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Implementation of CWEBTEST Testing Tool for an Effective Regression Testing of Web Application on Cloud Environment

Sunita A Jeevangi

Computer science and engineering
NMAM Institute of technology
NITTE ,udupi, Karnataka

Abstract

Web based applications are more complex programs than any other article in the cloud computing technology. Web based applications are more popular because they provide the user very convent way to access any of the client browser. In traditional web based testing does not provide storage, capturing and many other application but Modern web sites enables the capturing, processing, storage and transmission of sensitive customer data for immediate and recurrent use and that is made possible only through the web applications. Web based applications are very quickly deployed anywhere at less cost and without any software installation requirements at the user end. Although it is the powerful, these technologies bring new challenges and issues for software developers and software testers. CWEBTEST testing tool test are used to identify for finding the unique identified hypermedia on the web based applications .With the help of CWEBTEST tool hypermedia are identified.

Keywords: *Hypermedia, Hyperlinks, Hyper image, event target tree, web application regression testing, cloud environment.*

1. Introduction

From the last few year web application development has many significant.. Web applications programs are more complex than compared to any computing technology. They are more complex because of the increased use of distributed services, usability, and inter-operability, and security, large number of hypermedia and stricter requirements of reliability. Through internet web based application program it can be accessed. Software testing is expensive, cost effective, time consuming. Testing is a process that provides correctness and better software quality. It is been achieved by using regression testing in the today's market pressure and high cost of software testing of the web based application . Functional testing it is been neglected by software developers. The customers do not have to pay for maintenance cost and infrastructure installation in the cloud-computing environment. The person who uses the resources need not worry about the backups, web servers , software updates, installation, email servers, anti-viruses, both physical and logical security of the data If any user uses cloud computing technology they have to pay the service charges as well as then the network which they are using. More powerful are the web application and they also have the ability to provide feature rich content across the globe at an economical cost. For software testers and developer they bring the new challenges, as they are powerful technology

Compulsorily all web based application have to been tested. Functional testing tools exist in the more than 100 web based application either on cloud environment or online applications. Traditional technique tools are more complex structured so they are not suitable for web-based application. The features of testing such as regression test, database connection testing fixing errors, uniquely identifying hypermedia, as they are traditional technique they lack in testing etc.

Regression testing is the process of fixing the bugs retesting of a system or its component in order to ensure that modifications does not lead to any changes in the desired functionalities.

The web based application uses the CWEBTEST tools for identifying the unique hypermedia. Hypermedia is identified from regression testing; complied HTML code is performed on web-based application by using CWEBTEST tools.

After it has been modified, again it is retested. The time for testing a set of programs which are large in size and more time is saved by using CWEBTEST tools .when it is been compared with previously performed regression testing techniques the present testing technique is very much efficient. CWEBTEST has been published private cloud environment.

2. SYSTEM ANALSIS

2.1 Problems of existing system

During the process of integration tests, the regression test seems to be very large. Regression testing is less efficient when changes and modification are done in the web based application program .when it is retest it takes more time, it repeats the functions which have been successfully tested

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in the past, so they will be used future . Therefore, generation of test cases can be significantly improved the better and efficiency of very large-scale software regression testing. In the software testing tool regression testing is very much important in the cooperate world its main aim is that any variations in the software life cycle is been identified soon, and the result does not side effect any of the software .When there is software configuration changes the software (programs, documents, or data) changes. It is sure that any modification done it may introduce new bugs and fix errors. In the existing system, it meets all the requirements that guided for the design and development of the configured software system. These can be installed and runnier on any environment but in certain circumstances, they are helpless to the customer or user.

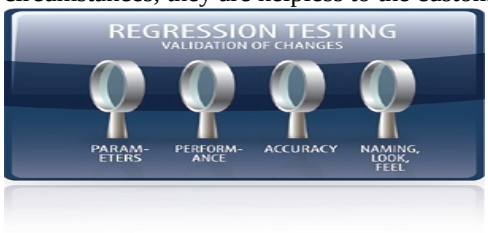
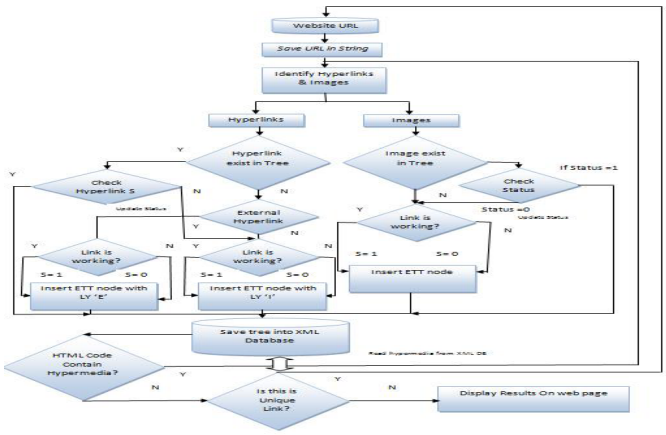


