ASP.NET Core

ASP.NET Core MVC

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Microsoft

Before ASP.NET Core

- Classic ASP
- ASP.Net Web Forms
- ASP.NET MVC
- ASP.NET Web API
- Razore
- ASP.NET Core

Agenda

What Is MVC ?	MVC Pattern	Views In Asp.net MVC	Nuget
	Asp.net MVC vs WebForms	Controller In Asp.net MVC	Asp.net MVC and Data Access
	Asp.net MVC Feature	Model In Asp.net MVC	Others

Lesson 1: Introducing Microsoft Web Technologies

- Overview of Microsoft Web Technologies
- History of ASP.NET Core
- Overview of ASP.NET Core
- Client-side Web Technologies
- Hosting Technologies
- Microsoft Azure

Overview of Microsoft Web Technologies

- Development Tools
  - Visual Studio
  - Visual Studio Code

- Hosting Technologies
  - IIS
  - Microsoft Azure

- Server-side Code
  - ASP.NET Core
  - Blazor Server

- Client-side Code
  - 'Vanilla' JavaScript
  - JavaScript Frameworks (React, Angular, Vue, etc.)
  - Blazor WebAssembly

History of ASP.NET Core

ASP.NET 4.x: ➡️
- Web Pages
- Web Forms
- ASP.NET MVC
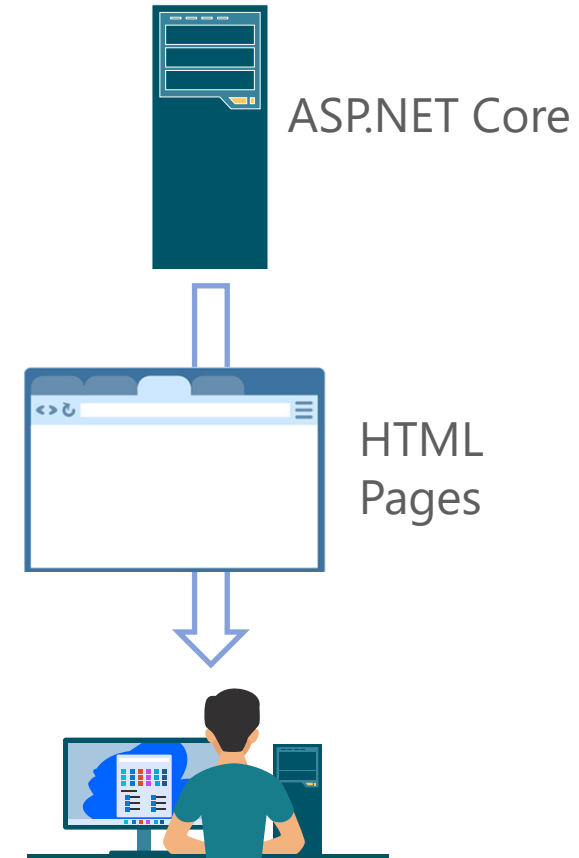- Web API

