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Muet Blogging: An Integral Platform for Students Projects

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Abstract:*Since the evolution of web 2.0 technologies, the use of weblogs has grown vastly. Weblog is a platform for discussion and awareness about various subjects. It has also promoted use of blogs in other IT sectors like educational blogs, fashion blogs, IT technology blogs, food recipe blogs, microblogs and other personalized blogs. The ratings of users on each post in a blog are significant. Researchers have suggested that using blogs in education are also vital as it instills awareness in the students and develops an interaction amongst them. Blogs are a subset of group-work as it diffuses awareness about different fields and technologies across the interested demographic. As students feel difficulty to go through all the previous projects and also find it difficult to select a particular domain for their final year projects. This research is the solution of above defined problem. In this research work, first a weblog for maintaining the final year B.E projects of MUET students is developed. This work embodies the feature of the post's ranking at specific time with the help of a ranking algorithm that is applied on posts by MUET students. This algorithm is termed as WCA (Word CountAlgorithm) and uses the comments of users as its source. Developed ranking algorithm provide users particular information in several particular dimensions. The developed searching filters assists the weblog to announce a particular post as highest comments containing posts, 1 week older posts, 1 hour older posts, and all the older posts.Automated testing and user testing also proves the usefulness of the developed MUET blog.*

Keywords: *Web-Blog, Post, Word Count Algorithm, Comments.*

I. INTRODUCTION

Weblog is among the several web services in the disguise of a personal website where bloggers can speak on interesting topics [4][5]. Weblog consist of several pages with information or posts available in a chronological (most recent to the oldest) order [19]. Blogs represent emotional media of the web 2.0, whereas the traditional websites such as homepages and boards are representative services of the web 1.0 that provides formal contents [9].

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Weblogs can be considered as one of the easiest ways of sharing information & accumulate the opinions of different users on a post.Through blogs, one can share his opinion, experience, observations and knowledge.

Users now not only post the content in Web 2.0, but also participate in an array of activities such as commenting, voting, forwarding and tweeting among other social actions [10]. Mostly people pen their experience and opinion in their blogs, which yields a plethora of useful information on the blogosphere. Blogs have been used now a days for inbound marketing too where visitors can become customers if contents and data is quite interesting [3]. Recently, the number of blogs has been growing rapidly and hence, the significance of blogs cannot be overlooked [1]-[2]. Now a day's Online news and e-articles have deployed ranking via algorithms, that measures the number of tags, track back links and comments [20].

In this work we have developed weblog for MUET students. In order to reduce the communication gap between students of different departments, the use of web blog will be best suited. We will use comments as a source of communication among the pupils to discuss ideas and share their opinion related to post. An important task of opinion mining is to extract people's opinions on features of an entity [11].The objectives of this research are:

- To provide a single platform in terms of weblog for students' projects and topics that how they can make a project in more innovative way.
- Present their outstanding projects of B.E so that pupil would get to know the MUET talent because most of students do not access Face book to get daily updates. So, we are proposing a simple platform to appreciate those students by letting it know to every MUET member.

The main contribution of this work is to develop and apply a ranking algorithm to the comments which will use the opinion of users to mark a post as either highly ranked or low ranked based on comments evaluation after submission of comments on particular post.

II. RELATED WORK

Previous work included the use of classifiers to check sentiment of users. Negative comments have been counted in order to get the rate of disapproval on YouTube videos using machine learning approaches [14]. Some works include analysis of the structural features of the blog and use these components such as comments and trackbacks for blog ranking through the comparison between the blog and the other web services [10].

The research presented in study [10] has focused on text-based trackbacks and pingbacks included in comments. The greater the weight of the word, higher the algorithm will count that tag-based word.

In study [16], analysis on youtube's comments has done where social media and politics has been focused to score selected comments by sentiment analysis. Authors have developed blog ranking algorithm in study [13] to find out the implicit and hidden links given in a blog based on content analysis. In study [18], authors have proposed system of blog mining using 3 steps: web crawling, sentiment analysis and visualization. This system is proposed to extract review comments done on movies in order to rate particular movie. The work presented in [17] has focused on the relationship between the reader and the author of the microblog and weighted the relationship based on tweets. And this paper also discussed the quality of the tweets, tweet score, author score, and reader score parameters. Tweet score is based on how many times users have retweeted a post with or without comments. If a tweet is with comments, it means that users are more attractive towards a post and vice versa. In study [8] authors have discussed about tweet ranking algorithm which will count the number of links in a tweet and number of retweets, check account authority of users, and the length of tweets. The study [1] focuses on overall estimation of comments done in the blogosphere by analyzing the weblog's popularity via comments, but comments section is not the focus in study. Inactive weblogs were removed based on posts. Posts containing huge text having few comments and posts having large number of comments were counted for the weightage of weblogs. In another study [6] modification of an algorithm called BlogRank has been applied for the ranking of weblogs based on the link graphs. Number of trackbacks and comments can be retrieved by processing the contents of each post. Posts, Topic information, date and time of posts were also considered to be an important information for ranking a weblog. In this study comment is not a focus to be discussed.

