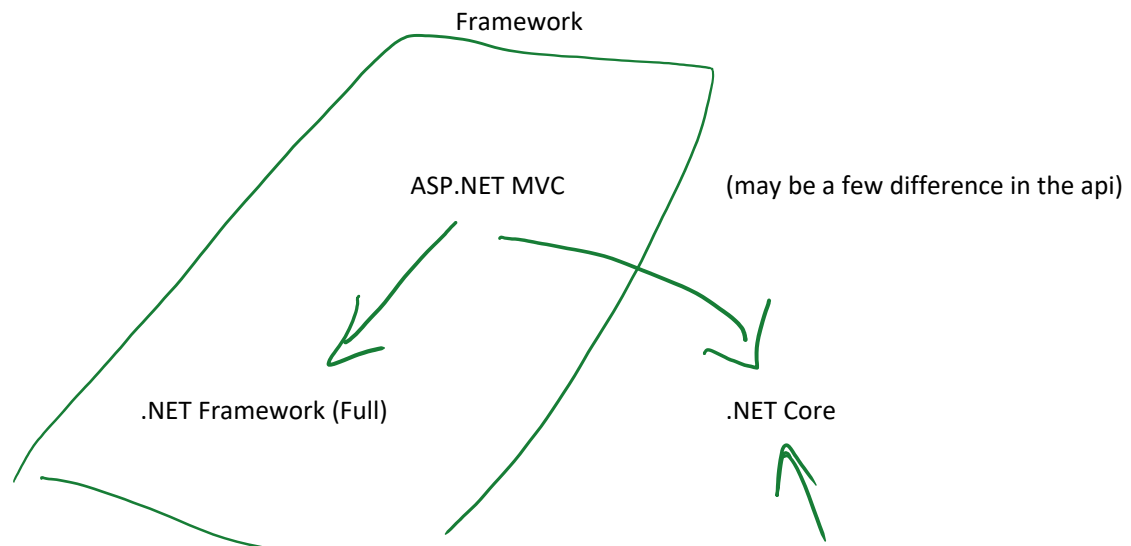


Agenda

Monday, May 11, 2020 9:35 AM

ASP.NET MVC <--- Application Framework <---- Helps you develop the application

.NET Core Application <----- Runtime Framework/Platform <----- helps you execute the application



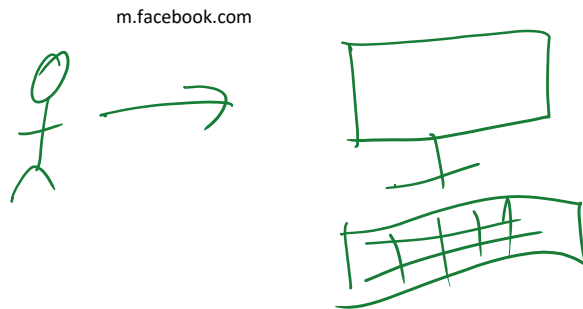
Http Protocol

Monday, May 11, 2020 10:03 AM

<http://m.facebook.com> <---- Open Mobile Site

<http://www.irctc.co.in/mobile>

GET m.facebook.com/ \r\n
User-Agent: chrome, windows10\r\n



It is a contradiction between the URL and the User-Agent

Url --> give me mobile site
User-Agent --> give me desktop site

Saw

GET /some/url
connection: keep-alive

- Request to keep the connection alive
- Don't close the Tcp socket (Please)
- Browsers almost always send this header to the client
- Server can (and very often does) ignore this request