Figure 1 existing system

2.2 PROPOSED SYSTEM

They are gaining high popularity pace because of great services and information are made available over the network, web based application programs have also become more complex for performing functional testing. These web based application portals they have lakh of audio files, hyper links, images, multimedia files, data files and many others. Web pages of html script are changed or modified frequently viz. adding links, adding new features ,making user specific customizations and much other functionality in this way web based applications are been modified or changed constantly with additions features .Therefore it becomes very necessary to test the web based applications that are been modified or changed. The modified or changed web based application are been tested by using regression testing technology.



- **Accuracy and Consistency**: content should be accurate and it should be consistence as and when date and time changes.
- **Timeliness**: a web based application changes very rapidly it should identified very soon and it should highlighted so.
- **Response Time and Latency**: Server response time should be within the time the user had allotted
- **Performance**: performance should be accepted by the user
- **Structural Quality**: The website should be connected properly so it can navigate to all the internal and external links present in the web page
- **Security**: it is the most important concept it should maintained in e-banking etc
- **Content**: HTML code should be correct and valid and it should be matched to the expected source code

4. REGRESSION TESTING OF WEB APPLICATION

4.1 Overview of regression testing

In the web application there are many types of software testing regression testing is one among them were it aims to uncover any new bugs or regression that can be a raised after the non functional and functional areas of a system are been tested

Types of Regression testing.

Old bug-fix->here the previously fixed errors and verified defeat should not be occurring once again in the system.

Side effect-effect -> it is an attempt to check whether any other parts of the system should not been changed by the recent configuration changes in the system.

Bug-fix->it is process were the errors are been fixed.

Web development has an internal part of web application that is regression testing .various regressions and new bug are been tested against web application. High quality and bug free software product can been delivered to the end customer by essential regression testing.

It is hard to image successful business without website .It does not matter what kind of services you offer to the client in the current period of time.

It might be like banking(Atm, online banking, money transaction)tourism(booking the ticket etc) healthcare ,sports and many more .where the regression testing is a stage for testing process .this type of testing stage must be included compulsorily.

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4.2 Importance of Regression testing functionality

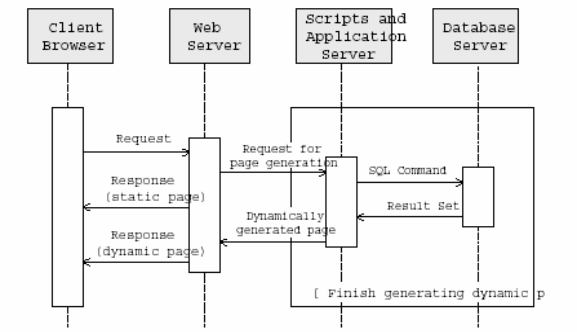

Figure 3 Regression testing functionality

Here from the above figure there are four browsers working at a time client browser, web server, script and application server and database server. Here first the client through his browser he sends the request the web server it search for the page in the scripts and application server it send the query to the database whether the page is present or not .then the result set is made ready by the database server and send back to the script an d application server later the query is been generated as a dynamic page by the application server then it is been sent to the web server the web server differentiate the page into static and dynamic then it is sent back to the client in the form of response to the request sent by the client through the browse

4.3 Interaction between the regression testing system and the

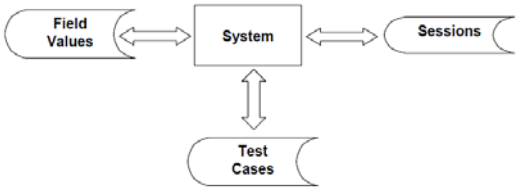

Figure 4 regression testing system and data

Here the interaction between the regression testing system and the data first the system has to be configured with all the proper software that are required later we set the field values for which the regression testing has to work properly the values may be any condition it may follow. Then we write test cases for each web page how it should work after clicking on the each button and link, images that has to been loaded and last the session are classified how to perform the test like upload session, testing session and many others. These all fields are attached to the system which is configured with all the testing functionality

5.Notations used in the regression testing for the web application

Symbols	Physical meaning
Wurl	Web application URL.
S_{url}	web application URL in string
H	Hypermedia
Himages	Images
Hhyperlinks	Hyperlinks
H_I	Internal source hypermedia
HX	External source hypermedia
H_U	Unique hypermedia
HW	Working hypermedia
HD	Dead hypermedia.