III. IMPLEMENTATION

The website has been developed using PHP and MySQL as the core languages, Adobe Dreamweaver as the IDE &XAMPP (Cross platform, Apache, MySQL, PHP, and Perl). In this section the data model of MUET blog, pseudocodes of word count ranking algorithm, searching filters are discussed.

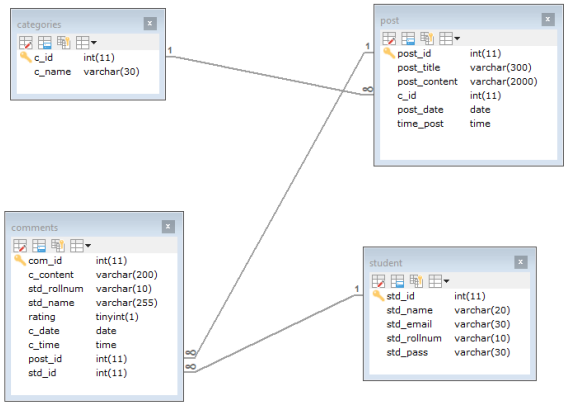

Fig 1. ERD of MUET blog Database

A. Data Model of MUET blog

Figure 1 illustrates the database of MUET blog. This database is used to save the comments on posts. The entity 'comments' is responsible to store comments on particular posts. Comments done by students are stored in the comments table along with the particular post's ID to recognize the post title and content. We have collected the data of B.E projects from five departments including Computer Systems Engineering, Software Engineering, Electronics Engineering, Telecommunications Engineering and Biomedical Engineering. In total we have organized the records of 158 projects. The site map of MUET blog is presented in figure 2.

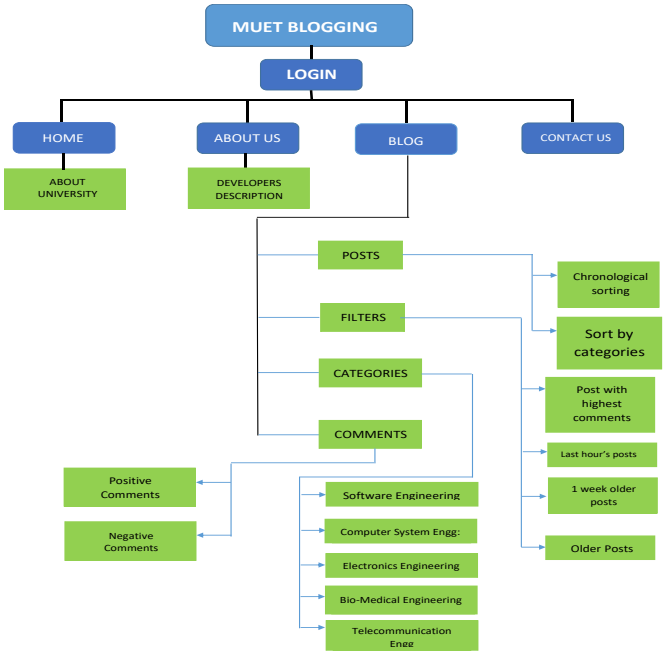

Fig 2. Sitemap of Weblog

B. Word count ranking algorithm

Many researchers have worked on counting of positive and negative comments in which several machine learning techniques have been applied in order to detect cyber bullying and abusive words in comments on social media [15].

Clustering approaches have also been applied to get informative comments on you-tube videos in order to rate video as useful or useless [14]. Several researchers also worked on youtube view count + comments to predict the future popularity videos [11].For our ranking algorithm, we created a function using the logic of analyzing a comment to check the number of positive and negative comments on a post. The purpose of this algorithm is to check the weightage of a post. In this logic, array's built-in function is used to break a sentence. The positive and negative words have already been defined in function manually, in a separate file named "posneg.php". Only the words mentioned in "posneg.php" will be detected as positive or negative like 'good, better, aggressive, not bad, etc.