<https://books.org/list?cat=thriller>

<https://amazon.in/proucts?q=mobile-cover&model=samung-note-8>

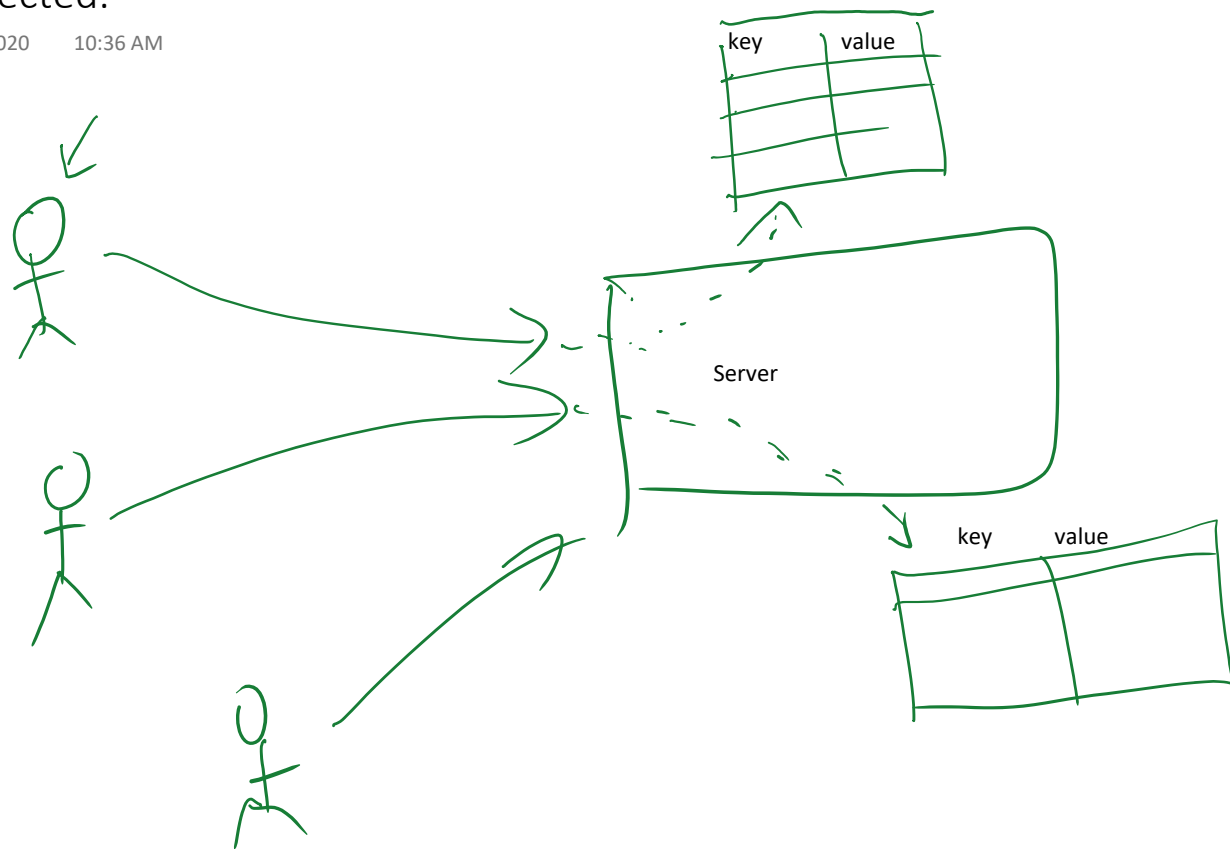
Server Response

200 OK
Content-type:text/html
date-modified:2020/04/13

Clients second request

How will server connect a user to its session when socket is disconnected.

Monday, May 11, 2020 10:36 AM



Cache Redirect

Monday, May 11, 2020 11:28 AM

Server Response

200 OK
Content-type:text/html
date-modified:2020/04/13

Client Next Response

GET /resource
if-modified-since:2020/01/30

//content changed after clients previous visit

200 OK
Content-type:text/html
date-modified:2020/04/13

Gets new Data

Client Next Response

GET /resource
if-modified-since:2020/05/04

//content not modified after the last visit

304 Not Modified
\r\n

Cache Redirect

Can use the existing

MVC

Monday, May 11, 2020

12:19 PM

Presentation

Business

Data

View

~~Controller~~

Model

Model



Standard Network Port

Tuesday, May 12, 2020 9:26 AM

As an admin I can run any server on any available (free) port.

