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Vellore Institute of Technology
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**SCHOOL OF COMPUTER SCIENCE ENGINEERING AND
INFORMATION SYSTEMS (SCORE)
Winter Semester 2023-2024**

**SWE2005
Softwar Testing**

Slot : EI+TEI

REVIEW-3

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VIT UNIVERSITY: VELLORE 632 014

BONAFIDE CERTIFICATE

Certified that this project report **“TESTING A WEBSITE”** is the bonafide work of **“DHANUSH,EDWARD,SOMESH,VARUN”** who carried out the project work under my supervision.

SIGNATURE

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School of Computer Science Engineering and InformationSystem
Fall Semester 2023-24
Software Testing
SWE2005

Introduction:

In our project, we are testing the CMC Eye Hospital website. We used tools like JMeter, JUnit, and Selenium to check if the website works well, responds fast, and is reliable.

Problem Statement:

A prevalent issue arises from a significant number of individuals providing inaccurate information during the registration process on website. This has led to the generation of a substantial amount of anonymous data upon logging in, contributing to the creation of duplicate values. To address this matter, we are diligently testing all modules to ensure their seamless functionality and identify potential areas of improvement. Our objective is to rectify this issue and enhance the accuracy of data collection by assessing the effectiveness of each module within our system.

Functional Requirements:

User Registration:

User should be able to create an account and log in successfully or the user can sign in through google or face book. Through their account the user should be able to use the application in different devices without losing any data.

Online Appointments:

The website should provide an online appointment scheduling system that allows patients to book appointments easily.

Patient Portal:

The website should provide a secure patient portal where patients can access their medical records, view test results, communicate with doctors, and manage their healthcare information.

Health Information:

The website should provide comprehensive health information related to eye care, including common eye conditions, treatment options, and preventive measures.

Doctor Profiles:

The website should provide detailed profiles of the hospital's eye doctors, including their qualifications, experience, and areas of expertise.

Non functional requirements:

Performance:

The website should load quickly and perform well under different user loads.

The website should be able to handle a large number of concurrent users.

The website should be able to handle a high volume of traffic.

Reliability

The website should be available 24/7.

The website should be able to recover from failures quickly.

The website should be able to withstand malicious attacks.

Security

The website should protect user data and privacy.

The website should use appropriate security measures to prevent unauthorized access.

The website should be compliant with all applicable data protection laws and regulations.

Usability

The website should be easy to use for all users, regardless of their technical expertise. understandable for normal man also.

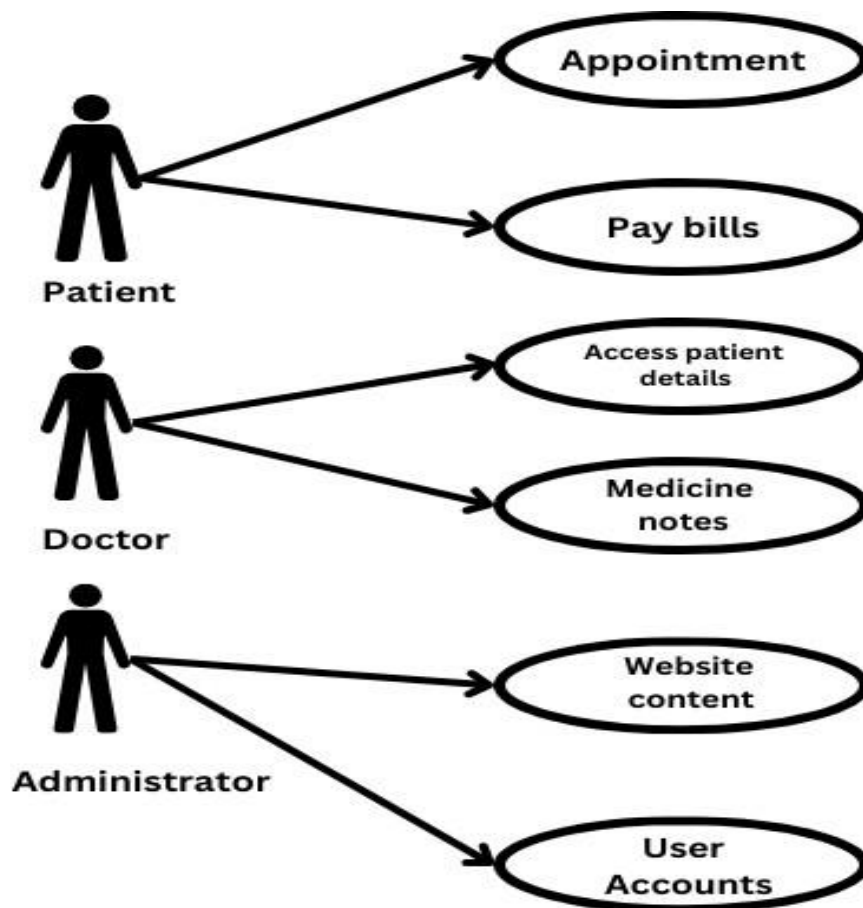
The website should be accessible to users with disabilities.