ASP.NET Core: ➡️
- MVC
- Razor Pages
- Web API

- .NET Framework

- .NET Core
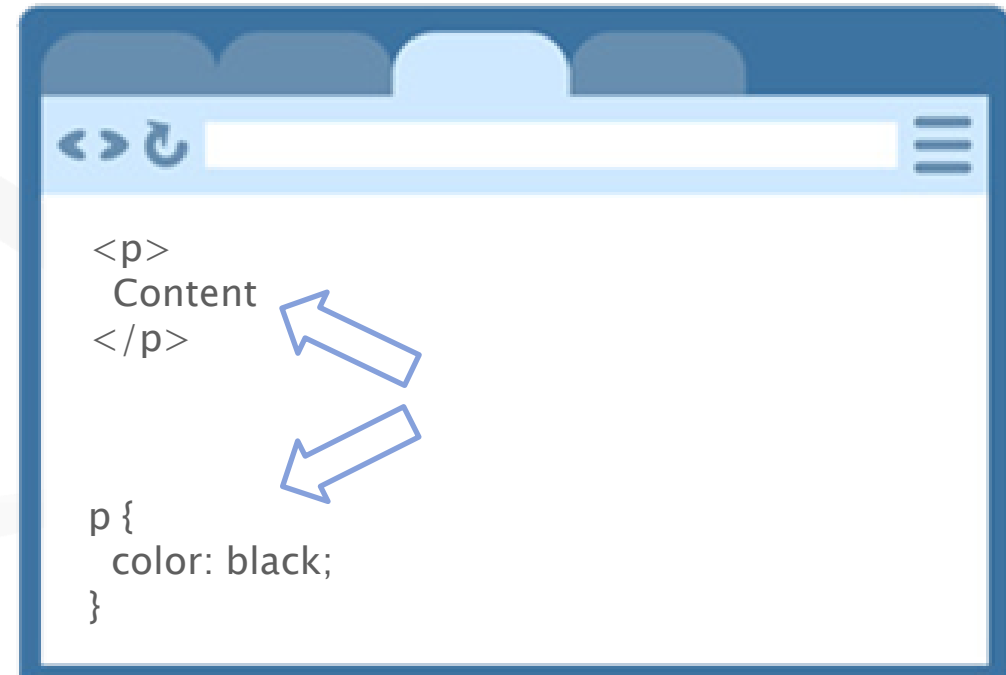
- .NET 6
- .NET 7

Overview of ASP.NET Core

Programming Models:
- MVC
- Razor Pages
- Web API

ASP.NET Core

HTML
Pages

Client-side Web Technologies

- jQuery
- AJAX
- CSS frameworks
- Angular
- React
- Vue
- ...and more

```
<p>
  Content
</p>




p {
  color: black;
}
```

Hosting Technologies

- IIS
  - Features
  - Scaling
  - Perimeter Networks
- IIS Express
- Other Web Servers
  - Apache
  - Nginx

Microsoft Azure

- Cloud computing provides scalability, flexibility, security, and reliability
- The Microsoft Azure platform includes:
  - Web Apps
  - Databases (Azure SQL Database, Cosmos DB)
  - Virtual Machines
  - Storage
  - Message Queues
  - Containers