One Machine ----> One Port ----> One App (One socket)

Standard Practice

First 1K port is reserved for standard protocol

- 20,21 ----> FTP
- 25 ----> SMTP
- 80 ----> HTTP
- 110 ----> POP
- 443 ----> HTTPS

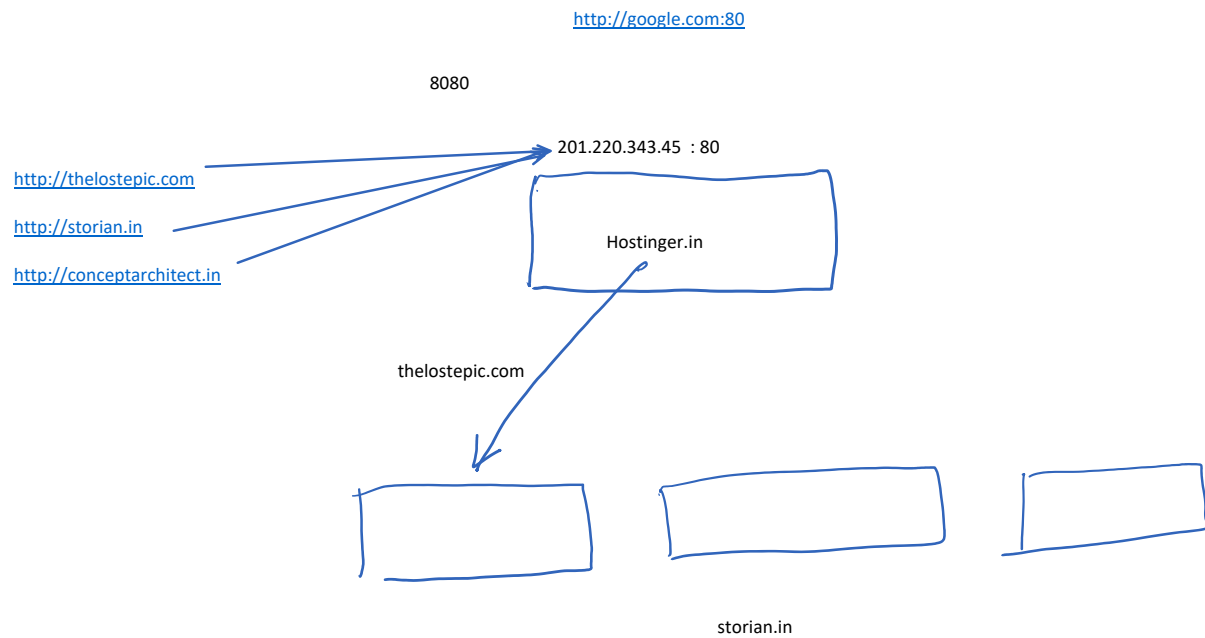
Q. What if I run HTTP Server on a Non Standard Port

A. The URL Will Change

a. <http://books.org:3393/books>

- now we say the server will be available on port 3393.

- You can imagine that default url is a shortform for
 - <http://books.org:80/books>
 - <http://books.org:445/books>



MVC URL

Tuesday, May 12, 2020 10:00 AM

Traditional View

<http://localhost:57586/> <----- index.html/default.html/default.aspx/default.php ----> from root directory

