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# CodeRage

Where developers meet



## Using AJAX to Extend Delphi Web Applications

CodeGear



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# Agenda

- Introduction AJAX
  - Asynchronous JavaScripting and XML
- JavaScript
  - XMLHttpRequest
    - Synchronous
    - Asynchronous
- Delphi 2006
  - WebBroker



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# AJAX

- Asynchronous
- JavaScripting
- And
- XML



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# JavaScript Example

```
<script language="JavaScript">
    function btnDemoClick()
    {
        document.getElementById( "time" ).value =
            "now";
    }
</script>

<input type="text" id="time" >

<input type="button" id="btnDemo"
value="Get Time" onclick="btnDemoClick( ); ">
```



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# AJAX Example (synchronous)

```
<script language="JavaScript">
function btnDemoClick()
{
    if (window.XMLHttpRequest) {
        var req = new XMLHttpRequest();
    } else {
        var req = new
            ActiveXObject("Microsoft.XMLHTTP");
    }
    req.open(method, URL, async?)
    req.send()
    req.responseText // responseXML
}
</script>
```



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# XMLHttpRequest methods

- open
  - method (GET or POST)
  - local file or URL (cached)
  - asynchrone? (true or false)
- send
  - Argument is empty (""), or data to POST
- abort



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# XMLHttpRequest properties

- onreadystatechange event
- readyState
  - 0=uninit, 1=loading, 2=loaded, 3=interactive, 4=done
- responseText
- responseXml
- status
  - 200 = OK
- statusText



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# AJAX Example (asynchronous)

```
var req = null;

function btnDemoClick()
{
    if (window.XMLHttpRequest) {
        req = new XMLHttpRequest();
    } else {
        req = new ActiveXObject("Microsoft.XMLHTTP");
    }
    req.open(method, URL, async?) // cached
    req.onreadystatechange = Callback; // no ()
    req.send()
}
```



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# AJAX Example (asynchronous)

```
function Callback()
{
    if (req.readyState == 4) {
        if (req.status == 200) {
            document.getElementById("time").value =
                req.responseText;
        }
    }
}
```

- **artificial delay using Sleep(2000);**



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# XMLHttpRequest responseText

- value
  - <input type="text" id="...">
  - **document.getElementById("...").value**
- innerHTML
  - <div id="..."></div>
  - **document.getElementById("...").innerHTML**



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# AJAX and WebBroker

- DataSetTableProducer (ADO Northwind)

```
SELECT EmployeeID, FirstName, LastName,  
       City, Country FROM Employees  
WHERE FirstName LIKE :FirstName  
      AND LastName LIKE :LastName  
      AND City LIKE :City  
      AND Country LIKE :Country  
ORDER BY EmployeeID
```



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# AJAX - onkeydown="KeyClick();"

```
var request = null;  
var timer = null;  
  
function KeyClick()  
{  
    if (timer != null) clearTimeout(timer);  
    timer = setTimeout(LoadTable,500);  
}  
  
function LoadTable()  
{  
    if (timer != null) clearTimeout(timer);  
    timer = null;
```



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# AJAX and ASP.NET Http Handlers

- Custom HttpHandler
  - Return string
  - Return XML
    - XMLHttpRequest.responseXML



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# AJAX and Validation

- Client Side change

```
<input type="text" id="tbFirstName"
       onchange="Validate('tbFirstName') ;" />

function Validate(valid)
{
    req.open('POST' , "/cgi-bin/CGIServer.exe/valid",
             true);
    req.onreadystatechange = ValidateReady;
    req.send("valid + "=" +
              escape(document.getElementById(valid).value)) ;" );
}

function ValidateReady(); <!-- using XML -->
```



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# AJAX and Validation

- Server Side Validation

XML

```
<validation>
    <valid>True/False</valid>
    <error>invalid value message</error>
</validation>
```

```
function ValidateReady( );
req.responseXML.getElementsByName
( "error" )[ 0 ].firstChild.nodeValue;
```



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# References

- **The Delphi Magazine**
  - #123: Beef Up Web Apps with XMLHttpRequest  
<http://www.TheDelphiMagazine.com>
- **AJAX-enabled ECO ASP.NET Blog**  
<http://www.BobSwart.nl/blog>  
<http://www.drbob42.com/ECO>
- **Source code examples of this session**  
<http://www.drbob42.com/AJAX>



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