- Overview of Razor Pages

Overview of Razor Pages

- Code in .CSHTML files
- Precise control over HTML

```
@page
@model IndexModel
@{
    ViewData["Title"] = "Home page";
}

<div class="text-center">
    <h1 class="display-4">Welcome</h1>
    <p>This page was loaded at @DateTime.Now.</p>
</div>
```
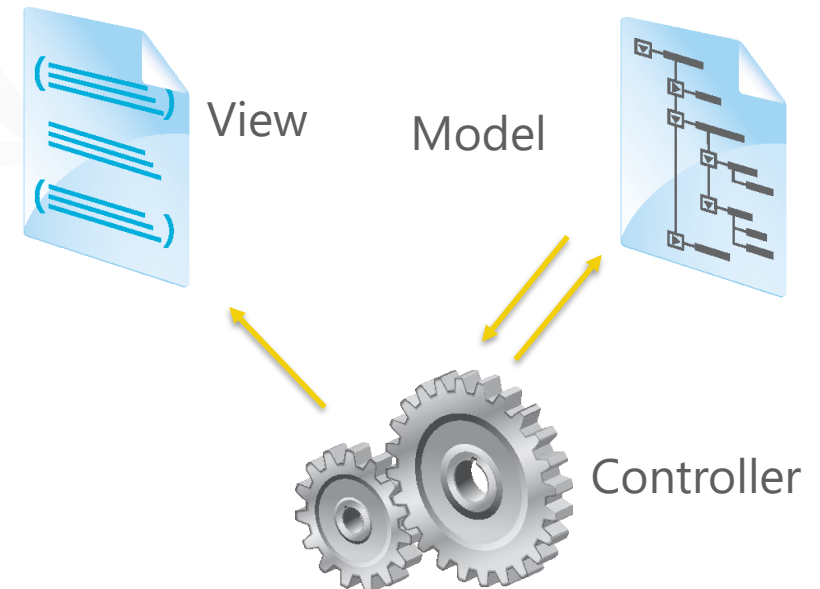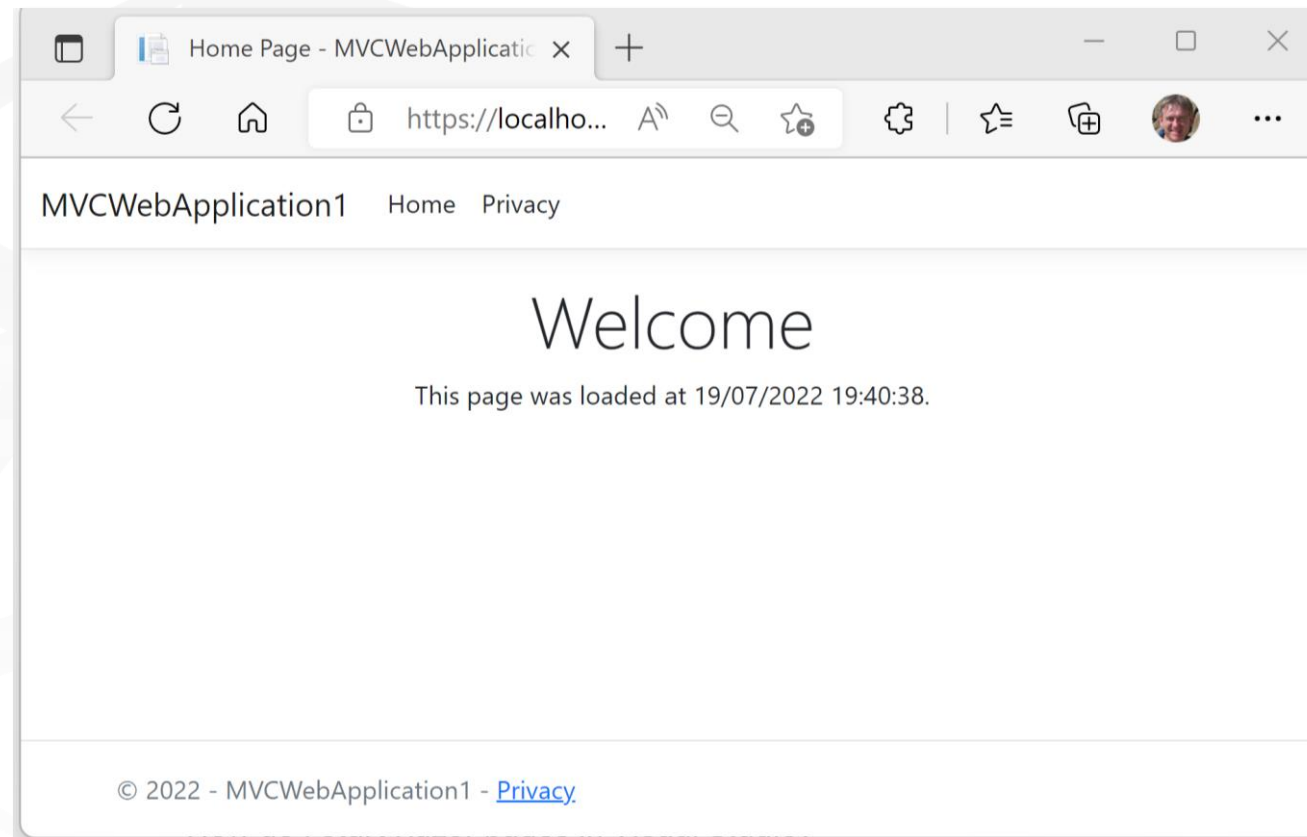
Introduction to ASP.NET Core MVC

- Overview of MVC
- Demonstration: MVC Web Application
- Overview of Web API
- Shared ASP.NET Core Features

Overview of MVC

- Models encapsulate objects and data
- Views generate the user interface
- Controllers interact with user actions
- Code in .cshtml and .cs files

View

Model

Controller

Demonstration: MVC

What Is MVC ?