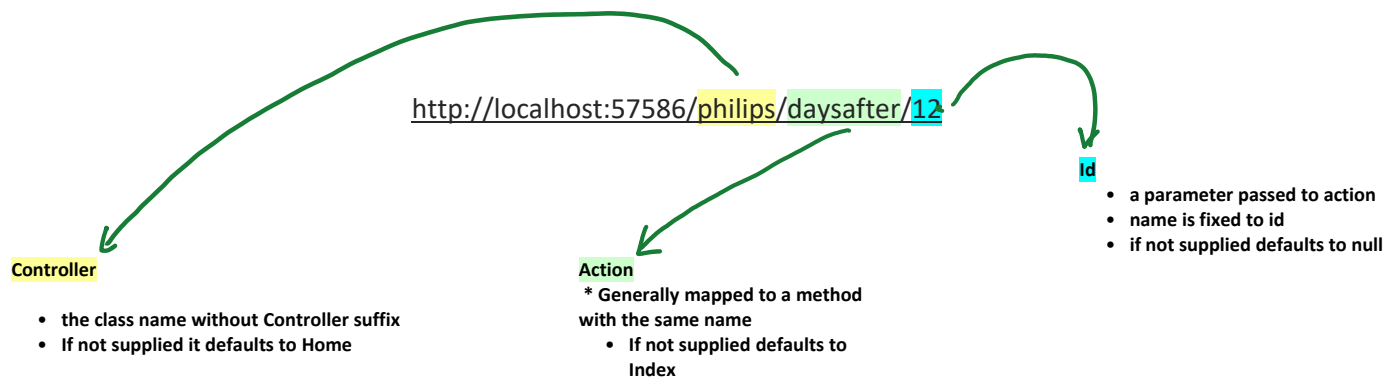
<http://localhost:57586/Home/Contact> <----- index.html/default.html/default.aspx from /Home/Contact directory

<http://localhost:57586/Home/About>

<http://localhost:57586/books.html> <----- request for books.html file in root directory

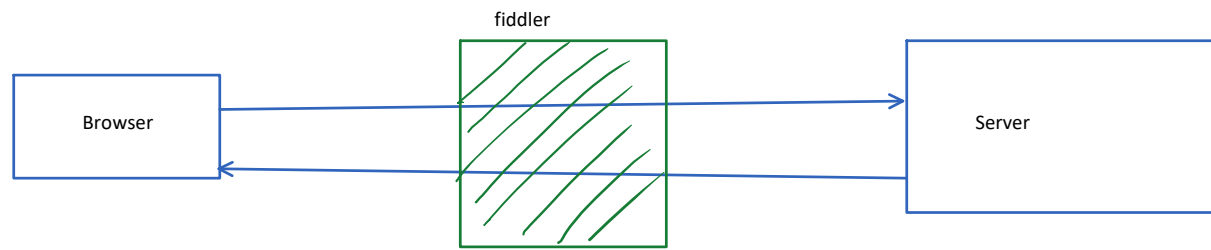
<http://localhost:57586/Home/About/authors.aspx> <----- execute authors.aspx page from /Home/About folder

MVC URL has by default 3 parts



How Fiddler Works

Tuesday, May 12, 2020 10:41 AM



Controller--->Action--->ActionResult

Tuesday, May 12, 2020 11:38 AM

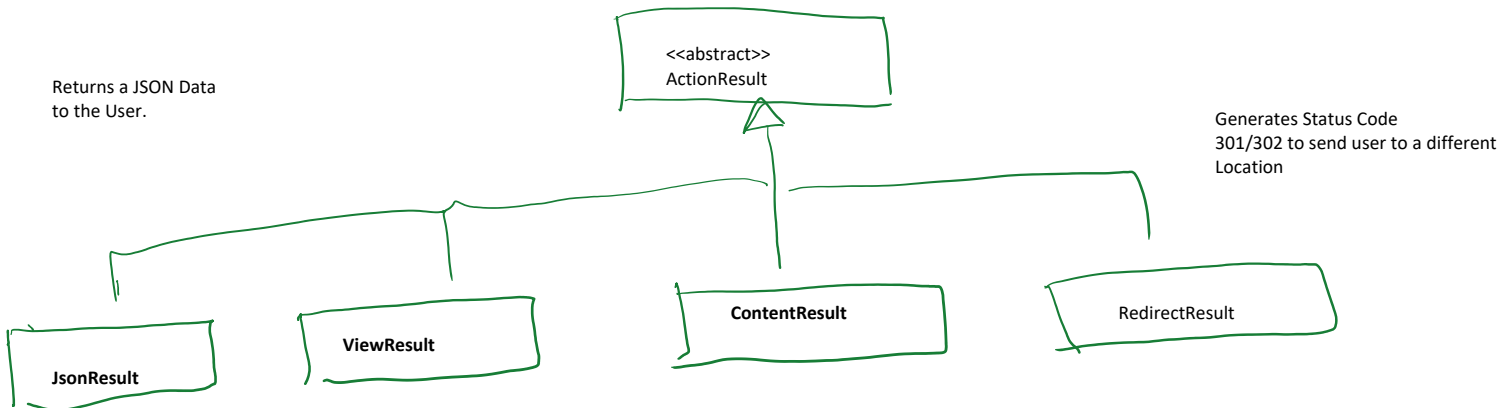
1. An Url is a request for a **Controller** to perform some **Action**
2. Once an Action is performed it returns an **ActionResult**
3. ActionResult is returned to the User As a **View**

