

DELHI TECHNOLOGICAL UNIVERSITY (Formerly DCE)



SOFTWARE TESTING (SE-302)

Testing Adobe and DTU Website

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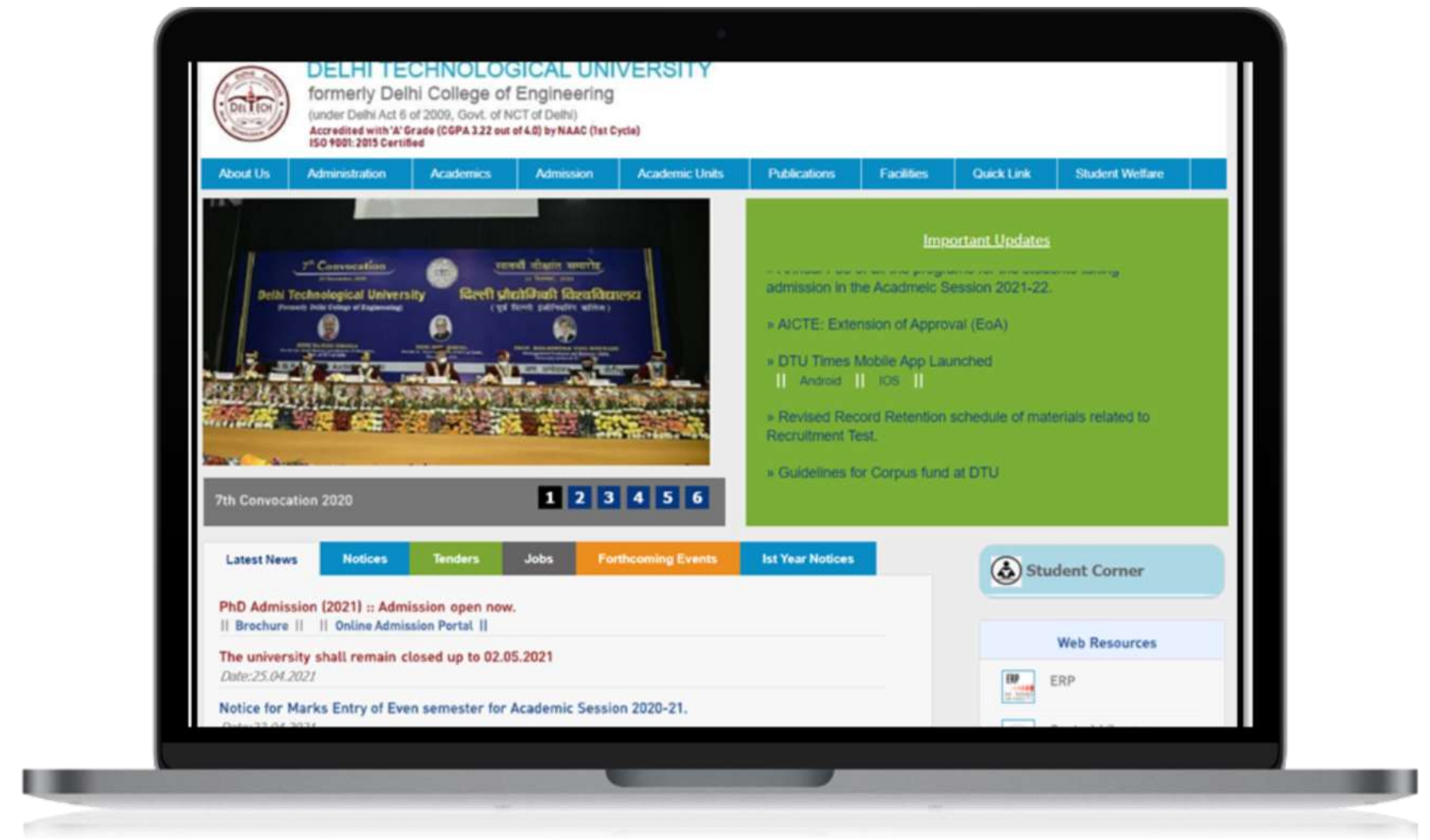
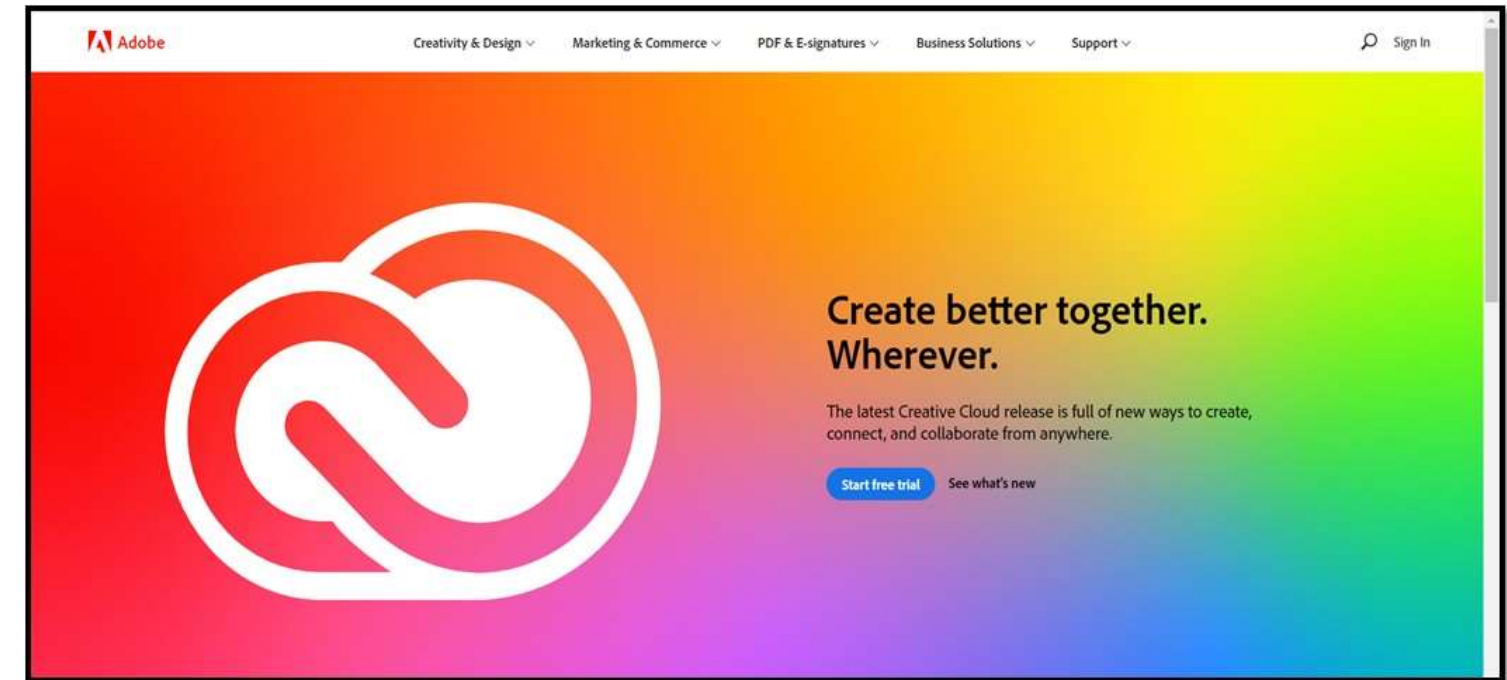
HIERARCHY OF TESTING

