

RegEx Search & Replace Extension for Chrome and Firefox

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BSc Hons Project Report
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2018

Abstract

The aim of this project was to build a browser extension to allow users to search and replace text with regular expressions in editable text input fields of web pages.

After evaluating existing extensions that were unsuccessfully attempting to implement this functionality, the new extension has been carefully designed, developed, and finally successfully released for Chrome and Firefox browsers.

In addition to the future-rich search and replace function, this plugin also adds the ability to save favorite patterns, store search history, or predefine text templates that can be inserted into the editable area of a page.

The software followed an iterative development process, where user feedback was collected via several means, including Google Analytics, which was used to track user interaction, and a support website used to collect user feedback comments.

After the initial release, about twenty updates have been subsequently released over the span of a few months. This iteration was further supported by automated tests of several kinds.

The extension has received excellent reviews and at the time of writing has over 3000 weekly users (users from both browsers combined).

Acknowledgements

Thanks to

- Boris Grot - for supervising the whole project, and making important feature suggestions leading up to the first official releases of the extension on the Chrome and Firefox web stores
- Michael O’Boyle - for making suggestions, especially regarding Google Analytics
- Christoph Metze - for finding several important bugs that subsequently led to releases 1.3.2, 1.3.3, and 1.3.4
- Daniel Tomberlin - for pointing out a use case when trying to search across multiple single-line inputs, and for updating his web store rating and review after I implemented it in 1.3.6
- GitHub user [MarkRH](#) - for finding a bug that was later fixed in 1.1.3
- StackOverflow user [wOxxOm](#) - for suggesting `Document.execCommand` API that I used to fix issues with templates in 1.2.0

And also thanks to all those people who submitted user feedback or reviews.

Declaration

I declare that this thesis was composed by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or professional qualification except as specified.

(Dalimil Hajek)

Table of Contents

1	Introduction	9
1.1	Motivation	9
1.2	Existing Extensions	10
2	Background	13
3	Design	15
3.1	User Interface	15
4	Implementation	17
5	Evaluation	19
6	Conclusions	21

List of Figures

1.1	Google Chrome browser find tool	10
1.2	Mozilla Firefox browser find tool	10

Chapter 1

Introduction

Modern web browsers allow users to find text in a web page, but when it comes to editable text areas that are often used on blogging platforms, online forums, social media, and email web clients, as a form of user input, none of the existing browsers allow users to also replace the found occurrences.

The aim of this project was to build an extension that adds this browser functionality. The tool allows users to find and replace text in editable text input fields of web pages, and includes a large set of features and search options, including regular expression support and occurrence highlighting.

1.1 Motivation

Search and replace functionality can be extremely useful when composing long emails, writing posts on social media, online forums, or blogging platforms, as well as in any email web clients.

The most frequent use cases are:

- Fixing a typographical error – A word or a phrase may have been used several times with the wrong spelling. This can reoccur several times in a forum post or an email, and it would be convenient to replace everything at once.

This also includes fixing unreadable characters in blog entries such as `Â€?`, due to a change in encoding or some unintended text handling.

- Normalizing incorrectly formatted text – Regular expressions can be used to detect formatting errors such as multiple spaces before a period, missing upper-case letter, various metric unit formatting errors, and similar. Search and replace extension supporting regular expressions can quickly find and fix these.
- Renaming a phrase – Often a word or a phrase that occurs several times throughout a text needs to be corrected or substituted (perhaps using a synonym or a wording that sounds better)

Without having a browser extension for search and replace, one could imagine a solution where all text is copied and pasted into an advanced text editor, fixed using the built-in search and replace function, and copied back into the web page input field.

In addition to being a lengthy and time consuming process, this method would in many cases lose all text formatting, because more advanced editable text elements on the web may contain images, emojis, and text containing many formatting tags, which would not be preserved during the copy-pasting.

Additional motivation behind the development of this project was to add search-and-replace related features that are missing even from the more advanced text editors. One of them is storing the search history, and also being able to save favorite search patterns, that can later be quickly accessed. Both of these would save time and increase user productivity.

1.2 Existing Extensions

Web browsers support standard search functionality for any text on a page but no browsers have the find & replace functionality. Users have asked for this feature on Google Chrome forums¹, but the decision of browser developers was to leave the implementation of this functionality to potential text-processing web applications, rather than implementing it as a part of the browser.

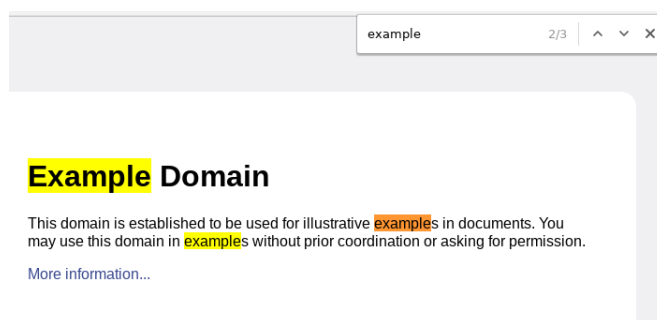


Figure 1.1: Google Chrome browser find tool

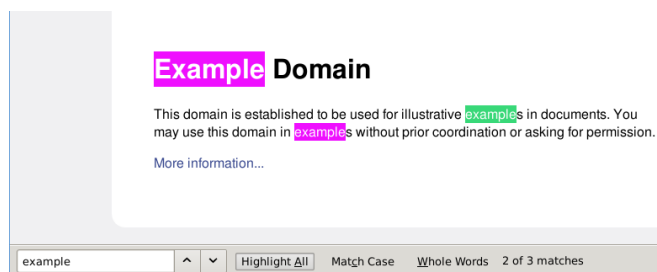


Figure 1.2: Mozilla Firefox browser find tool

¹Google Chrome Forum link: <https://productforums.google.com/forum/#!topic/chrome/Y4UORlpdYfo>

There have been several attempts to implement this functionality via an extension. Most of them either don't work, are missing functionality (particularly support for regular expressions), are limited to certain websites, or are counter-intuitive and hard to use in general.

Chapter 2

Background

Chapter 3

Design

3.1 User Interface

Chapter 4

Implementation

Chapter 5

Evaluation

Chapter 6

Conclusions