Aspects of AJAX

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Asynchronous programming

Why we need asynchronous programming

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Asynchronous programming

Asynchronous programming

```
      window.clearTimeout(_timer);
    document.getElementById("outputField").value = "wait...";
    _num = inputText;

    prime = 2; // start with 2
    number = parseInt(inputText);
    outputText = "";

    _timer = window.setTimeout("CalcPrimeFactors()", 50, "javascript");
  } // if
```

parallel incoming requests. AJAX uses this fundamental feature of web servers as you will see.

On the clientof nlyof2ofevents will remain and must be processedofone after the other:

- The event thatofstarts processing:

We will see how this can be done by using the built-in XMLHttpRequest

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Native AJAX Programming

```
...


[WebMethod(Description="Calculate all prime factors of a given number.")]
public string CalcPrimeFactors(string inputText) {
  string outputText = String.Empty;
  UInt64 prime;  // try this factor (only primes will match!)
  UInt64 number; // product of the remaining factors

  if ((inputText == null) || (inputText.Length == 0) || (inputText == "0"))
    return (null);

  prime = 2; // start with 2
  number = UInt64.Parse(inputText);

  while ((number > 1) && (prime * prime <= number)) {

      // try the next factor (slowly)
      prime += (prime == 2UL ? 1UL : 2UL);

    } else {
      // found a factor !
      outputText = outputText + " " + prime;
      number = number / prime;
    } // if


  if (number > 1) {
    // the last factor (a prime) is here0.48 9.12 re f 1h/s0r12 r.479 9.12 re f 533.04 484.55966.48 9.12 re f
```

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You now also can use URLs to jump directly to some important content.

-

A proxy generator to WebServices for JavaScript

view source code

view source code

view source code

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dateTime	date	Date
boolean	bool	Boolean
System.Xml.XmlDocument	x	In Mozilla / Firefox: XML:

AJAX Actions

Usig the web service proxy functions directly from JavaScript code is one

The AJAX Engine

The AJAX Engine

OPTION elements for a SELECT element you would have to download about 400.000 bytes of additional HTML code – too much. Instead a simple INPUT field is combined with the possibility to search in this dataset.

The WebService that implements this lookup functionality can be found in

The AJAX Engine

ajaxForms.resetData(obj)

b o e h T

```
// declare an AJAX action
var action1 = {
  delay: 200, // wait for multiple keystrokes from fast typing people

  // the prepare function just returns the context object (if any)
  // and makes it available to the call function.
  prepare: function(obj) { return (obj); },

  // the call is not pointing to the webservice proxy directly but calls it using several
parameters.
  call: function (obj) {
    var n1 = document.getElementById("n1").value;
    var n2 = document.getElementById("n2").value;
    proxies.CalcService.AddInteger.func = this.call.func; // patch
    proxies.CalcService.AddInteger.onException = this.call.onException; // patch
    proxies.CalcService.AddInteger(n1, n2); // and call
  },

  // the result will now be processed as usual.
  finish: function (p) { document.getElementById("outputField").value = p; },

  onException: proxies.alertException
} // action1
```

The AJAX Engine

The AJAX Engine

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JavaScript Behaviours

The way to building AJAX Controls

The JavaScript behaviour mechanism

JavaScript Behaviours

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JavaScript Prototypes in Mozilla/FireFox

Building JavaScript enabled web controls

brought to the client for make them available to the Behaviour implementation.

- The JavaScript Behaviour must be bound to the generated HTML element by calling the jcl.LoadBehaviour method once for every instance of the control

Of course it is possible to bring all these components to the client without using a web controiout some server side loio implemented by the

Building JavaScript enabled web controls

```
<input ... lookupservice="<%=this.lookupservice %>" ... />
```

The consequence of this is that the dult-values for parameters that are not specified in the source code must be ecified in the initialization of the class members and that values assigned o the JavaScript prototype objects are always overridden.

HTML Code

Writing specific HTML code for a User Control is simply done by writing it down at the end of the *.ascx file. It can be as complex as you like it to be.

AJAX enabled web controls

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AJAX enabled web controls

The reference to the WebService should also be set in the init function after

Table Data

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Displaying huge tables using AJAX

AJAX enabled web controls

Tuning the TableData

After realizing the first working version of TableData I found several things that did not work as expected so I published a better version with some

AJAX enabled web controls

AJAX enabled web controls

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AJAX enabled web controls

AJAX enabled web controls

Have a Look at

- http://www.mathertel.de/AJAXEngine/S.A 4H.(e)25(J)16(a)15(X)10(i)2B(o21ib(o2155(e)2Tr(b)-15(e)25(e)2Vng)15e5(w)39

Visual Effects Library

Why AJAX needs visual effects

Implementing a web based application by using AJAX techniques is about

-

Visual Effects

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Visual Effects

Drag and drop HTML objects around using CSS and JavaScript

http://www.mathertel.de/AJAXEngine/S04_VisualEoa94

Visual Effects

PopUp Information

http://www.mathertel.de/AJAXEngine/S04_VisualEffects/PopUpDemo.aspx

PopUp windows and PopUp boxes can be used to show additional

Building a AJAX enabled popup control

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functionality or styles. Rarely ore once-only include files slow down the application.

