

쉽게 배우는

ASP.NET Web API

for All(Web, Mobile, Desktop, etc)

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MCT(Microsoft Certified Trainer)

Microsoft MVP(Most Valuable Professional)

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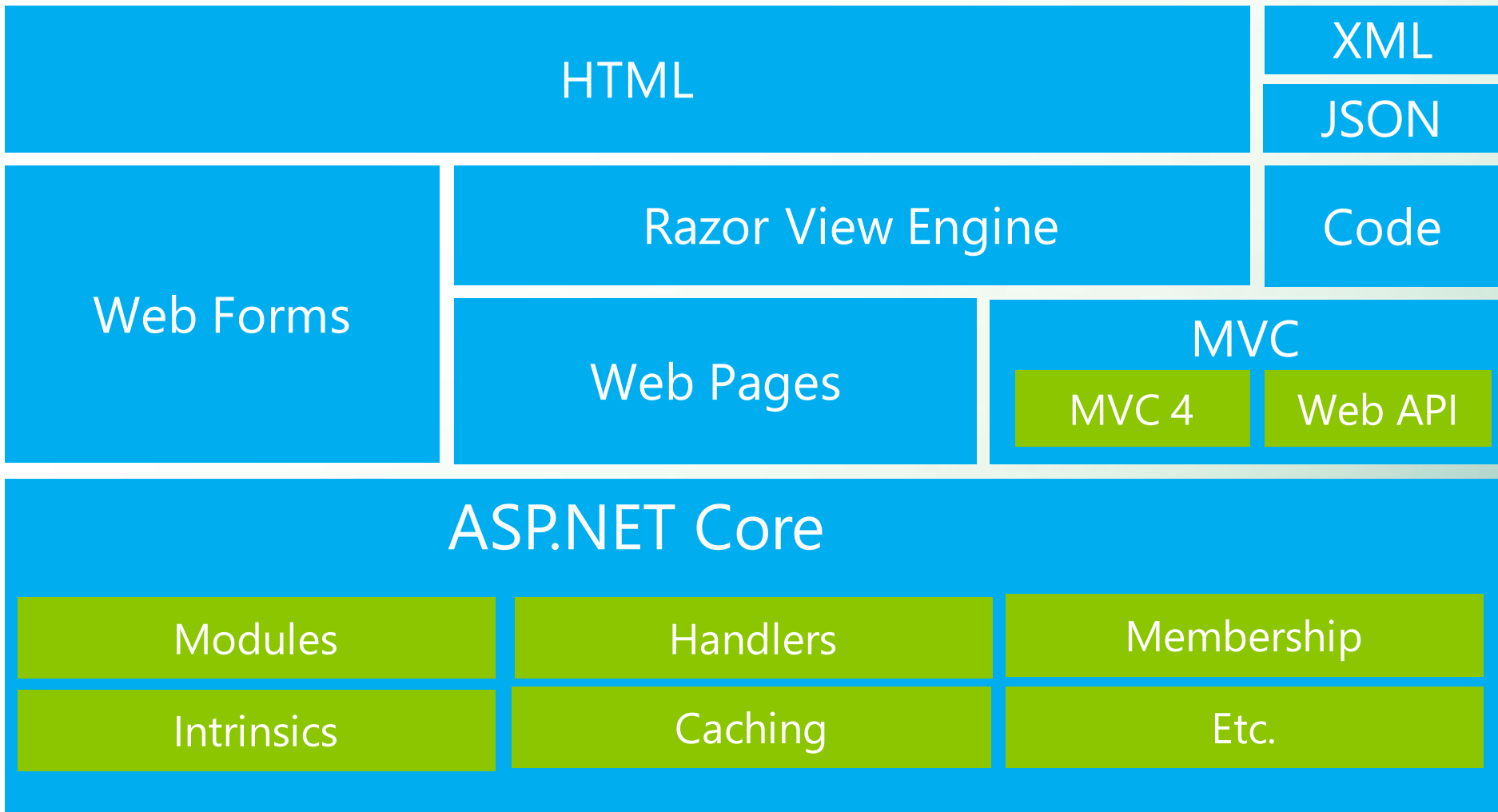


ASP.NET Web API 들어가기에 앞서...