The website should be responsive and adapt to different screen sizes and devices. like phone, tablet, computer etc..

User interface:

The screenshot displays the 'Patient Portal' login interface for Christian Medical College Vellore. The header features the college's logo and name, along with the motto 'Not to be ministered unto but to minister'. Below the header, the page is divided into two main sections. On the left, a login form is presented with two tabs: 'WITH PATIENT ID' (selected) and 'WITH USER ID'. The 'WITH PATIENT ID' tab contains a 'Do you have Patient ID to login?' question, followed by input fields for 'PATIENT ID' and 'PASSWORD / OTP'. Below these fields are links for 'CLICK TO GET ONE TIME PASSWORD (OTP)' and 'NEW / FORGOT PASSWORD?'. A 'Login' button is positioned to the right of the password field. At the bottom of the form is a blue button labeled 'New Patient (First time to CMC)?'. On the right side of the page, there is a QR code with the text 'Download the CMC Patient Portal (Android) Mobile App by scanning the code'. Below the QR code is a section titled 'Our New Ranipet Campus' featuring a photograph of the campus building and a link for 'Janata Medical Service for patients from West Bengal (Click here for details)'.

Use case diagram:



Black Box Testing:

BLACK BOX TESTING METHOD:

Equivalence Partitioning: This testing method involves dividing the input domain of a program into classes or partitions, where each class represents a set of equivalent inputs. The idea is to test representative cases from each partition, assuming that the program's behavior will be the same for any input within that partition.

Test Matrix Table:

Login Page:

Test Case Id	Test case Scenario	Input	Expected Output	Actual Output	Pass/Fail
T1	CORRECT USERNAME BUT INCORRECT PASSWORD	USERNAME: 240328W00329 Password: password123	Incorrect Password	Incorrect Password	FAIL
T2	CORRECT USERNAME AND PASSWORD	USERNAME: 240328W00329 Password: RSKOZW8	LOGIN SUCCESSFUL	LOGIN SUCCESSFUL	PASS
T3	INCORRECT USERNAME AND PASSWORD	USERNAME: XYZ PASSWORD : 3EREFDE	INCORRECT USERNAME AND PASSWORD	INCORRECT USERNAME	FAIL
T4	INCORRECT USERNAME BUT CORRECT PASSWORD	USERNAME: EREDF PASSWORD RSKOZW8	INCORRECT USERNAME	INCORRECT USERNAME	FAIL
T5	CORRECT USERNAME BUT MISSING PASSWORD	USERNAME: 240328W00329 PASSWORD :	MISSING PASSWORD	MISSING PASSWORD	FAIL
T6	MISSING USERNAME BUT CORRECT PASSWORD	USERNAME: PASSWORD RSKOZW8	MISSING USERNAME	MISSING USERNAME	FAIL

