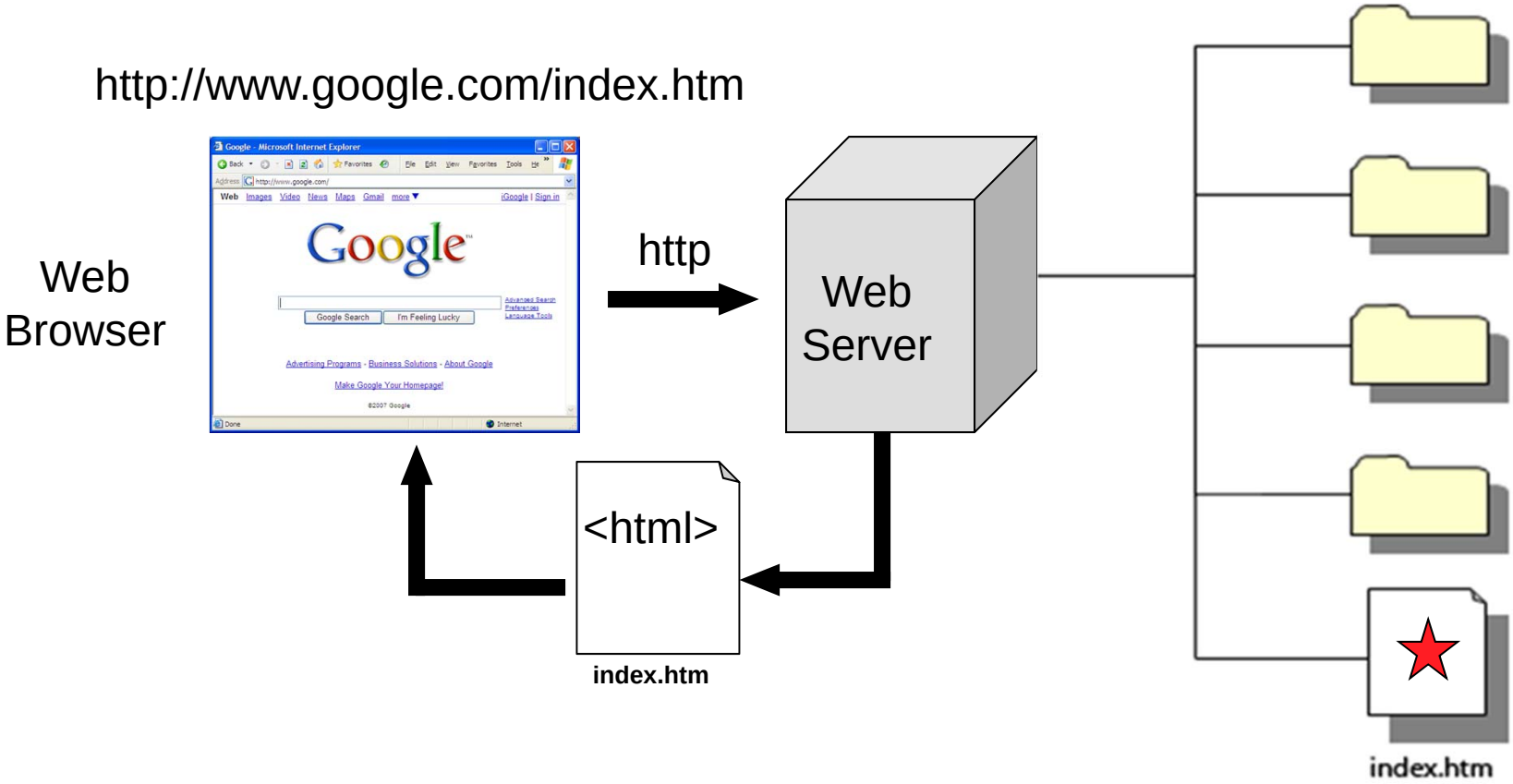
Session 7

ASP.NET Web Applications

High-Level View of the Web

- **Browser is client application**
- **Browser requests a resource**
  - Document, image, video, stylesheet, script, …
- **Web server responds**
  - File or dynamic response
- **Request / Response model**
- **Stateless**

