



# Free your Web Apps from Speed Bumps

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PUBLIC

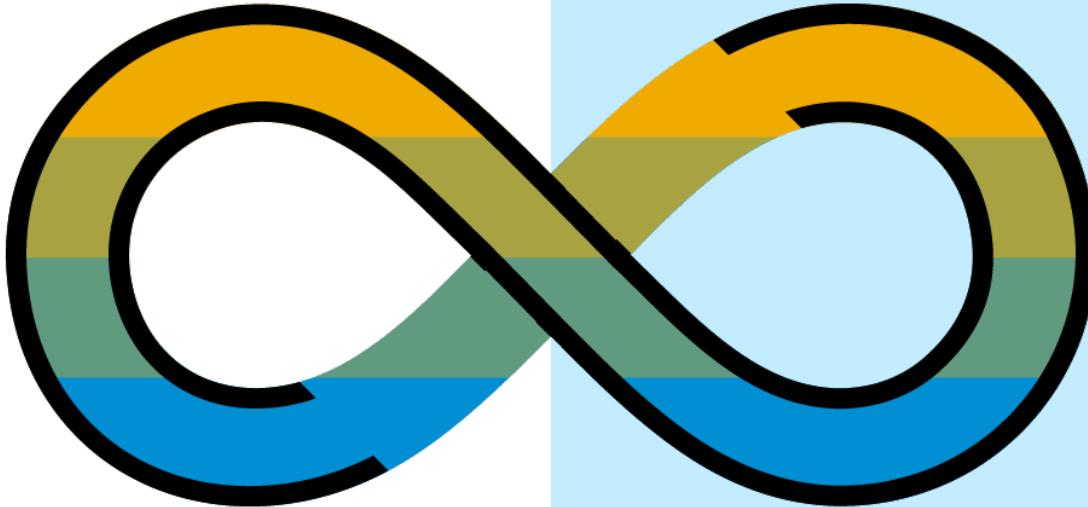


# Agenda

- Structure of this Session
- Optimization Options
- Optimization Tip
- Coding Challenge

# Structure of this Session

**General  
tips and tricks**



**SAPUI5/OpenUI5  
context**



# Optimization Options

Update your Dependencies

Benefits from updates

The latest  
features

Bug fixes

Security  
patches

Performance  
improvements



# Optimization Options

## Update your Dependencies

### The project dependencies

```
{ } package.json X
{} package.json > ...
1  [
2    "name": "devtoberfest2021-frontend-coding-challenge",
3    "version": "0.1.0",
4      > Debug
5      "scripts": {
6        "start": "ui5 serve --open index.html",
7        "serve": "ui5 serve",
8        "build": "ui5 build --clean-dest --dest dist self-contained --all",
9        "prettier": "prettier -w .",
10       "test": "run-s karma",
11       "karma": "run-s clearCoverage karma-ci",
12       "clearCoverage": "shx rm -rf coverage",
13       "karma-ci": "karma start karma-ci.conf.js"
14     },
15     "devDependencies": {
16       "@ui5/cli": "^2.11.2",
17       "karma": "^6.3.4",
18       "karma-chrome-launcher": "^3.1.0",
19       "karma-coverage": "^2.0.3",
20       "karma-ui5": "^2.3.4",
21       "npm-run-all": "^4.1.5",
22       "prettier": "^2.3.2",
23       "shx": "^0.3.3",
24       "ui5-middleware-livereload": "^0.5.4"
25     },
26     "ui5": {
27       "dependencies": [
28         "ui5-middleware-livereload"
29       ]
30     }
31 }
```