Controller ----> is an object

Action ----> is what controller do

ActionResult ----> return of the Action

View ----> what user sees (ActionResult)



ViewResult

ViewResult uses a ViewEngine to generate a dynamic Html View using Model Data and a ViewTemplate

ContentResult

One of the simplest ActionResult
It returns a given String content to the user without any processing.

If your **Action** is not returning an **ActionResult**
The current object is automatically converted to **ContentResult** by the controller

A code like

```
public Person Contact()
{
    var p=new Person();
    return p;
}
```

Is internally converted to (psudocode)

```
public ContentResult Contact(){
    var p=new Person();
    return new ContentResult()
    {
        Content=p.ToString()
    };
}
```

This happens with the base Controller

Razor view engine processing

Tuesday, May 12, 2020 12:26 PM

Razor is one of the simplest view engine to combine view template (HTML) with C# Code (**CS+HTML = CSHTML**)

```
<h2>Welcome To Philips Server</h2>
@{
    //this is a c# code block. you can write any c# here
    var date = DateTime.Now;
}
<p><strong>Date is </strong>@date.ToLongDateString()</p>
<p><strong>Time is </strong>@date.ToLongTimeString()</p>
```

Razor Block Code

```
@{
    //razor block
}
```

You can write any processing statement, assignments etc in this block. This block doesn't have direct output on the screen unless you write `Response.Write()`

Razor Display Expression

`@something`

It is a shortcut for

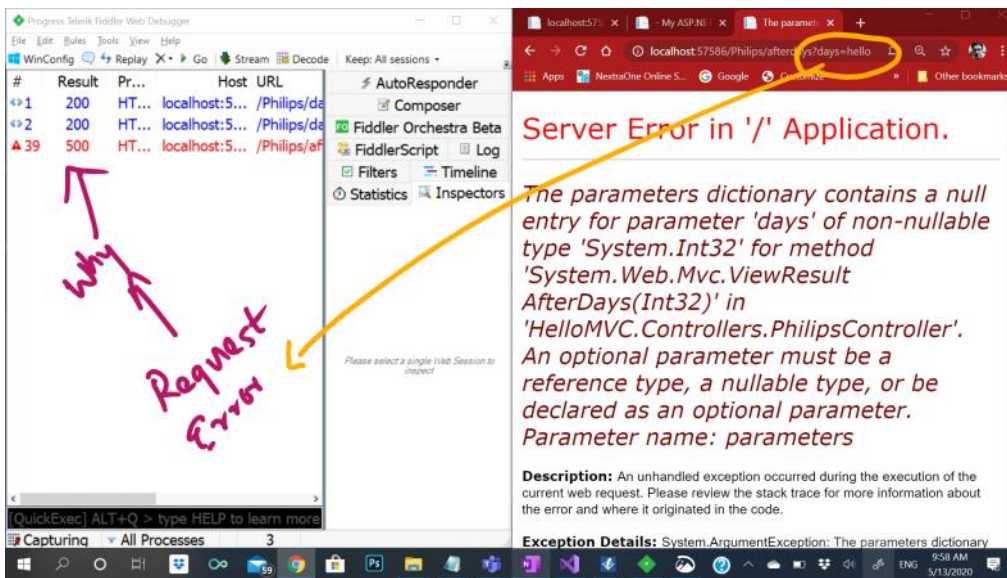
```
@{ Response.Write(something); }
```

Notice there is no semicolon after simple razor expression what ever you type automatically used as argument to `Response.Write()`

Also Note `@` is automatically closed when it finds html code

HTTP Errors!

