



ASP.NET AJAX – Basics

ASP.NET Web Forms
Telerik Software Academy
<http://academy.telerik.com>



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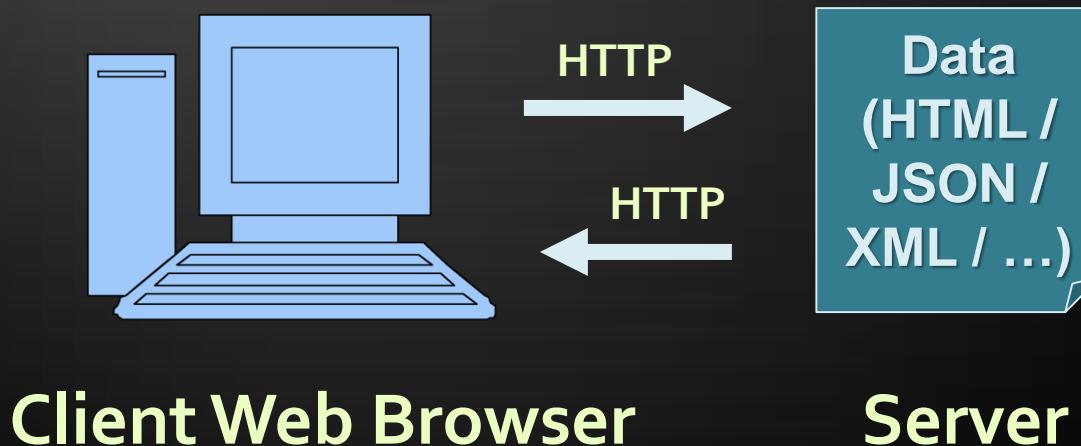
AJAX

What is AJAX?

- ◆ **AJAX = Asynchronous JavaScript And XML**
 - Allows updating parts of a Web page at runtime
 - Approach for developing dynamic Web sites
 - Not a particular technology
- ◆ There are over 50 AJAX frameworks
 - http://en.wikipedia.org/wiki/List_of_Ajax_frameworks
- ◆ **ASP.NET AJAX is Microsoft's AJAX framework**
 - Part of ASP.NET and .NET Framework
 - Supported by Visual Studio

What is AJAX? (2)

- ◆ AJAX enables you to pass information between a Web browser and Web server without refreshing the entire Web page
 - ◆ Done by asynchronous JavaScript HTTP requests and dynamic page updates



AJAX Technology Components

- ◆ DHTML + DOM
 - ◆ Browser DOM manipulated through JavaScript
 - ◆ Used to dynamically display and interact with the page contents
 - ◆ CSS stylesheets for formatting
- ◆ XMLHttpRequest object
 - ◆ Exchange data asynchronously with the Web server through asynchronous HTTP requests
 - ◆ Any data format could be used: HTML fragments, text fragments, XML, JSON, etc.

- ◆ Two different styles of AJAX:
 - ◆ Partial page rendering
 - ◆ Loading of HTML fragment and showing it inside a <div>
 - ◆ Implemented with UpdatePanel in ASP.NET
 - ◆ JSON service
 - ◆ Loading JSON object from the server and client-side processing it with JavaScript / jQuery
 - ◆ Implemented as WCF + jQuery AJAX



ASP.NET AJAX Framework

What is ASP.NET AJAX?

- ◆ **ASP.NET AJAX is AJAX development framework from Microsoft**
 - ◆ Standard part of .NET Framework
 - ◆ Allows quickly creating highly interactive Web applications, easy-to-use, highly productive
 - ◆ Supports both popular approaches:
 - ◆ Server-centric (partial page rendering)
 - ◆ Client-centric (client-side control rendering)
 - ◆ Works on all modern browsers: Internet Explorer, Firefox, Safari, Chrome, Opera

ASP.NET AJAX Architecture

XHTML, CSS,
JavaScript,
AJAX
Markup

AJAX-enabled
ASP.NET Pages

Web Services
(ASMX or WCF)

AJAX Client Script Library

Controls, Components

Component Model and UI
Framework

Base Class Library

Script Core Library

Browser Compatibility

Client Framework and Services

ASP.NET AJAX Server Extensions

AJAX
Server
Controls

App Services
Bridge

Asynchronous
Communication

ASP.NET 4.0

Page Framework,
Server Controls

Application
Services

Server Framework



ASP.NET AJAX Server Controls

- ◆ ASP.NET AJAX server controls allow easily build rich experiences with ASP.NET
 - Application UI and core logic still run on server
 - Avoid need to master the JavaScript and asynchronous programming
- ◆ Use AJAX techniques to reduce full round trips
- ◆ Enable incremental page UI updates
 - Examples: data navigation and editing, form validation, auto refresh, auto-complete, etc.