1. Functional Testing
2. User Interface Testing
 - Navigation Testing (using Selenium)
 - Form-Based Testing
3. Usability Testing
4. Configuration and Compatibility Testing (using PowerMapper)
5. Performance Testing (using Locust & Apache Jmeter)
6. Database Testing
7. Security Testing (using PenTest and Immuniweb Tool)

Links to the websites:

<http://dtu.ac.in/>

<https://www.adobe.com/in/>



FUNCTIONAL TESTING - ADOBE

Functionalities tested:

1. Registering on the website.
2. Log in to the website for purchasing software.
3. Search the software with filters applied.
4. Log in to the website to make Profile changes in the edit profile section.
5. Log in to the website to contact Adobe customer service.

Errors and Findings:

- The website was able to perform the above tasks comfortably but fails in some cases.
- While registering on the website, in the register form, there are no validity checks for special characters in the First & Last name field. Moreover, the email is not validated whether it exists or not.
- When a user is logged in and tries to contact Adobe Help for any issue, he/she is not able to chat with the virtual assistant.
- The Virtual Assistant is not able to resolve most of the issues faced by the user, rather it just keeps on echoing the same error message.
- The database is updated whenever the user purchases any software. Information like credit card/debit card details is saved to the database for future use.

Test cases ID	Test Scenario	Description (Steps followed)	Inputs	Expected output	Pass/Fail
TC01	Registering a user to the website.	Register on the website by filling up the register form.	Email address: ashish1234@gmail.com First name: Ashish Last name: Kumar Password: Hello123 DOB:15 Jan 2000	If the information entered by the user is valid, the user's information is successfully added into the database and he is successfully registered, otherwise an appropriate error message is displayed.	Pass
TC02	Browsing the software in the View all products section. but not purchasing it.	Search the software to decide which items to purchase.	Search string Input: Photoshop	List of all softwares searched are correctly displayed.	Pass
TC03	Browsing the software with special offers	Click on Special offer tag in View all product section	-	All the special offers are displayed.	Pass
TC04	Searching a software with filters applied.	Click on "Desktop" checkboxes to view only desktop softwares.	TYPES <input checked="" type="checkbox"/> Desktop <input type="checkbox"/> Mobile <input type="checkbox"/> Web	List of all softwares with the selected filter are correctly displayed.	Pass

FUNCTIONAL TESTING - DTU

Functionalities tested:

1. Latest updates about Admission in different academic programs
2. Checking latest notices
3. Information about DTU Administration
4. Information about academic departments
5. Facilities offered by DTU campus

Errors and Findings:

- The website satisfies all the basic functionalities that an educational website should have.
- The information on the website is well updated. All the sections, i.e. Notices, Tenders, Jobs, Forthcoming events, latest news about admission, and important updates of the university are updated regularly.
- All the information is filtered out with respect to the date on which the information is uploaded. It makes it easier for the user to search for the required information on the website.
- The website lists out all the facilities that are offered by the institution with images.
- There are separate columns for important links and resources offered by the institution. This makes the website a one-place-for-all help that is required by the user of the website.

Test Cases ID	Test Scenario	Description (Steps followed)	Expected Output	Actual Output	Pass/Fail
TC01	Latest updates about Admission in different academic programs.	<ol style="list-style-type: none">1. Click on the 'Admission' tab present on top of the website homepage.2. Choose the required program.	All the latest news about the different academic programs must be visible to the user, with appropriate dates mentioned.	The updates are regularly updated on the website. The user is able to see all the updates about the required program.	Pass
TC02	Checking latest notices	<ol style="list-style-type: none">1. Click on the 'Notices' tab present on the website homepage.2. Scroll and search the required notice on the website.3. Click on the particular notice to download it.	All the latest notices must be visible to the user, with appropriate dates of upload mentioned.	The notices section is well updated and all the required notices are present on the website.	Pass
TC03	Checking latest tenders	<ol style="list-style-type: none">1. Click on the 'Tenders' tab present on the website homepage.2. Scroll and search for the required notice on the website.3. Click on the particular tender to download it.	All the latest tenders must be visible to the user, with appropriate dates of upload mentioned.	The Tenders section is well updated and all the required tenders are present on the website.	Pass

USER INTERFACE TESTING

NAVIGATION TESTING - ADOBE

- Through selenium, we found zero broken links and 87 valid links.

Detection of broken links completed with 0 broken links and 87 valid links

- However, by using third party web applications,
 - a. DeadLink Checker - <https://www.deadlinkchecker.com/>
 - b. DrLinkCheck - <https://www.drlinkcheck.com/>
- We found the following broken links:
 - <https://www.adobe.com/la/offer-terms/cc-full-puf-special-offer.html>
 - <https://acrobat.adobe/es/eu>
 - <https://www.adobe.com/creativecloud/features.mp4>
 - <https://www.adobe.com/supportservice/>
 - <https://www.adobe.com/products/photoshop/selector>

