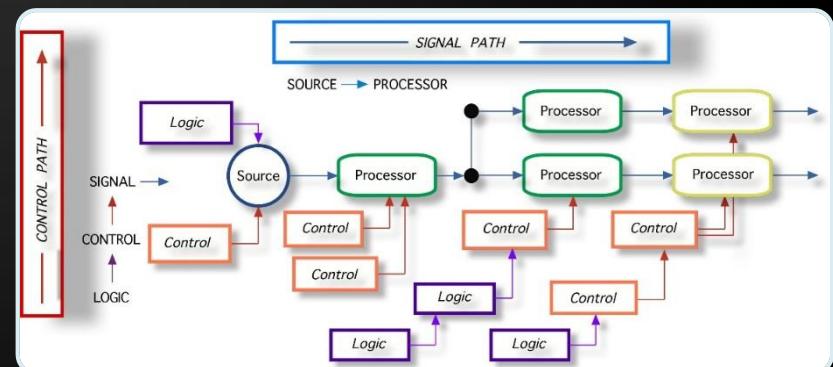


AMD and RequireJS

Splitting JavaScript into Dependent Modules

Telerik Software Academy
Learning & Development
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- ◆ AMD Overview
- ◆ RequireJS Overview
 - ◆ Installation and configuration
- ◆ Defining modules with RequireJS
- ◆ Defining Dependent modules



AMD Overview

- ◆ Asynchronous module definition (AMD) is a JavaScript API for defining modules
 - And they are loaded asynchronously
 - Useful in improving the performance of websites
- ◆ AMD allows to create dependent modules
 - Modules that need other modules to work
- ◆ RequireJS is a famous AMD library
 - Runs both in the browser and in Node.js

Dive in RequireJS

How to create dependent modules?

RequireJS Overview

- ◆ **RequireJS is a JavaScript file and module loader**
 - ◆ **It is optimized for in-browser use**
 - ◆ Yet it can be used in other JavaScript environments, like Rhino and Node
 - ◆ **Modular loaders improve the speed and quality of code**
 - ◆ Inspire lazy-loading of JS files
 - ◆ Makes files dependent on other files

RequireJS Overview (2)

- ◆ Using RequireJS makes code more simpler and optimized
 - Instead of loading all the JavaScript files on the page load, load them when needed
- ◆ Handles the many-scripts-hell in a web page
 - Load a single file/module (app.js)
 - And this file will require other files/modules
 - And these other modules will require more modules etc...

Using RequireJS

- ◆ **RequireJS needs a configuration file to load other files**
 - ◆ **The config file is the single JavaScript file in the web page**
- ◆ **RequireJS loads all code relative to a baseUrl**
 - ◆ **The url given in data-main**
- ◆ **RequireJS assumes by default that all dependencies are scripts**
 - ◆ **Suffix ".js" is not expected**

Using RequireJS: Steps

- ◆ To use RequireJS:

- ◆ Fetch the require.js file:
 - ◆ Either download it from [RequireJS web site](#)
 - ◆ Or with bower: `$ bower install requirejs`
- ◆ Create an app.js file to start your application
- ◆ Create an HTML page and src the RequireJS file
 - ◆ And set the data-main attribute to the app.js file

```
<script src="scripts/libs/require.js"  
       data-main="scripts/app/app"></script>
```

The app.js file

- ◆ The app.js is the file, that starts your application
 - ◆ It has dependencies to other RequireJS modules

```
//app.js
(function () {
    require.config({
        paths: {
            "jquery": "libs/jquery-2.0.3"
        }
    });

    require(["jquery"], function () {
        //write your jQuery-dependent code here
    });
}());
```

Using RequireJS

Live Demo



Defining Modules

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- ◆ A module is a well-scoped object that avoids polluting the global scope
 - ◆ It can explicitly list its dependencies and get a handle on those dependencies
 - ◆ Dependencies are received as arguments to the define function
 - ◆ The RequireJS module is an extension of the Module Pattern

- ◆ The RequireJS syntax for modules allows them to be loaded as fast as possible
 - Even out of order, yet evaluated in the correct dependency order
 - Since global variables are not created it is possible to load multiple versions of a module
- ◆ There should only be one module definition in a single JavaScript file!
 - The modules can be grouped into optimized bundles by an optimization tool

