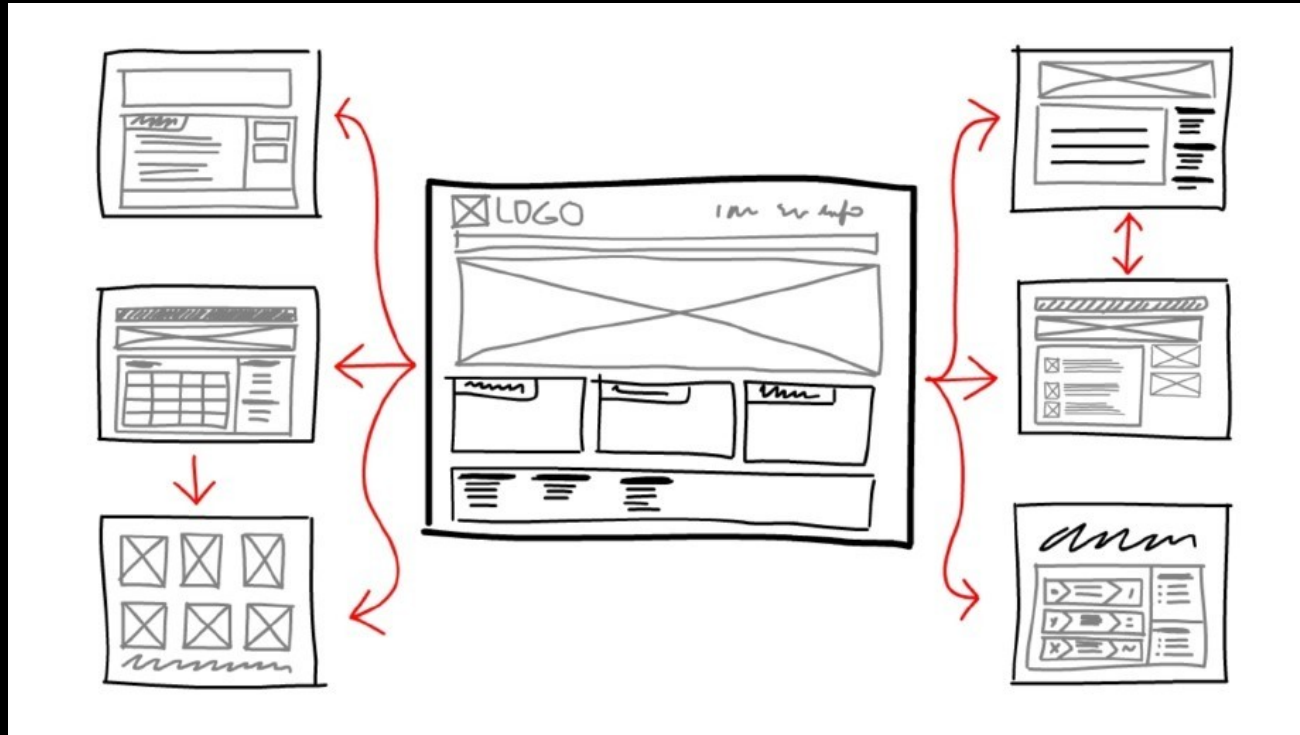
Web Cartography

- What do you need?
  - Text Editor
    - VS Code, Atom, Notepad ++, VIM
  - Modern Web Browser
  - Graphic Editor
    - Adobe, GIMP
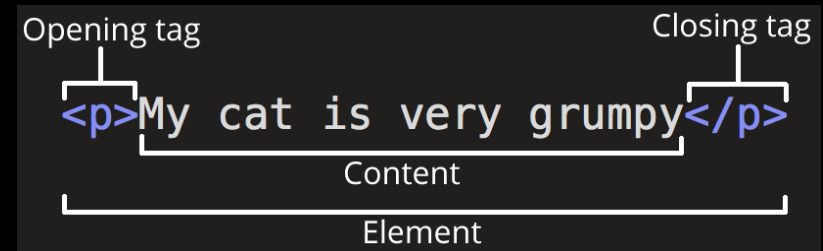 - Version Control System
    - Git-based VCS

Web Cartography

- Sketch it out > Wireframe

Web Cartography

- HTML
  - Hypertext Markup Language
  - Structures the web page
    - DOM – Document Object Model
    - Tags (html, head, body, script, p, a, ul, ol, li)
    - Content (text inside the tags)
    - Elements (Tags + Content)

