Asynchronous Javascript and XML

What can we do with AJAX?

- Ajax is a methodology of designing web applications , so that they have the look and feel of desktop applications
- AJAX is an acronym for Asynchronous JavaScript And XML
- Provides an ability to communicate with the server asynchronously
- Request can be sent to the server and continue interaction with the user
- Need not wait for response from the server
- Once the response arrives, a designated area in UI will update itself and reflect the response information
- Whole page need not be reloaded.
- With Ajax, it is possible to
  - Update a web page without reloading the page
  - Request data from a server - after the page has loaded
  - Receive data from a server - after the page has loaded
  - Send data to a server - in the background

Applications of Ajax – Live searches

- Get search results instantly, as the search term is entered
- Ajax contacts Google behind the scenes
- Drop-down menu displays common search terms from Google that might match wha the entered search term
- Possible to select one of those terms and just click it in the menu.

Figure 1-2: A Google live search.

Applications of Ajax – Auto Complete

- Closely related to live search applications complete applications
- Try to guess the word and bring a list of similar words from the server and displaying them.

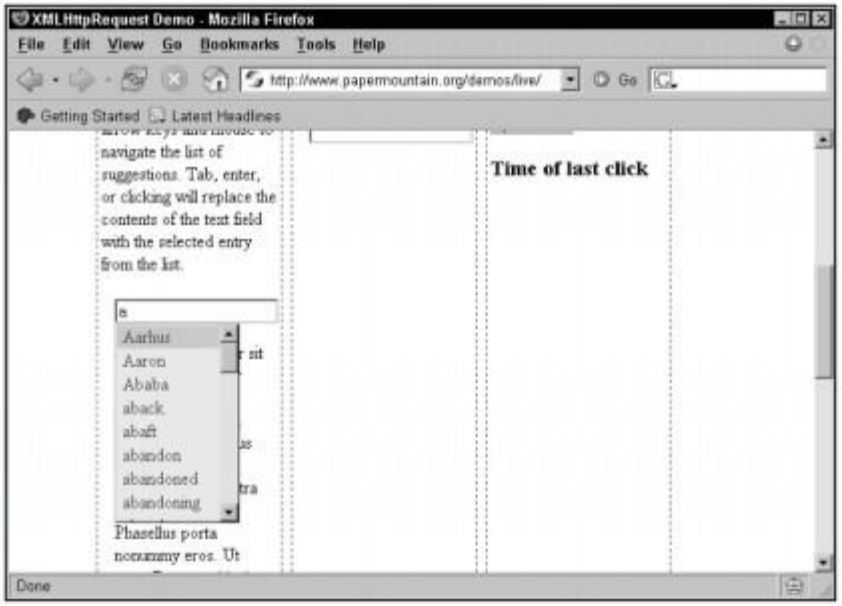


Figure 1-3: An autocomplete example.

Applications of Ajax – Chat

- Ajax excels at updating Web pages without refreshing the displayed page
- It's a great choice for Web-based chat programs, where many users can chat together at the same time.

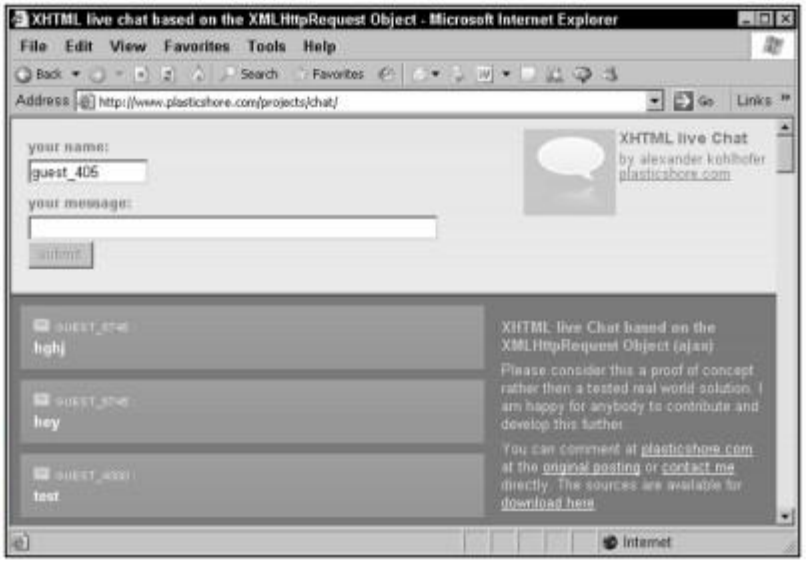


Figure 1-4: An Ajax-based chat application.

