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## THE MOST SEARCHED FOR ITEMS IN ELIBRARY

**Abstract:** Since 2007 we have been developing eLibrary as Internet oriented digital library of retro-digitized books and various documents. In order to increase its visitation rate, we made items in our repository visible to Internet search engines, particularly the Google one. We achieved this goal by using Google Webmaster Tools, free web service provided by Google to help webmasters optimize visibility of their websites. This tool produces detailed reports for searched items and also marks number of clicks and search position for every item shown in the search result. The statistics according to the various search criteria for most searched for items in the repository are also presented

**Keywords:** Digital Repository, Search Engine, Google

### Introduction

The number of items in our digital library eLibrary ([elibrary.matf.bg.ac.rs](http://elibrary.matf.bg.ac.rs)) has been steadily growing in the past seven years. At the moment it contains about 3500 retro-digitized books, doctoral dissertations and other documents. In addition to the people familiar to the Internet location of library, we wanted the library content to be accessible to a wider range of users. We achieved this goal by making this content visible to the Google search engine.

Google Webmaster Tools is a web service which provided this utility. In this paper we show the main features of this useful service and present the statistics of the most searched for items in our digital repository. All reports are created based upon search activity between February, 1<sup>st</sup> and April, 30<sup>th</sup> 2014 (*Figure 1, Figure 3*).



Figure 1

### 1. Webmaster Tools

Google Webmaster Tools is a free web service which is accessible for all registered Google users. In order to make a website visible to Google search engine, it is required to

submit URL of website's sitemap and prove the website's ownership by uploading verification HTML. Then it allows Google "crawlers" (programs such as robots or spiders) to scan and explore submitted website by following links provided in sitemap.

Webmaster Tools offers several functionalities which are accessible for logged user through links on the left side of webpage (Figure 2). Site Dashboard contains basic information about current website status (crawl errors, search queries statistics, website's sitemaps). In Site Messages there is a listing of automatic messages sent by Google crawlers. Search Appearance section allows the user to improve appearance of results from your website in Google search. Search Traffic gives detailed reports about search activity on the website (search queries and links statistics, links to your site from other websites). Google Index section offers overview of index status and content keywords used by Google search engine. In Crawl section there are reports about crawler activity (crawl errors, crawl stats). Security Issues informs user about website security problems.

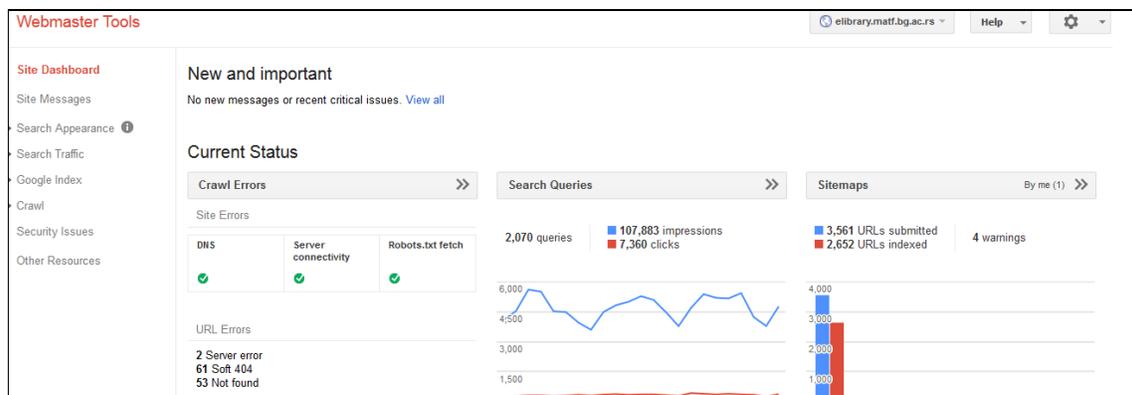


Figure 2

The Site Traffic section provides various information about the performed search, such as the number of clicks per item and position in search results.