- A design Pattern (Methodology)

- More easily testable

What Is MVC ?

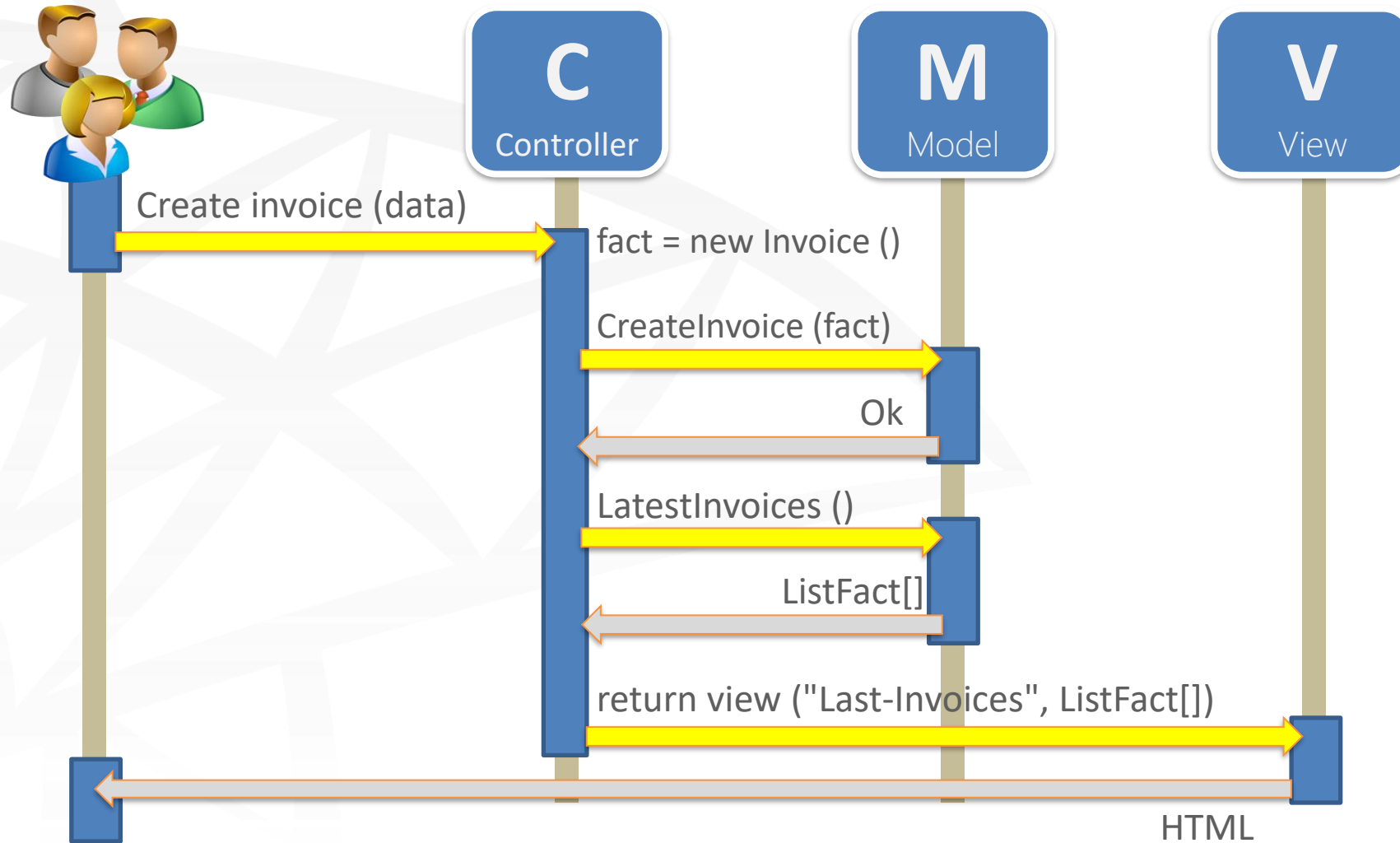**M** Model
- Representation of domain data
- Business Logic