### The used UI5 version

```
! ui5.yaml M X
! ui5.yaml > {} framework > version
      ui5.yaml (ui5.yaml.json)
1   specVersion: "2.5"
2   metadata:
3     name: helloworld
4     type: application
5   resources:
6     configuration:
7       paths:
8         webapp: webapp
9   framework:
10    name: SAPUI5
11    version: 1.95.0
12    libraries:
13      - name: sap.ui.core
14      - name: sap.m
15      - name: sap.f
16      - name: sap.tnt
17      - name: sap.ui.layout
18      - name: themelib_sap_fiori_3
19    server:
20      customMiddleware:
21        - name: ui5-middleware-livereload
22        afterMiddleware: compression
23        configuration:
24          port: 35729
25          path: webapp
26
```

# Optimization Options

## JavaScript Minification and Module Bundling

- JavaScript is an interpreted language
- The source code needs to be sent via HTTP
- The code that developers read doesn't need to be the code that the machine reads
- Developers might need to debug JavaScript code in the browser
- Multiple HTTP requests lead to repeated HTTP headers

```
function insert(i) {  
    document.write("Sample " + i);  
}  
  
for(var i = 0; i < 30; ++i) {  
    insert(i);  
}
```

105 Bytes

```
function e(r){document.write("Sample "+r)}for(var o=0;30>o;++o)e(o)]];
```

78 Bytes



# Optimization Options

## JavaScript Minification and Module Bundling

Use the [UI5 Builder](#) (part of the UI5 tooling)

> ui5 build

The screenshot shows the Network tab of the UI5 Builder tool. At the top, there's a timeline from 500 ms to 4500 ms. Below it, a list of resources is shown, including 'library-preload.js', 'Component-preload.js', and another 'library-preload.js'. The right side of the screen displays the source code for 'Component-preload.js'.

```
//ui5-build.com/devtoberfest/devtoberfest2021FrontendCodingChallenge/Component-preload.js
sap.ui.require.preload({
    "com/devtoberfest/devtoberfest2021FrontendCodingChallenge/Component.js": function() {
        sap.ui.define(["sap/ui/core/UIComponent", "sap/model/json/JSONModel"], "com/devtoberfest/devtoberfest.devtoberfest2021FrontendCodingChallenge.Component", {
            metadata: {
                manifest: "json"
            },
            init: function() {
                e.prototype.init.apply(this, arguments);
                this.getRouter().initialize();
                this.setModel(o.createDeviceModel(), "device");
                const n = window.matchMedia & window.matchMedia("(prefers-color-scheme")
                const i = new t({
                    search: "",
                    lightTheme: !n
                });
                this.setModel(i, "settings")
            },
            onBeforeRendering: function() {
                $("#busyIndicator").remove()
            }
        })
    }
})
```

Request the “Debug Sources” in the [Technical Information Dialog](#)

CTRL + SHIFT + ALT + P (Windows)

CTRL + SHIFT + OPTION + P (MacOS)



# Optimization Options

## Optimize Media Encoding

All roads lead to Rome – can you spot the difference?