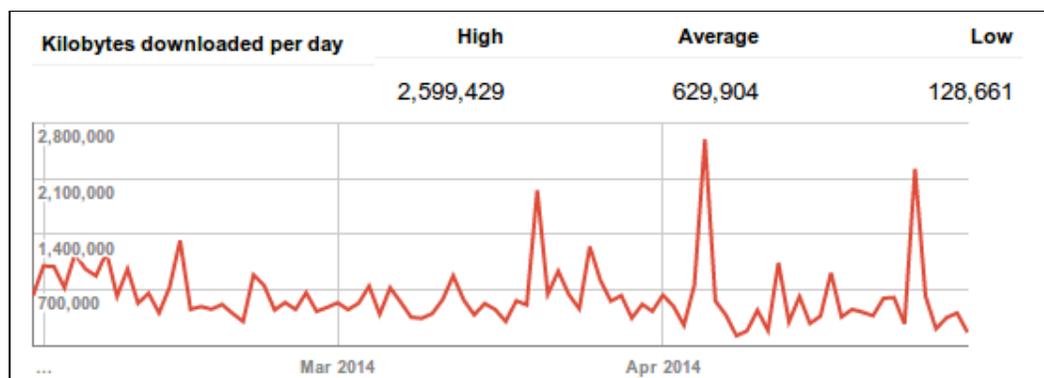


Figure 3

All these results can be filtered by a few criteria: country from which the search was executed and what type of Google search service was used (Mobile, Images, Web).

We extracted ten top searched for items in Web and Mobile search category and top search for items in each of the countries from which users accessed our repository.

## 2. Web top search

In the list of top ten searched for items from Google Web search service (*Figure 4*) there are five master thesis defended at the Faculty of Mathematics. Other items are mostly textbooks (three of them), one etymology dictionary of the Serbian language and one popular science book by Serbian prominent scientist Milutin Milanković.

URL	Impressions <sup>1</sup>	Clicks <sup>2</sup>	CRT <sup>3</sup>	Avg. pos. <sup>4</sup>
Elementary combinatorics	6680	985	15%	6.2
Development of term function through primary and high school	10143	969	10%	12
Logarithmic and numeric tables	2511	649	26%	3.7
Information technologies in teaching in Serbia and Denmark – a comparative analysis	2903	527	18%	5.4
The Golden intersection	6863	455	7%	7
Approach to teaching geometry	3894	413	11%	8.1
Etymology dictionary of Serbian Language 1	2977	382	13%	7.3
Improving math teaching in third grade by using GeoGebra	4658	372	8%	8.1
Through Space and centuries	1744	356	20%	5
Numeric methods	2487	314	13%	4.3

Figure 4

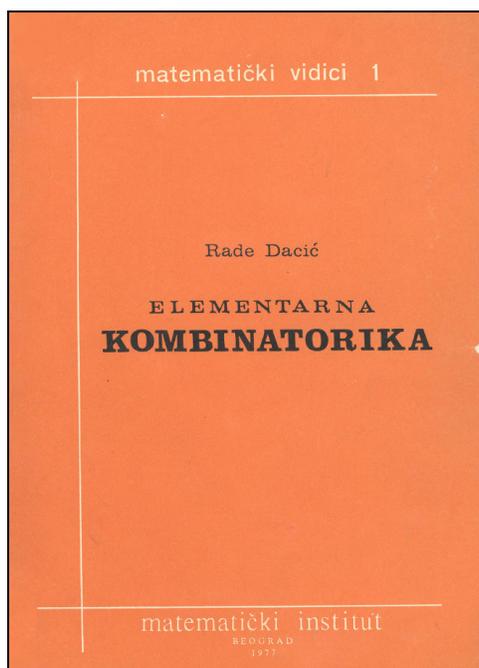


Figure 5

<sup>1</sup> The number of times an item appeared in search results

<sup>2</sup> The number of times a user clicked item's listing in search results

<sup>3</sup> Clickthrough rate: the percentage of impressions that resulted in a click

<sup>4</sup> The average top position of item on the search results page

*The most searched for item is the book “Elementary combinatorics” (*

*Figure 5)*, written by Rade Dacić, published by the Mathematical Institute in 1977. It is a textbook about basic combinatorics intended to be used by students, engineers and economists. The book is written in Serbian.

Another one is the book “Logarithmic and numeric tables”, issued in 1973 and written by Vojislav Mišković. It is a handbook which includes logarithmic tables and tables of approximate values of elementary functions. In the past it had been a very useful tool for students before powerful modern calculators appeared.

The book “Through Space and centuries” is the oldest book on this list. It was published in 194, its author is a famous Serbian scientist Milutin Milanković. The book contains thirty seven letters to an unknown female person. There Milanković writes about astronomy, but also about his childhood, education and his scientific work. It can be described as a partly biography – partly as a popular science book.