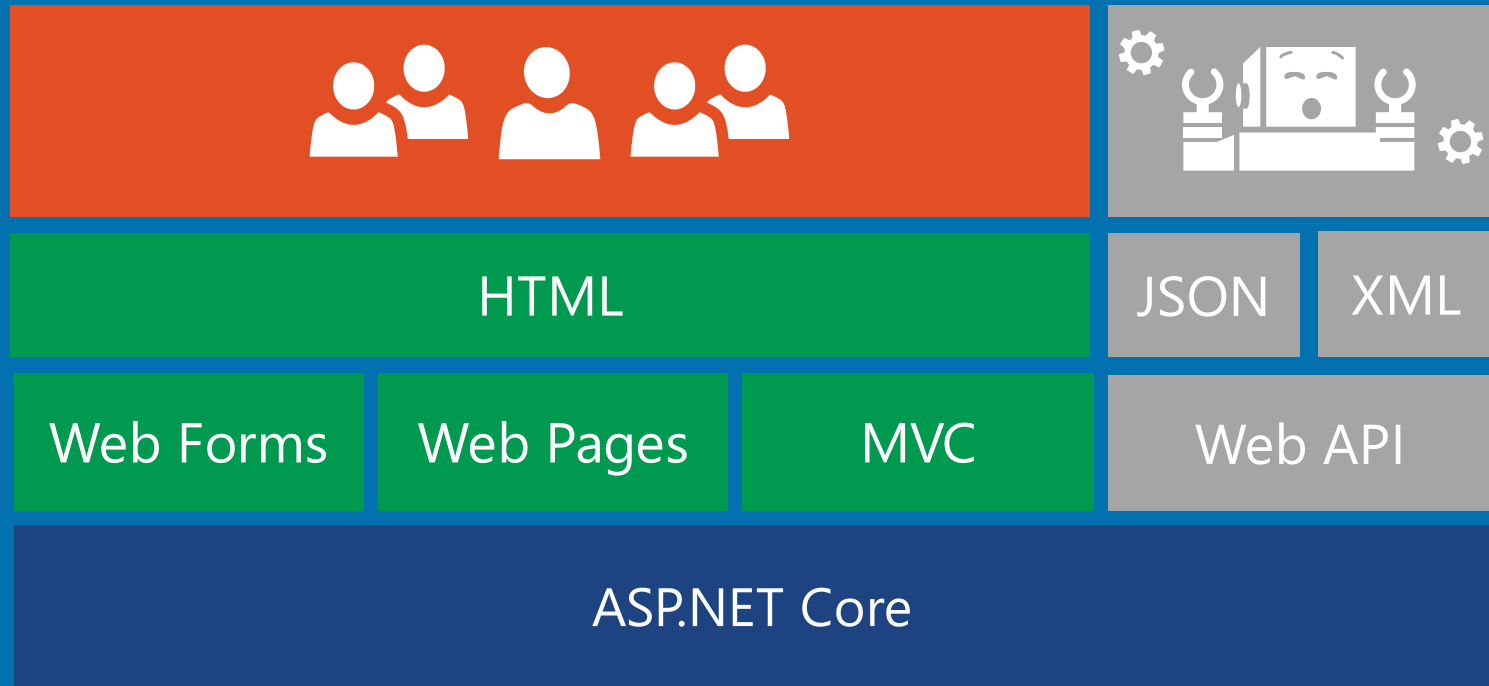
- 개발 환경 구축: 무료 버전인 VS 2013 기준
 - Visual Studio 2013
 - ASP.NET MVC 4, 5 개발 환경 == ASP.NET Web API
 - Web API 프로젝트 생성
 - » 기본으로 모든 환경이 구성됨
 - ASP.NET 프로젝트 생성
 - » System.Web.Http 어셈블리 포함됨
 - » Nuget으로 Microsoft ASP.NET Web API 설치
 - 기본 프로젝트 생성 후
 - » Install-package Microsoft.AspNet.WebApi.SelfHost
- 강좌 관련 참고 자료
 - <http://www.asp.net/web-api>



ASP.NET 영역



ASP.NET Web API과 One ASP.NET



Web API란 무엇인가?

HTTP 서비스

다양한 장치로의 접근을 위해 만들어짐

HTTP를 사용하는 응용 프로그램 프로토콜



왜 Web API가 필요한가?

135



왜 Web API를 만들어야 하는가?

좀 더 많은 클라이언트에게 정보 제공



왜 Web API를 만들어야 하는가?

클라우드 서비스로 손쉽게 확장



왜 Web API를 만들어야 하는가?

HTTP 사용한 표준 접근 방식

```
GET /en/html/dummy.php?name=MyName&married=not+single &male=yes HTTP/1.1
Host: www.explainth.at
User-Agent: Mozilla/5.0 (Windows;en-GB; rv:1.8.0.11) Gecko/20070312
Firefox/1.5.0.11
Accept: text/xml,text/html;q=0.9,text/plain;q=0.8,image/png,*/*;q=0.5
Accept-Language: en-gb,en;q=0.5
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.7
Keep-Alive: 300
Connection: keep-alive
Referer: http://www.explainth.at/en/misc/httpreq.shtml
```



ASP.NET Web API 데모

Sample Read-only Model and Controller

Step 1:

Create a Model

```
public class Person
{
    public int Id { get; set; }
    public string Name { get; set; }
}
```

Step 2:

Make an API Controller

```
public class PersonController : ApiController
{
    List<Person> _people;
    public PersonController()
    {
        _people = new List<Person>();
        _people.AddRange(new Person[]
        {
            new Person { Id = 1, Name = "Chuck Norris" },
            new Person { Id = 2, Name = "David Carradine" },
            new Person { Id = 3, Name = "Bruce Lee" }
        });
    }
}
```

Read-only Controller Actions to return data

Step 3:

Return everything

```
// GET /api/person  
public IEnumerable<Person> Get()  
{  
    return _people;  
}
```

Step 4:

Return one item

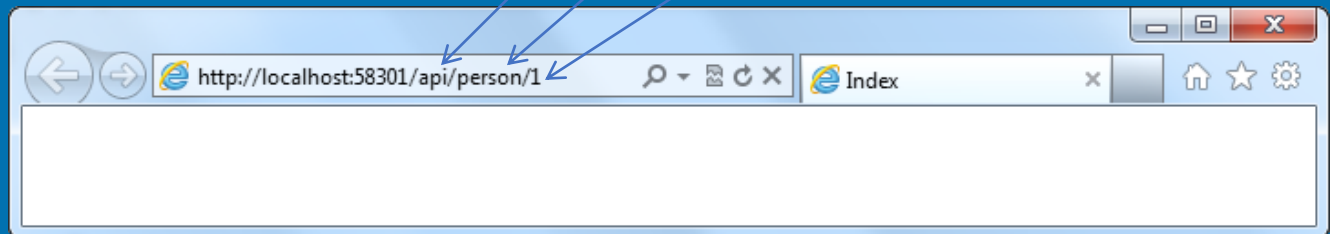
```
// GET /api/person/5  
public Person Get(int id)  
{  
    return _people.First(x => x.Id == id);  
}
```

Routing a Web API

Routing:

Familiar syntax,
conventional approach

```
public static void RegisterRoutes(RouteCollection routes)
{
    routes.MapHttpRoute(
        name: "DefaultApi",
        routeTemplate: "api/{controller}/{id}",
        defaults: new { id = RouteParameter.Optional }
    );
}
```



Manipulating HTTP Responses

Return `HttpResponseMessage<T>` to modify response headers

Example

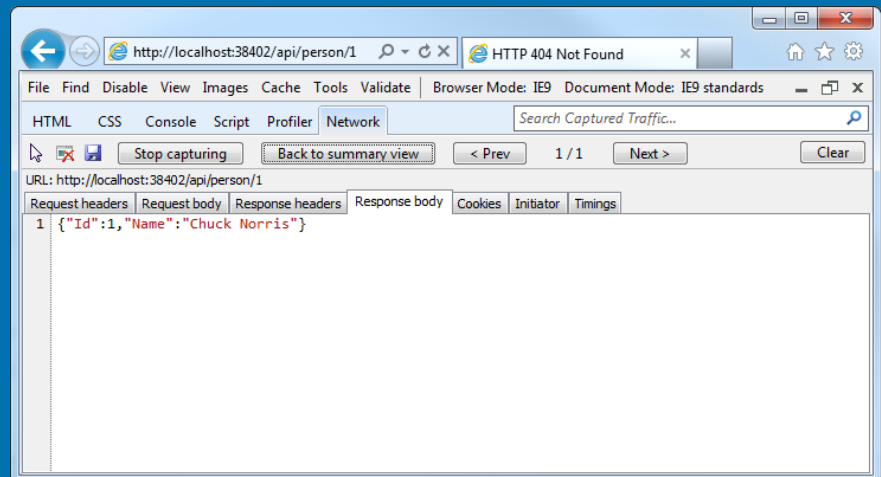
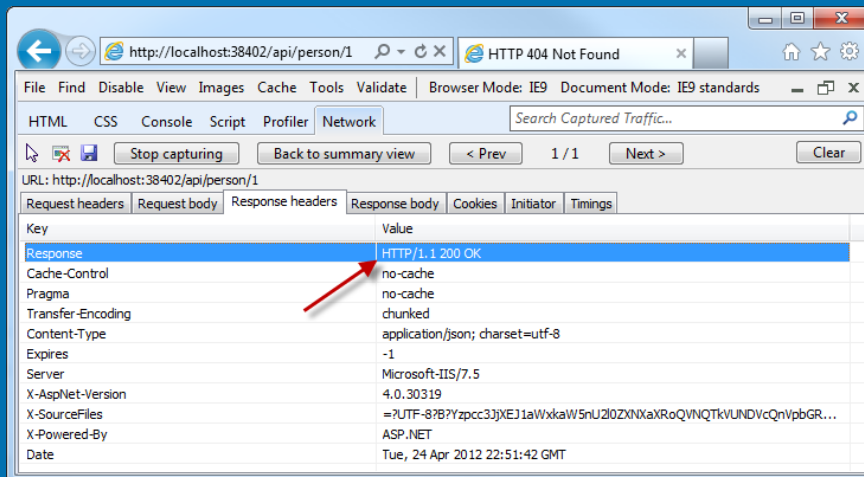
Find a person and return it, but what happens if we don't find a match?

```
// GET /api/person/5
public HttpResponseMessage<Person> Get(int id)
{
    try
    {
        var person = _people.First(x => x.Id == id);

        return new HttpResponseMessage<Person>(
            person,
            HttpStatusCode.OK
        );
    }
    catch
    {
        return new HttpResponseMessage<Person>(HttpStatusCode.NotFound);
    }
}
```

