Module 3 Day 8

MVC Controllers - Session

What makes an application?

- Program Data
  - ✓ Variables & .NET Data Types
  - ✓ Arrays
  - ✓ More Collections (list, dictionary, stack, queue)
  - ✓ Classes and objects (OOP)
- Program Logic
  - ✓ Statements and expressions
  - ✓ Conditional logic (if)
  - ✓ Repeating logic (for, foreach, do, while)
  - ✓ Methods (functions / procedures)
  - ✓ Classes and objects (OOP)
  - ❖ Frameworks (MVC)
- Input / Output
  - User
    - ✓ Console read / write
    - ✓ HTML / CSS
    - ❏ Front-end frameworks (HTML / CSS / JavaScript)
  - Storage
    - ✓ File I/O
    - ✓ Relational database
    - ❏ APIs

Cross-Site Request Forgery

- A malicious site can use a previously created authentication cookie to get work done and do damage
- ASP.Net sends an additional token with each POST request to prevent this type of attack (Anti-forgery token)
- You mark your code to "validate" the token on posts
  - On the controller class or method (action): [ValidateAntiForgeryToken]
  - On the controller class: [AutoValidateAntiforgeryToken]
  - Globally: services.AddMvc(options => options.Filters.Add(new AutoValidateAntiforgeryTokenAttribute()));
- https://docs.microsoft.com/en-us/aspnet/core/security/anti-request-forgery?view=aspnetcore-2.2

Demo

Session – What it's for

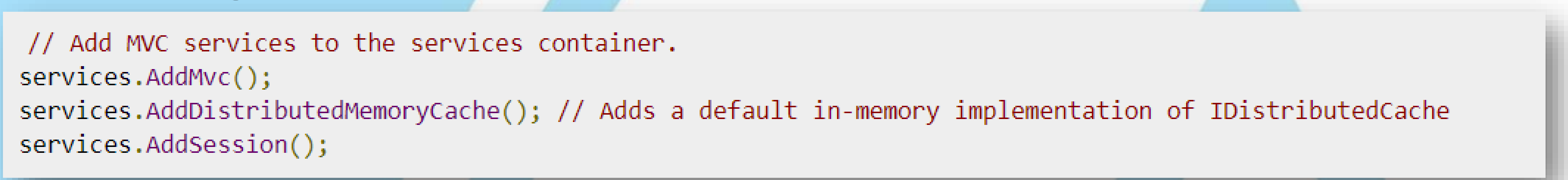
- Http is inherently stateless
  - Every request is independent from the last one
  - This helps make sites highly scalable
- Sometimes we need to maintain state between requests
- Session is one way of managing state (anonymously)
- Examples
  - Shopping experience. Browse, add to cart, browse, add, view cart, check out
  - Multi-page job application
  - Multi-page tax form submission
- https://docs.microsoft.com/en-us/aspnet/core/fundamentals/app-state?view=aspnetcore-2.2#state-management

Session – How it works

- On the user’s first request
  - Server creates a “Session” object (like a dictionary)
  - Server creates a Session Id and stores the object with the Id
  - Server sends the Session Id to the client in a “cookie”
- On subsequent user requests
  - Browser sends the cookie information automatically
  - Server uses the Session Id to find the Session object
  - Then our code has access to the Session object
- The Session object
  - Store Key => Value
  - Key is string
  - Value is either string or Int32 (you can mix)

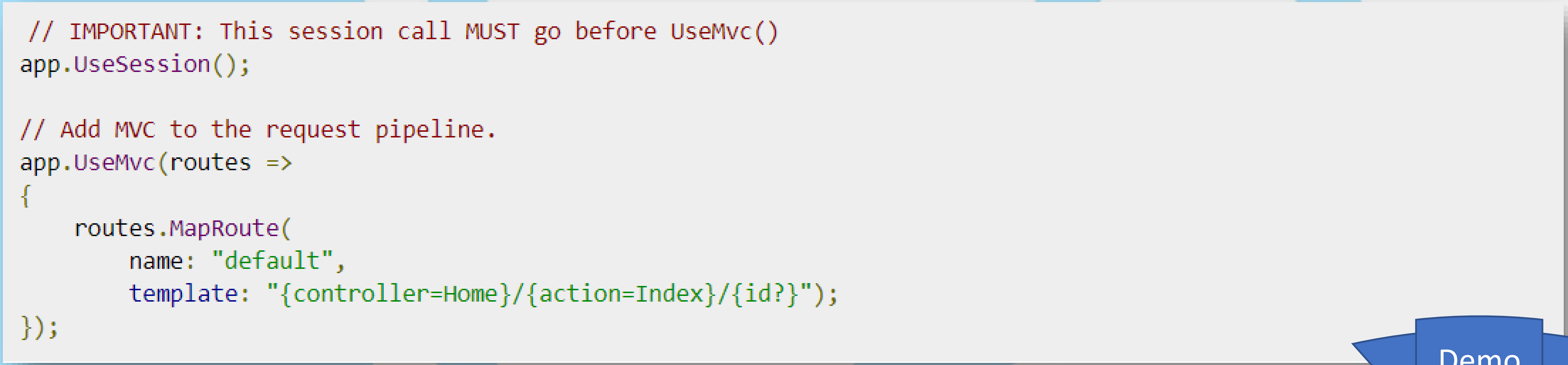
Session – Setup (Startup.cs)

- In ConfigureServices:



```
// Add MVC services to the services container.
services.AddMvc();
services.AddDistributedMemoryCache(); // Adds a default in-memory implementation of IDistributedCache
services.AddSession();
```

- In Configure:



```
// IMPORTANT: This session call MUST go before UseMvc()
app.UseSession();

// Add MVC to the request pipeline.
app.UseMvc(routes =>
{
    routes.MapRoute(
        name: "default",
        template: "{controller=Home}/{action=Index}/{id?}");
});
```

Demo

Using Session

- HttpContext.Session.GetString / SetString
- HttpContext.Session.GetInt32 / SetInt32
- Complex objects must be *Serialized* to strings when Setting
- Then *de-serialized* back to objects when Getting
- We use JSON (JavaScript Object Notation)

Let's Code

TempData

- An odd marriage between ViewData and Session
  - Stores data for this and next request
  - Access it like you access ViewData
- Store: TempData[“myKey”] = “myValue”;
- Retrieve: string theData = (string)TempData[“myKey”];
- Often used in conjunction with Redirects to “pass” data
- Example: Add to Cart message, Update City message

Let’s Code