V View
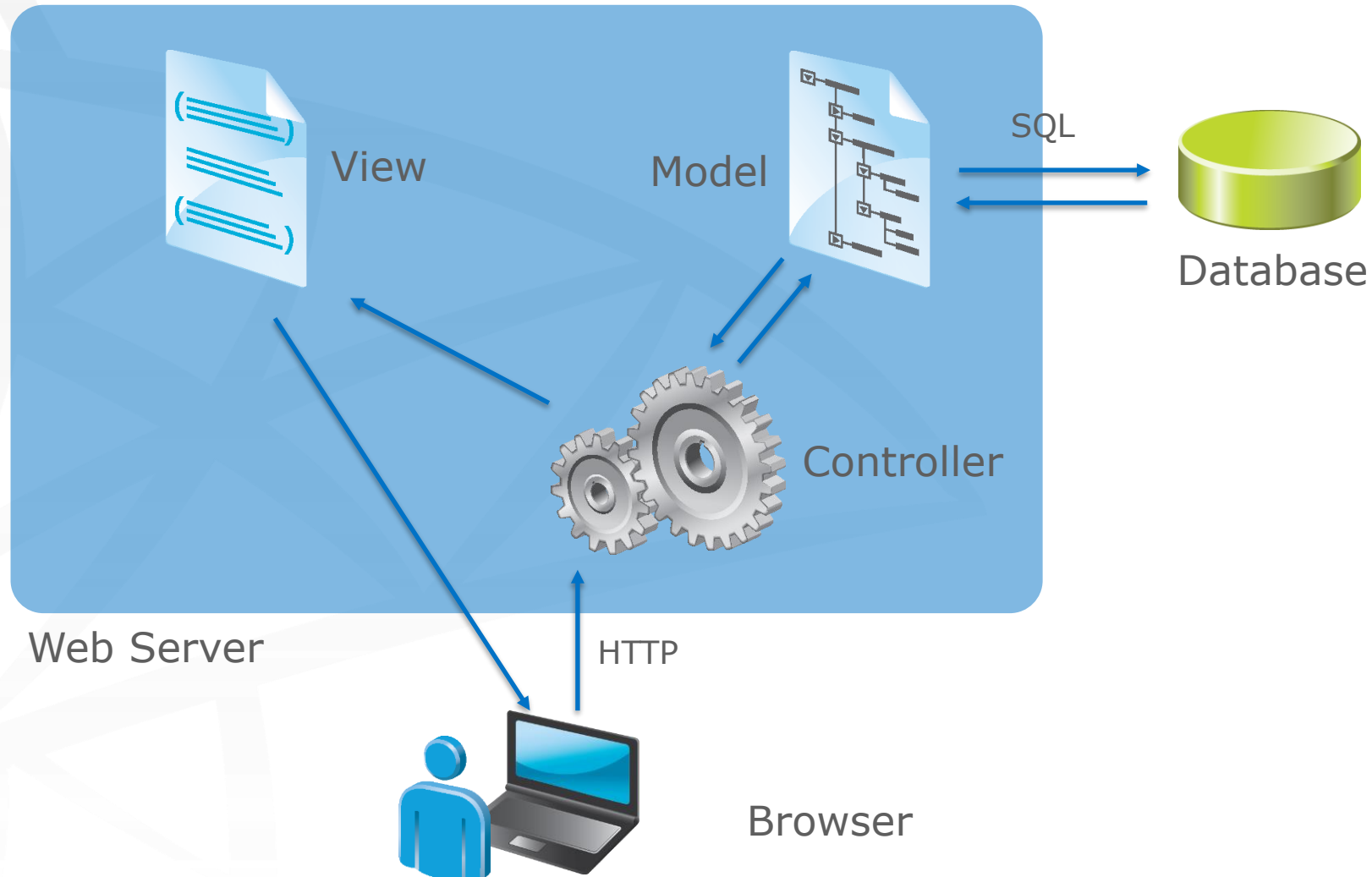- User Interface
- The representation of Model

C Controller
- An intermediary between Model and View
- Application's Brain (Handle user requests, bind Data, return views)

