SolutionBox

(YouTube URL: https://www.youtube.com/watch?v=fyb0LOAWl_c&rel=0)
Top Solutions to your problem

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Abstract—*Today when students or developers find any doubt related to computer programming they quickly go to the Stack Overflow website and search for their question. The answers displayed are relevant but in an unsorted manner, thus taking lot of user's time in finding the best answer to their problem. Solution box is a web application which gives user the best relevant answers in a sorted manner thus providing accurate, productive and efficient search results. Website also provides all the answers and best answer related to the suggested questions provided by the search engine. Comparison of sorted results and real time analysis of technologies is also provided. SEARCH SPECIFIC TO TECHNICAL QUESTIONS.*

Index terms—**Stack Exchange, Stack Overflow, API, Node.js, Bootstrap**

I. Introduction

Stack Exchange is a network of question and answers websites on diverse topics in wide range of fields. It provides a source from where actual questions and answers can be fetched. It provides various filter options for calling the API of a website like stack overflow. API consists of a certain important set of questions and answers.

Solution Box is based on Stack Overflow API provided by Stack Exchange. It is a search based web application which filters the data based on the input provided in search box. Search results displays relevant questions and answers along with the best answers associated with the input text. The best answer feature can be very useful when the user don't want to spend too much time reading all the answers and can focus on the best answer. Additional feature provided in comparison to stack overflow is graphical analysis of the sorted questions and answers and analysis of latest and hottest technologies in market.

II. Working

User will be asked to enter the question for the problem he wants to get answer for. Related to the entered query, user will then be shown 30 top rated questions in descending order of the votes. The questions will have a title and description related to the question, and two options for answers i.e. to show all answers or to show only the best answer. The best answer is the *accepted answer* from Stack Overflow API provided by Stack Exchange. If there is no accepted answers for a particular question, highest voted answer will be displayed as best answer.

If the user chooses to see the all answers, the answer are sorted in descending order based on its votes.

III. Analysis

As we have used the Stack Overflow API, analysis was done based on what Stack Overflow does and what Solution Box will do. Stack Overflow shows the questions based on either relevance or votes. Solution Box filters the relevant answers and shows them in descending order of votes. Graph1 shows the comparison of questions between two systems based on votes. Thus, looking at the graph we can analyze the efficiency and accuracy between StackOverflow and Solution Box. Graph2 shows the contribution of various fields related to technologies.

Case Study1: This case study focuses on the efficiency and accuracy of answers when compared with Stack overflow. Let us consider an example where a user searches for "How to convert string to integer?" To ensure that the search result is sorted, accurate and takes less time, statistics shows the comparison as follows:

I) Stack Overflow - Unsorted Graph
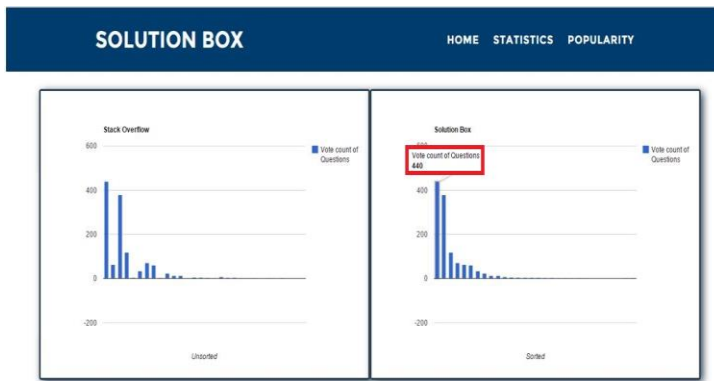
Number of Questions returned – 20

Question No.	Votes
1	440
2	63
3	379
4	119
5	1
6	35
7	71
8	61
9	1
10	25

II) Solution Box – Sorted Graph

Number of Questions returned – 20

Question No.	Votes
1	440
2	379
3	119
4	71
5	63
6	61
7	35

8	25
9	1
10	1

Case Study2: Analysis based on hottest technologies:
Web Technologies

Name	Popularity Count (Dynamic)	Comparison (Dynamic)
JavaScript	748475	21.5%
PHP	677164	19.5%
JQuery	559650	16.1%
HTML	364530	10.5%
CSS	268786	7.7%
Asp.net	241880	7%
.net	200192	5.8%
Ruby-on-rails	186777	5.4%
Ruby	121034	3.5%
Ajax	107601	3.1%
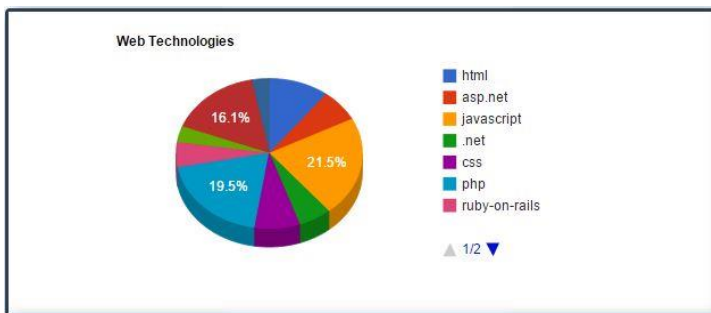
IV. Technologies Used

1. Node.js with express framework: Node.js is an open source, cross platform runtime environment for server side and network applications. Node.js applications are written in JavaScript and as its cross platform they can be run on windows, Mac OS, Linux. We have used Node.js with the express framework in our SolutionBox web application as server side implementation to call the StackExchange API's. NPM package html-to-text used for converting HTML to plain text.

2. Bootstrap: Bootstrap is a free collection of tools for creating websites. It has a huge collection of components like buttons, graphs and contains many templates which are comparable to other available best web designs. We have used Bootstrap for designing our whole front end.

3. Eclipse: Eclipse is an Integrated Development Environment (IDE), which uses an extensible plugin system to customize the environment. We extended the eclipse Luna for developing node application by installing Node.js plugin.

4. Google chart API: The Google chart API lets you make charts from some data and embed it into the webpage. We used Google charts API to display our analysis.

5. Bluemix: Bluemix is a cloud Platform-as-a-Service developed by IBM. It supports several programming languages and we used one of them, i.e. Node.js. This application is deployed on Bluemix.

6. GitHub: GitHub is a very useful when it comes to build large projects shared by a group. Developers collaborating on a single project can update and share their changes made to the project using GitHub.

7. OAuth: Used for authentication.

V. Future enhancement
We look forward to make our application to serve better results for our users by doing following:

1. Integrating the results from other Q&A websites by using their publicly available API's.
2. Integrating Solution Box into various IDE's as a plugin.

VI. Conclusion
Various types of case studies done by us and the case study presented shows that Solution Box will help people to find better results i.e. top 30 questions and their top answers or the best answer.

VII. Contribution
- Jenil Doshi– Stack Overflow API calls and Google Charts API.
- Vijesh Jain- Stack Overflow API calls and Data Processing.
- Vrushank Doshi- Graphical User Interface and Data processing.
- Anup Dudani – Data Processing and filtering of data.

References:
[1.] StackExchange, http://stackexchange.com/
[2.] Getbootstrap, http://getbootstrap.com/
[3.] Google Charts, https://developers.google.com/chart/

GitHub link:
https://github.com/vijeshjain/SolutionBox.git

Web app link:
http://solutionboxdemo.mybluemix.net/