1.7 MB



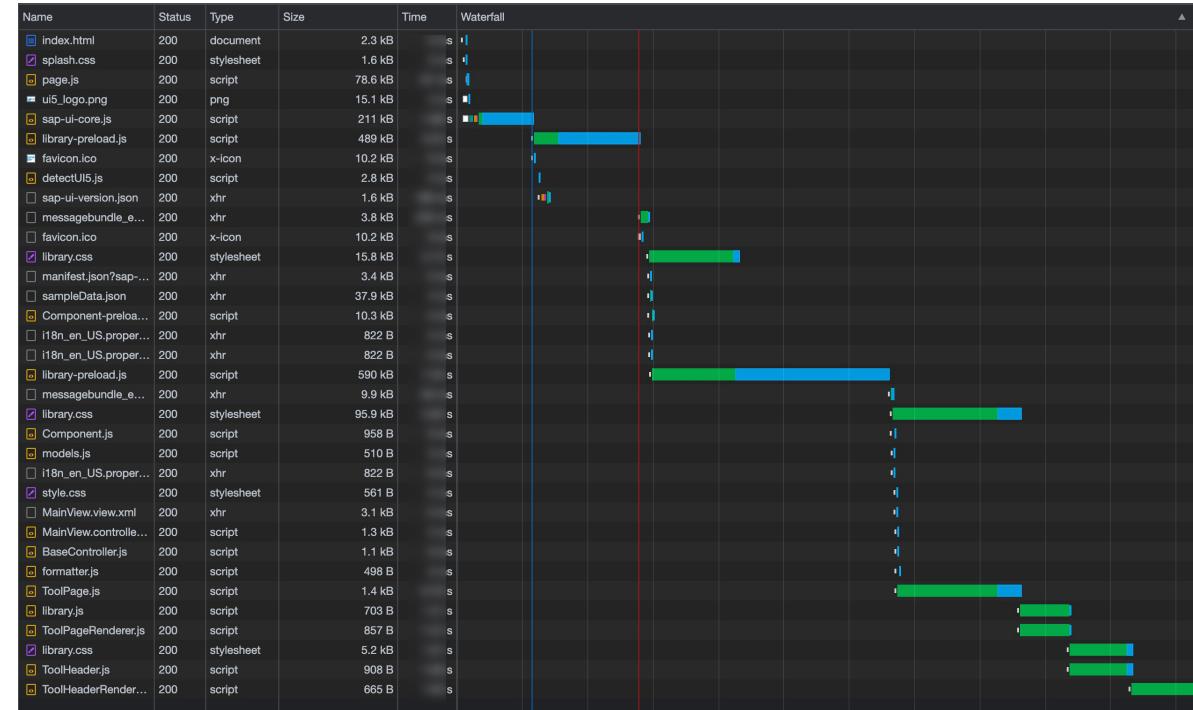
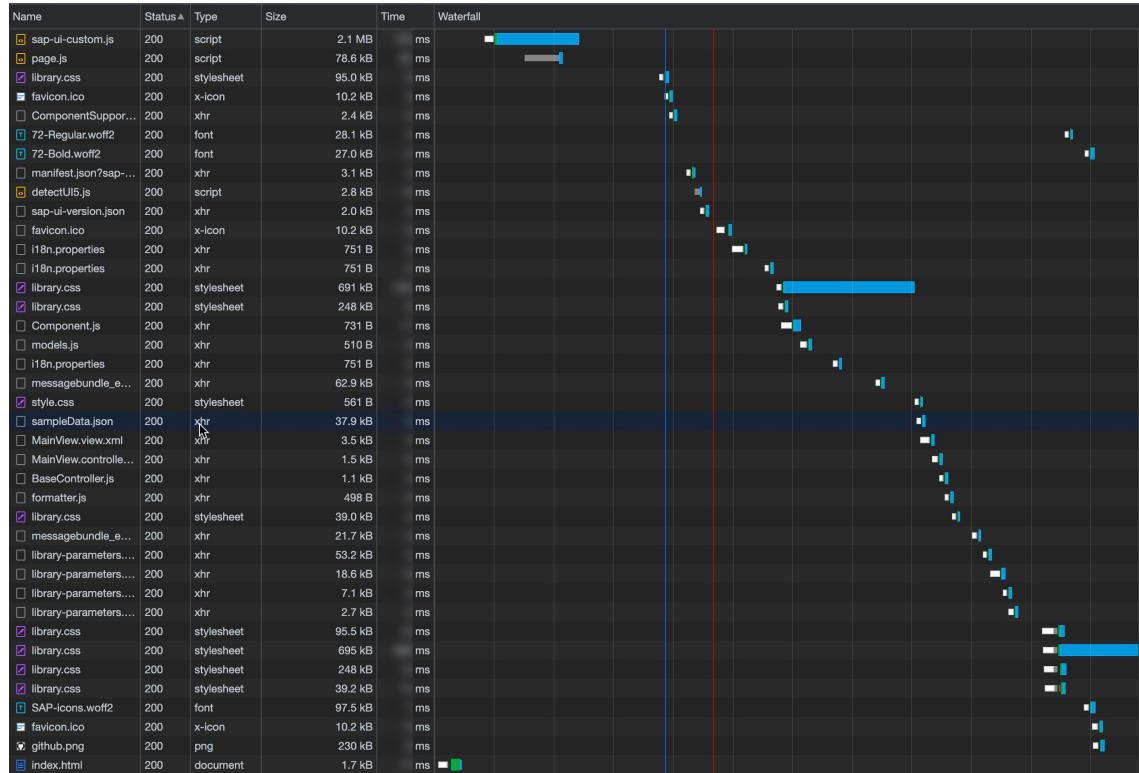
500 KB