This algorithm has been developed to depict the working of NLP to analyze user's comments. No pattern and part-whole pattern have been also used to analyze feature ranking on sentences [12]. The pseudo code of word count ranking algorithm is shown below.

Pseudocode of ranking Algorithm
1: Create a function **algo_comment**that accepts two parameters (for student comment, for student rating) 2: Initialize a variable having array datatype, holding the list of negative words. 3: Initialize a variable to hold user comments. 4: Set a variable that uses the array's builtin function called as explode('separator', 'variable holding a comment') 5: Use foreach() loop to check whether the particular value(negative word) is present or not. If value is present then break the sentence. In foreach loop use two built-in functions to check availability of words (strstr(), in_array). Else: Do the same work for positive words in comments. 6: if(positivewordfound) Then: Set rating =1. 7: if(negativewordfound) Then: Set r ating =0. 8=rating=rating+1.

C. Working of Searching Filters

Different filters have been added to search for posts under "Filters" caption. We have implemented 4 filters for the ease of students to search a post according to their need.

1. Posts with highest comments: This filter will extract the post with the highest number of positive and negative comments.

2. Last Hours Post: This will show the posts of last hour.

3. Posts older than 1 week: As name explains, it will bring last week's posts.

4. Older Posts: All the older posts will be shown here.

Pseudocode of Searching based on highest comments
1: Writing a query for showing max 3 posts having highest number of comments (positive or negative) 2:If("highest comments post" link is clicked) Then: Print "all the posts having highest number of comments" Else: Print " " Endif.
Pseudocode of searching based on last hour's post
1: Writing a query for showing all the posts done today 1 hour earlier by using the function "Date_format() and date_sub()"
2: If("1 hour earlier posts" link is clicked) Then: Print "all the posts done today,1 hour earlier" Else: Print " " Endif.
Pseudocode of Searching based on 1 Week older posts
1: Initialize a variable with current date. 2 : Initialize another variable with a function carrying 1 week older post i-e (date(current date, strtotime("-1 week"))) If("1 week older post filter"link is clicked) Then: Print all the posts whose date is "**1 week older"** Else : Print " " Endif.
Pseudocode of Searching based on older comments
1: Initialize a variable to save 1 day before date 2: Initialize another variable to save 1 year before date 3: Writing a query for showing all the older comments by giving limit from 1 year before and 1 day earlier posts 4:If("older comments post" link is clicked) Then: Print "all the posts done till one day ago" Else: Print " " Endif.

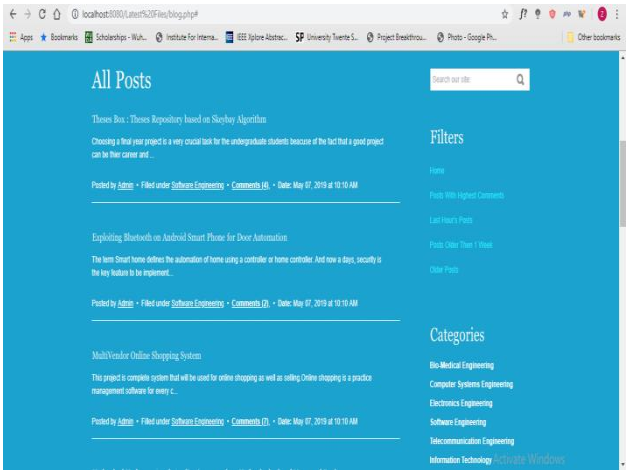

Fig 3. MUET blog interface showing filters and categories

D. Working of MUET Blog

The MUET blog interface is depicted in figure 3 and working of MUET blog is shown in figure 4. After logging in, users can view the blogs. They can view the blogs category wise and they can also perform searching based on filters. The main programming logic has been applied on comments sections which is applicable on overall comments section.

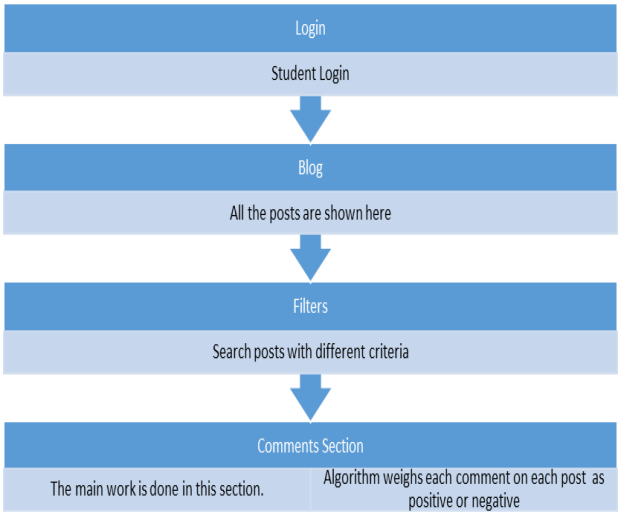

Fig 4. Working Flow of MUET Blog

IV. RESULTS AND DISCUSSION

To evaluate the MUET blog, two types of testing have been performed, automated testing and user testing. The results of both types of testing are presented and discussed in the section.