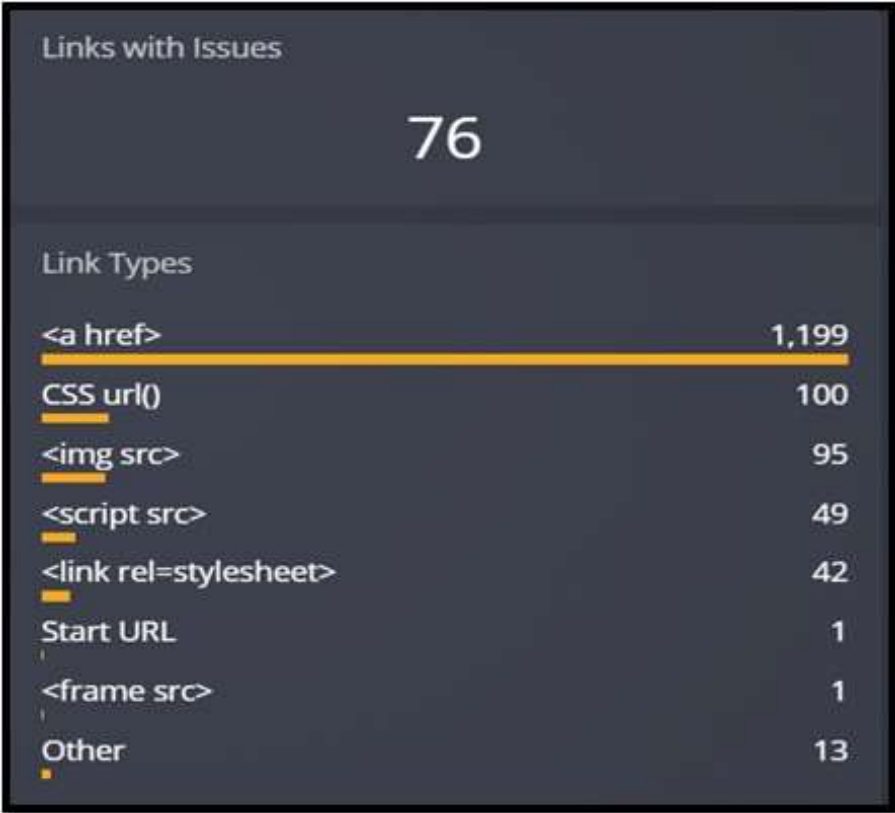
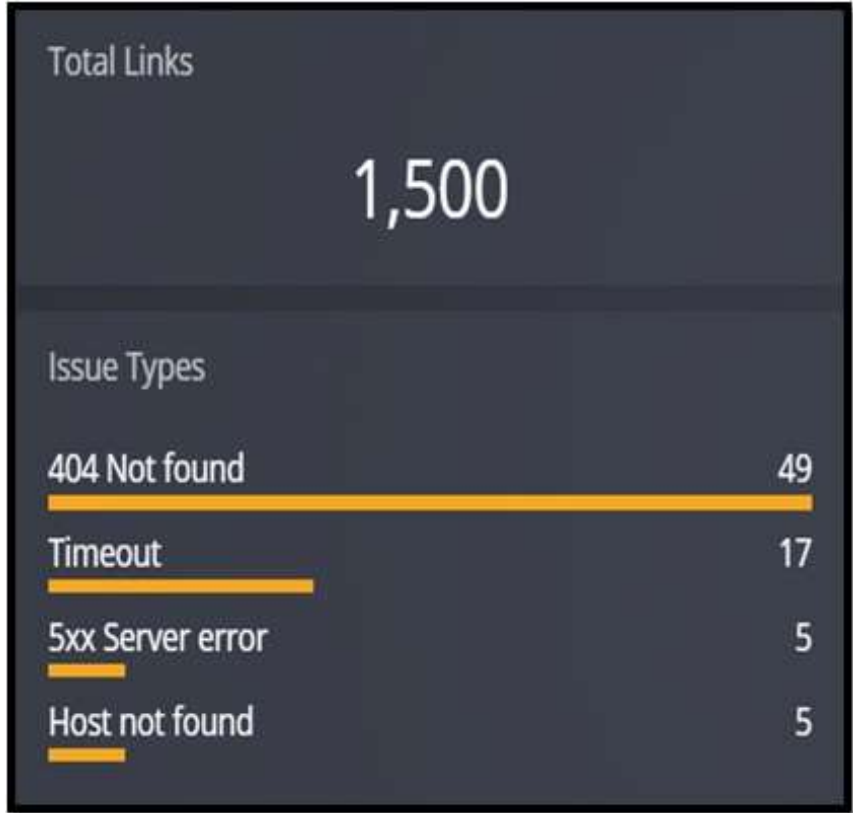
Test cases ID	Description	Inputs	Expected output	Remarks
TC01	Check all the header links on each web page	Link1- Creativity & Design Link2- Marketing & Commerce Link3-PDF & E-signatures Link4-Business Solution Link5-Support	Appropriate web page is opened with respect to each link. Appropriate horizontal and vertical scroll bars are present and the user can view the page contents properly.	Header contains following headings which in turn contains various links and all the links are working fine.
TC02	Check all the links which are mentioned in footer of each web page	Link1-Shop For Link2-For Business Link3-For Education Link4-For Mobile Link5-Experience Cloud Link6-Support Link7-Resources Link8-Adobe	Appropriate web page is opened with respect to each link.	Footer contains following headings which in turn contains various links and all the links are working fine.
TC03	Search for softwares in the View all products page.	Search string	The user is able to navigate across multiple search pages successfully.	When user provides string in search bar, then results are showed from which the user is able to view softwares.
TC04	Click on 'back' link present on each page.	Clicking the Back Button	The appropriate page is displayed.	The back function is working perfectly.

USER INTERFACE TESTING

NAVIGATION TESTING - DTU

- Through selenium, we checked a total of 606 total links. Out of which 11 links were found to be broken having server code 404.
- However, by using third party web applications,
 - (a) DeadLink Checker - <https://www.deadlinkchecker.com>
 - (b) DrLinkCheck - <https://www.drlinkcheck.com/>

Summary of the testing can be seen below:



Test cases ID	Description	Inputs	Expected Output	Actual Output	Remarks
TC1	Check all the header links on each web page	Link1 - Homepage Link2 - Vision and Mission Link3 - East Delhi Campus Link4 - Wall of Donors Link5 - Alumni Affairs Link6 - International Affairs Link7 - T & P Link8 - NIRF Link9 - Photo Gallery Link10 - DTU Studio Link11 - Moodle Link12 - RTI Info Link13 - Contact Us	Appropriate web page is opened with respect to each link.	Appropriate web page is opened with respect to all the links except the following: International Affairs (Timeout Error) - https://intaffairs.dtu.ac.in/ Moodle (Database Connection Error) - http://moodle.dtu.ac.in/	Except two links mentioned, other links are working fine and the corresponding web pages are displayed with respect to each link.
TC2	Check all the links on each web page to test the appearance of content on each web page.	Link1 - Homepage Link2 - Vision and Mission Link3 - East Delhi Campus Link4 - Wall of Donors Link5 - Alumni Affairs Link6 - International Affairs Link7 - T & P Link8 - NIRF Link9 - Photo Gallery	Appropriate horizontal and vertical scroll bars are present and the user can view the page contents properly.	Appropriate horizontal and vertical scroll bars are present and the user can view the page contents properly except for the following links which are not opening: International Affairs (Timeout Error) - https://intaffairs.dtu.ac.in/ Moodle (Database Connection Error) -	Except two links mentioned, other links are working fine and the corresponding web pages are displayed with vertical and horizontal scroll bars, with respect to each link.

FORM BASED TESTING - ADOBE

Forms tested:

1. Register form
2. Login form
3. Payment form

Errors and Findings:

- Most of the validity checks in the forms are working properly.
- Mandatory fields are not marked with an asterisk or with some other sign. However, the mandatory functionality is working properly.
- There are no validity checks for special characters in the First & Last name fields in the register form.
- While registering into the website, there are no validity checks for a valid email address ie. whether provided email id exists or not.
- In the register form, there is no maximum length for password.

