.NET Programming

**Components of a Web Application**

* Client Computer
* Web Browser
* Internet
* Server Computer
* Web Server
* Database Management System

**Terminology**

* **Client:** Makes request to server
* **Server:** Can be both a client or server. It handles or makes requests.
* **Internet:** Series of connected networks
* **Intranet:** Network connections within a company
* **Web Browser:** User interface of the web. It renders the page to the client
* **Web Server:** Uses HTTP to respond to requests
* **Internet Information Services (IIS):** Microsoft’s web server
* **Localhost:** Server that sits on the current client locally
* **Port:** Numerical address that acts as a door to the address requested.
* **URL:** address for a site in words you can understand
* **HTTP request/response:** Protocol that allows for communication. Has body and header
* **Application Mappings:** Determines how to process a page
* **Application Server:** Deals with the business rules
* **Post Back:** Posting back information from a GET command
* **Round-Trip:** the whole trip from sending a request as a client to receiving a response from the server.

Dynamic vs Static Web Pages

* **Static:**
  + Client sends request to server
  + Html file fed to server which is sent back as a response to client
* Dynamic ASP:
  + Client sends request to server (IIS)
  + Then proceeds to the application server (ASP.NET)
  + Then to the web applications form (.aspx)
  + And travels back to send a response to the browser.

**Class Libraries**

* Provides pre-written code in form of classes that are available to all .NET languages.
* Groups called namespaces
* Stored in System.Web namespace.

**.NET Common Language Runtime**

* Manages the execution of .NET programs.
* Coordinates functions like memory management, code execution
* Includes Common Type subsystem so that all .NET applications use the same data types
* Microsoft Intermediate Language (MSIL)
  + .NET programs are compiled into this.
  + Stored on disk in an assembly which are run by CLR

**Web Form Components**

* Each application keeps 2 files
  + Aspx file which holds code for asp controls and html
  + Aspx.cs file or code-behind which hold c# code for the form.
  + Other classes are held in App\_Code folder.

**.NET First Request**

* Aspx file is divided into a full class and partial class
  + Partial class is compiled with code-behind into an assembly .dll
  + Remaining class gets gets compiled and inherits from the class in the first assembly
  + Remaining classes in App\_Code are compiled into a single assembly
* ASP.NET creates an instance of the page with final assembly
* ASP.NET raises events and generates HTML that’s passed back to server for the response

**.NET Subsequent Request**

* ASP.NET creates an instance of the page from final assembly
* ASP.NET raises events and generates HTML that’s passed back to server for the response
* Classes are not recompiled.

**Intro to ASP.NET**

* Stateless
* Server executes code and prepares HTML to send back to client
* Server Controls generate HTML for you.

**ASP.NET Markup**

* Asp: prefix
* Runat=”server” identifies it as a server side component.
* Client side is rendered as html

**Website File Types**

* Forms (.aspx)
* Master Pages (.master)
* HTML (.html)
* CSS (.css)
* Sitemaps (.sitemap)

**Code File Types**

* Xml
* SQL Server database

**Arrays and Collections**

* Type[] varName = new type[size];
  + String[] names = new String[10]{“Cody”, “Martin”, ”Brae”, “Mark”……}

**Conditional Operator**

* String outputVal = (val % 2 == 1) ? “Number is odd” : “Number is even”

**Namespaces are same a “packages” in java**

**Writing Comments**

* C#
  + // or /\*\*/ for inline
  + /// for xml
* VB
  + ‘ for inline
  + **‘’** for xml

**Server Control Types**

* Simple (textboxes, labels, etc)
* List (DropDownList)
* Container (Wizard and Panel)

**Common Control Properties**

* CausesValidation
* AutoPostBack
* Enabled
* Runat
* ID
* Visible

**Common Properties for DropDownLists**

* Items
* SelectedItem
* SelectedValue
* SelectedIndex

**Page Events**

* Page\_Init
  + Gets data from the database
* Page\_Load
  + Populate page with information
  + Modify controls
* Page\_PreRender
  + Sessions/Cookies

**ASP.NET Concepts**

* All ASP tags are converted to HTML when rendered to the client
* ViewState data is stored in hidden fields and is encrypted