Wednesday, May 13, 2020 9:56 AM

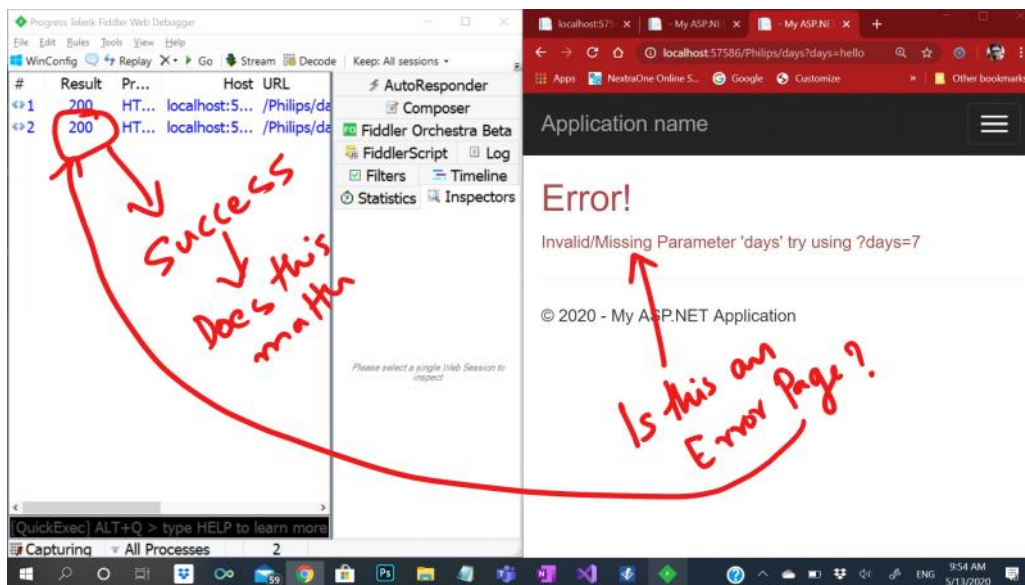


Is this a client request error or a Server Side error as notified.

Ideally it should be request error (400)

But it is server error, because Server didn't tell user they made a mistake

Server is uselessly taking on the guilt!



If This is an error page,

Why is the status code 200?

What should be the status code here?

It should be **400 Bad Request**

Does it matter 200/400? After all end user is going to see Error page and not the actual status code?

YES.
Humans are not the only one who see a webpage

Automated system like search engine crawlers or automated testing frameworks also see these outputs

- Do you want search engine crawlers to index even error page?
- Do you want automated systems to check color of message to decide if it is an error page?

URL Formats

Wednesday, May 13, 2020 10:41 AM

Which is a better URL to get a list of all Books By Jeffery Archer?

Approach#1 -- Traditional with id

<http://books.org/books.aspx?author=2915>

Approach#2 -- Traditional with name

<http://books.org/books.aspx?author=jeffrey-archer>

Approach#3 -- MVC URL

<http://books.org/books/by/jeffrey-archer>

Problem Approach#1

- need to remember an id
- what will be the list of books by john grisham called?