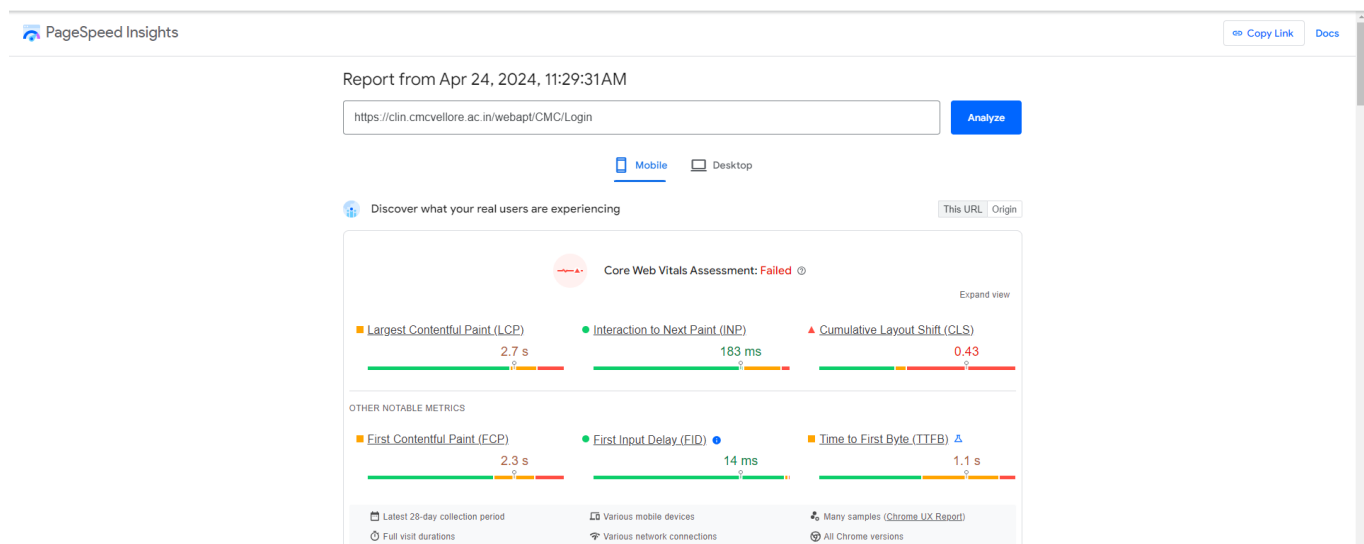
Performance testing by manual:

We have completed a comprehensive assessment of the CMC website, covering performance testing, accessibility, best practices, and SEO. Below, you'll find the key findings and results from our evaluation.

Performance	39%
Accessibility	73%
Best practices	63%
SEO(Search engine optimization)	82%

We've identified a performance challenge on the website, primarily attributed to the utilization of next-gen image formats. This has resulted in a suboptimal website performance that warrants attention.

Pagespeed Insight from Google:



Mobile Desktop

Latest 28-day collection period

Various desktop devices

Many samples (Chrome UX Report)

Full visit durations

Various network connections

All Chrome versions

Diagnose performance issues



39

Performance

Values are estimated and may vary. The performance score is calculated directly from these metrics. [See calculator.](#)

▲ 0-49 ■ 50-89 ● 90-100

METRICS

[Expand view](#)

▲ First Contentful Paint
8.0 s

▲ Largest Contentful Paint
27.2 s

● Total Blocking Time
80 ms

▲ Cumulative Layout Shift
0.356



Report from Apr 24, 2024, 11:29:31AM

<https://clin.cmcvellore.ac.in/webapt/CMC/Login>[Analyze](#)

Mobile Desktop

Discover what your real users are experiencing

[This URL](#) [Origin](#)