Model View Controller Pattern

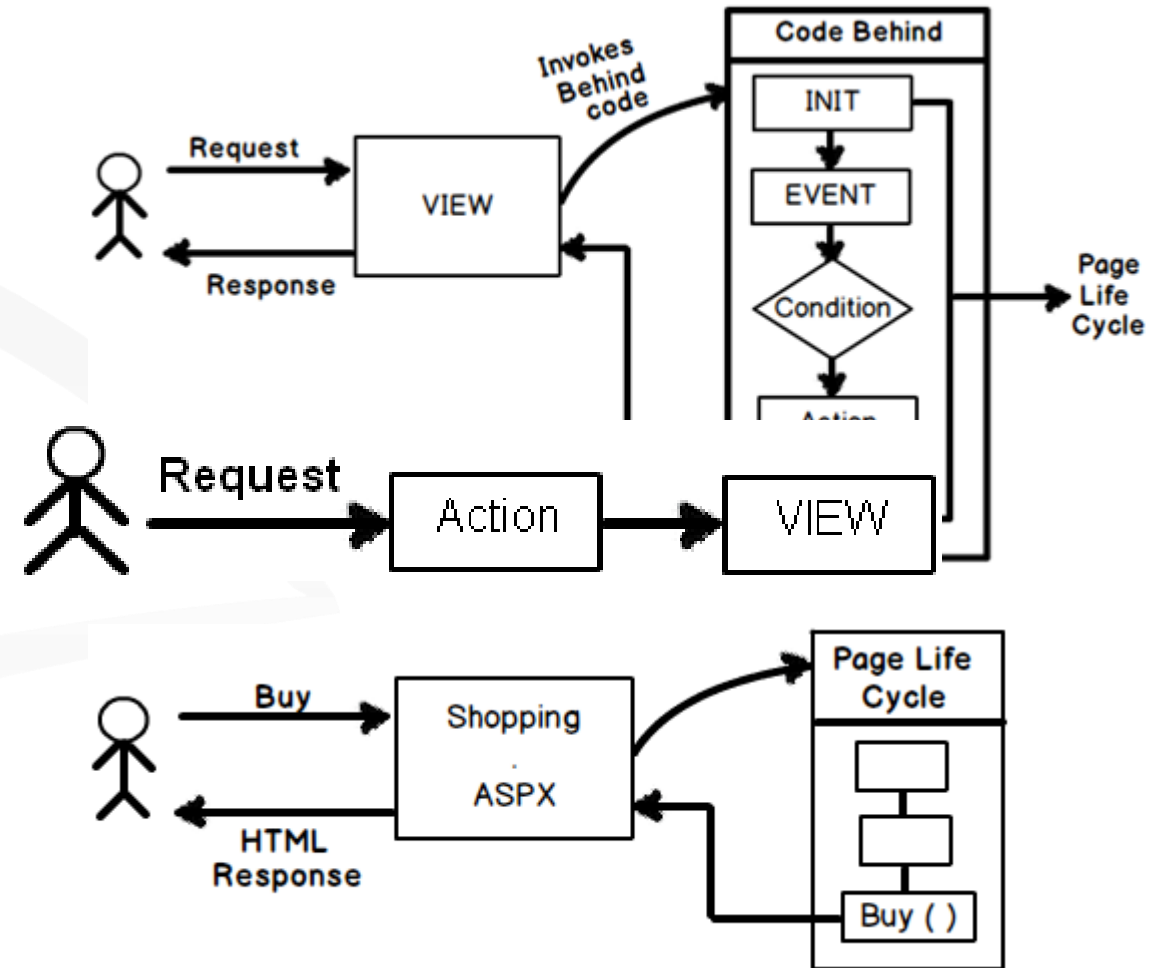Create invoice (data)

fact = new Invoice ()

CreateInvoice (fact)

Ok

LatestInvoices ()

ListFact[]

return view ("Last-Invoices", ListFact[])

