

NATIONAL COMPETITION "YOUTH TALENTS"

TOPIC OF THE PROJECT

Website Chronometer

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1 Introduction

"*Website Chronometer*" represents a supplement to the Internet browser "Google Chrome". Additives are software programs that can change and improve the functionality of the browser.

Our Chrome extension provides an opportunity to limit the access to a site after the expiry of the set by the user time. The web page can be visited again after midnight when the timer is reset and the additive is entirely overcharged.

The project is intended to increase the concentration of people by limiting the time spent in useless websites. They unintentionally lose more time than suggested, surfing the Internet while looking through photos or publications, which reduces their productivity repeatedly. The idea of this development is by setting a permitted amount of time by the user himself, to restrict access so he can spend more time on the important and valuable things than losing time on Internet pages.

Chrome extension works by recording the fixed by the user URL address and comparing it with the active one. When they are the same, a timer is activated which can recognize the website that is used at the moment and does not take into account the timer for other at the moment inactive web pages. The user has the option to choose a number of minutes and when the timer reaches them, the Chrome extension will automatically terminate the access to the web page as begins to redirect the user to the search engine of Google Chrome each time when trying to open the page. The access is restored after midnight when the user has the option to select the site and allowed minutes again.

2 Structure

Particularities for the created "*Chrome extension*" shall be declared in the main file "*manifest.json*", containing the name, description and version of the additive.

The role of this file is to send information for the functions of the Chrome

extension to the browser.

For our Chrome extension is needed "*activeTabpermission*", which provides access to the active web site and "*tabs permission*", providing the URL address.

Furthermore this file indicates the two resource files using "*browser_action*", forming the design of the Chrome extension. In this way is implemented user interface.

2.1 style.css

CSS is a language for the description of styles. We use it together with the HTML to describe the presentation of the Chrome extension. It includes the size of the "*popup*" field as well as the location of "input" fields and buttons in it.

2.2 icon.png

This is an image that is positioned on the right of the browser and when pressed activates the window, called "*popup*", in which are assigned tasks for the implementation. It shall be declared in the main file.

2.3 popul.html

This is a standard HTML file, creating the pop-up menu in response to a single click of the user "icon.png". It shall determine its contents, responsible for user interbase. In our case it includes two input fields and two button as well as a website and timer, which are recorded after the start of the Chrome extension.

2.4 popup.js

This JavaScript file performs the actual logic of the pop-up window. It can accept the values recorded in the input fields of "*popul.html*", and to transmit them to the files that are in need of this information.

2.5 content.js

This file is needed if the Chrome extension must have access to the web pages and to communicate with them. It is a part of the internet sites that the user visits and not of the Chrome extension. This is the only file that has access to the details related to the visited web pages and has allowance to make changes in them and to record data.

"*Content.js*" communicates with the Chrome extension and other files through message passing and requests to "background.js".

2.6 background.js

This represents the invisible page that contains the main logic and controls the behavior of the Chrome extension. In the local storage of "*background.js*" in the form of the variables shall be stored and processed all the information since this is the only file that can receive information not only from "*popup.js*", i.e. data entered by the user, but also from "*content.js*", i.e. information about the content of the web pages. This file is the link between the two files.

3 Technical realization

The project is being realized through the transmission of information by means of communications between the "*content.js*", "*background.js*" and "*popup.js*" and use of the local storage as database.

3.1 Local storage

Local storage is memory on the Internet browser which allows recording of information without time limit. Furthermore the recorded data are saved even after closing the browser and shutting down the computer, which is of great importance for our Chrome extension. Also the local storage facilitates multiple access to data as they are not lost.

3.2 URL

When entering the URL address from the user, "*popup.js*" records it in the local storage and "*background.js*" takes the value from there and saves it as the value of the variable "*websites*" respectively in its local storage.

Simultaneously, "*content.js*" detects active web site and records its URL address. "*Background.js*" inquire to "*content.js*" for this value and after its receipt, saves it as a local variable "*sentURL*". So "*background.js*" compares the entered URL address, which is taken from the local storage and the active web site.

Through a series of several checks in the code is carried out face detection on the site regardless of the type of its recording in the input field. For example "*www.abv.bg*", "*abv.bg*" and "*http://www.abv.bg/*" are all adopted by the "*popup.js*" and transmitted by messages to "*background.js*"

3.3 Timer

The user has the option to set a limit on the amount of time spent in the chosen by him web site in the form of minutes. Similarly the situation with the set URL, "*popup.js*" saved the selected time in its local memory and "*background.js*" take the value from there and saves it as a numerical value of the variable "*time*" respectively in its local memory.