There are plenty of Ajax-based chat rooms around. Take a look at `http://treehouse.ofb.net/chat/?lang=en` for another example.

Applications of Ajax – Chat

- When the user drags the television to the shopping cart the server is notified that the user bought a television.
- Server sends back the text “You just bought a nice television.”

Figure 1-5: Drag-and-drop shopping.

Applications of Ajax – Login Feedback

- Another Internet task that can involve many annoying page refreshes is logging in to a site.
- If you type the wrong login name, for example, you get a new page explaining the problem
- Need to log in on another page, and so on.
- How about getting instant feedback on your login attempt?

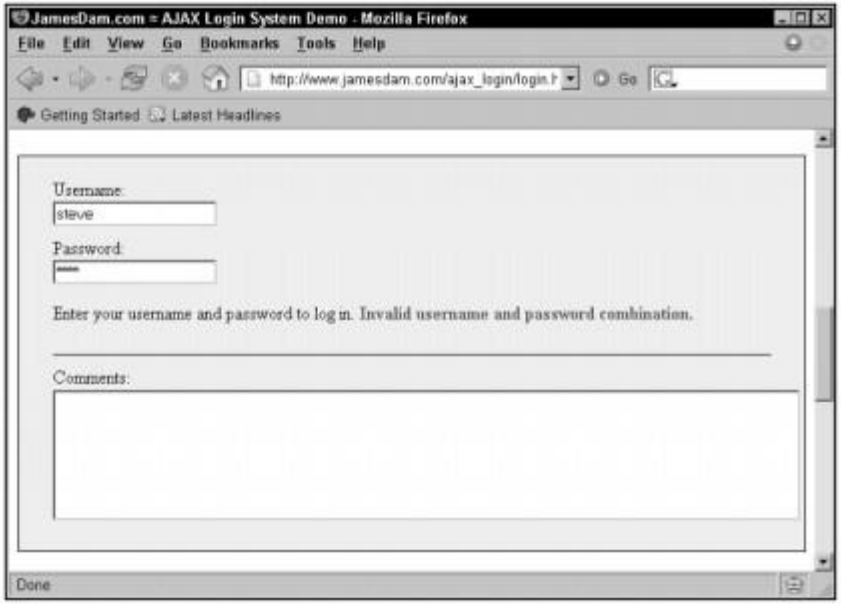


Figure 1-7: Ajax makes correcting login mistakes easier.

Applications of Ajax – Popup Menus

- The pop-up menus appear when you move the mouse
- display text retrieved from the server using Ajax techniques.
- By accessing the server, Ajax allows you to set up an interactive menu system that responds to the menu choices the user has already made.

