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ECMAScript 6 - Language Features

Corresponding Author [1,*], Co-Author [2] and Co-Author [2*]

[1]Department of XXXXXXX, Address XXXX etc.
[2]Department of XXXXXXXX, Address XXXX etc.

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ABSTRACT

Motivation: ECMAScript is the underlying standard for a programming languague usually embedded in HTML Code to add dynamic interactivity to web documents. Almost every Web Developer has heard about this wide spread Language and came to the point using Javscript for her or his project. As time passes by, the use of JavaScript in practice has shown it's benefits and weaknesses. That makes it important to stay up to date with the current and upcoming language standards for this very potent programming language. In this article we're going to have a closer look at the upcoming JavaScript language standard which is ECMAScript Version 6. After making clear

Results:

Availability:

Contact: name@bio.com

0.1 What is ECMA Script

0.1.1 ECMA International ECMA International is a not-for-profit association in Geneva. Their target is to develop and publicate standads and technical reports for information and communication technology and consumer electronics. The corresponding standard is ECMA-262 specification and ISO/IEC 16262

0.1.2 Next standard for JavaScript ECMAScript 6 was standartizede by ECMA International and is the next standard for Javascript. The actual version currently used for JavaScript is ECMAScript5.1 Browser vendors can use it as an orientation for their own JavaScript implementations.

0.2 History

ES1 - 1997 First ECMAScript standard released by ECMA International, named ECMAScript Version 1.

ES2 - 1998 One year after the release of ECMAScript Version 1, editorial changes were made to align ECMAScript with the ISO/IEC international standard 16262.

ES3 - 1999 Modern language features were added in ECMAScript Version 3. Some examples are regular expression support or exception handling with try and catch.

ES4 - (—-) After the first set of changes made in ECMAScript Version 3, some members of ECMA International planned a set of breaking changes for Version 4, after a huge discussion about backwards compatibility Version 4 was finally abandoned.

ES5 - 2009 After endless debates and discussion, the plan for breaking changes was temporarily freezzed and reduced to the clarification of JavaScript ambiguities with the introduction of the strict mode.

ES5.1 - 2011 A second set of editorial changes in ECMAScript History were made to align it again with theISO/IEC standard 16262.

ES6 - 2015 ECMAScript 6 (aka JS Harmony) is scheduled for june 2015. It will be the most extensive standard since ECMA Script Version 1 was released. Due to the fact, that ES6 just adds syntax features on top of ESCMAScript 5.1 the backward compatibility is guaranteed. The major changes made in ES6 also work as a foundation for the following features planned for ES7

ES7 - (tbd) At May 2015 ECMAScript Version 7 is in a very early draft state.

0.3 Benefits of ECMAScript6

0.3.1 Suitable for large code bases The new ECMAScript Version 6 provides modules an classes which makes the prior used patterns (e.g. module pattern) obsolete and gives the possibility for clean easily readable code which makes ES6 suitable for bigger projects. Thanks to the syntax improvements the boilerplate is reduced which leads to less lines of code and with proper usage to reduced maintenance effort and easier extensibility.

0.3.2 Straight forward migration of existing code As ES6 only adds new features on top of ECMAScript 5.1 the migration of existing code is very easy, wich means that no code must be rewritten to make the code base fit for the new standard.

1 WEB APP

1.1 ESnake6

1.2 Architectural Overview

1.2.1 Build Process To build ECMAScript 6 applications while the standard is still in a draft state, we used a ES6 to ES5 compiler.

*to whom correspondence should be addressed

After writing the App the ECMAScript Version 6 source files will be translated into ECMAScript 5.1. while the used HTML and CSS files as well as the included libraries will be copied. After the translation into ECMAScript 5.1 the project can be run with RequireJS modules and Sourcemaps

1.2.2 Libraries and Technologies The used technologies in the app include the Bower package manager, which was used to mange client side libraries. The task runner gulp automated the build system. For the sake of testing http-server was used to serve static files. The RequireJS Module system handles asynchronous loading of javascript. The Loadash utility library provides fuctions for working with lists (e.g. map, filter, last). Finally the Babel compiler compiles ECMAScript 6 into ECMAScript 5, which is understood by all modern browsers. This specific compiler accepts a flag which causes the compiler to translate modules to RequireJS syntax.

1.2.3 Application Strucutre

1.2.4 Project Structure The app folder contains the nescessary HTML, CSS and JavaScript (ECMAScript6) code. The application entry point is the

2 ECMA SCRIPT LANGUAGE FEATURES

2.1 Code Organization

3 DISCUSSION

As it's possible to extend existing projects with ECMAScript 6 code, the question comes up if a mixture of known concepts like the Module Pattern and the new Module System doesn't create confusion.

4 CONCLUSION

- ECMAScript 6 adds on top of ECMAScript 5 and thus maintains backwards compatibility which makes it easy to extend existing projects with new ECMAScript 6 code.
- Many syntax improvements enable the programmer to reduce boilerplate and reduce maintenance efforts.
- Thanks to Modules and Classes code organization gets a lot easier and makes ECMAScript 6 suitable for bigger projects.

To use ECMAScript 6 today, you can use an ES6 to ES5 compiler e.g. Babel or Traceur. The development experience gets very pleasant thanks to sourcemaps. For new runtime features you can also use polyfills (e.g. core-js).

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