“Etymology dictionary of the Serbian Language” by the author Aleksandar Loma is the only one item from the list that belongs to the field of humanitarian science. It is a very popular edition published in 2003 by the Institute for the Serbian Language.

The last item in our list is university textbook “Numeric methods *Workbook through C, FORTRAN and MATLAB*” by a group of authors from the Faculty of Mathematics in Belgrade (Desanka Radunović, Aleksandar Samardžić and Filip Marić). They presented a collection of different numeric problems and their solutions implemented in specified programming languages. The book is used as a course material for several subjects at this faculty.

### 3. Mobile top search

In this group of items (*Figure 6*) there are four items different from those in the previous one. The major part of the list belongs to master theses, five out of ten items. There are two textbooks, one from combinatorics and another from logarithmic and numeric tables, one book about logic, Milanković's book and a new book from etymology.

URL	Impressions	Clicks	CRT	Avg. pos.
Logic	500	74	15%	6.6
Development of term function through primary and high school	642	63	10%	4.3
Logarithmic and numeric tables	414	61	15%	3
Through Space and centuries	293	56	19%	5.8
Elementary combinatorics	642	55	9%	5.9
The Golden intersection	740	36	5%	6.3
Squaring the circle	647	30	5%	8.9
Mathematics in the Biblical text	552	30	5%	7.8
Approach to teaching geometry	268	30	11%	2.7
Etymology and small folkloric forms	736	27	4%	5.7

Figure 6

The top searched for item in this category is a translation into Serbian of a Russian book “Logic” (*Figure 7*) written by Nikolay Losskiy, a professor of philosophy at the University of Petrograd. The book was published in 1927. The book is philosophical logic and presents foundation of the notion of proof and the logical derivation on the university student level [3].

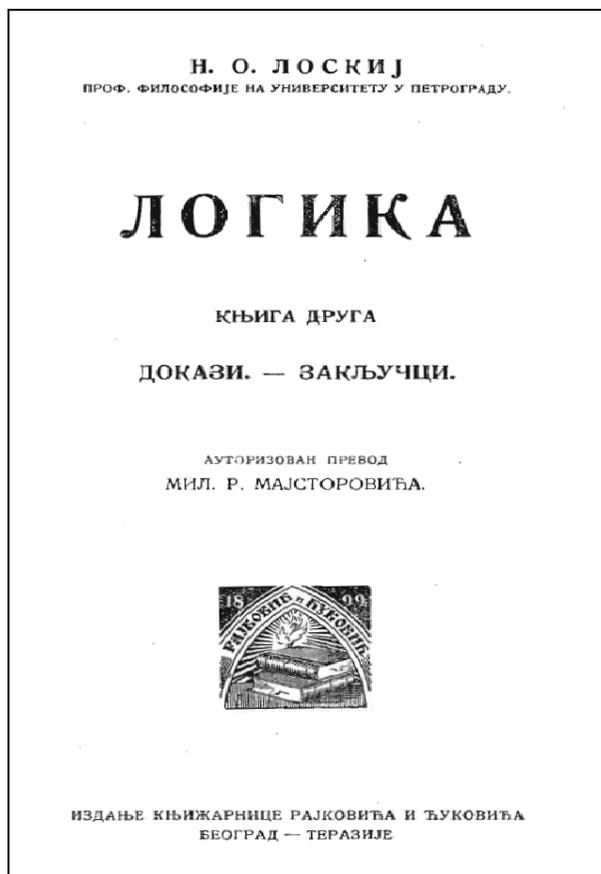


Figure 7

There is another book from the field of humanitarian science that holds the last position on this list. This is the book “Etymology and small folkloric forms” by author Biljana Sikimić which was published by the Institute for the Serbian Language in 1996.

#### 4. Top searched for items by country

Some of the items in this category have already been introduced in previous sections, so we give a detailed description about the new ones.

In Web search category top searched for item in Serbia and Macedonia is previously described book Dacić's “Elementary combinatorics”. In Serbia in Mobile search group there is Milanković's book “Through Space and centuries”. Top searched for book through Google Mobile search in Macedonia is the book “Perpetual calendar” (*Figure 8*) written by Zaharije Orfelin and published in 1783. It is the first Serbian book on astronomy and natural sciences and it is written in old the Slavic-Serbian language. The book describes natural science and astronomical phenomena but it also contains astronomical tables and drawings [4]. As a curiosity, Orfelin was an artist and a member of the Academy of Engraving in Vienna.