ScriptManager Control

- ◆ <asp:ScriptManager> control

- ◆ Manages:
 - ◆ AJAX components
 - ◆ Partial page rendering
 - ◆ Client requests and server responses on ASP.NET server pages.
- ◆ Only one manager control per .aspx page
- ◆ Automates the JavaScript callbacks
- ◆ Required once in the page to enable AJAX

UpdatePanel Control

- ◆ <asp:UpdatePanel> control
 - Easily define "updatable" regions of a page
 - Implements the server-side AJAX approach (partial page rendering)
 - Server roundtrips become asynchronous

```
<asp:UpdatePanel id="UpdatePanelDemo" runat="server">
    <ContentTemplate>
        <!-- This content can be dynamically updated !-->
        <asp:Calendar id="CalendarDemo" runat="server" />
    <ContentTemplate>
</asp:UpdatePanel>
```

Dynamic Forms with ASP.NET AJAX

Live Demo



Register

Name
Email ID
Blog URL
About yourself

Import Data Embed this Form in your Site

Save Reset



Microsoft
ASP.net

UpdatePanel.UpdateMode

- ◆ UpdatePanel.UpdateMode property:
 - ◆ UpdateMode = Always (default)
 - ◆ Updates the panel for all postbacks that originate from the page (synchronous and asynchronous)
 - ◆ UpdateMode = Conditional
 - ◆ Updates the panel when something inside it is changed (by default ChildrenAsTrigger=True)
 - ◆ Or by calling Update() method explicitly
 - ◆ Or by triggers defined in the update panel

- ◆ Triggers cause update of the UpdatePanel's content on particular event
 - ◆ Can be controls inside or outside the panel

```
<asp:UpdatePanel ID="UpdatePanelWithTriggers"
    runat="server" UpdateMode="Conditional">
    <Triggers>
        <asp:AsyncPostBackTrigger
            ControlID="TimerDemo" EventName="Tick" />
    </Triggers>
    <ContentTemplate>
    </ContentTemplate>
</asp:UpdatePanel>
```

◆ AsyncPostBackTrigger

- Converts postbacks into async callbacks
- Typically used to trigger updates when controls outside an **UpdatePanel** post back
- If **ChildrenAsTriggers="false"**, can be used to specify which controls inside **UpdatePanel** should call back rather than post back

◆ PostBackTrigger

- Lets controls inside **UpdatePanel** post back.
- Typically used to allow certain controls to post back when **ChildrenAsTriggers="true"**

- ◆ <asp:Timer> control

- Added as a trigger of an update panel
- Refreshes panel when timer interval expires

```
<asp:Timer ID="TimerDemo" runat="server" Interval="5000">  
</asp:Timer>
```



ASP.NET AJAX: UpdatePanel + Timer

Live Demo



UpdateProgress Control

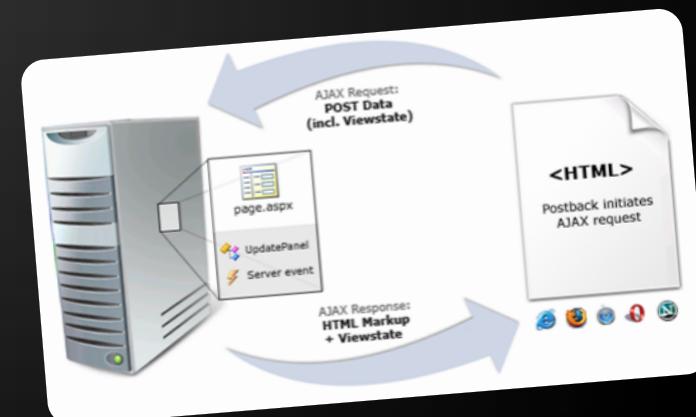
- ◆ <asp:UpdateProgress> control
 - ◆ Shows status while an asynchronous postback is in progress
 - ◆ Button to cancel the request can be added

```
<asp:UpdateProgress ID="UpdateProgressDemo"  
    runat="server">  
    <ProgressTemplate>  
        Updating ...  
    </ProgressTemplate>  
</asp:UpdateProgress>
```