Opening tag | Closing tag

`<p>`My cat is very grumpy`</p>`
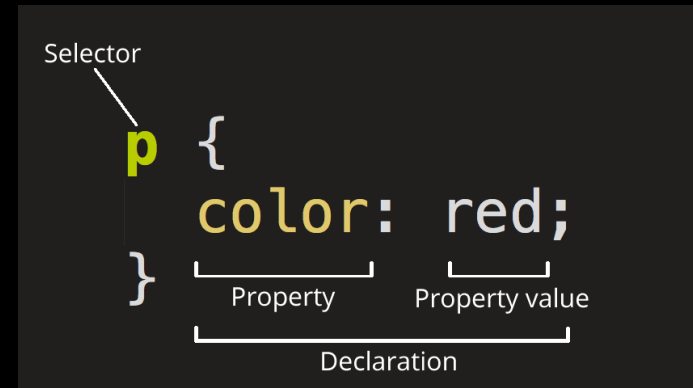
Content

Element

Web Cartography

- CSS
  - Cascading Style Sheets
  - Styles the web pages
    - Use multiple style sheets, last one in order is first
    - Selector (HTML Tag to be styled)
    - Property (Style you want to modify)
    - Declaration (Property + Value)
  - Boxes!

Web Cartography

- JS
  - Java Script
  - Interactivity to web page
  - High-level, dynamic programming language
  - Many different frameworks
  - OOP & Functional
    - Variables, Functions, Objects
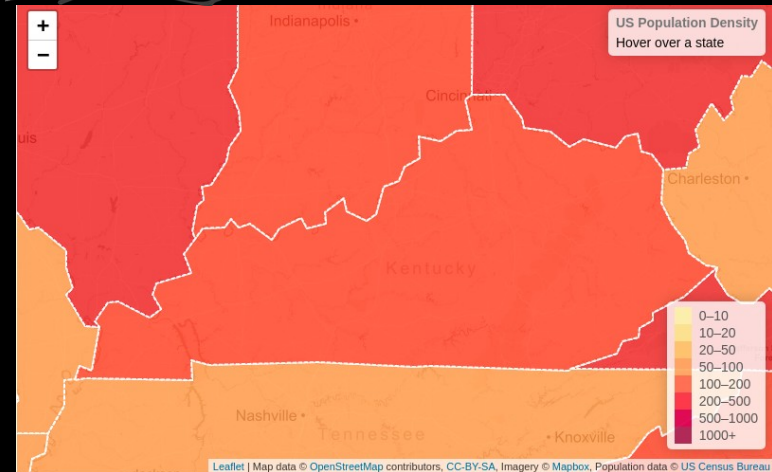
```
<script>
    var cities = L.layerGroup();

    L.marker([39.61, -105.02]).bindPopup('This is Littleton, CO.').addTo(cities),
    L.marker([39.74, -104.99]).bindPopup('This is Denver, CO.').addTo(cities),
    L.marker([39.73, -104.8]).bindPopup('This is Aurora, CO.').addTo(cities),
    L.marker([39.77, -105.23]).bindPopup('This is Golden, CO.').addTo(cities);

    var mbAttr = 'Map data &copy; <a href="https://www.openstreetmap.org/">OpenStreetMap<
            '<a href="https://creativecommons.org/licenses/by-sa/2.0/">CC-BY-SA</a>, ' +
            'Imagery © <a href="https://www.mapbox.com/">Mapbox</a>',
        mbUrl = 'https://api.tiles.mapbox.com/v4/{id}/{z}/{x}/{y}.png?access_token=pk.eyJ

    var grayscale   = L.tileLayer(mbUrl, {id: 'mapbox.light', attribution: mbAttr}),
        streets  = L.tileLayer(mbUrl, {id: 'mapbox.streets',   attribution: mbAttr});

    var map = L.map('map', {
        center: [39.73, -104.99],
        zoom: 10,
        layers: [grayscale, cities]
    });
```
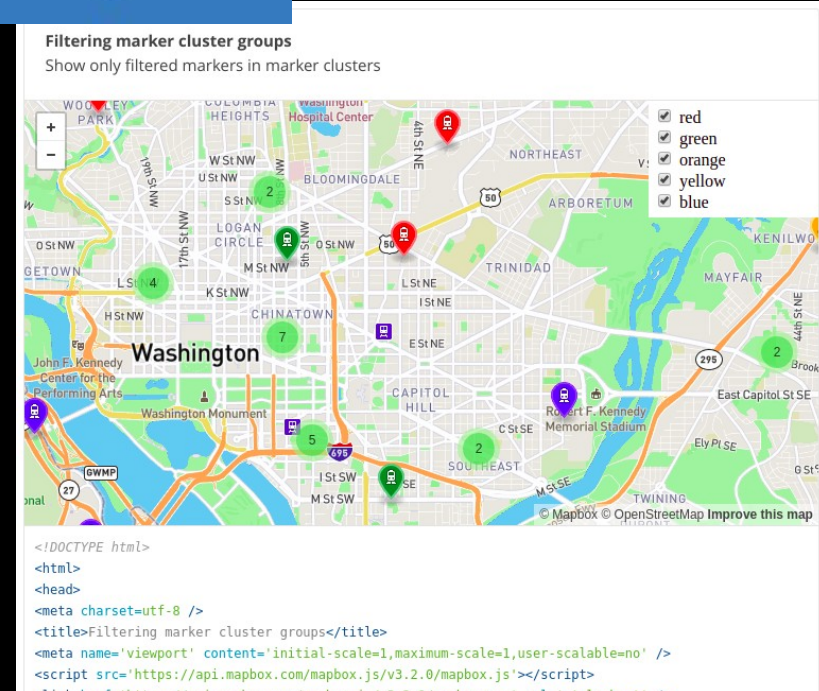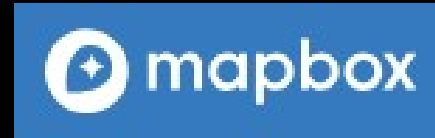
Web Cartography