Testcases ID	Description	Inputs	Expected output	Remarks
TC01	Check the Email text field that has an Email address without @ symbol.	testgmail.com	It should show the validation message for valid email.	Error message is displayed – “please enter an email address”.
TC02	Check the Email text field that has a random string instead of a real email.	abcd	It should show the validation message for valid email.	Error message is displayed – “please enter an email address”.
TC03	Check the Email text field that has @ symbol written in words.	testAttherategmail.com	It should show the validation message for valid email.	Error message is displayed – “please enter an email address.”
TC04	Check the Email text field that has a missing dot in the email address.	test@gmailcom	It should show the validation message for valid email.	Error message is displayed – “please enter an email address”.
TC05	Check the Email text field that has a number instead of a real email.	12345	It should show the validation message for valid email.	Error message is displayed – “please enter an email address”.
TC06	Check the Email text field that has blank spaces (means user doesn't provide email).	-	It should show the validation message for valid email.	Error message is displayed – “please enter an email address”.
TC07	Check the invalid email which is not registered.	ashishkr73@gmail.com aryan123@gmail.com	email should not be accepted as a valid email address.	Error message is displayed – “We couldn't find an account with that email address.”
TC08	Check the valid email which is registered.	ashishkr737@gmail.com aryan12378@gmail.com	email should be accepted as a valid email address.	Green tick appears signalling that it's a valid email address and proceeds to enter password.

CONFIGURATION AND COMPATIBILITY TESTING

We applied a manual as well as automated approach to test the configuration and compatibility of the websites. We have used the PowerMapper tool to generate the following matrix.

ADOBE

Link of the report:

<https://try.powermapper.com/Demo/Report/21eee1a4-b30c-4f5d-b62d-b3b87216b873>

This tab shows pages that exhibit browser-specific behavior, or trigger browser bugs.

Browser	IE	Edge	Firefox	Safari	Opera	Chrome	iOS	Android	
Version	11	88	84	14	73	88	≤13	14	88
Critical Issues	✓	✓	✓	✓	✓	✓	✓	✓	✓
Major Issues	🟡	✓	✓	✓	✓	✓	✓	✓	✓
Minor Issues	🟡	✓	✓	✓	✓	✓	✓	✓	✓

Key

- 🔴 Missing content or functionality
- 🟡 Major layout or performance problems
- 🟡 Minor layout or performance problems

Findings:

- The site was able to load across all the platforms and all the operations could be performed seamlessly.
- The PowerMapper tool was able to identify 3 major and 2 minor issues in layout of the webpage, in Internet explorer version 11 or less.

DTU

Link of the report:

<https://try.powermapper.com/Demo/Report/fa64fd31-e74f-4d77-9437-e56a7ed832f2>

Browser	IE	Edge	Firefox	Safari	Opera	Chrome	iOS	Android	
Version	11	88	84	14	73	88	≤13	14	88
Critical Issues	✓	✓	✓	✓	✓	✓	✓	✓	✓
Major Issues	✓	✓	✓	✓	✓	✓	✓	✓	✓
Minor Issues	✓	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡

Key

- 🔴 Missing content or functionality
- 🟡 Major layout or performance problems
- 🟡 Minor layout or performance problems

Findings:

- There were many UI issues observed across various devices and the layout was also not satisfying.
- The PowerMapper tool identified 1 major and 2 minor issues in the layout of the webpage, in almost all of the web browsers.

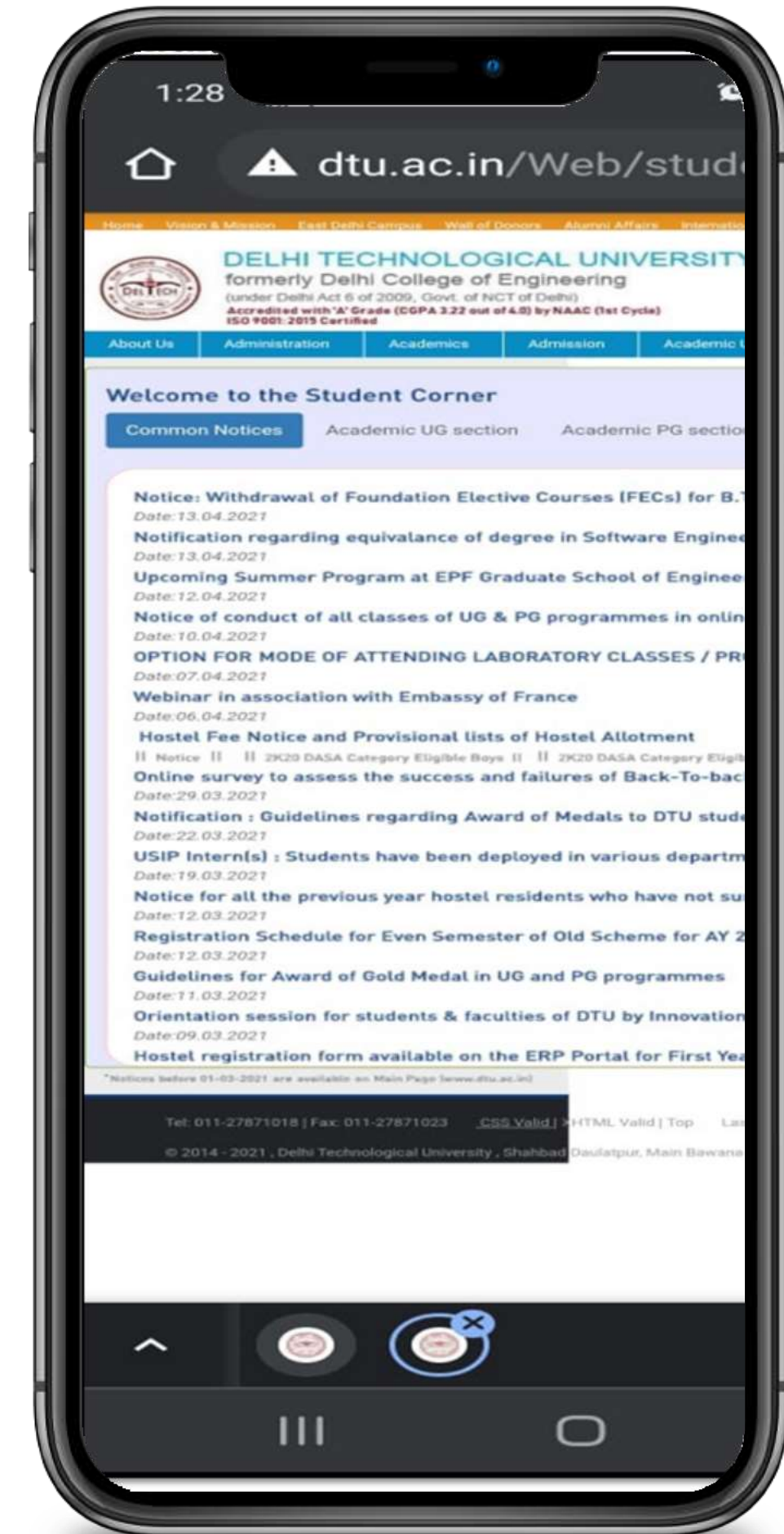
The evident snapshot is provided in the next slide.

Snapshot Evidence !

This is a snapshot of the Student Corner section of the DTU website taken by my Samsung M51 mobile phone using Chrome as a web browser.

1.The footer is not displayed properly (half of it is black and half white).

2.The page layout is not entirely visible. Half of the contents of the page are not displayed.