# Optimization Options

Avoid or Minimize Blocking JS and CSS / On-demand Loading of Assets

Save time with:

- Concurrent requests instead of sequential ones
- Reduced number of concurrent requests





# Optimization Options

Avoid or Minimize Blocking JS and CSS

Enable asynchronous loading in the bootstrapping

```
<script
    id="sap-ui-bootstrap"
    src="/resources/sap-ui-core.js"
    data-sap-ui-theme="sap_belize"
    data-sap-ui-compatVersion="edge"
    data-sap-ui-async="true"
    data-sap-ui-onInit="module:my/app/main"
    data-sap-ui-resourceroots='{"my.app": "./"}'
>
```

Ensure that root view and routing are configured to load targets asynchronously

```
"sap.ui5": {
    "rootView": {
        "viewName": "sap.ui.demo.walkthrough.view.App",
        "type": "XML",
        "id": "app",
        "async": true
    },
    "routing": {
        "config": {
            "routerClass": "sap.m.routing.Router",
            "viewType": "XML",
            "viewPath": "sap.ui.demo.walkthrough.view",
            "controlId": "app",
            "controlAggregation": "pages",
            "async": true
        }
    },
    ...
}
```

Avoid 404 misses

messagebundle_en_US.properties	512 B	8 ms	1
messagebundle_en_US.properties	518 B	7 ms	1

# Optimization Options

## Caching

- Serve the same content from a previous *request*
- Caching reduces stress on the CPUs and the network
- There are multiple caching strategies:
  - In the browser ([Local Storage](#), [Session Storage](#), [IndexedDB](#))
  - Via network protocol (Content Delivery Network)
  - In the backend or database



# Optimization Options

## Caching

Consider using the [SAPUI5 CDN](#)

```
<script id="sap-ui-bootstrap"
       type="text/javascript"
       src="https://sapui5.hana.ondemand.com/1.94.0/resources/sap-ui-core.js"
       data-sap-ui-theme="sap_belize"
       data-sap-ui-libs="sap.m"></script>
```

Or use the [Service Worker API](#)

Consider using a [Cache Buster for SAPUI5](#)

```
<script type="text/javascript"
       id="sap-ui-bootstrap"
       src="resources/sap-ui-cachebuster/sap-ui-core.js"
       data-sap-ui-libs="sap.ui.core,sap.m,sap.ui.table"
       data-sap-ui-theme="sap_belize"></script>
```

# Optimization Options

## Reduce the Perceived Loading Time

A slow page can:

- cost you money
- increase the bounce rate
- “tell” users the page is broken

“But some pages might just need more time to load than others”

A splash screen can reduce these effects. It:

- can be animated or as simple as a logo
- helps to manage the users’ perceptions and expectations

# Optimization Options

## Reduce the Perceived Loading Time

Technical Articles



Roland Bouman  
March 4, 2021 | 3 minute read

### UI5 Tips: Adding a Splash-Screen / Loading indicator

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2 comments | 3 likes | 594 views | Edit

UI5 apps always take a little time to load. If you don't take any precautions, the user will be looking at a blank screen while the app is loading.

It is fairly simple to add a splash screen and loading indicator to improve the user experience. This will give your app a more professional appearance, and it will cost minimal effort.