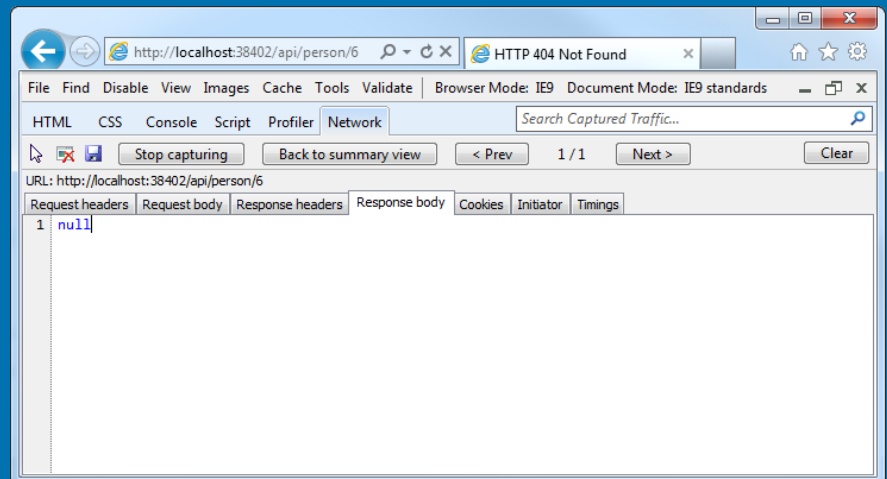
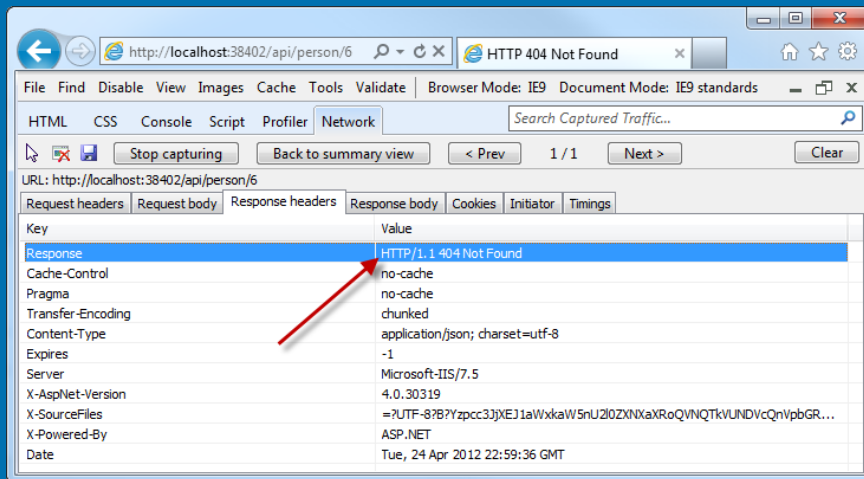
Manipulating HTTP Responses

A successful API call returns an HTTP OK and the JSON data



Manipulating HTTP Responses

An unsuccessful API call returns an HTTP 404 (and no JSON)



Posting Data to a Web API

Use HTTP Post:

Pass a Model

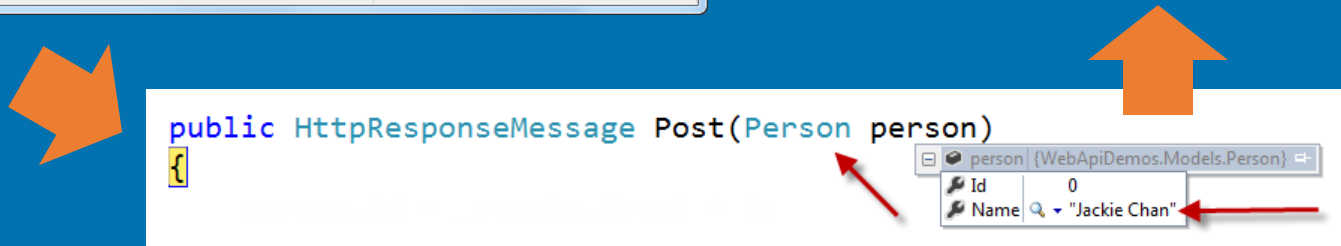
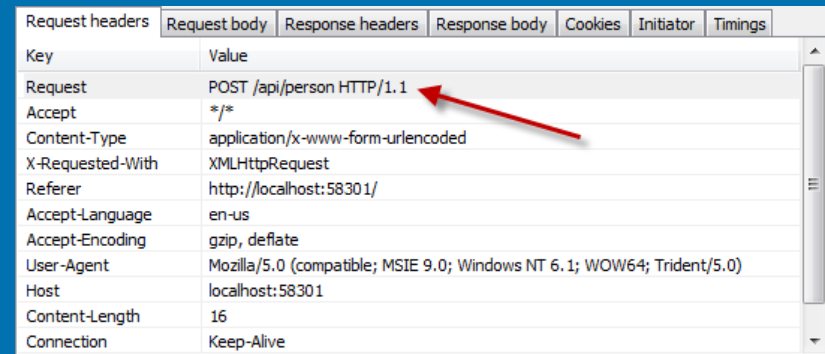
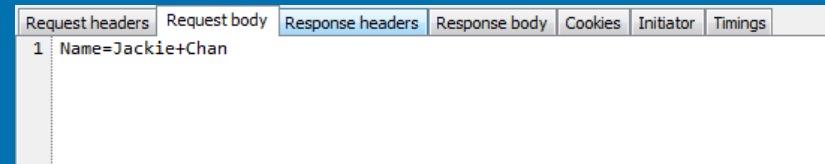
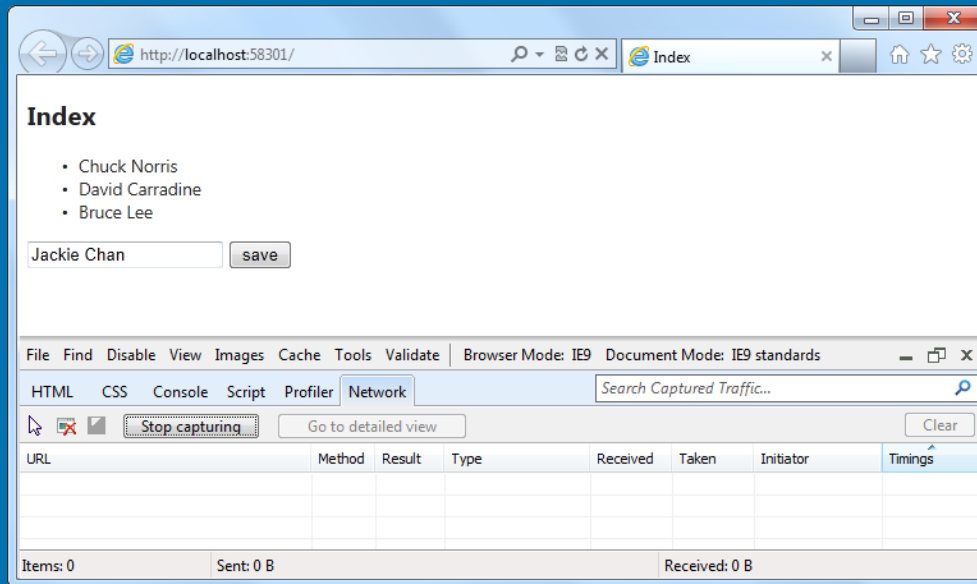
```
public HttpResponseMessage Post(Person person)
{
    person.Id = _people.Count + 1;

    if (_people.Any(x => x.Id == person.Id))
        return new HttpResponseMessage(HttpStatusCode.BadRequest);

    try
    {
        _people.Add(person);
    }
    catch
    {
        return new HttpResponseMessage(HttpStatusCode.BadRequest);
    }

    return new HttpResponseMessage(HttpStatusCode.OK);
}
```

Posting Data to a Web API



데모

Web API가 적용된 웹 응용 프로그램 살펴보기

File / New Project / Web API

Web API 프레임워크 요구 사항

- 기본적인 HTTP 기반 프로그래밍 방법 필요
 - 헤더, 상태코드, 캐싱 등
- URL를 통한 쉽게 자원에 접근할 수 있어야 함
 - /api/Products/
- HTTP Content Negotiation(내용 협상)
 - JSON, XML, ...
- 다양한 포맷 지원
 - /api/Products/1.png
- 횡단관심(공통관심;Cross Cutting Concerns)에서 분리
 - [Authorize("User=RedPlus")]
- 가볍고, 테스트가능하고, 확장 가능 해야 함



MS기술로 Web API를 구현하려면...

ASP.NET MVC



~~WCF Web HTTP~~
~~WCF REST Starter Kit~~
WCF Web API



MS기술로 Web API를 구현하려면...

ASP.NET MVC



~~WCF Web HTTP~~
~~WCF REST Starter Kit~~
WCF Web API



MS기술로 Web API를 구현하려면...

ASP.NET Web API



ASP.NET Web API 특징

ASP.NET MVC에서 가져옴:

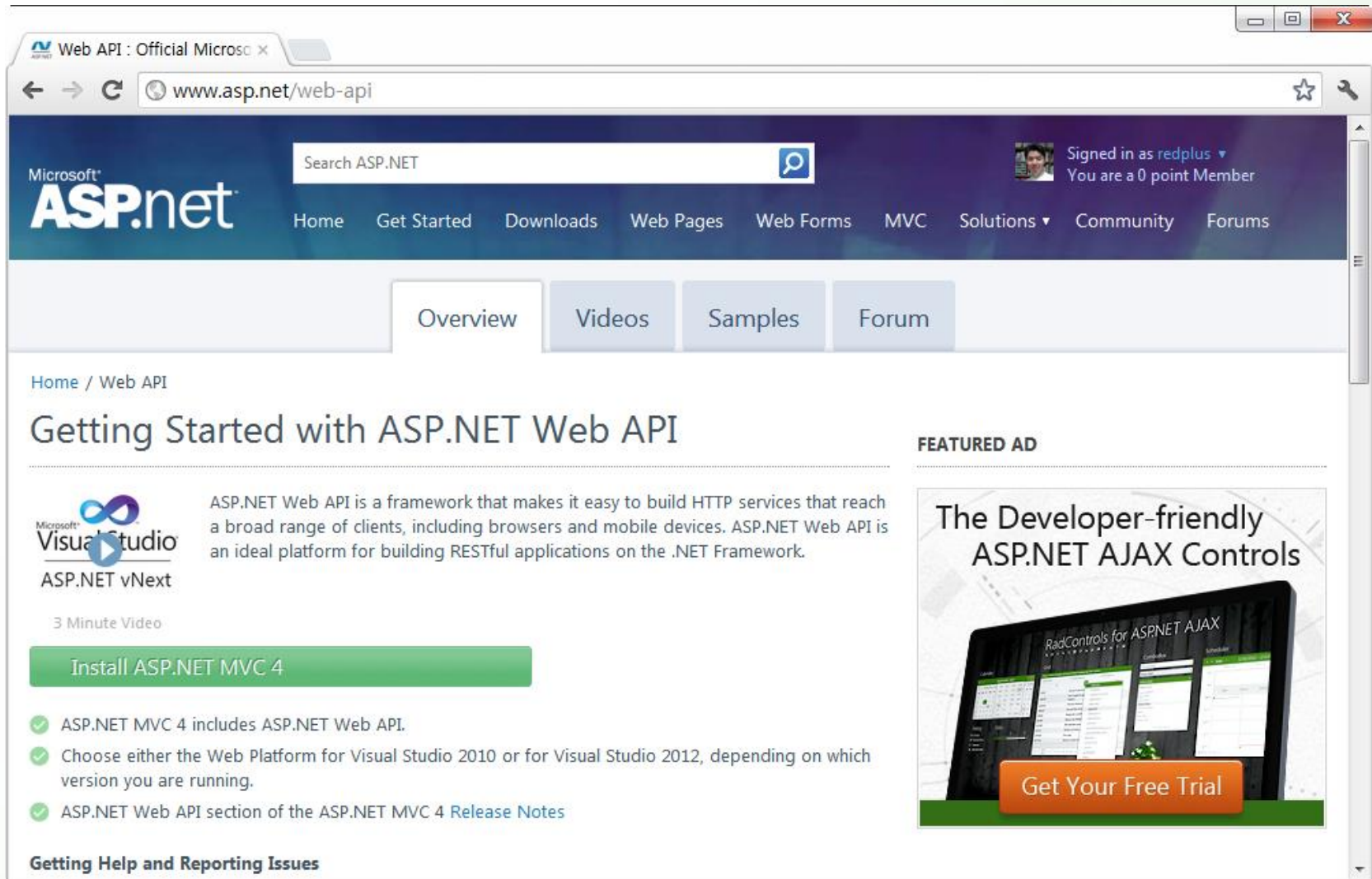
- ASP.NET Routing
- Model binding
- Validation
- Filters
- Link generation
- Testability
- IoC integration
- VS template
- Scaffolding

WCF Web API에서 가져옴:

- Modern HTTP programming model
- HttpClient
- Task-based async
- Formatting, content negotiation
- Server-side query composition
- Create custom help pages
- Self-host
- Tracing



http://www.asp.net/web-api



The screenshot shows the official ASP.NET Web API website. The browser address bar displays 'www.asp.net/web-api'. The page features a dark blue header with the 'ASP.NET' logo, a search bar, and a user profile 'Signed in as redplus'. A navigation menu includes links for Home, Get Started, Downloads, Web Pages, Web Forms, MVC, Solutions, Community, and Forums. Below the header, a secondary navigation bar highlights 'Overview', 'Videos', 'Samples', and 'Forum'. The main content area is titled 'Getting Started with ASP.NET Web API' and includes a description of the framework, a '3 Minute Video' link, and a green button labeled 'Install ASP.NET MVC 4'. A list of three bullet points provides additional information about MVC 4 and release notes. On the right, a 'FEATURED AD' for 'RadControls for ASP.NET AJAX' is displayed, featuring a laptop image and a 'Get Your Free Trial' button.

Web API : Official Microsoft

Search ASP.NET

Signed in as redplus
You are a 0 point Member

Home Get Started Downloads Web Pages Web Forms MVC Solutions Community Forums

Overview Videos Samples Forum

Home / Web API

Getting Started with ASP.NET Web API

ASP.NET Web API is a framework that makes it easy to build HTTP services that reach a broad range of clients, including browsers and mobile devices. ASP.NET Web API is an ideal platform for building RESTful applications on the .NET Framework.