Problem Approach#2

- long and complicated url
- It looks too techy
 - Query Strings are ugly
- **Technology Id (.aspx)**
 - **Why should I include technology id in an URL?**
 - **What Jeffrey Archer book list has got to do with .net framework?**
- **Why Url shouldn't include technology**
 - **because we may switch our technology tomorrow**
 - **Then all urls we created today will be useless**
 - **All bookmarks will be dead**

W3C Recommendation for a URL

A URL should be

- Short
- Simple (Easy to Remember)
- Permanent (Removed Technology ID)
- identification of a resource (business)

URL shouldn't include

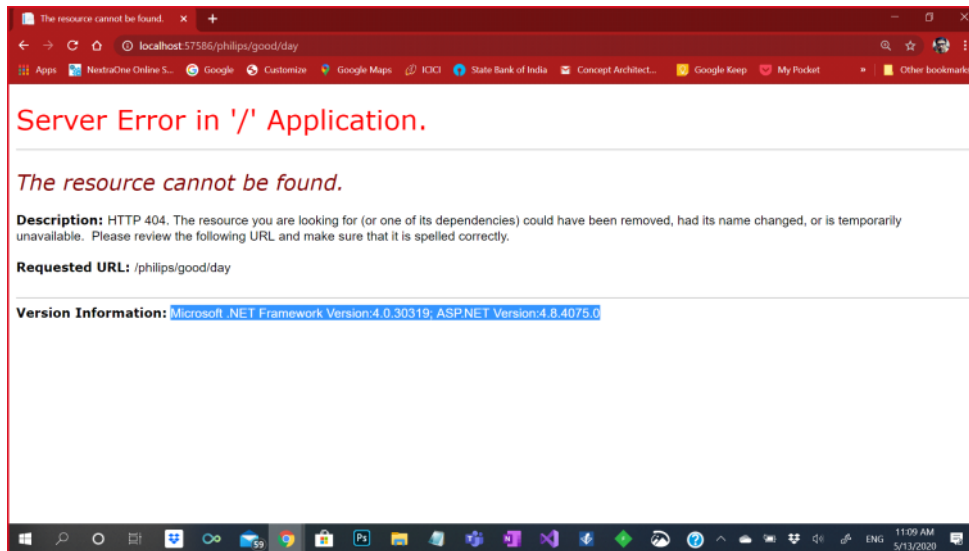
- Technology id such as
 - aspx/php/jsp
 - data format json/xml
 - device id eg m.facebook.com or irctc.in/mobile

<http://yt.be/5x9q8z>

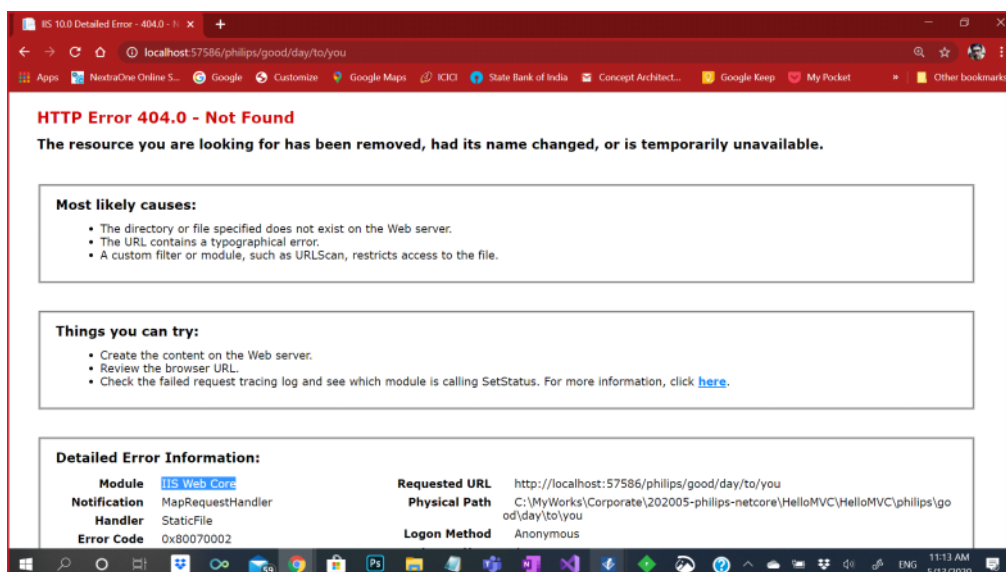
- SHORT BUT NOT SIMPLE!