- Leaflet
  - Open source, web mapping library
  - Browser & mobile
    - Responsive design
  - Non-geographical maps?
  - Can use web services
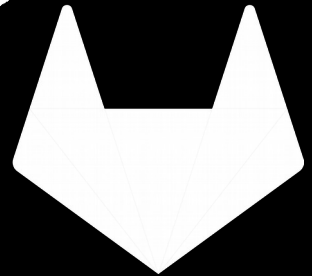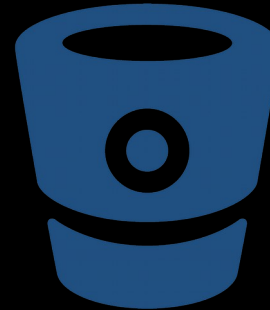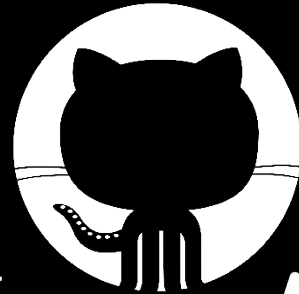 - Animations and more!

Web Cartography

- MapboxJS
  - Built with Leaflet
  - Open source
  - Supported by Mapbox
  - Geocoding & Navigation
  - Mapbox Studio & 3D
    - Web services
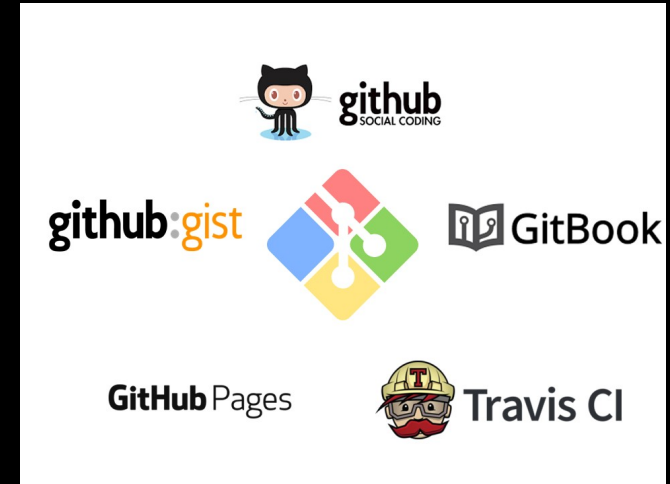 - Requires account/API key

Web Cartography

- VCS
  - Version Control System
  - Maintain a history of code, docs, data
    - GitHub
    - GitLab
    - BitBucket
    - Can also use Google Drive… kinda
      - Cloud text editors for Drive

Web Cartography

- VCS on GitHub
  - Back-up your code & data
  - Share code (gists)
  - Host static websites (github.io)
  - Create documentation (gitbook)
  - Collaboration (project management, gitter)
  - Public and Private repos
  - Map rendering (GeoJSON, CSV, even 3D with STL)

Resources

- Codecademy
- Mozilla – Learn Web Development
- Leaflet.js
- Mapbox.js
- NewMapsPlus
- MapShop
- Leaflet Demo