Microsoft Visual Studio
ASP.NET vNext

3 Minute Video

Install ASP.NET MVC 4

- ASP.NET MVC 4 includes ASP.NET Web API.
- Choose either the Web Platform for Visual Studio 2010 or for Visual Studio 2012, depending on which version you are running.
- ASP.NET Web API section of the ASP.NET MVC 4 [Release Notes](#)

Getting Help and Reporting Issues

FEATURED AD

The Developer-friendly ASP.NET AJAX Controls

RadControls for ASP.NET AJAX

Get Your Free Trial



http://aspnetwebstack.codeplex.com

The screenshot shows a web browser window with the address bar displaying `aspnetwebstack.codeplex.com`. The page header includes the CodePlex logo, the text "Project Hosting for Open Source Software", and navigation links for "redplus", "Sign Out", and a search bar labeled "Search all projects". The main content area features the ASP.NET logo and a navigation menu with tabs: HOME, DOWNLOADS, DOCUMENTATION, DISCUSSIONS, ISSUE TRACKER, SOURCE CODE, PEOPLE, and LICENSE. Below the navigation menu, there are links for "Page Info" and "Change History (all pages)". The main text describes ASP.NET as a free web framework for building great web sites and applications. It mentions that this site is the home of the ASP.NET MVC, Web API, and Web Pages source code, and provides a link to `http://www.asp.net` for official installers, documentation, tutorials, samples, and videos. It also states that these products are actively developed by the ASP.NET team assigned to the Microsoft Open Tech Hub and in collaboration with a community of open source developers. On the right side, there is a "Subscribe to Project" link, a star icon indicating "1204 people following this project (follow)", a search bar labeled "Search Wiki & Documentation", and a message stating "There is no recommended release for this project." Below this, there is an "ACTIVITY" section with a table showing page views, visits, and downloads. The table has three columns: PAGE VIEWS, VISITS, and DOWNLOADS. The data row shows 17995 page views, 7292 visits, and 522 downloads. At the bottom of the activity section, there are links for "Days: 7", "30", and "All", and a "Details" link.

ASP.NET MVC / Web API . x

aspnetwebstack.codeplex.com

CodePlex Project Hosting for Open Source Software

redplus | Sign Out | Search all projects

ASP.NET

Subscribe to Project

HOME | DOWNLOADS | DOCUMENTATION | DISCUSSIONS | ISSUE TRACKER | SOURCE CODE | PEOPLE | LICENSE

Page Info | Change History (all pages)

ASP.NET is a free web framework for building great web sites and applications.

This site is the home of the ASP.NET MVC, Web API, and Web Pages source code. If you want to use the released versions of these products to develop your applications, visit <http://www.asp.net> to find official installers, documentation, tutorials, samples, and videos.

These products are actively developed by the ASP.NET team assigned to the Microsoft Open Tech Hub and in collaboration with a community of open source developers. Together we are dedicated to creating the best possible platform for web development.

Source Code

You can browse the source code via the [web](#) or use [git](#) to clone the source repository.

1204 people following this project (follow)

Search Wiki & Documentation

There is no recommended release for this project.

ACTIVITY

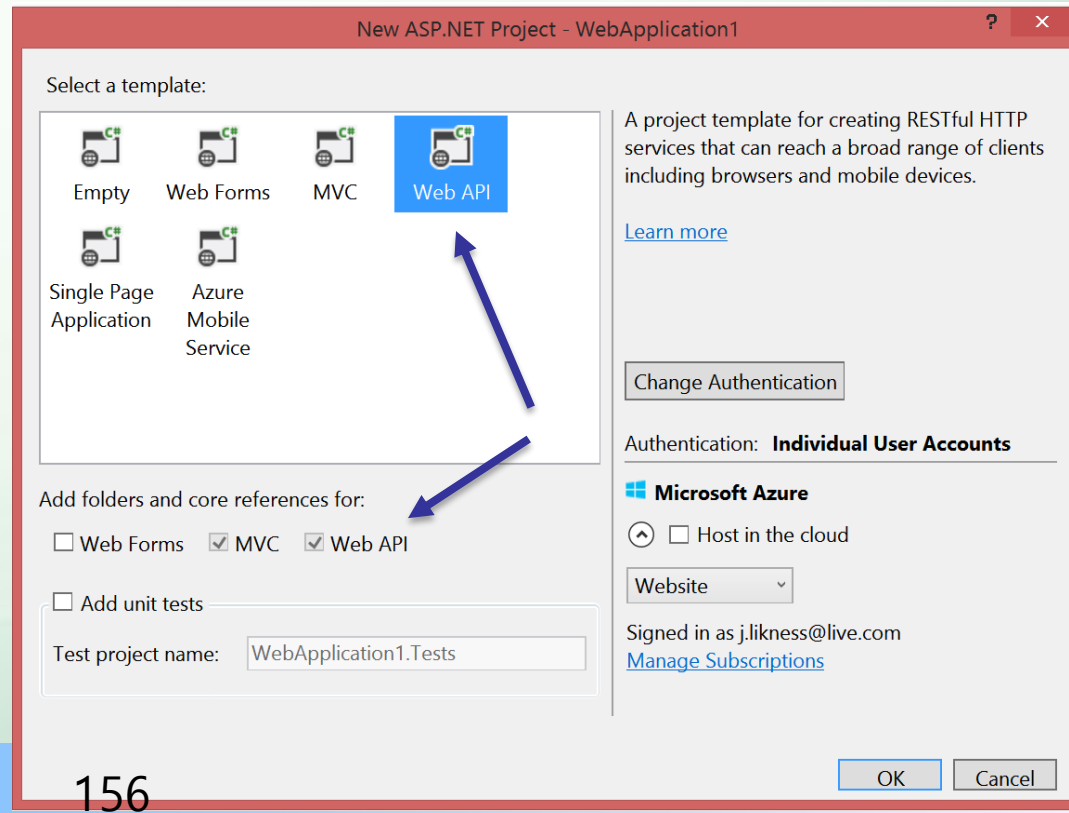
PAGE VIEWS	VISITS	DOWNLOADS
17995	7292	522