Static Web Pages

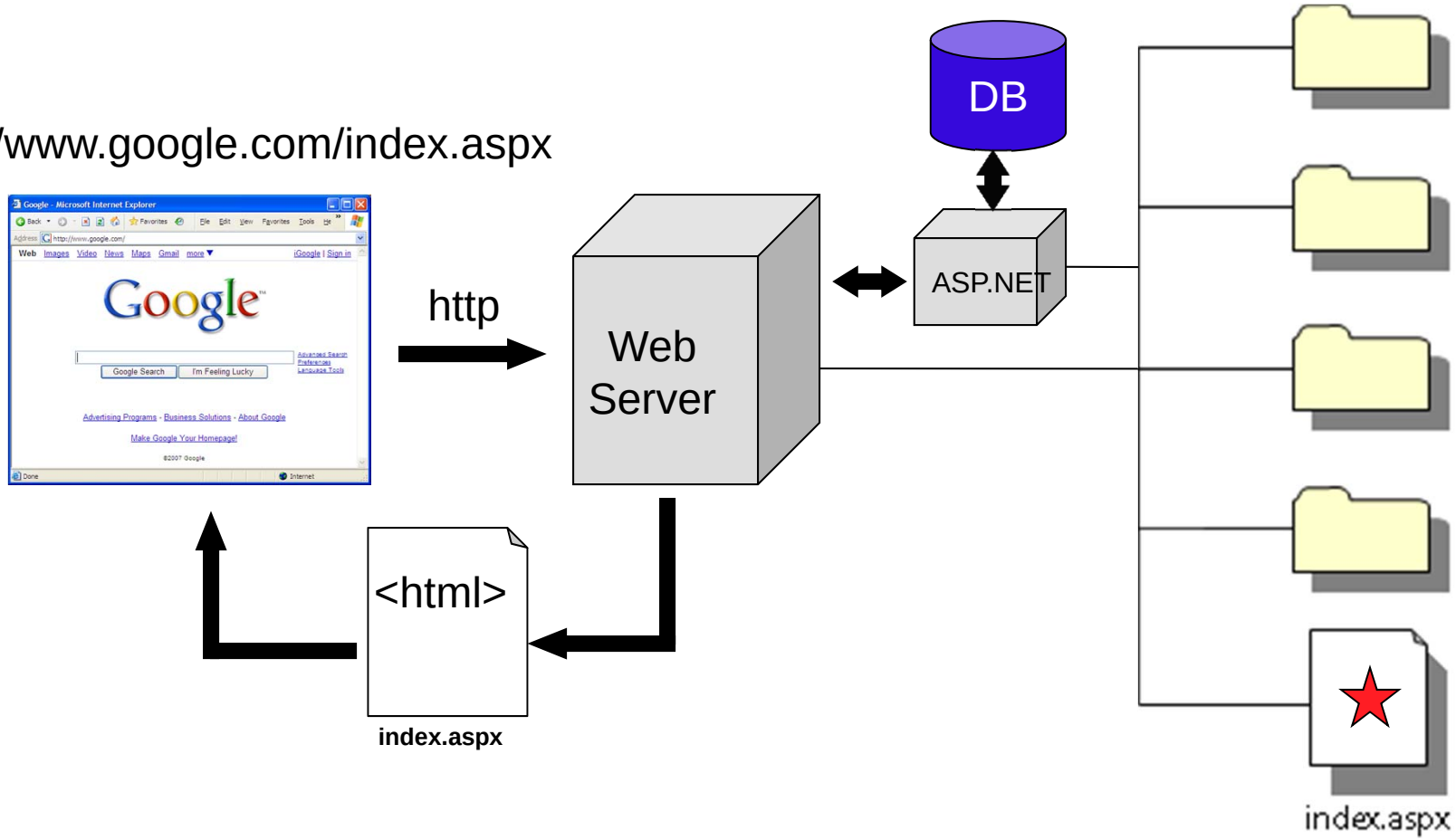


Static Pages

- **Simple**
- **One-size-fits-all**
- **Often result in redundant data entry**
- **Can be very fast**
- **Perfect for content that rarely changes**