A. Automated Testing

For testing of weblog, Katalon studio tool has been used. It is used for web testing, API testing, android testing and many more features. We can use both test scripts and test cases to test the developed MUET blog. For testing weblog several test cases have been developed to validate the interface. In figure 5, test cases have been listed to test the blog.For testing the web interface, the following steps are involved:

1: Open Browser: As katalon studio can also test the websites on local server. So the mentioned link has been opened by selecting the chrome browser.

2: Navigate to URL: After opening the browser, the URL is entered which leads to the post.

3: Click: It will check if, after clicking on the 'student name' field, it is getting the text or not and if it is doing the same for the student 'roll no' text field as well.

4: Submit: If the 'comment' field is empty and the user clicks on the Submit button, then an alert will be generated asking the user to input text in the field. This alert is produced because the 'required' property of HTML has been added for form validation. However, if all the text fields are filled by the user and then the Submit button is clicked, it will simply accept the input & proceed forward. Here the submit test case is working but due to the automated nature of the testing, it leaves the comment field empty which halts the testing, thereby, producing an alert. Due to this, test case 8 and 9 is not proceeded. The blog is in testing mode as katalon can test a system over multiple browsers (chrome, Firefox, Internet Explorer, Edge, Safari).Figure 6 is the pictorial representation of the test cases written in figure 5. All the test cases are executed step by step for black box testing.Figure 7 is the execution of all the test cases discussed in figure 5. Total 9 test cases have designed in which 3 test cases have been failed. All the tests have been executed successfully except the "Submit" step. The reason behind this failure is that the comment has not submitted because in automated testing comment cannot be done and hence alert of successful submission has not generated.

Item	Object	Input
1 - Open Browser		"http://localhost:8080/latest%20Files
2 - Navigate To Url		"http://localhost:8080/latest%20Files
3 - Click	input_Student Name (required)_nam	
4 - Set Text	input_Student Name (required)_nam	"Zoobia"
5 - Set Text	input_Student Roll Number (requirec	"11sw04"
6 - Submit	input_Your Comment (required)_sub	
7 - Accept Alert		
8 - Get Text	textarea_Your Comment (required)_c	
9 - Close Browser		