This post shows you exactly how to do this. You might also be interested in checking out [the sample app from github](#) so you can run it yourself.

#### Running the app

The loadingscreen sample app is in the `loadingscreen` subdirectory of this repository. Simply expose the folder and all its contents with a webserver, and navigate to its `index.html`

[Check out this post](#)

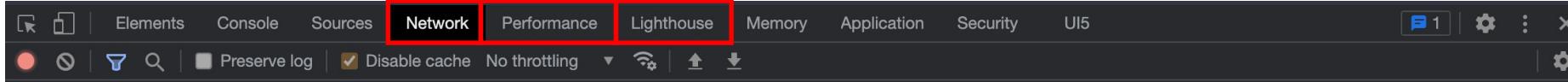
## Optimization Tip

**“Premature optimization is the root of all evil.”**

Donald Knuth

# Optimization Tip

## Use the Dev Tools of Your Browser



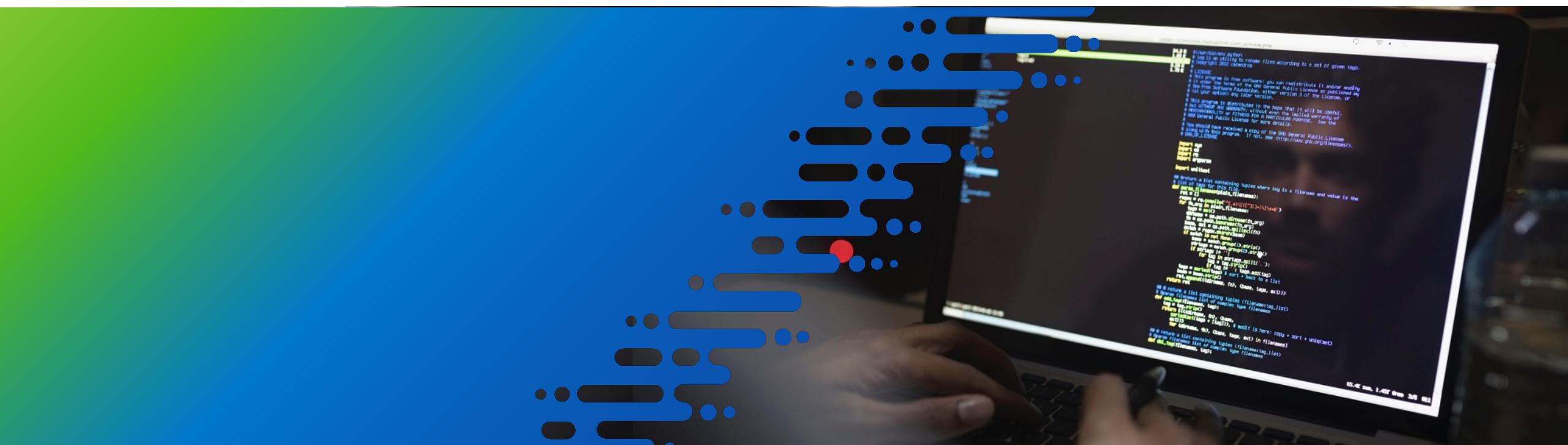
- Network trace
  - Which requests failed?
  - How long they are stalled?
- Performance profiler
  - Which jobs take the most time?
  - Drill down into JavaScript functions
- Lighthouse report
  - Get a numeric performance score
  - Get suggestions for improvements

# Coding Challenge

It's your Turn

1. Fork and clone the [repository](#)
2. Install the dependencies
3. Start the server
4. Optimize the app to a performance score of at least 75
5. Commit and push the fixes
6. Open a PR and see the result

# Demo Time!



# Resources

- [12 Steps to a Faster Web App](#)
- [UI5 Performance Checklist](#)
- [Devtoberfest Repository](#)
- [Devtoberfest Gameboard \(replace “yourId” in the URL\)](#)
- [Coding Challenge \(Week 6\) Repository](#)



# Thank you.

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