

# Module 3 Day 3

## Web Applications

# 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

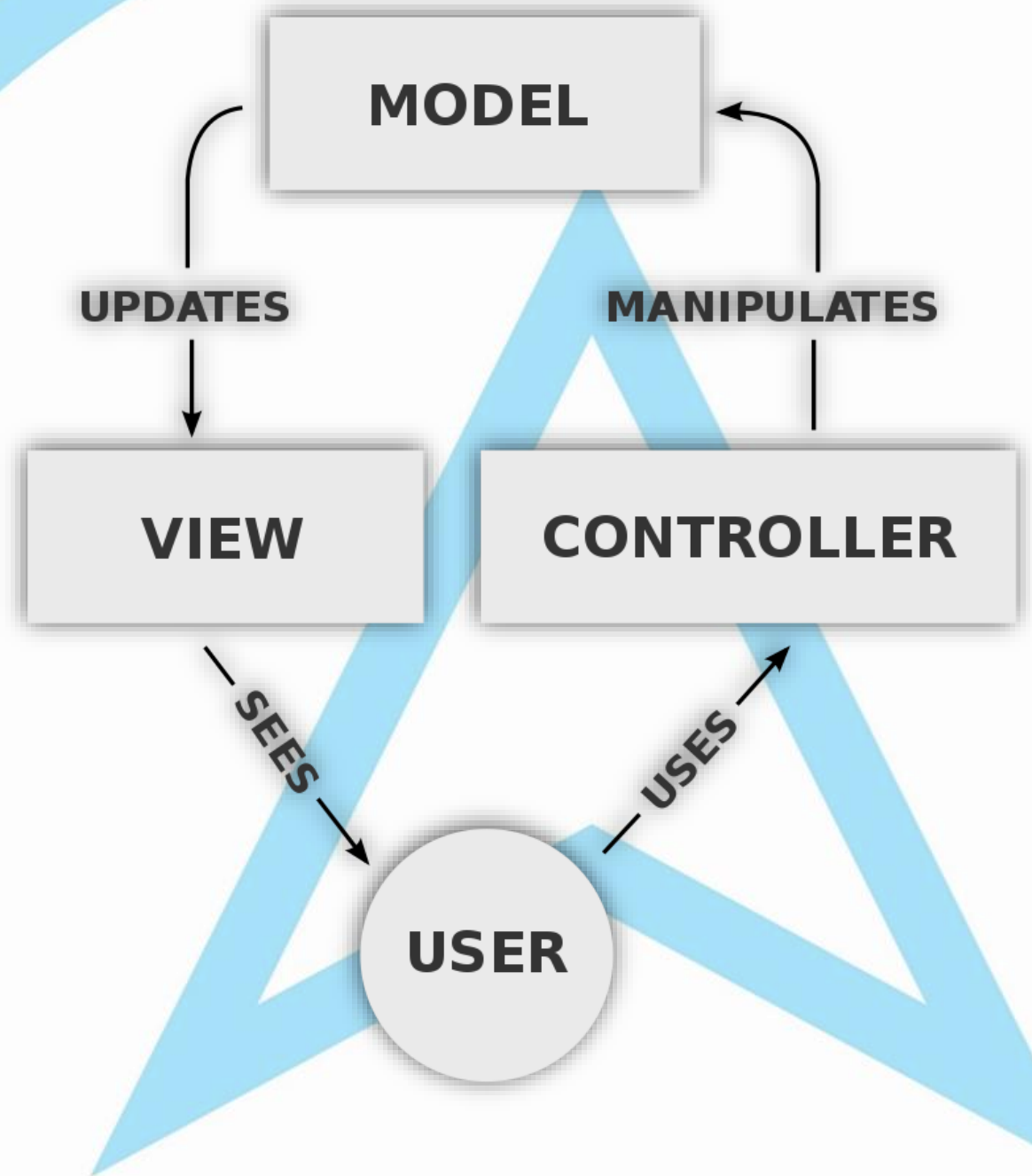
- ✓ File I/O
- ✓ Relational database
- ❑ APIs

# ASP.Net MVC

- Active Server Pages (ASP)
    - Framework for dynamic web applications
    - Initially released in 1996
    - ASP.Net released in 2002
    - ASP.Net Core first released 2016
      - Open-source, cross platform
  - Model-View-Controller (MVC)
    - Architectural design pattern used in 1970's and 1980's, and formalized in 1988
    - Many frameworks use this design pattern
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- [https://en.wikipedia.org/wiki/Design\\_Patterns](https://en.wikipedia.org/wiki/Design_Patterns)
  - <https://exceptionnotfound.net/tag/designpatterns/>

# MVC

- Model
  - Business data
  - POCO
- View
  - Communication with user
  - Presents model in different ways
  - “Knows about” Model
- Controller
  - Glue / mediator
  - Gets model data, selects view
  - “Knows about” Model, View



# ASP.Net MVC Project (Visual Studio)

- Create a project
- Project structure
  - Dependencies
  - wwwroot
  - Controllers
  - Models
  - Views



Let's  
Code

# Default Routing

- <http://localhost/{controller}/{action}/{id?}>
- Framework looks for a controller called {controller}Controller
  - E.g. HomeController
- Looks for an Action (method) on that class called {action}
  - E.g., Index
- Passes {id} as a parameter to the Action (optional)
- Action (method) returns a View (html)
  - Might also return a file (e.g., CSV), JSON, XML or other data (later)
  - Technically, it returns any *ActionResult*
- Default values
  - {controller} defaults to Home
  - {action} defaults to Index
- Routing is setup in Startup.cs

# Views

- HTML that is sent to the user
- Razor
  - HTML / C# hybrid
  - @ delimits “server code”
- Blocks: @{ }
- @if
- @for
- Creating a new view
- Layout Views



Let's  
Code



# Layout View

- Each view has a Layout property
  - May refer to a Layout file
  - Layout file supplies “common” elements across pages
  - View renders “within” the Layout
  - `_ViewStart.cshtml` supplies the “default” value for Layout
- Typically in Views\Shared folder
- Called `_Layout.cshtml` by default
  - Contains a `@RenderBody()` statement
  - That’s where the individual view content goes



Let's  
Code



# ASP Attributes

- **<a asp-area="" asp-controller="Home" asp-action="Index">Home</a>**
  - Generates  
`<a href="/">Home</a>`
- **<a asp-area="" asp-controller="Home" asp-action="Privacy">Privacy</a>**
  - Generates  
`<a href="/Home/Privacy">Privacy</a>`



Let's  
Code