Web front-end frameworks

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# Questions

1. Which front-end framework(s) can be used in the project?
   1. What are the most common frameworks?
      1. (Field) By looking at what other programmers and projects use on sites like Stack Overflow.
   2. What are the differences between those frameworks?
      1. (Library) By looking at the documentations of the frameworks.
   3. What is the browser support for those frameworks?
      1. (Library) By looking at the documentations of the frameworks.

# Which front-end framework(s) can be used in the project?

## What are the most common frameworks?

### YAML

<http://www.yaml.de/>

YAML is a html and css framework to easily build web interfaces. It has css classes to easily create common UI elements like a tabs, buttons and navigation.

There are css classes to easily create responsive grid layouts and other interface structures.

### Bootstrap

<http://getbootstrap.com/>

Bootstrap is a html, css and js framework to quickly build a web interface. The framework consists of a set of html elements/snippets with css and js that can be used to show common UI elements like a button, tabbar or a popup.

As example the following html code shows a tabbar:

<ul class="nav nav-tabs">

<li role="presentation" class="active"><a href="#">Home</a></li>

<li role="presentation"><a href="#">Profile</a></li>

<li role="presentation"><a href="#">Messages</a></li>

</ul>

Additionally the framework has js methods to hide and show a popup as example.

### Zurb Foundation

<http://foundation.zurb.com/>

Foundation is a html and css framework similar to Bootstrap to easily build a web interface.

While Bootstrap is focused on quickly being able to create an interface, Foundation is not styled as much and more pointed towards creating complex interfaces.

### Polymer

<https://www.polymer-project.org/>

#### Polymer library

Polymer is a js library to create custom html elements. This is already possible in modern browsers but Polymer adds support for more browsers and additional features.

Custom elements make web development simpler, instead of creating complex html structures and using classes and tags to handle user interaction you only needs to create a custom element and add bindings to the element so that user input is directly handled without the needs to listen to a list of events.

Additionally it also make html less easier to read since multiple html tags can be replaced with a simple custom tag.

Content of custom elements can be easily updated by changing the value of it’s property.

As example the following custom element:

<hello-name owner="Thomas"></hello-name>

Will be rendered as:

<p>Hello <b>Thomas</b>!</p>

#### Polymer App Toolbox

An additional Polymer library with components, tools and templates to quickly build apps in the material design language.

### Angular

<https://angular.io/>

Angular is a js framework based on the MVC pattern to easily create applications in js. It’s commonly used to create applications that use a json api that generate the interface on frontend instead of the backend.

Views with models and controllers can be easily made with Angular, it also support data bindings which means that changes in models can be directly shown in the view without the need to write additional code.

Example controller in Angular:

<div ng-app="myApp" ng-controller="myCtrl">

First Name: <input type="text" ng-model="firstName"><br>

Last Name: <input type="text" ng-model="lastName"><br>

<br>

Full Name: {{firstName + " " + lastName}}

</div>

<script>

var app = angular.module('myApp', []);

app.controller('myCtrl', function($scope) {

$scope.firstName= "John";

$scope.lastName= "Doe";

});

</script>

### React

<https://facebook.github.io/react/>

React is a js library to easily create views for application logic. In comparison with Angular, React does not follow the MVC pattern but directly generates a view base on the state of the component.

Example code:

class HelloMessage extends React.Component {

render() {

return <div>Hello {this.props.name}</div>;

}

}

ReactDOM.render(<HelloMessage name="Jane" />, mountNode);

## What are the differences between those frameworks?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | CSS framework? | JS UI framework? | JS logic framework? | Design language? |
| YAML | Yes | No | No | No |
| Bootstrap | Yes | Yes | No | Themes |
| Zurb | Yes | Yes | No | Themes |
| Polymer | Optional | Optional | Yes | Optional |
| Angular | Optional | Optional | Yes | Optional |
| React | No | No | Yes | No |

Polymer is a JS framework that enables developers to create custom HTML elements. Additionally there is a collection of Material design elements.

Angular is a JS framework based on the MVC pattern to easily create applications in js. Additionally there is a version to add Material design.

## What is the browser support for those frameworks?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Chrome | Firefox | Safari | Opera | Internet Explorer |
| YAML | Supported | 3.6+ | 4+ | 10+ | 6+ |
| Bootstrap | Supported | Supported | Supported(Mac) | Supported | BS3->8+ BS4->10+ |
| Zurb | Supported | Supported | Supported | Supported | 9+ |
| Polymer | Supported | Supported | 7+ | Supported | 11+ |
| Angular | 45+ | 40+ | 7+ | No | 9+ |
| React | Supported | Supported | Supported | Supported | 9+ |

Supported means that it has been tested in the latest browser versions, this is commonly used for browsers that have had support for a long while and are known to have automatic built in update mechanisms.