PERFORMANCE TESTING - ADOBE

- The parameters that were set for conducting this testing are as follows:
 - a. The number of users per second were increased gradually from 500, 1000, 2000, 3000, 4000 to 5000.
 - b. The number of users spawns per second is 100
- The pie chart shows that 96.72% of the HTTP requests made on the website were successful whereas 3.28% lead to errors.
- The distribution of response times ranges is depicted on the top-right side.

Avg. Response Time - 1.48 ms

Tools Used: Locust and Apache Jmeter



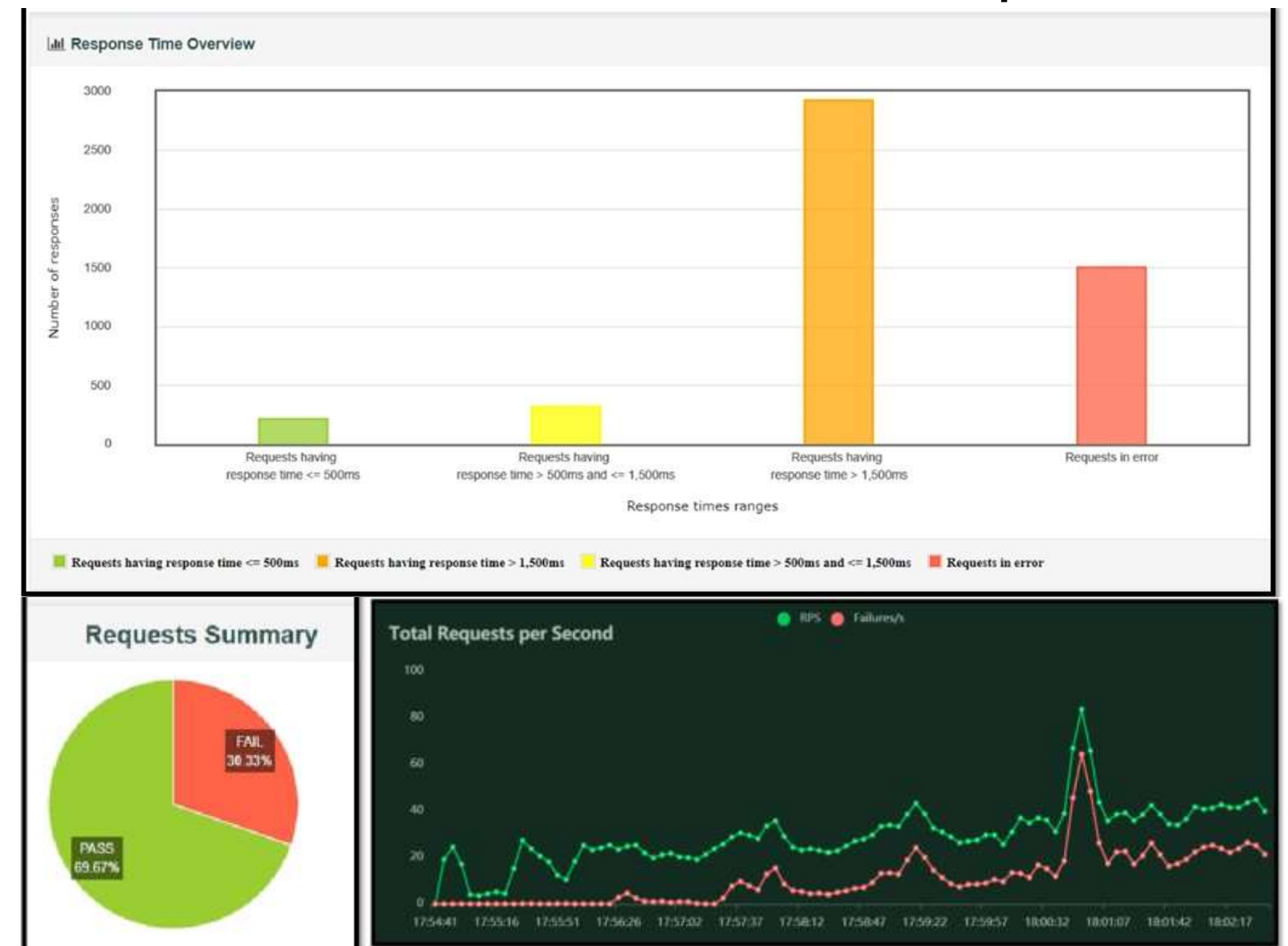
Threshold - 5000 users/sec

PERFORMANCE TESTING - DTU

- The parameters that were set for conducting this testing are as follows:
 1. The number of users per second were increased gradually from 200, 500, 700, 1000, 1500, 2000 to 3000.
 2. The number of users spawns per second is 100.
- The pie chart shows that 69.67% of the HTTP requests made on the website were successful whereas 30.33% lead to errors.

Avg. Response Time – 5.23 ms

Tools Used: Locust and Apache Jmeter

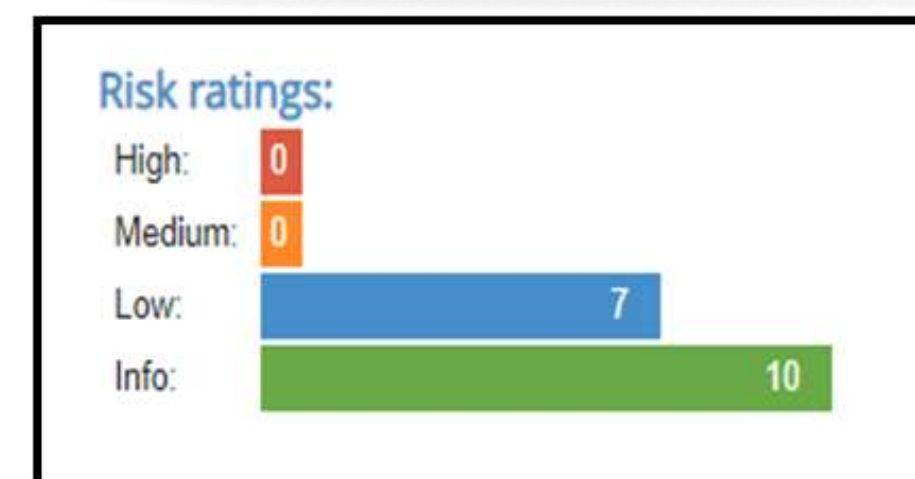


Threshold - 1000 users/sec

SECURITY TESTING - ADOBE

The key findings of the testing are as follows:

- Secure attributes set in cookies that prevents browsers to send cookie over an insecure connection.
- The absence of security headers in HTTP responses may lead to Clickjacking, Cross-site scripting attacks, Unsecure channels etc.
- Trusted SSL/TLS certificate issued.
- Encrypted and more secured.
- No WAF (Web Application Firewall) is detected.
- They should implement a WAF to protect the website against common web attacks.



