

How modern Web Browsers work¹

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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

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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 site². 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.

2 Introduction