Simultaneously, when overlapping of active and preset web site, it enters a function. The extension activates the timer that is recorded as the value of the numeric variable "*countdown*" in the local memory of "*background.js*". This numerical variable changes its value each one second as happens with the unit more. On exit from the function variable retains its value and in re-entering this value will not be reset.

3.4 Termination of access to the web site

When the time the user spent in a web site coincide with the set in the beginning, the user is automatically redirected to the search engine of "*Google Chrome*".

This role shall be carried out in the following way. In "*background.js*" are compared the selected and the activated timer. They match when the following is true equality: $60 * \text{the value of the variable "countdown"} / \text{the value of the variable "time"} /$, since this equalizes the units. If equality is true, "*background.js*" sends a message to the "*content.js*", at whose obtaining the consumer shall be redirected to the online search engine.

4 Description of the Chrome extension

Pressing the icon located in the right hand corner of the internet browser "*Google Chrome*", pops up a window with one input field "*Choose your website*", in which should be introduced the URL of the desired for monitoring site. By pressing the button "*Add*", the URL is stored in the memory and can be visible to the user in the pop-up window until being replaced.

When the web page is entered in the box, appears new input field in which the user enters the time allowed for access in minutes. The value shall be adopted after pressing the "*Set*" button.

5 Used technologies

For implementation of the project are used the following languages for programming: JavaScript, HTML, CSS. It is also used the jQuery JavaScript library.

Additives join all files in one archived .crx file, which can easily be downloaded and installed by the internet users.

Doing it is a quick and easy access to the Chrome extension. After the implementation of the user interface, we make the small icon in the right from the internet search engine thanks to "*browser action*" in file "*manifest.json*".

6 Achieved results

It is created a completely free software program operating fully for one web site.

Detailed are reviewed browser additives with similar functionality and similar aims. It is paid particular attention to the opinions and criticism of their users. Cons of these additives are established and our extension tries to eliminate part of them and to turn them into their own advantages.

For this purpose, our program only takes into account the active web site and not the remaining open pages. This is a problem for many of the people, using other browser additives, because while looking for information on the internet for their project, the timer takes into account the time for the site, which is not actively used. Our extension cope successfully with this problem.

7 Conclusion

The Project represents a supplement to the Internet browser "*Google Chrome*", accessible for all users. It is suitable for people who wish to increase their concentration and productivity. Especially recommended is for those with a laden everyday life without time to lose. The Chrome extension is made in support of students who stay with hours over computer without to realize how valuable time is lost in the pointless things.

The style of the Chrome extension is extremely facilitated and simplified, which gives the opportunity to be used by people without special knowledge in the field of programming and information technology.

The Chrome extension is entirely in the English language with the aim of wider spread outside the boundaries of Bulgaria.

8 Future Development

In the future we aim to make the Chrome extension efficient for countless many websites.

Sites will be able to be divided into categories according to the time after which to be blocked. I.e. for each site the user will be able to choose a different allowed time. This means that if there are n introduced site, it will have n separately activated timer.

Furthermore, every user will have the chance to choose a site to which to be redirected after the expiry of the permitted amount of time. This site may be different for each one of the recorded URLs.

For greater convenience of the user the remaining seconds will be displayed in the corner of the site, so there is no need for the user to open the pop-up field each time.

9 References

- [1] "<https://developer.chrome.com/extensions>", last visited on 09.04.2016
- [2] "<http://stackoverflow.com/> last visited on 07.04.2016
- [3] "<https://robots.thoughtbot.com/how-to-make-a-chrome-extension> last visited on 16.03.2016
- [4] "<http://code.tutsplus.com/tutorials/developing-google-chrome-extensions-net-33076> last visited on 28.03.2016