Dynamic Web Pages

http://www.google.com/index.aspx



Dynamic Pages

- **Require more planning**
- **Allows customized user experiences**
- **Gives access to server resources such as**
  - Database
  - Message Queue
  - Files
  - Event Log
  - Memory
- **Minimizes redundant data entry**
- **Code can be reused**

ASP.NET

- **Used to build dynamic web pages**
- **Web application is deployed to a web server and rendered as HTML.**
- **Enables RAD**
- **Unified development model**
- **Various Project Models:**
  - Web Site model (personal, department site)
  - Web Application (enterprise application)
  - MVC

Web Forms

- **.aspx files**
- **Mixture of static content and .NET code**
- **Code-beside model provides code separation**
  - Visual (.aspx file) HTML Markup
  - Code (.cs)
  - Designer-Generated (.designer.cs)
- **ASP.NET generates browser-specific HTML via adaptive rendering**
- **Event-driven (like WinForms)**

ASP.NET Controls

- .NET objects
- Render appropriate HTML markup
- Server-side abstraction of HTML
- Must be marked as runat="server"
- ASP.NET provides many controls
- HTML tags can be made to run server-side as well

```
<div>
    Name:
    <asp:TextBox ID="txtName" runat="server">User K. Jones</asp:TextBox
    <asp:Button ID="btnSubmit" runat="server" Text="SUBMIT" onclick="btnSubmit_Click" />
</div>
```

Web Form Events

- **Due to request/response model, event handlers require a round-trip to the web server**
- **This is known as the “PostBack”**
- **The page is requested again**
- **The server responds**
- **The page is rendered again**

State

- **HTTP is stateless**
- **ASP.NET enables state via:**
  - View State
    - Hidden text field
    - Manage postback state
  - Session State
    ```
    Session[“CustomerName”] = “Joe Jones”;
    ```
  - Application State
    ```
    Application[“CompanyName”] = “Acme Enterprises”;
    ```
  - Cookies
    - Properties of Request and Response objects

ASP.NET Page Lifecycle Events

- PreInit
- **Init**
- InitComplete
- PreLoad
- **Load**
- **<control events: i.e. click>**
- Load Complete
- PreRender
- PreRenderComplete
- SaveStateComplete
- **Render**
- Unload

http://msdn.microsoft.com/en-us/library/ms178472.aspx

Control Event Lifecycle

- **Init**
- **PreLoad**
- **Load**
- **Control-specific events (i.e. button's Click event)**
- **PreRender**
- **Unload**

User Controls

- **Code snippets**
- **Contain code + markup**
- **.ascx extension**
- **Make code more modular**

Master Pages

- Template for content
- Includes replaceable placeholders for page to render markup
- .master extension
- Common for boiler-plate HTML markup
- Use Contentplaceholder control to define placeholder

```
<%@ Master Language="C#" AutoEventWireup="true" CodeFile="Site.master.cs" Inherits="Site" %>
 <html>
 <head>
     <title></title>
     <asp:ContentPlaceHolder id="head" runat="server/>
 </head>
 <body>
     <div>
         <asp:ContentPlaceHolder id="Body" runat="server" />
     </div>
     <div>
         <asp:ContentPlaceHolder id="Footer" runat="server" />
     </div>
 </body>
 </html>
```

Pages using Master Page

- **Use Content control**
- **Set ContentPlaceHolderId property**

```
<%@ Page Title="Home Page" Language="C#" MasterPageFile="~/Site.master" ... %>

<asp:Content ID="BodyContent" runat="server" ContentPlaceHolderID="MainContent">
     <h2>
         Welcome to ASP.NET!
     </h2>
     <p>
         To learn more about ASP.NET visit <a href="http://www.asp.net" title="ASP.NET Website">www.asp.net</a>.
     </p>
 </asp:Content>
```