Table 1 notations used in the regression testing for the web application

5. Algorithm for regression testing for the web page

Here we have web application URL'S as u there are n number of hypermedia regression testing is been performed by the developers and testers. On their web application regression testing is a process of selective retesting process of a system after modification or changing any of the system configuration does not lead to any desired effect on the system .Hypermedia contains hyperlinks and hyper image every web application contains webpage.

GetURL(WURL)=>here web application take URL as input and output as the html script in the string format(surl)

Get hypermedia (surl)=>here surl is taken as input it scans through the html code the images and hyperlink are been displayed on the separate web page.

Compare hypermedia=>here it compares with the previously set output that is images and hyperlinks are taken and compared with the previously existing in the tree format (event target tree)

Identify hypermedia=>here the unique hypermedia is taken as input then they are checked whether they are internal hypermedia or external hypermedia

Test hypermedia=>here unique hypermedia is taken as input if the media is working then set to (HW)working hypermedia or dead hypermedia(HD) here the time is calculated execution of the web page before and after regression testing

6.Results and Discussion

graph for after regression testing before hosting in cloud

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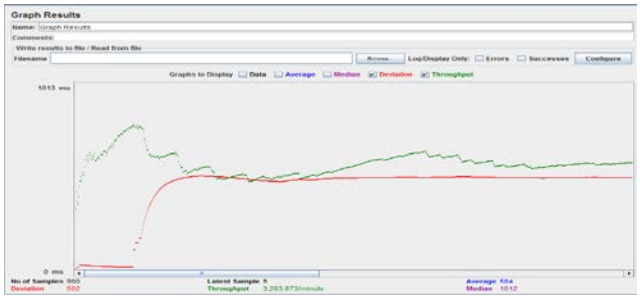

figure 5 graph for after regression testing before hosting in cloud

Here it is a graph for regression testing of the web pages before hosting in the cloud environment .Green color shows the throughput of the web page how it executes after regression testing here we give number of samples it means how many user has to run the application red color shows the deviation .

Graph for after regression testing after hosting

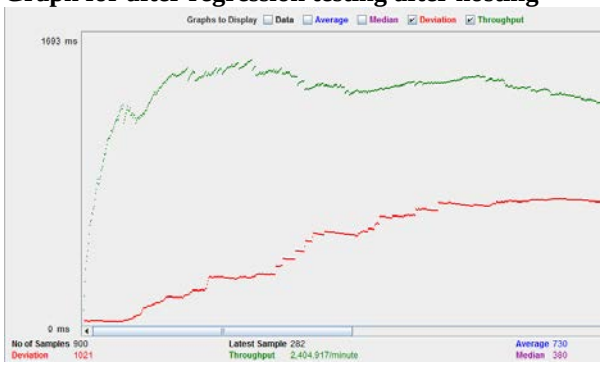

Figure 6 Graph for after regression testing after hosting

Here the graph shows after regression testing and after the cloud environment is set, here the throughput is less compared before hosting and numbers of samples were the user executes the web pages latest sample are more compared to before hosting it.

Graph after regression testing

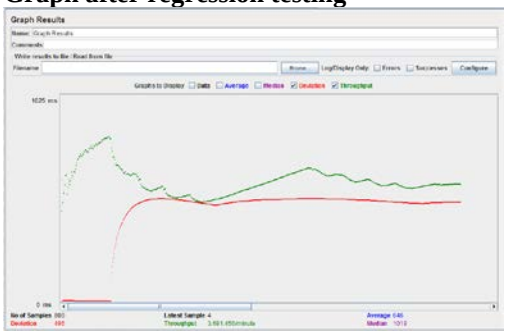

Figure 7 Graph after regression testing

Here only regression testing is applied to the web pages and number of samples latest samples are less compared with the previous regression testing.

Summary report after regression testing and after hosting

	A	B	C	D	E	F	G	H	I	J
1	Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughpı	KB/sec	Avg. Bytes
2	Login Pag	100	760	93	6383	1219.02	98.00%	5.8	11.85	2080.9
3	New User	100	629	107	9373	1189	100.00%	5.8	11.88	2089
4	Admin Pa	100	572	175	3397	821.87	98.00%	5.9	12.46	2176.8
5	View Imag	100	672	91	6451	1037.06	99.00%	5.9	11.95	2071.3
6	View Link	100	751	119	6448	1182.59	97.00%	6	11.88	2037.8
7	View Vide	100	378	90	3251	334.69	99.00%	6	12.13	2071.3
8	About	100	524	112	6261	830.31	100.00%	6.1	12.36	2089
9	User Pane	100	507	170	9330	1043.21	99.00%	6.1	12.63	2125.9
10	Logout	100	477	114	3354	663.91	99.00%	6.1	12.34	2084.9
11	TOTAL	900	585	90	9373	972.49	98.78%	46	94.05	2091.9