Fig 5. Test cases for MUETBlog

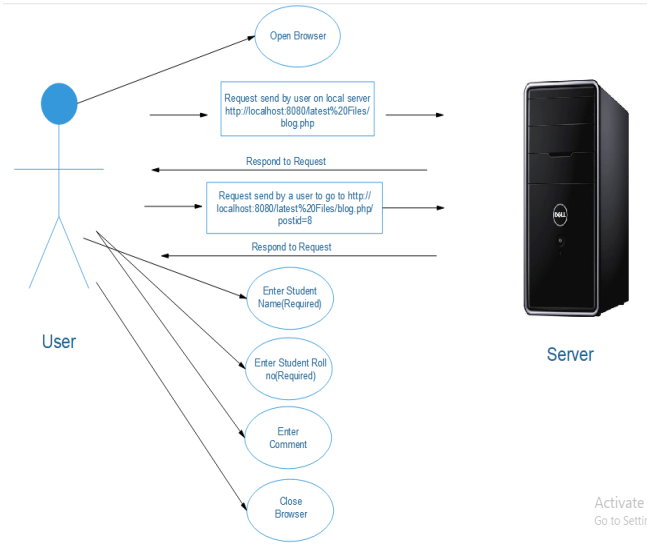

Fig 6. Working of Test cases

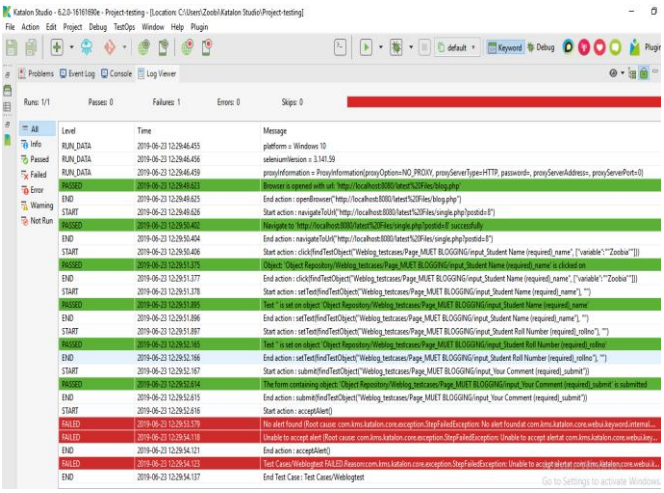

Fig 7. Execution of Test cases

B. User Testing

The user testing has been performed on a sample of fifty-two students belonging to the Computer Systems Engineering, Software Engineering, Electronics Engineering, Telecommunications Engineering and Biomedical Engineering departments of MUET. After performing user testing from different departments via evaluation form generated by google forms, it has been observed that weblog startup is acceptable by users and it has shown mostly positive results related to both functional questions and quality attributes. For the evaluation of web interface and the working of the weblog, we have plotted several questions on a Likert scale, which, has been designed based on YES, No and May Be options. Table I is the combined evaluated result of QUESTION 1,2,3,4 and 5. These questions are related to recommendation of weblog and about black box testing.Table II is depicting the results about the idea of students related to the reduction of gap between them.

Only 11.5% students answered that this blog will not be helpful for them. Table III is presenting the result of question 7 which comprises of the look and feel of the blog. The rating from 5 to 1 are showing the highest to lowest rating. The results depict that just three students are not satisfied form the look and feel of the blog. This table is also illustrating the result of question 8 which comprises of how one can understand the objective and purpose of the blog and about the web interface. The results reveal that 12 students are unable to get the idea of the blog fully.

Table-I. Evaluation of questions (1-5)

S.No.	Questions	Yes	No	Maybe
Q1	Does this weblog help you out?	100%	0%	-
Q2	Does this weblog give you an idea to combine your idea with another technology to enhance it?	94.2%	4%	2%
Q3	Is it easy to search, comment and like a particular post	98.1%	2%	-
Q4	Is it easy in this blog to use another's field's interface?	88.5%	0%	11.5%
Q5	Would you recommend this blog to other colleagues?	100%	0%	-

Table II. Evaluation of question 6

Q6	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Will this idea help us to reduce gap between MUETIANS related to new technology discussion?	55%	63.5%	3.8%	1.9%	5.8%

Table III. Evaluation of Look & feel and understanding the blog

Q7	Rating				
	5	4	3	2	1
Rate the look and feel of the blog.	23.1%	67.3%	9.6%	0	0
Q8	**5**	**4**	**3**	**2**	**1**
How well do you think you understand what the idea of the application is?	26%	52%	14%	6%	1%

Following result is the evaluation of the suggestions, taken from students, to add functional or non-functional features, to enhance the blog. One student suggested about rating and the 98% of the students are happy from the working of the blog. Table IV is also showing the user evaluation about question 10 where 5 students have different opinions to add features like star rating, or suggestions to develop it for android phones, aesthetics of website, to improve flow of document in a website.

Table IV. Evaluation of any correction and suggestions for the blog

S.No.	Questions	Yes	No
Q9	Is something not working the way you thought it should work?	98%	2%
Q10	What is missing from the application?	9.5%	89.3%

V. CONCLUSION

In this work, a web log to represent the B.E projects of MUET students have been developed. As the trend of weblog is rising every day, it will be a helpful platform for MUET students to discuss innovative ideas, based on the past projects. The uniqueness of this project lies in the development of a ranking algorithm. This algorithm is efficiently categorizing a post as high ranked or low ranked based on comments evaluation by counting the positive and negative words in each comment on a particular post. The logic of breaking a sentence in words and then analyzing them as negative or positive is implemented. Searching filtershas been developed that will extract the posts according to their functionality.

The blog is tested by both user testing and automated testing. For user testing, opinions of students studying in different departments of MUET are gathered and for automated testing we have used Katalon studio for user interface. According to user testing results, this weblog is helpful for muetians. Few students have given suggestions to improve the blog by adding features in it.It can be extended further to mobile applications that will facilitate the access to the blog for students. Other possible enhancements could be addition of keyword-based searching and capturing the picture of a particular post to get discussion in comments of a captured post.

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