HTML

Models, Views, and Controllers

View

Model

SQL

Database

Controller

Web Server

HTTP

Browser

Request

- Asp.Net Request
- MVC Request

Asp.net MVC

- Part of ASP.NET

- Not an upgrade or replacement for Web Forms

Webforms	MVC	Webpages
ASP.NET		

Asp.net MVC vs Web Forms

- No server control

- No ViewState

- No Code Behind

- Full control over html

- Unit Testing

Asp.net MVC

- Separation of application tasks (No code Behind)

- Friendly URLs (Routing)

- Scalability and Performance

- Supports existing ASP.NET features (Authentication, Membership, roles, output caching,…)

- Natural integration with Ajax

Views In Asp.net MVC

- View Engines
  1. Aspx
  2. Razor

- Layout

- Partial View

- Section

- HtmlHelper, AjaxHelper

HtmlHelpers

- ActionLink

  @Html.ActionLink("Modifier", "Edit", new {Id=3})

  `<a href="/Product/Edit/6">Modifier</a>`

- Form Elements (Form, TextBox, Hidden,....)

  @Html.TextBox("Num")

  `<input id=" Num " type="text" value="" name=" Num ">`

HtmlHelpers

- DropDownList

var db = new

IEnumerable<

.Select(c => r   /Name });

ViewBag.Cate

@Html.[

(IEnun   ies)

```html
<select id="CategoryID" name="CategoryID">
  <option value="1">Beverages</option>

  <option value="2">Condiments</option>
  <option value="3">Confections</option>
  <option value="4">Dairy Products</option>

  <option value="5">Grains/Cereals</option>
  <option value="6">Meat/Poultry</option>
  <option value="7">Produce</option>

  <option value="8">Seafood</option>
</select>
```

AjaxHelpers

- ## Ajax ActionLink

```
@Ajax.ActionLink("Get Time", "GetTime", new AjaxOptions () {
                UpdateTargetId="divTorefresh",
                HttpMethod="GET"
                })
```

Get Time

Controller In Asp.net MVC

- Action Results

- Filters

- Caching

Controller Action Results

- ViewResult

- PartialViewResult

- JsonResult

- JavaScriptResult

- ContentResult

- FileResult

Filters In Asp.net MVC

- Authorization filters

- Action filters

Caching In MVC

```
[OutputCache(Duration=3600)]
Public ActionResult GetListCountries()
{
        // Logic to get countries list
}

[OutputCache(Duration=3600,  VaryByParam = "countryId")]
Public ActionResult GetListRegions(int countryId)
{
        // Logic to get regions list
}
```

Model In Asp.net MVC

- Annotation

- Validation(Client Side & Server Side)

Annotation & Validation In MVC

- Required

- DisplayName

- Range

- DataType

- StringLength

Asp.net MVC and Data Access

- Entity Framework

- Database First

- Model First

- Code First

Entity Framework

- Object-relational mapping (ORM) Framework

- Gives an automated mechanism for Data Access

- Manipulate Data as Object

- Reduce hard coded Query

- Performing basic **CRUD**(Create, Read, Update, Delete)

DataBase First Approach

- Existing DataBase

- Generate .Edmx From DataBase

- Use ObjectContext & DBContext

Model First Approach

- Empty Edmx Model

- Design th DB Schema

- Generate DataBase From Model

Code First Approach

- Create Domain Models (Class)

- Generate DataBase From Domain Models

- Full Control Over Code

- No Autogenerated code

ASP.NET MVC Security

- User Authentication

- Authorization

- Cross-site Scripting

Authentication Mode

- Forms Authentication

  - Cookies

- Windows Authentication

  - Windows Session

  - Via IIS

- OAuth

  - Facebook, google, Hotmail, twitter, etc.

Authorization In Asp.net MVC

- Role-based Authorization

  - [Authorize(Roles = "Admin, Super User")]

  - [Authorize(Users = "Ahmad, Rayan")]

Cross-Site Request Forgery (CSRF)

- Malicious attack (Cross Domain)

- Using Forms

- Session hijacking

Cross-site Scripting

- Malicious attack Using Script Injection

- Inject Code Inside Pages

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