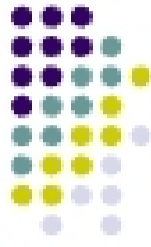


Web Services

CS 640, Lecture 14



Lecture outline



- Web Services
- AJAX
- Presentation layer for RPC

What do web services do?



- Main use: ask another computer to run a procedure for you – parameters and results sent over network
- Remote Procedure Calls (RPC) -- a very old and very powerful idea
- Distinguishing features of web services
 - They run over http
 - They use XML to encode responses (and requests)
 - Client and server often use different languages
 - Client and server are often in different organizations
 - Client may be JavaScript code in browser – AJAX

More on web services

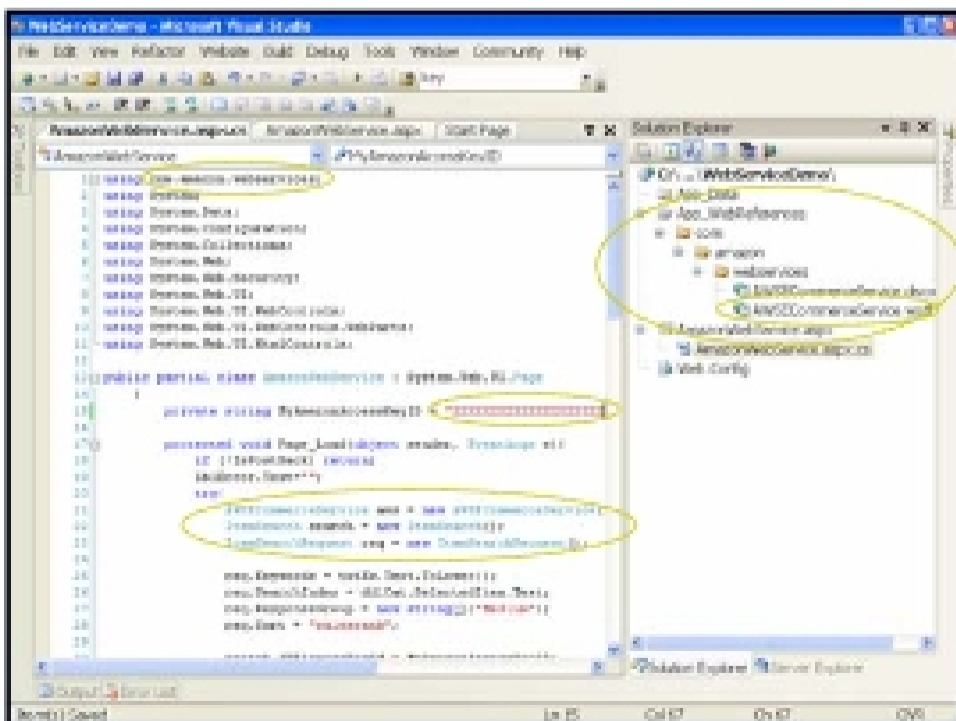


- Many companies allow access to their data / services through web services (some free)
 - Examples: Amazon, ebay, Google, Yahoo, USPS
- Two popular flavors
 - SOAP – requests are in XML
 - REST – request format same as query strings of HTML forms (sequence of name-value pairs)
- WSDL (web service description language) file used to describe format of messages supported by a given web service

ASP.NET and web services



- Writing web services
 - Create new web site of type "web service"
 - Write C# methods exposed to clients
 - The system does the rest (incl. generating WSDL)
- Using web services
 - Add "web reference" to your site/project
 - Give URL of WSDL file
 - Use web service in your code
 - System adds "glue" – class definitions, code for building requests and parsing responses, etc.



Lecture outline

- Web Services
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What is AJAX?

- Dynamic, interactive web pages that feel more like a desktop application than a static page
- Key technologies – Asynchronous requests, JavaScript, DOM manipulation, CSS (especially positioning of elements), web services using XML
- Core tenet – in response to user actions, do not refresh full page from server, send small requests as needed and update individual elements of web page
- Examples: dragging/zooming maps at Google and Yahoo, "tooltip details" at Netflix, etc.



The XMLHttpRequest object

```
var xmlhttp;
function createXMLHttpRequest() {
  if (window.ActiveXObject) {
    return new ActiveXObject("Microsoft.XMLHTTP");
  } else if (window.XMLHttpRequest) {
    return new XMLHttpRequest();
  }
}

function do_liveSearch(pattern) {
  xmlhttp = createXMLHttpRequest();
  xmlhttp.onreadystatechange = handleStateChange;
  xmlhttp.open("GET", document.URL.substring(0, document.URL.lastIndexOf('/') +
    "SearchService.aspx?pattern="+pattern, true);
  xmlhttp.send(null);
}

function handleStateChange() {
  if (xmlhttp.readyState == 4) {
    if (xmlhttp.status == 200) {
      updatePage();
    } else { alert("Status " + xmlhttp.status); }
  }
}

// var xmlDoc = xmlhttp.responseXML;
```