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)

![Diagram of traditional vs AJAX application models](image.jpg)

Figure 1: Traditional vs AJAX

• Traditional vs AJAX
  – Traditional
    * Form-based input
    * Press “submit” button and wait until the entire page reloads

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CS144: Web Applications

* 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