How modern Web Browsers work[1]

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[1] Special Topic for the Module "Entwicklung Webbasierter Anwendungen"

Objectives:

- *Learn about the basic building blocks of modern Web browsers*
- *Get acquainted with the processing internals and the DOM building logic*
- *Understand what happens inside the browser when you type in an URL*

Contents

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1 Preface

> *In the years of IE 90% dominance there was nothing much to do but regard the browser as a "black box", but now, with open source browsers having more than half of the usage share, it's a good time to take a peek under the engine's hood and see what's inside a web browser. Well, what's inside are millions of C++ lines...*
>
> —Tali Garsiel

This lecture note is a revised summary of the excellent article "How Browsers Work: Behind the scenes of modern web browsers" by Tali Garsiel and Paul Irish, published in 2011. The original article is available at: `https://www.html5rocks.com/en/tutorials/internals/howbrowserswork/`.

There is also a video available at vimeo about Tali's talk: `http://vimeo.com/44182484`.

The information and facts about the internal operations of WebKit and Gecko is the result of much research done by Israeli developer Tali Garsiel. Over a few years, she reviewed all the published data about browser internals and spent a lot of time reading Web browser source code. Tali published her research on her site[2]. In the following years, her research results have been revised and republished on numerous occasions.

[2] See `http://taligarsiel.com/`

Why should you learn about browser internals?

Learning the internals of browser operations helps you make better decisions and know the justifications behind development best practices. It also helps you to identify performance bottlenecks and build lightning fast websites. As we will see, page loading time has an influence on the Google page rank—a page loading time > 2 sec. results in a lower rank in the Google search results and the Google crawler also crawls such pages less frequently, meaning that search index terms are less frequently updated and the time until new or updated page content will be considered by the Google search engine is extended.

TODO: Add refs

2 *Introduction*