CS144: AJAX Introduction

- **Examples of interactive Web application**
  - Yahoo Mail: https://mail.yahoo.com
  - Google suggest: http://www.google.com/webhp?complete=1

- Two modes of Web interaction (traditional vs AJAX)

![Figure 1: Traditional vs AJAX](image)

- **Traditional vs AJAX**
  - Traditional
    - Form-based input
    - Press “submit” button and wait until the entire page reloads
* Frequent interruptions and significant delay
  – AJAX
    * Immediate, “in-place” update of page content
    * More “desktop-application”-like feel

• Q: What does AJAX mean?
  – AJAX: Asynchronous JavaScript and XML
    * The term was coined by Jesse James Garrett in Feb 2005
    * http://www.adaptivepath.org/ideas/ajax-new-approach-web-applications/

• Q: What is needed to support this interaction?
  – Background-color change example: http://oak.cs.ucla.edu/classes/cs144/examples/javascript.html
    – Q: What should the browser do for this demo page?
      * Monitor “clicks” on the page
      * When clicked, change the background color
    – Q: How is the sequence of execution determined?
      * Event-driven programming:
        ▶ Control flow is driven by events not by the programmer
        ▶ Examples of events: user presses a button, server sends a response, ...
        ▶ Programmer specifies mapping from events to actions
          ▶ “If this event happens, then take these actions”: callback functions
    – Q: What mechanisms are needed to support this app?
      * Dynamic in-place page update mechanism

• Two key building blocks of AJAX applications
  1. JavaScript: The programming language for the Web
     – Allows running complex code inside a browser to make the page “dynamic”
  2. Document Object Model (DOM)
     – Tree-based representation of HTML document
     – JavaScript program can manipulate different parts of the DOM to make changes on the page
– JavaScript program can monitor “events” on the DOM, like clicking on certain part of the page
– Topics of our next study