In Bosnia and Herzegovina the top searched for item in both categories is a master thesis on teaching mathematical functions in primary and high school education. Also, it is the most searched for item in Montenegro. In the group of Mobile search items in Montenegro the top item is the article “Space – time in literature” written by Milivoj Anđelković and published in the proceeding of the V conference “Development of astronomy among Serbs”.

The author analyzes fundamental physical categories appearing in the literature and that are related to the space and time [5].

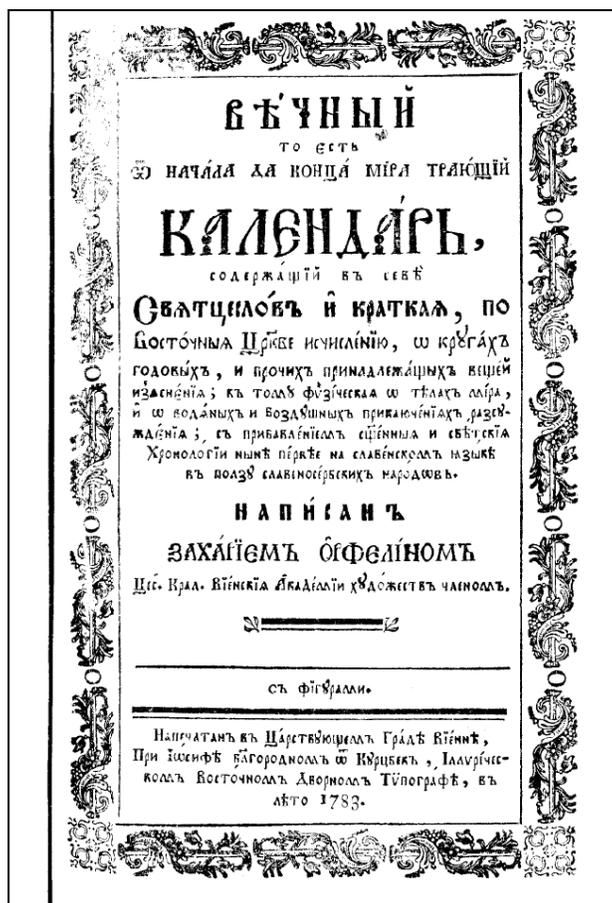


Figure 8

The famous Gauss mathematical work “Disquisitiones arithmeticae” is the most searched for item by the visitors from the United States. The author is one of the greatest mathematicians of all times, Carl Friedrich Gauss (1777-1855). This very influential book on elementary and algebraic number theory is written in Latin and presents Gauss discoveries in this area of mathematics. This edition of the book is dated from 1801. The top Mobile search item is “Publication of the Astronomical observatory of Belgrade No.82”.

In Croatia the most searched for item in both groups is the mentioned “Logarithmic and numerical tables”. In Russia top item in Web search category is “Geometric methods of electrodynamics” written by Ćemal Doličanin, professor at State university of Novi Pazar. It is a textbook written in Russian. Also, there is another book written in Russian in Mobile search group, a textbook “Some problems of mechanic non-autonomous systems” by the authors Veljko Vujičić and Anatolij Martljnok.

The most searched for item in both groups in India is a textbook “Logic” which we previously presented. In Germany top search items are “Logarithmic and numeric tables” and “Belgrade in advent towards Europe Cultural influences of Great Britain and Germany on Belgrade elites, 1918-1941” by author Ranka Gašić in groups of Web and Mobile search,

respectively. The later book is a study that examines the influence of German and Great Britain on the elites of interwar Belgrade [2].