Overall risk level:

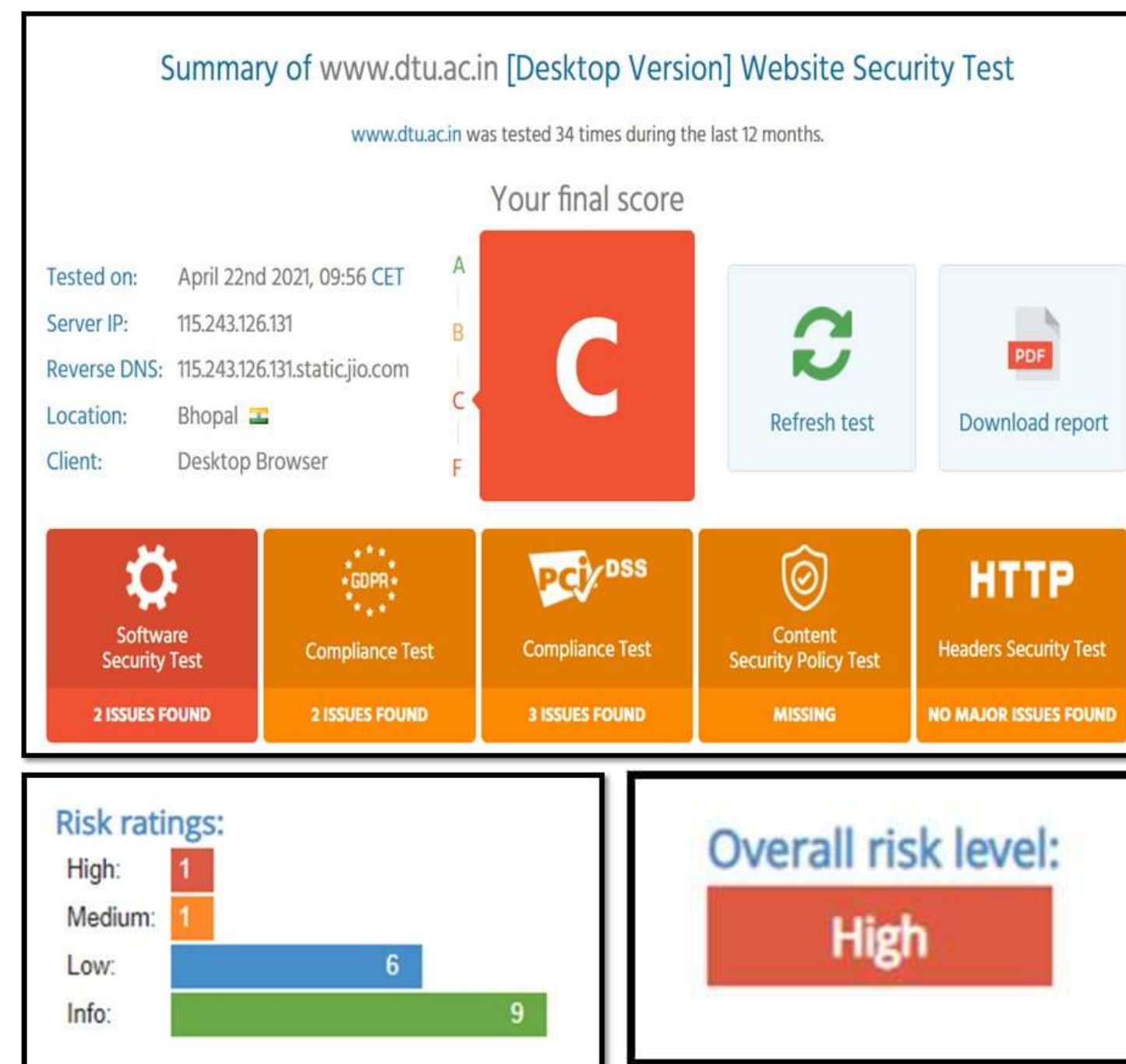
Low

Tools Used: PenTest and ImmuniWeb

SECURITY TESTING - DTU

The key findings of the testing are as follows:

- Missing secure attributes set in cookies that prevent browsers to send cookies over an insecure connection.
- The absence of security headers in HTTP responses may lead to Clickjacking, Cross-site scripting attacks, Unsecure channels etc.
- No trusted SSL/TLS certificate issued.
- No WAF (Web Application Firewall) is detected.