HTML and http Basics

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```
        if (ajax.queue[n] == action) {
```

```
} // ajax.StartProgress


// hide any progress indicator soon 9.12 re f 6 rg 1844 755.2 7LProgress
```

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```
        val = ret;
```

```
// px is a proxies.service.func object !
proxies.EnableCache = function (px) {
  // attach an empty _cache object.
  px._cache = new Object();
} // proxies.EnableCache
```

```
// check, if a call is currently waiting for a result
proxies.IsActive = function () {
  return(proxies.xmlhttp != null);
} // proxies.IsActive
```

```
///<summary>Callback method for a webservice call that dispatches the response to servive.func or
service.onException.</summary>
///<remarks>for private use only.<remarks>
proxies._response = function () {
  var ret = null;
  var x = proxies.xmlhttp;
  var cc = proxies.current;
  var rtype = null;

  if ((cc.rtype.length > 0) && (cc.rtype[0] != null))
    rtype = cc.rtype[0].split(':');

  if ((x != null) && (x.readyState == 4)) {
    if (x.status == 200) {
      var xNode = null;

      if (rtype != null)
        xNode = x.responseXML.getElementsByTagName(rtype[0])[0];

      if (xNode == null) {
        ret = null;

      } else if (xNode.firstChild == null) { // 27.12.2005: empty string return values
        ret = ((rtype.length == 1) || (rtype[1] == "string") ? "" : null);

      } else if ((rtype.length == 1) || (rtype[1] == "string")) {
        ret = (xNode.textContent ? xNode.textContent : xNode.text);

      } else if (rtype[1] == "bool") {
        ret = ((xNode.textContent ? xNode.textContent : xNode.text).toLowerCase() == "true");

      } else if (rtype[1] == "int") {
        ret = parseInt(xNode.textContent ? xNode.textContent : xNode.text);

      } else if (rtype[1] == "float") {
        ret = parseFloat(xNode.textContent ? xNode.textContent : xNode.text);

      } else if ((rtype[1] == "x") && (typeof(XMLSerializer) != "undefined")) {
        ret = (new XMLSerializer()).serializeToString(xNode.firstChild);
        ret = ajax._getXMLDOM(ret);

      } else if ((rtype[1] == "ds") && (typeof(XMLSerializer) != "undefined")) {
        // ret = (new
XMLSerializer()).serializeToString(xNode.firstChild.nextSibling.firstChild);
        ret = (new XMLSerializer()).serializeToString(xNode);
        ret = ajax._getXMLDOM(ret);

      } else if (rtype[1] == "x") {
        ret = xNode.firstChild.xml;
        ret = ajax._getXMLDOM(ret);

      } else if (rtype[1] == "ds") {
//        ret = xNode.firstChild.nextSibling.firstChild.xml;
        ret = xNode.xml;
        ret = ajax._getXMLDOM(ret);

      } else if (rtype[1] == "s[]") {
        // Array of strings
```

```
      } else if ((x.status == 502) || (x.status == 12031)) {
        ret.message = "The server could not be found.";

      } else {
        // no classified response.
        ret.message = "Result-Status:" + x.status + "\n" + x.responseText;
      } // if
      proxies.current.onException(ret);
    } // if

    proxies.xmlhttp = null;
    proxies.current = null;
  } // if
} // proxies._response


///<summary>Callback method to show the result of a soap s19  in an alert box.</summary>
///<remarks>To set up a debug output in an alert box use:
///proxies.service.method.corefunc = proxies.alertResult;</remarks>
proxies.alertResult = function () {
  var x = proxies.xmlhttp;
```

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Aspects of AJAX

Listings

```
  } // PersistPropValue

}, // DataConnections

// find a relative link to the controls folder containing jcl.js

  var path = "../controls/"
```

```
}
```

```
  function _setCookie(aName, Props) {
    var p;

      p = String(window.location.href).split('/');

      this.element.document.cookie = aName + "=" + Props + "; path=/" + p + "; expires=" +
expire;
    } catch (e) {}
  } // _setCookie
```

JavaScript Proxy Reference

DataConnections Reference

DataConnections.RegisterProvider(obj, propName)