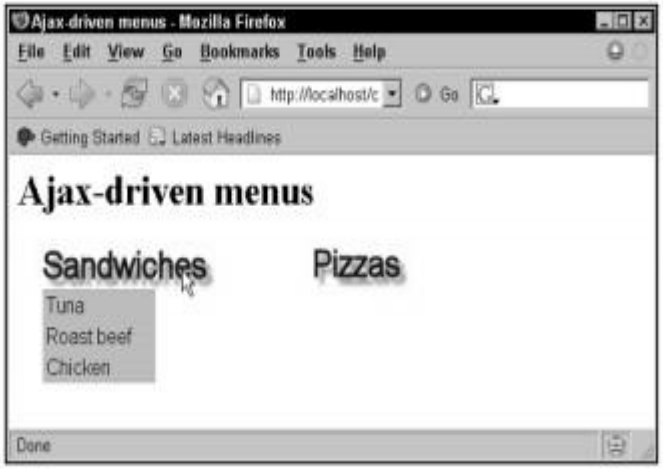
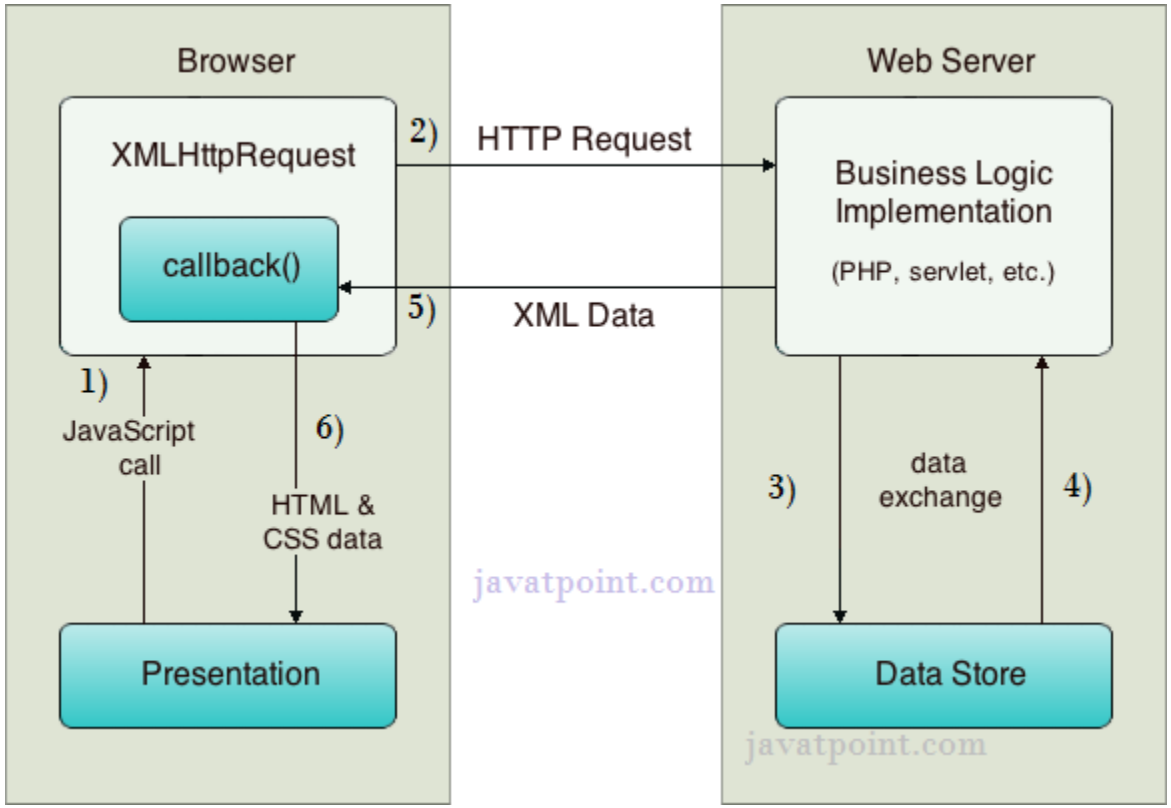


Figure 1-8: Ajax-enabled pop-up menus.

How ajax works



Steps

- User sends a request from the UI and a javascript call goes to XMLHttpRequest object.
- HTTP Request is sent to the server by XMLHttpRequest object.
- Server interacts with the database using JSP, PHP, Servlet, ASP.net etc.
- Data is retrieved.
- Server sends XML data or JSON data to the XMLHttpRequest callback function.
- HTML and CSS data is displayed on the browser.

How to implement AJAX application?

- XMLHttpRequest object is utilized for sending the request.
- Browser provides the capability for XMLHttpRequest object.
- Most modern browsers provides support for XMLHttpRequest.
- This object helps for http request and process XML response

Properties of XMLHttpRequest

- XMLHttpRequest consists of properties readyState, status, statusText, responseText
  - readyState denotes states as
    - 0 – UNINITIALIZED
    - 1 – LOADING
    - 2 – LOADED
    - 3 – INTERACTIVE
    - 4 – COMPLETE.
  - status is HTTP status code for the response
  - statusText is HTTP status message for the status code
  - responseText is response text from server

Event in XMLHttpRequest

- XMLHttpRequest contains an event ‘onreadystatechange’
- It is invoked whenever ‘readyState’ property given above changes
- Need to register a function for the above event ‘onreadystatechange’
- xhttp.open("GET", "ajax_info.txt", true);
  - The third argument ‘true’ represents asynchronous
- xhttp.send();