Table 2 Summary report after regression testing and after hosting

Summary report after regression testing and before hosting

	A	B	C	D	E	F	G	H	I	J
1	Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughpı	KB/sec	Avg. Bytes
2	Login Pag	100	373	3	1115	399.55	0.00%	10.2	17.37	1735.5
3	New User	100	14	2	127	19.51	0.00%	10.7	23.93	2292
4	Admin Pa	100	1079	1019	1195	42.07	0.00%	10.1	66.4	6763
5	View Imag	100	1061	1015	1209	42.82	0.00%	9.6	13.6	1444
6	View Link	100	1050	1017	1176	27.39	0.00%	9.4	9.2	999
7	View Vide	100	1034	1011	1083	13.93	0.00%	9.4	4.96	543
8	About	100	7	2	31	5.49	0.00%	10.3	32.26	3220
9	User Pane	100	1031	1008	1069	12.09	0.00%	9.2	53.71	5960
10	Logout	100	5	2	12	2.75	0.00%	10.2	16.92	1706
11	TOTAL	900	628	2	1209	502.86	0.00%	51.8	138.57	2740.3

Table 3 Summary report before regression testing and before hosting

Summary report before regression testing and before hosting

	A	B	C	D	E	F	G	H	I	J
1	Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughpı	KB/sec	Avg. Bytes
2	Login Pag	100	7	3	25	3.41	0.00%	14.2	24.05	1735.5
3	New User	100	4	3	9	1.14	0.00%	14.2	31.72	2292
4	Admin Pa	100	1032	1004	1074	14.56	0.00%	12.4	82.23	6767
5	View Imag	100	1031	1001	1075	15.75	0.00%	12.2	17.19	1444
6	View Link	100	1028	1006	1095	14.15	0.00%	12	11.67	999
7	View Vide	100	1028	1007	1060	12.33	0.00%	12	6.38	543
8	User Pane	100	1033	1010	1078	13.78	0.00%	11.9	69.56	5964
9	Logout	100	4	3	9	1.36	0.00%	13.8	23.04	1706
10	TOTAL	800	646	3	1095	496.68	0.00%	61.5	161.1	2681.3

Table 4 Summary report before regression testing and before hosting

7.ADVANTAGES OF USING REGRESSION TEST IN CLOUD

- **Independent work environment**: As testing is performing for the application which is less dependency on any official web site or web pages.
- **Cost effective**: when a user uses the service it is cost effective the cost is reduce because the user should not have to pay for infrastructure platform
- **Improve the Testing Efficiency***:* such as machine and network preparation, the operating

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system installation, software installation of various testing tools reduces the time consumed.

- **Less management work:** As the user in borrowing the server model it is work are been maintained by the cloud.

CONCLUSION

With the steady growth of web-based applications testing has become a very tough job. there are many number of web based application testing tools available in the software world but they are all traditional techniques which are not good or suitable for complicated structured web based applications. They lack the additional features of testing such as regression testing, fixing errors, testing database connection, unique identified hypermedia etc. Although regression testing is being widely accepted as it aims at detecting errors by comparing present behavior with the past behavior of the web application and it assures the reliability of software by providing information about the quality of an application but it suffers the limited use in the domain.

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REFRERENCES

1. C.H. Liu, D.C. Kung, P. Hsia And C.T. Hsu, Object-Based Data Flow Testing Of Web Applications, Conference On Quality Software, Pages 7-16, October 2001.
2. Marchetto A., Ricca F. And Tonella P, A Case Study-Based Comparison Of Web Testing Techniques Applied To Ajax Web Applications, Journal On Software Tools For Technology Transfer, Pages 477-492, December 2008.
3. Marchetto A., Tonella P., And Ricca, F., State-Based Testing Of Ajax Web Applications, IEEE Computer Proceedings Of The 23rd International Conference On Software Engineering, Pages 121-130, April 2008.
4. Mesbah, A And Van Deursen, A., Invariant-Based Automatic Testing Of Ajax User Interfaces, International Conference On Software Engineering (ICSE'09), IEEE Computer Society, Pages 210-220, May 2009.
5. Bu Sung Lee, Aggregating IaaS Service, 2011 Annual SRII Global Conference, Pages 335-338, February 2011.

   B. Hayes, Cloud Computing, Communications Of The ACM (CACM), Pages 9–11, July 2008.
6. Koray Incki,Ismail Ari And Hasan Sozer, A Survey Of Software Testing In The Cloud, IEEE 6th International Conference On Software Security And Reliability Companion, Pages 18-23, May 2012.
7. Peng Zhenlong And Ou Yang Zhonghui, The Application And Development Of Software Testing In Cloud Computing Environment, 2012 International Conference On Computer Science And Service System, Pages 450

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