Defining Modules

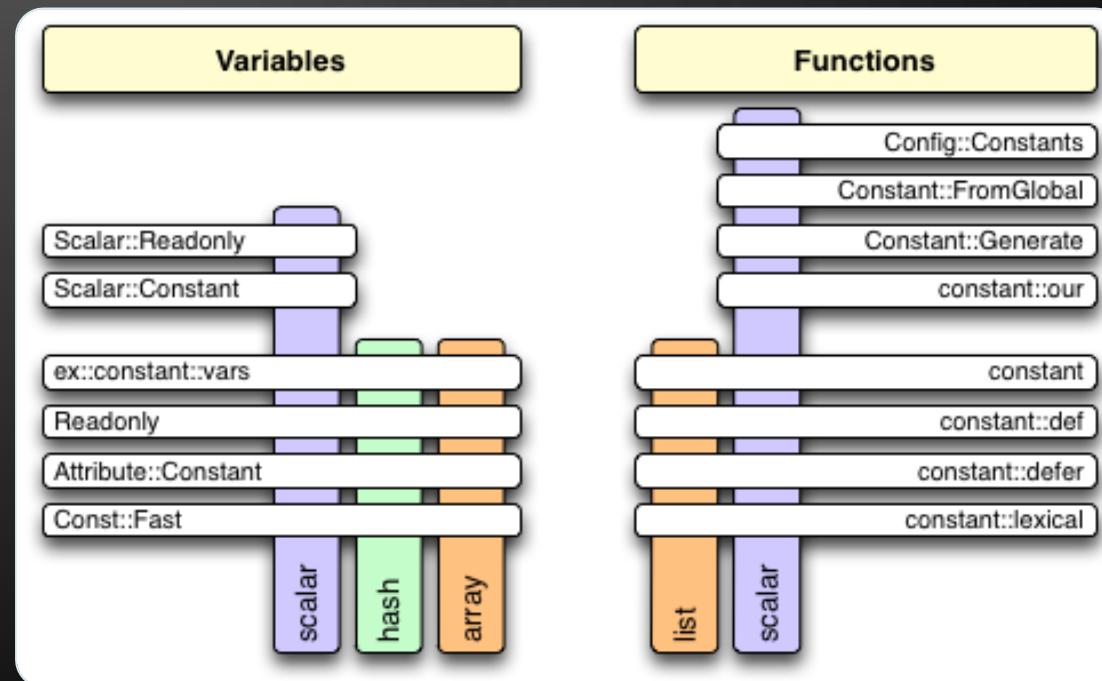
- ◆ Defining modules is done using the define function of RequireJS:
 - ◆ The name of the modules is the path of the file

```
//in file "libs/module1.js"  
  
define(function(){  
    //do stuff  
    return result;  
}  
  
define({ properties });
```

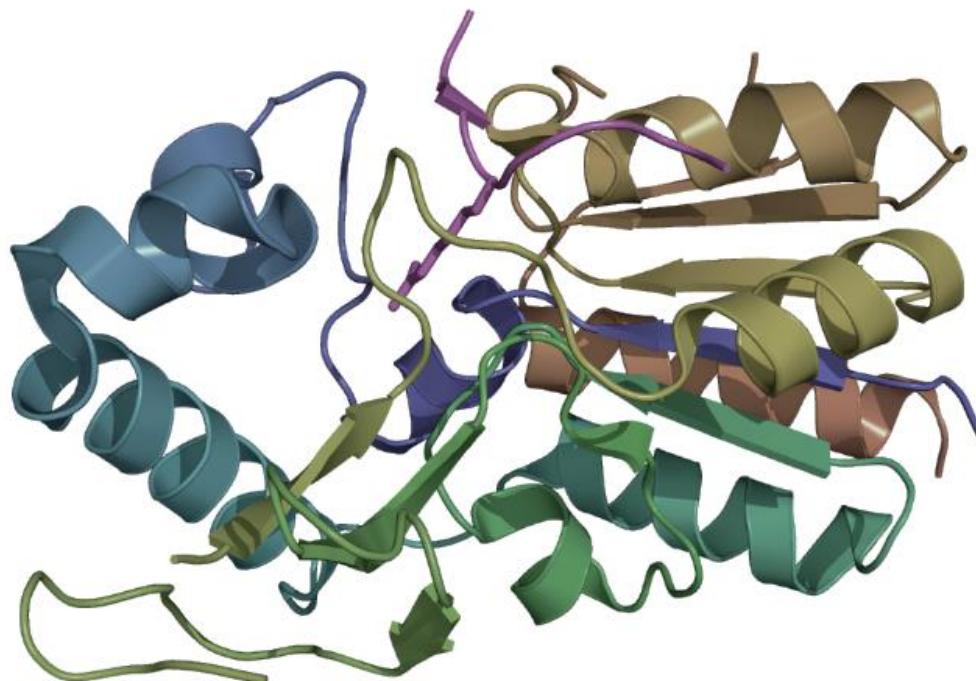
- ◆ Not all modules need dependencies
 - ◆ If no dependencies are needed, just pass a function handler or an object

Defining Simple Modules

Live Demo



Defining Modules with Dependencies



Defining Dependencies

- ◆ Some modules use another modules
 - RequireJS can "request" a file to be loaded
- ◆ Pass the names of the required module as an array in the define function
 - If any of them is not loaded, RequireJS will load it

Defining Dependencies

Live Demo

Questions?

1. Implement a ComboBox control (like a dropdown list)

- The ComboBox holds a set of items (an array)
- Initially only a single item, the selected item, is visible (the ComboBox is collapsed)
- When the selected item is clicked, all other items are shown (the ComboBox is expanded)
 - If an item is clicked, it becomes the selected item and the ComboBox collapses
- Each of the items in a ComboBox can contain any valid HTML code

1. (cont.) Implement a ComboBox control (like a dropdown list)

- Use RequireJS and handlebars.js
 - jQuery is not obligatory (use it if you will)
 - The ComboBox should have the following usage:

```
var people = [  
  { id: 1, name: "Doncho Minkov", age: 18, avatarUrl: "images/minkov.jpg" },  
  { id: 2, name: "Georgi Georgiev", age: 19, avatarUrl: "images/joreto.jpg" }];  
  
var comboBox = controls.ComboBox(people);  
var template = $("#person-template").html();  
var comboBoxHtml = comboBox.render(template);  
container.innerHTML = comboBoxHtml;  
  
//sample template  
<div class="person-item" id="person-item-{{id}}">  
  <strong class="person-name">{{name}}</strong><p class="person-age">{{age}}</p>  
    
</div>
```