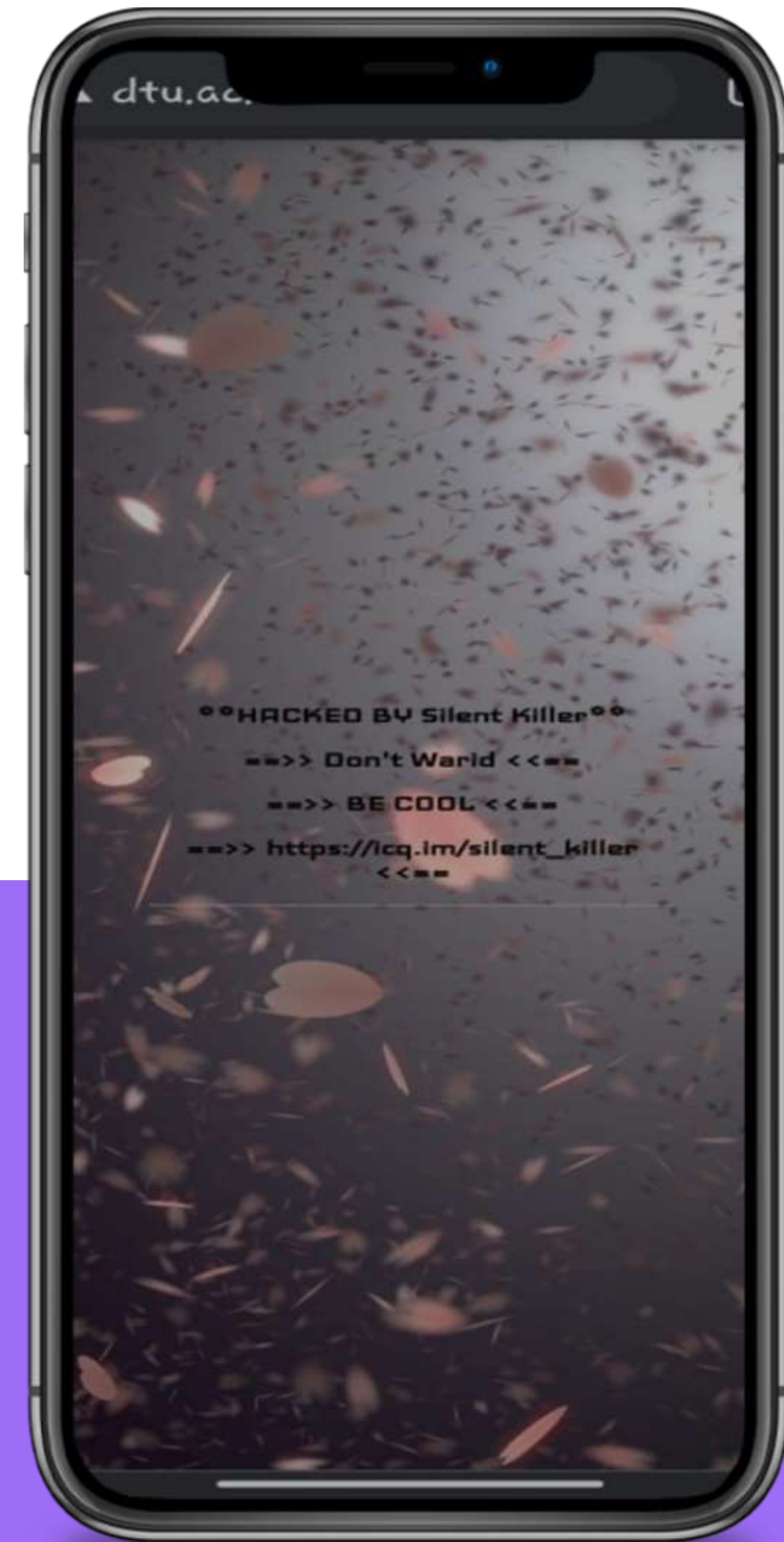


Tools Used: PenTest and ImmuniWeb

Security Fail Alert !

Communication is made over unsecure, unencrypted HTTP protocol. An attacker could search for an appropriate exploit (or create one himself) for this vulnerability and use it to attack the system.

We recently found out the DTU website got hacked by someone. It is for this reason only that the website is not secured and makes it easy for anyone to hack into it easily.



DATABASE TESTING - ADOBE

Test cases formed:

1. Searching a software in the View all products section.
2. Searching an item with filters applied.
3. Registering a user to the website.
4. Login into the website.
5. Changes in edit profile section.
6. Purchasing a software on the website.

Errors and Findings:

- The website was able to perform the above test cases comfortably, signifying a good database connection and suitable data retrieval methods.
- Once the user is registered, they can easily log in using the credentials used at the time of registration.
- Changes made in the edit profile are saved and reflected in the database at the same time.
- The database is updated whenever the user purchases any software. Information like credit card/debit card details are saved in the database for future use.
- Searching software is also performed efficiently. The results are displayed simultaneously when a filter is applied, indicating that data retrieval methods are applied appropriately.

Test case ID	Description (Steps followed)	Inputs	Expected Output	Pass/Fail
Search a software in the View all products section.				
TC1	Search the software to decide which items to purchase.	Search string Input: Photoshop	List of all softwares searched are correctly displayed from the database that satisfy the search criteria selected by the user.	Pass
Searching a software with filters applied.				
TC2	Click on "Desktop" checkboxes to view only desktop softwares.	TYPES <input checked="" type="checkbox"/> Desktop <input type="checkbox"/> Mobile <input type="checkbox"/> Web	List of all softwares with the selected filter are correctly displayed.	Pass
Registering a user to the website.				
TC3	Register on the website by filling up the form.	Email address: ashish1234@gmail.com First name: Ashish Last name: Kumar Password: Hello123 DOB:15 Jan 2000	If the information entered by the user is valid, the user's information is successfully added into the database and he is successfully registered, otherwise an appropriate error message is displayed.	Pass
Login into the website and purchasing a software.				
TC4.	Login into the site.	Email address: ashish1234@gmail.com Password: Hello123	If all the information entered by the user is valid, and selected software stored in the database is available, then the software is purchased by the user after successful payment and	Pass
	Select software to be purchased and its plan (monthly or yearly).	Product name: Photoshop Plan: Monthly		
	Choose the mode of payment.	Credit Card/Debit Card		

DATABASE TESTING - DTU

Test cases formed:

1. Searching a notice in the 'Notices' section.
2. Searching for archives notices/circulars/orders.
3. Searching for an event in the 'Forthcoming Events' section.
4. Giving feedback for the hostel feedback form.
5. Checking the Moodle option on the website homepage.
6. Searching for a photo in the 'Photo Gallery' section.
7. Checking the 'Student Corner' option.
8. Searching a tender in the 'Tenders' section.
9. Searching a job in the 'Jobs' section.
10. Searching for an Update in the 'Important Updates' section.

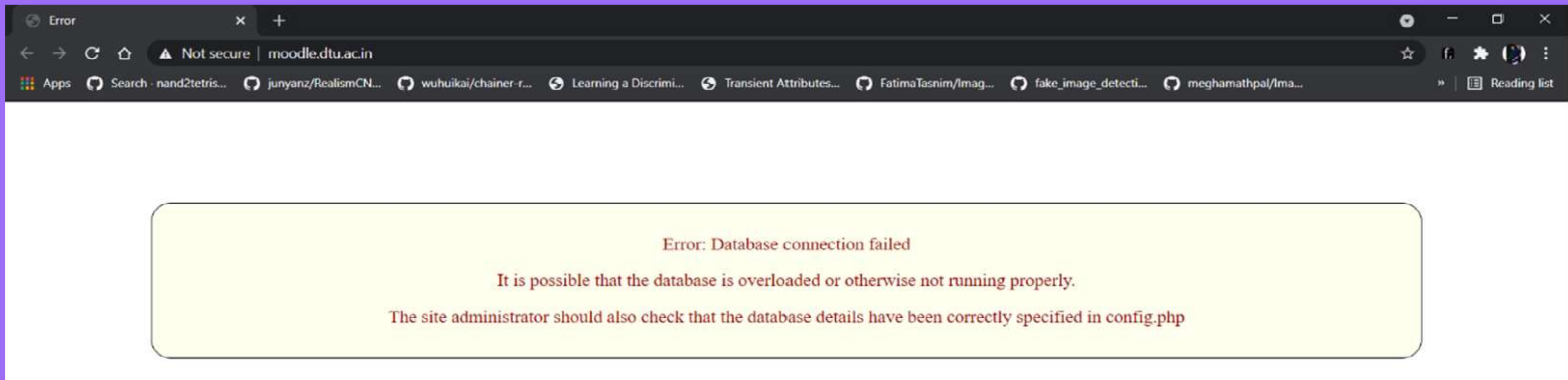
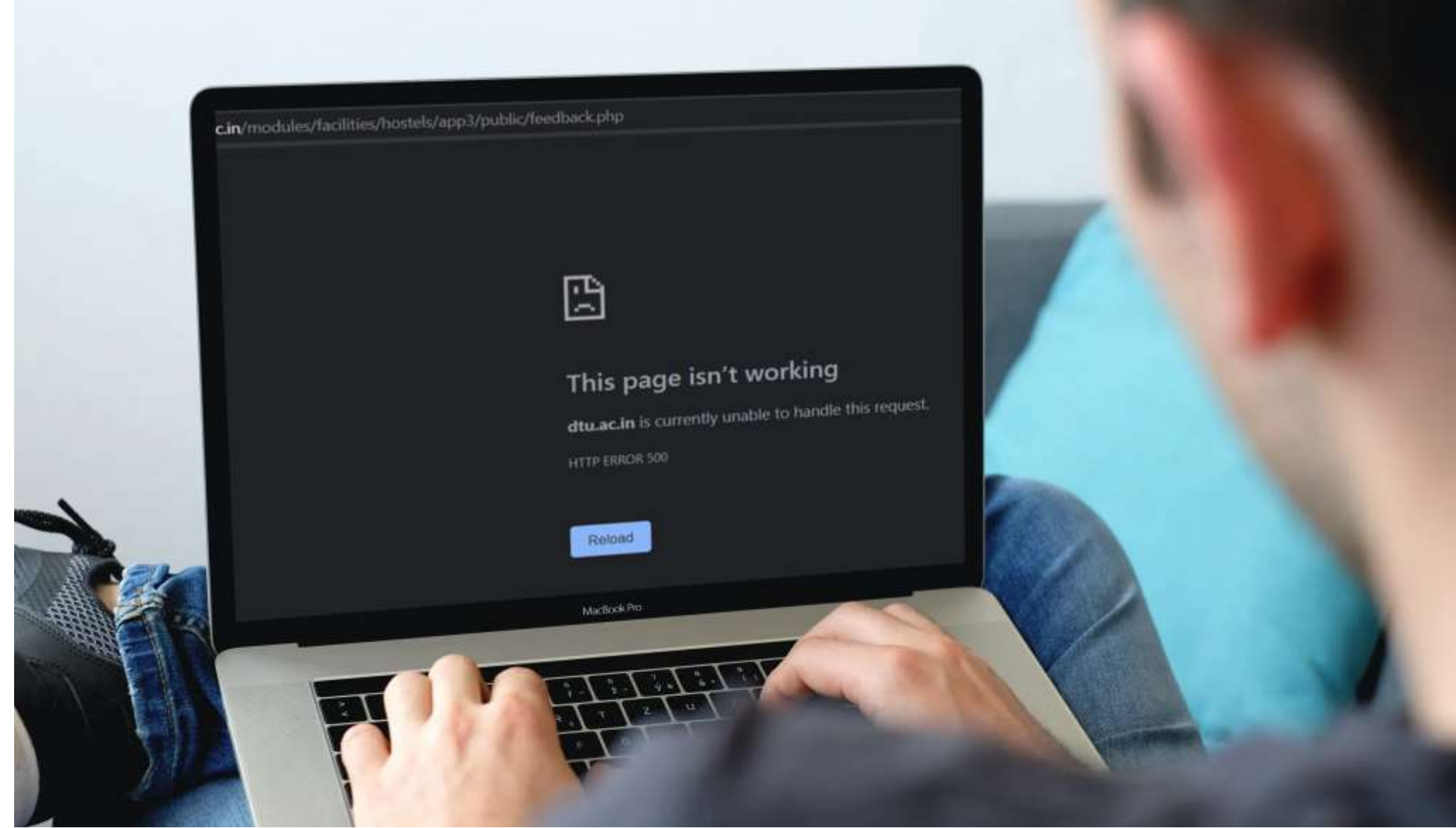
Errors and Findings:

- The feedback form for the Hostel facility is not working properly. There are errors in the database connection for that web page.
- The Moodle option given on the homepage of the website is not able to retrieve the database details.
- Other features like Notices, Tenders, Jobs, Latest News and Important Updates are working fine and the database connection is verified.

Test case ID	Description (Steps followed)	Observed Output	Expected Output	Pass/Fail
Searching a notice in the 'Notices' section.				
TC1	1. Click on the 'Notices' Section of the website. 2. Scroll and search for the required notice.	List of all notices are correctly retrieved and displayed from the database.	List of all notices should be correctly retrieved and displayed from the database.	Pass
Searching for archives notices/circulars/orders.				
TC2	1. Click on the 'Notices' Section of the website. 2. Scroll down and click on the 'View All' button. 3. Scroll down again and click on the 'Archives' button. 4. Search the required archive notice/circular/order.	List of all notices / circulars /orders are correctly retrieved and displayed from the database.	List of all notices / circulars /orders should be correctly retrieved and displayed from the database.	Pass
Searching for an event in the 'Forthcoming Events' section.				
TC3	1. Click on the 'Forthcoming Events' Section of the website. 2. Scroll and search for the required notice.	List of all events are correctly retrieved and displayed from the database.	List of all events should be correctly retrieved and displayed from the database.	Pass
Giving a feedback for the hostel feedback form.				
TC4	1. Click on the 'Hostels' button from the Web Resources section of the website. 2. Click on the 'Feedback Form' button.	The form doesn't load with a http error 500. There is problem retrieving the form from the database.	The form must be retrieved from the database and responses must be stored in the database correctly.	Fail
Checking the 'moodle' option on the website homepage.				
TC5	1. Click on the Moodle link on the top of the website.	There is a database connection error and the page is not loading.	The moodle page should load properly and details should be retrieved from the database.	Fail

Snapshot Evidences

Here are some corresponding snapshot proofs for the problems listed in the errors are findings of database testing:



ERRORS, SOLUTIONS and SUGGESTIONS – ADOBE

- There is no **Add to Cart** option. The user needs to individually pay for all the software that he/she wants to purchase.
- Only a **few details and features** about the software are mentioned which is not enough to completely understand the software functionality.
- It should be ascertained that all the **broken links** on the website are working properly. If a broken link is found, then it should be rectified as soon as possible.
- In the register form, there are **no validity checks** for special characters in the First & Last name field. Moreover, there are no validity checks for a valid email address means whether provided email exists or not. So, they must validate the email using some **API calls** to check whether the email id exists or not.
- While the user tries to contact Adobe for any issue (already logged in), then the user is **not able to chat with the virtual assistant**. When user clicks on the contact admin console, then it says “We're sorry. You don't seem to have access to the Adobe Admin Console”.
- While the user is trying to contact Adobe for any issue (without logged in), user is able to chat with virtual assistant, but the **virtual assistant is not able to solve the issue**, it just keeps on echoing “Can you describe the issue more specifically?” The Virtual Assistant must be **trained properly** to address the issue of the customer.
- Essential info. like **contact number or email address** for raising any issue should be provided so that if chatting with bot doesn't help customer, then he can raise his issue through call or email.



ERRORS, SOLUTIONS and SUGGESTIONS – DTU

- The website must have a **search functionality** provided to search for the required information on the website. It is extremely **hectic and cumbersome** for a user to search for a particular document in the entire website.
- There are **compatibility and configuration** issues found on some devices. The developers must ensure that they are coding the website for various devices and must use **MediaQuery** for the same.
- It should be ascertained that all the **broken links** on the website are working properly. If a broken link is found, for example – **International affairs, Moodle**, it should be rectified as soon as possible.
- In some sections of the website like the **Academic Departments** section, the **content is not formatted** properly. The readability of the webpage is an important factor which tells us about the quality of the website. It should be ensured that the contents of all the pages are displayed properly to the user.
- The **automated sliding feature** in the Important Updates section needs to be modified. A user cannot scroll the section, which makes it frustrating to wait for all the important updates to scroll automatically and slowly. Moreover, if the user hovers the mouse pointer over the section, the scrolling stops, making it impossible for the user to see the below updates.





Thank you

PRESENTATION BY :
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