Days: 7 30 All Details



데모

- ASP.NET Web API Hello World 프로젝트
 - HTTP 기반 서비스를 쉽게 구축
 - RESTful API 구현



Web API를 구현하려면...

- ApiController 클래스 상속
- 각각의 액션메서드 구현
 - 액션 메서드는 HTTP 메서드와 매핑됨
 - 액션 메서드의 접두사 이름은 HTTP 메서드와 매핑됨
 - GetComment
 - HTTP GET 메서드와 매핑
 - PostComment
 - HTTP POST 메서드와 매핑
 - 액션 메서드를 기존 이름으로 사용하되 HTTP 메서드로 노출하려면 [HttpGet/Post/Put/Delete] 특성 사용



라우팅(Routing)

- ApiController와 URI가 서로 매핑됨
 - api/{controller}/{id}
 - {controller} + "Controller" = ApiController 클래스명
- 기본 Web API Route

```
routes.MapHttpRoute(  
    name: "DefaultApi",  
    routeTemplate: "api/{controller}/{id}",  
    defaults: new { id = RouteParameter.Optional }  
);
```



액션 파라미터

- 간단한 타입은 URL를 통해서 바로 얻음
 - 라우트 데이터, 쿼리 파라미터
- 복합 형식(Complex Type)은 HTTP Body를 통해서 받음
 - MediaTypeFormatter를 사용하여 요청된 Body값을 Content Type에 기반하여 개체화 시켜서 사용 가능
 - JSON, XML, Form 정보는 즉시(기본으로) 제공함
- 커스텀 파라미터 바인딩
 - [FromUrl], [FromBody], [ModelBinder] 등 사용



유효성 검사(Validation)

- 모든 요청(Request)에 대해서 유효성 검사 (Validation)가 진행됨
- ModelState 개체를 통해서 유효성 검사 에러 계산 후 출력
 - ModelState.IsValid로 체크
- DataAnnotation 또는 사용자 정의 유효성 검사 (Custom Validation) 로직 수행



HTTP Content Negotiation(내용 협상)

- 응답 포맷(Format)은 HTTP Content Negotiation에 의해서 결정됨
 - JSON, XML, ...
- [Accept] 헤더에 의해서 포맷(Format)이 결정됨
 - Accept: application/json
- 서버는 아래 내용에 따라서 응답 포맷을 결정함
 - 요청(Request)
 - 액션 메서드의 반환 형식
 - MediaTypeFormatter 구성 시 해당 구성을 따름
- JSON과 XML은 기본(즉시)으로 제공함
 - JSON이 대세~



Content Negotiation

```
// Get the IContentNegotiator
IContentNegotiator negotiator = Configuration.Services.GetContentNegotiator();
// Run content negotiation to select a formatter
MediaTypeHeaderValue mediaType;
MediaTypeFormatter formatter = negotiator.Negotiate(
    typeof(Contact), Request, Configuration.Formatters, out mediaType);
// Create a response message with an object content using the selected formatter
HttpResponseMessage response = new HttpResponseMessage()
{
    Content = new ObjectContent<Contact>(contact, formatter),
    RequestMessage = Request
};
```

```
HttpResponseMessage response =
    Request.CreateResponse<Contact>(HttpStatusCode.Created, contact);
```



데모

- EF(Entity Framework)기반 스캐폴딩(Scaffolding)을 사용한 Web API



참고자료

- <http://www.microsoft.com/ko-kr/events/techdaysminisat/default.aspx>



마무리

ASP.NET Web API는 다양한 클라이언트에게 서비스를 제공할 수 있는 HTTP 서비스를 쉽게 만들 수 있는 MVC 4 포함된 새로운 기술

ASP.NET Web API는 RESTful 서비스를 만들기 위한 이상적인 플랫폼

ASP.NET MVC 5 개발환경(Visual Studio 2013)에서 지원

CodePlex를 통한 오픈 소스 제공으로 다운로드 후 소스 분석 가능



핸즈온랩

- <http://www.visualacademy.com/DotNetNote/BoardView?BoardName=WebCamp&Num=5>