MVC Lifecycle Error Handler

Wednesday, May 13, 2020 11:09 AM



- A 3 part URL is recognized as an MVC URL
- Routing Module passes control to MvcRouteHandler
- MvcRouteHandler breaks the URL into
 - controller: philips
 - action: good
 - id: 'day'
- MvcRouteHandler passes control to MvcRequestHandler
- MvcRequestHandler successfully creates controller 'PhilipsController'
- Not the action 'good' is not available
- **MvcRequestHandler** returns 404



- A Route that is not configured by the RoutingModule falls back to IIS
- IIS tries to handle the url in traditional way by either
 - extension mapping
 - physical file search
- when both fails **IIS (not asp.net)** generates 404

Assignment

Wednesday, May 13, 2020 11:54 AM

- Create a request for generating the Multiplication Table of a given number
- You choose your own URL structure
- The Url should take the number whose table is to be generated
- It should take an option second parameter for highest multiplier which should default to 10 if not passed
- Define success and error results properly

Use case 1 ---> Multiplication Table of 19 (Till its 10th Multiple)

Table of 19

Number	X	Result
19	1	19
19	2	38
19	3	
19	4	
19	5	
19	6	
19	7	
19	8	
19	9	
19	10	190

Use case 2 ----> Multiplication Table of 19 optional parameter sets highest multiple to 5

Table of 19

Number	X	Result
19	1	19
19	2	38
19	3	
19	4	
19	5	

Conventional Programming

Thursday, May 14, 2020 9:20 AM

Convention over configuration

- * Prefer a conventional coding
 - * reduces the need of configuration
- You are allowed to break/override convention if required
 - * configuration can be one way to override convention

Controller Execute

Thursday, May 14, 2020 9:41 AM

```
class Controller : Icontroller
{

    public void Execute( RequestContext context)
    {
        var httpContext= context.HttpContext;
        var routeData=context.RouteData;

        var actionName= routeData.Values["action"];

        var result= ActionInvoker.Invoke( actionName ); //this will search and execute an action method present in the controller

        ActionResult actionResult;

        if(result is ActionResult)
            actionResult=result;
        else
            result=new ContentResult(){ Content= result.ToString(); } //any normal return type is converted to ActionResult

        result.Exectue(); //generates the response!
    }

}
```


Preventing Javascript Injection Attack!

Thursday, May 14, 2020 10:04 AM

What if I type these content in a facebook wallpost

`<h1>Hello There, I hav a news</h1>`

`<script>alert("Hi, I have a news");</script>`

`<script> for(i=0;i<100;i++) alert("Hello World"); </script>`

If you are allowed to add any arbitrary html content to a web page user may

- Use Rich HTML/CSS format to express their idea, but it may break the site's theme
- Inject Scripts that may
 - deface the page at best
 - may inject malicious javascript to steal information and so on.
- Damage potential is endless

Solution!

- Most modern ViewEngine doesn't allow you to inject any HTML code as data to a page
- Any data inject to a page will automatically be encoded by replacing "<" with "<" and ">" with ">"
- These codes will appear on the page but will not be treated as HTML
- Some application may simple refuse to inject the code and fail with a validation error.

Books Web Site

Thursday, May 14, 2020 12:49 PM

Overview

- A web app for book lovers where user can find
 1. A List of Books with informations such as
 - i. Title
 - ii. Author
 - iii. Price
 - iv. Description
 - v. Coverpage etc
 - vi. Reviews and Rating
 - vii. User can also leave their review about the book
 2. A List of Authors
 - i. Author Name
 - ii. Their Biography
 - iii. Photographs
 - iv. Books Written By Them
 - v. Reviews and Rating
 3. User
 - i. Login
 - ii. Logout
 - iii. Maintains A Book Shelf
 - iv. Maintain Contributions such as
 - 1) Reviews

Assignment

1. Create The Model Classes
 - a. Book
 - b. Author
 - c. User
2. Plan the Routes (URL) to
 - a. what information you want to access
 - b. what operations you need to provide etc
3. Plan a outline of the pages that you need