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Application

/Website Chronometer/

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1. Pop-up window

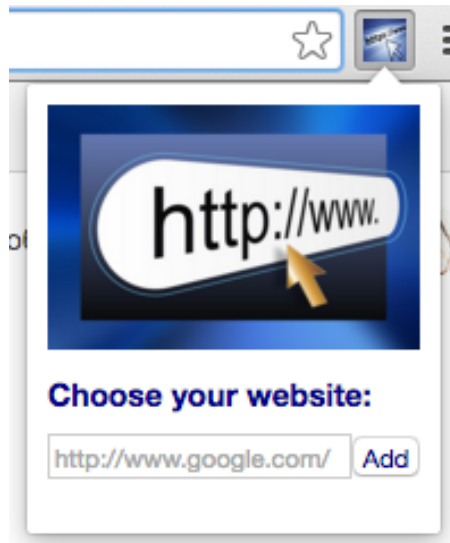


Fig. 1 Home screen

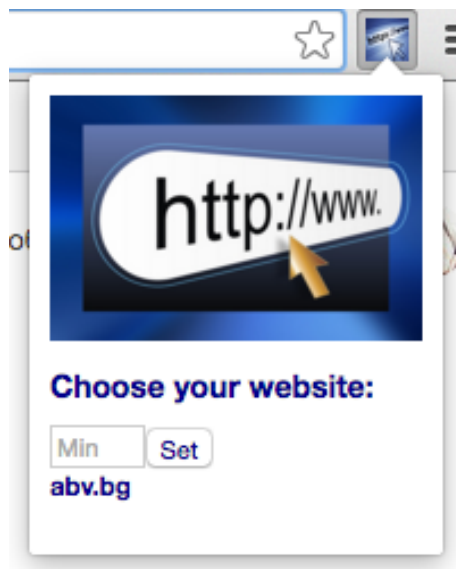


Fig. 2 Screen after selecting the URL address

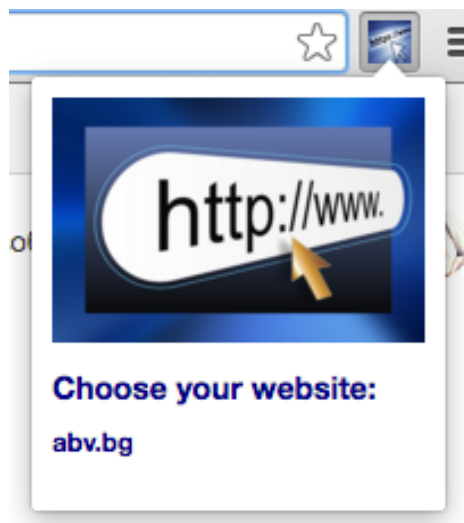


Fig. 3 Screen after selecting the time

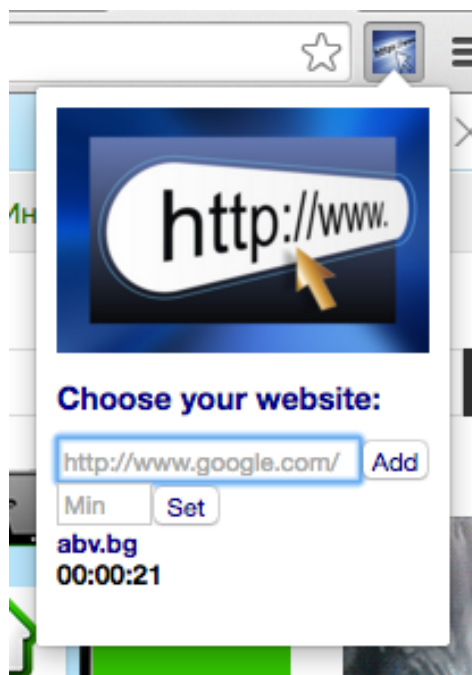


Fig. 4 Screen while staying on the selected website

2. Structure of the Chrome extension

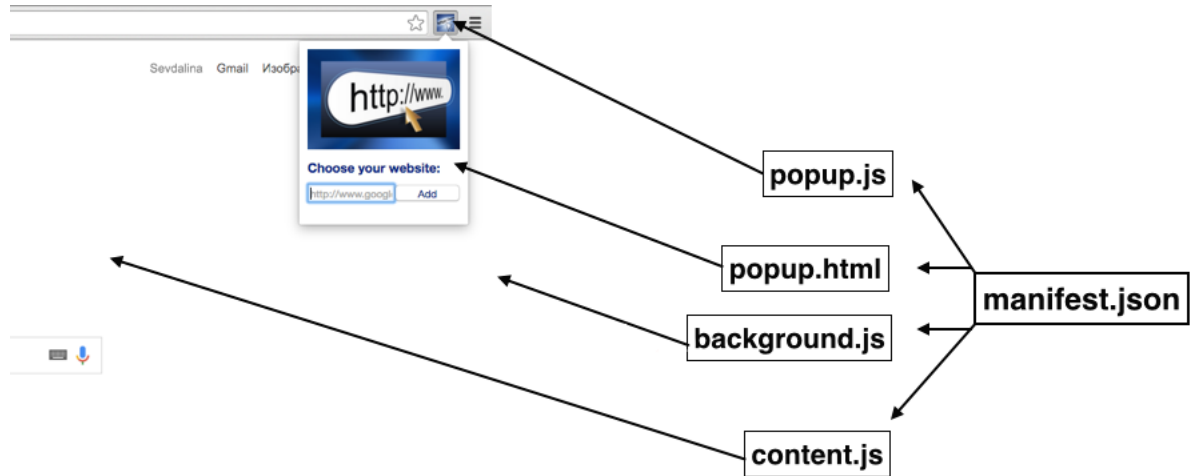


Fig. 5 Structure of the extension