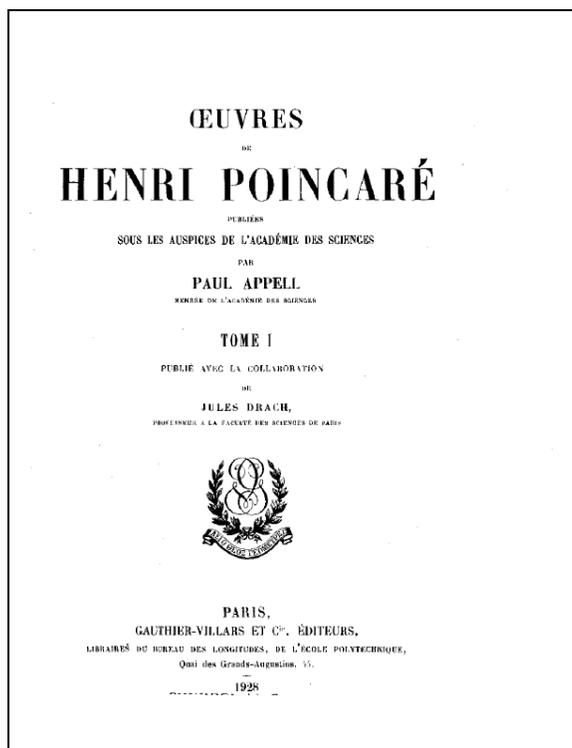


Figure 9

In Ukraine the most searched for item in Web search category is another book in the field of humanitarian sciences. This is the book “Slavic etymology today” by the author Aleksandar Loma, published by the Institute for the Serbian language. In Mobile searches group the top item is “Logarithmic and numeric tables”.

The top searched for item in Morocco is the book “Oeuvres de Henri Poincaré” (*Figure 9*), published in 1916. It is an overview of the scientific work of the famous French mathematician Henri Poincaré (1854-1912). The book covers Poincaré’s works in the fields of analysis, geometry, astronomy, mechanics and it also includes his memoirs edited by a publisher, another mathematician, Paul Appell. In Mobile search category the most searched for item is the second part of the previously described “Etymology dictionary of the Serbian language” written by the same author.

In France the top item in both categories is another Poincaré’s book “Théorie du potentiel Newtonien” (*Figure 10*) published in France in 1899. It is a collection of his lectures given at the Sorbonne during the first semester of school year 1894/1895.

In the United Kingdom the top item in Web search category is an article “Late Antique and Early Byzantine fortifications in Bosnia and Herzegovina (hinterland of the province of Dalmatia)” written by Perica Špehar. In Mobile search category the most searched for item is formerly described book “Logic”.

The last country from which the Google search was performed is Bulgaria. The most searched for item in both categories is the previously introduced “Slavic etymology today”.

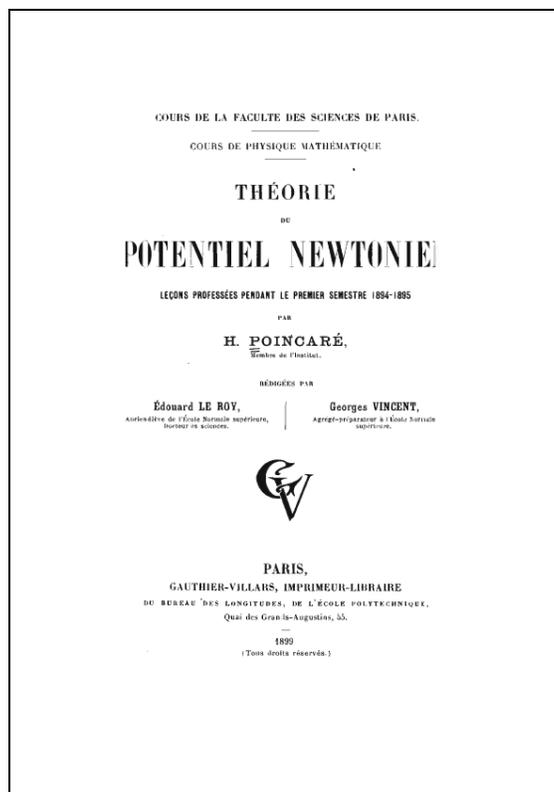


Figure 10

## 5. Conclusion and future work

In this work we described how we made items from our digital repository visible to Google search engine and presented the most searched for items in several categories. The most of the presented items are master theses and fundamental mathematical books. This is an expected result because the great part of the library is dedicated to theses and mathematics materials. Interestingly, the top searched for items from some countries are books written in foreign languages, French, German, Russian. However, we note that most of the digitized books in the repository are written in Serbian.

By using Webmaster Tool we can monitor search activity on behalf of Google search engine. In future we intend to analyze search activity performed directly on our repository and compare its results to the results given by Google search engine. We hope to find out more about the behavior of our users: do they visit our library because they know of its existence or because Google tells them where to go. After this type of analysis we will find out how much of a benefit we are got from using Webmaster Tools.

## Acknowledgments

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