CREATING SPAs WITH ASP.NET

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ABOUT ME

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Slides & code : https://github.com/jonathantower/spas-with-aspnet

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OVERVIEW

- What is an SPA?
  - Definition
  - Characteristics
  - Advantages & Disadvantages

- Client-Side
  - Routers
  - Modularizing Your Code
  - MVVM/MVC

- Server-Side
  - What's the Server for?
  - How can ASP.NET help?

LET'S GET STARTED

But First...

IF YOU GIVE $75, SO WILL I!

http://bit.ly/ccc-spa

"charity:water is a non-profit organization that provides clean and safe drinking water to people in developing nations. The organization was founded in 2006 and has helped fund 13,641 projects in 22 countries, benefiting over 4.6 million people." - Wikipedia

"97.1/100"
- CharityNavigator.org

charity: water

WHAT IS AN SPA?

REQUISITE "DEFINITION SLIDE"

- A single page application (SPA) is a web application that fits on a single web page with the goal of providing a more fluid user experience akin to a desktop application

- Generally characteristics:

  1. Browser-based
  2. Rich UI and UX
  3. Thick-client compared to non-SPAs
  4. Create with advanced JavaScript, AJAX, HTML5, and CSS
  5. View composition on the client-side
  6. Server-side primarily for retrieving/persisting data

HALLMARKS OF A SPA DONE RIGHT

- No URL change other than hash tag
- Back button works as expected
- Bookmark-able links
- Rich interaction between UI components
- Single full-page refresh from server, other content loaded using JavaScript
- Uses web services, especially RESTful ones

SPA ADVANTAGES

- Faster UI
- Better UX
- Less server-load
- Less need for caching

SPA DISADVANTAGES

- SEO
- Can be more work
- Modern web skills

JAVASCRIPT

The Client-Side in a SPA

ROUTERS: WHAT MAKES SPAs WORK

- DEMO: Roll your own router
- DEMO: AngularJS router
- DEMO: Kendo UI router
- Other libraries do this for you, like:
  - Backbone
  - Ember.js
  - CanJS
  - Many, many more

MODULARIZING YOUR CODE

- DEMO: Without modules, everything's global scope
- Modules are built-in with AngularJS
- DEMO: Modules with IIFE

- Others: Require.js, Browserify, CommonJS

- Finally: ECMAScript 6 import

```
// calculator.js
export function sum(a, b) { return a + b; }

// app.js
import * as calculator from 'calculator';
console.log(calculator.sum(1, 2)); // => 3
```

MODEL-VIEW-WHATEVER LIBRARIES

- AngularJS (both 1 and 2)
- Kendo UI
- Knockout
- Backbone
- Ember.js
- CanJS
- …

- DEMO: Angular.js MVVM
- DEMO: Kendo UI MVVM

ASP.NET

What's the Server-Side Good for Now?

WHAT SERVER-SIDE CODE CAN STILL DO FOR YOU

- Data Services
  - Database Access
  - CRUD
  - Validation

- Security
  - Service-As-UI Rule
  - Authentication

- SEO
  - Hash-Bang

- Other
  - Delivering views
  - Delivering other content
  - Preprocessing
  - Mixing dynamic/static content

DATA SERVICES

Restful data services with json

DATA SERVICES

- DEMO: RESTful Service Layer with Web API

DELIVERING VIEWS

Deliver contextually-relevant views

DELIVERING VIEWS AND CONTENT

- DEMO: Display modes on views

- DEMO: Pre-populated views, data, settings

- DEMO: Pre-rending on the Server

- DEMO: Pre-Processing and Task Runners

VALIDATION

- DEMO: Combine client and server-side validation into one

SECURITY

If it isn't happening on the server,
it's probably not secure

"SERVICE LAYER AS THE UI" RULE

Imagine the REST services *are* the UI to help avoid common security problems.
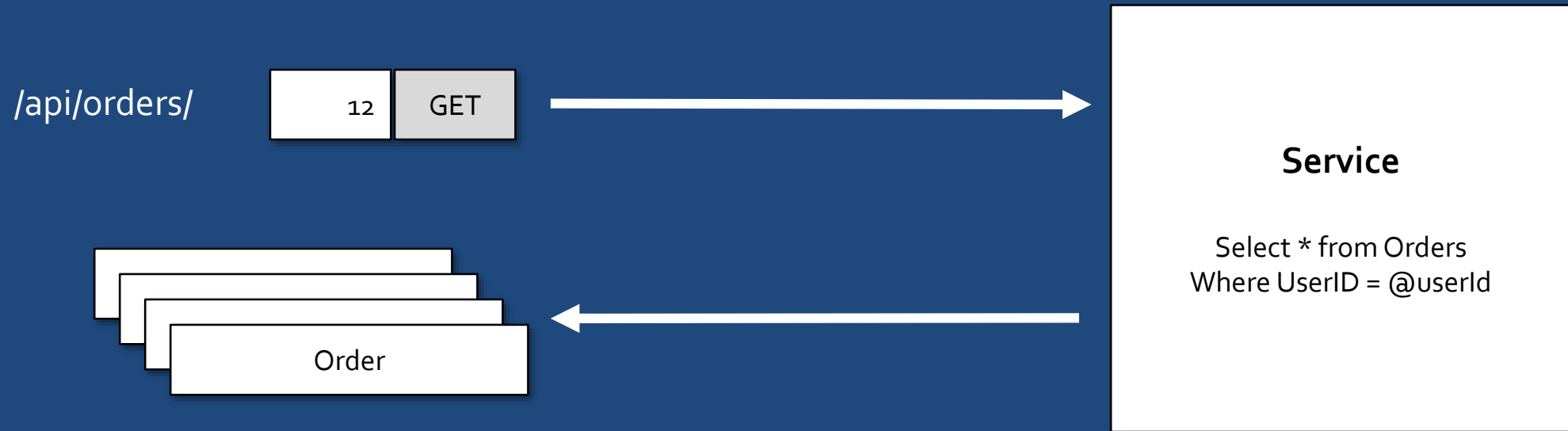
"SERVICE LAYER AS THE UI" RULE

Browser

currentUserId: 12

GET /api/orders/{userId}

Service

Select * from Orders
Where UserID = @userId

Order

"SERVICE LAYER AS THE UI" RULE

Browser

currentUserId: 12

GET /api/orders/12

Service

Select * from Orders
Where UserID = 12

Order

"SERVICE LAYER AS THE UI" RULE

/api/orders/ **12** GET ⟶

Service

Select * from Orders
Where UserID = @userId

⟵ Order

"SERVICE LAYER AS THE UI" RULE

AUTHENTICATION

- DEMO: ASP.NET Authentication Token

SEO

Makin' It Crawlable

HASH-BANGS

/ajax.html/#/view/path/and/name

/ajax.html#!/view/path/and/name

/ajax.html?_escaped_fragment_=/view/path/and/name

Source: https://developers.google.com/webmasters/ajax-crawling/

RECAP

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THANK YOU! QUESTIONS?

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