Full vs. Partial Postbacks

Live Demo





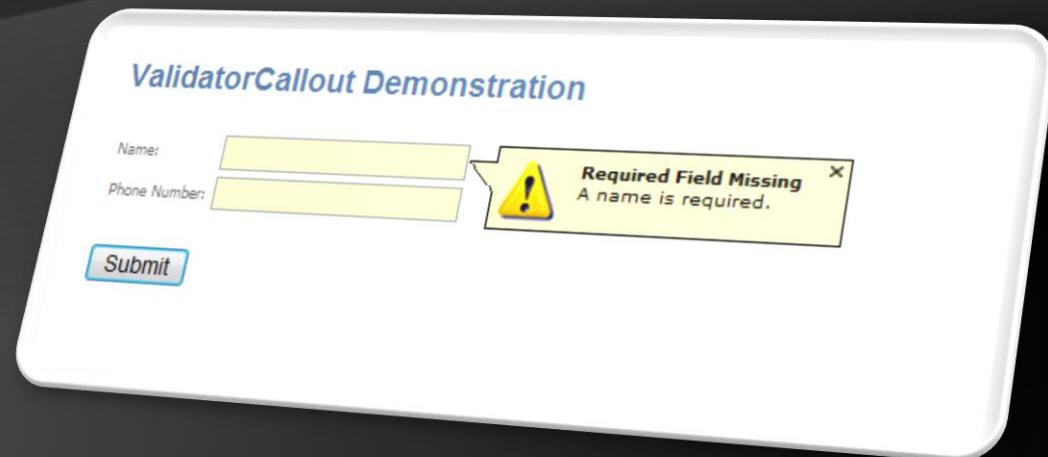
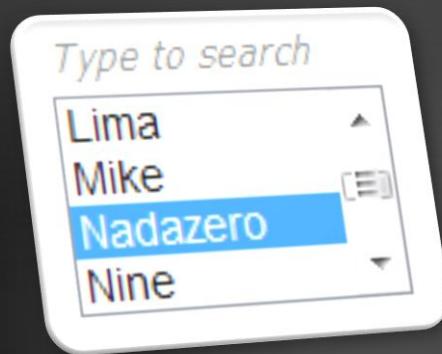
ASP.NET AJAX Control Toolkit

ASP.net
AJAX

ASP.NET AJAX Control Toolkit

- ◆ Collection of AJAX components
 - ◆ Ready-to-go samples
 - ◆ Comes with full source code and documentation
- ◆ SDK to simplify the creation and re-use custom AJAX-enabled ASP.NET controls
- ◆ Some controls:
 - ◆ CascadingDropDown – link drop-downs, with asynchronous population and no postbacks
 - ◆ CollapsiblePanel – panels that collapse and expand without postbacks

- ◆ **ConfirmButton:** extender adding a confirm dialog to any **Button**, **LinkButton**, or **ImageButton** control
- ◆ **DragPanel:** makes any panel into an object that you can drag around the page
- ◆ **ModalPopup:** shows a modal popup dialog
- ◆ ... and many more ...
- ◆ **Home Page:**
 - ◆ <http://asp.net/ajax/ajaxcontroltoolkit/>



AJAX Control Toolkit

Live Demo

ASP.net
AJAX

ASP.NET AJAX Control Toolkit



Questions?



1. Create an AJAX-enabled Web site which shows Employees and their Orders in two GridView controls (use the Northwind database and Entity Framework). Put the GridView for the orders inside an update panel. Add UpdateProgress which shows an image while loading (simulate slow loading with Thread.Sleep()).

When the user selects a row in employees GridView, the UpdateProgress must be activated and the panel must be updated with the orders of the selected Employee.

2. Using Timer and UpdatePanel implement very simple Web-based chat application. Use a single database table Messages holding all chat messages. All users should see in a ListView the last 100 lines of the Messages table. Users can send new messages at any time and should see the messages posted by the others at interval of 500 milliseconds.
3. Using the AJAX Control Toolkit create a Web photo album showing a list of images (stored in the file system). Clicking an image should show it with bigger size in a modal popup window. The album should look like the Windows Photo Viewer.