Core Web Vitals Assessment: Passed

[Expand view](#)

OTHER NOTABLE METRICS



Latest 28-day collection period

Various desktop devices

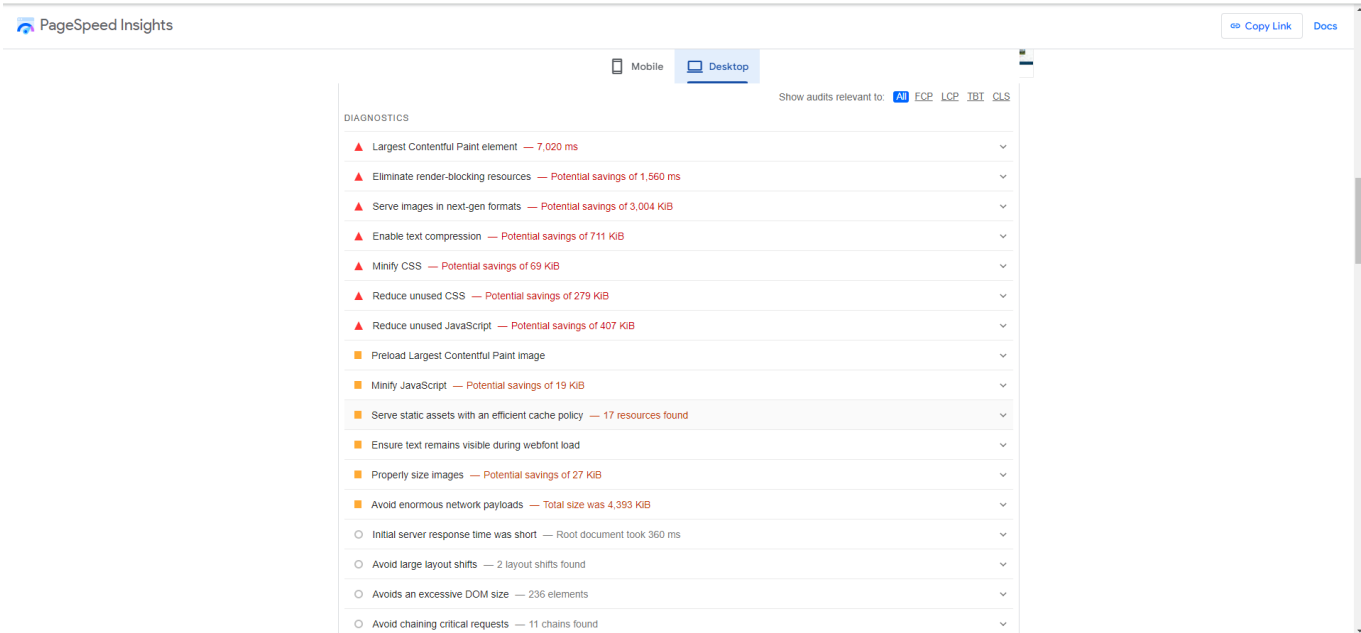
Many samples (Chrome UX Report)

Full visit durations

Various network connections

All Chrome versions

This tool, provided by Google, serves as a comprehensive resource for assessing website performance and offers insights into optimizing speed. It effectively highlights specific issues affecting performance and provides actionable recommendations for improvement.



The website underwent speed and load testing using the JMeter tool, revealing its commendable performance and ability to handle varying levels of load without encountering errors. The results indicate a robust and resilient system, showcasing the website's capacity to maintain stability and responsiveness under increased user activity. This successful outcome underscores the reliability of the website and its capability to deliver a seamless user experience across diverse conditions.

Advantages of JMeter:

1. Open Source:

- JMeter is open-source and freely available, making it cost-effective for organizations.

2. Platform Independence:

- Being Java-based, JMeter is platform-independent and can be used on various operating systems.

3. Extensibility:

- JMeter is highly extensible, allowing the integration of custom scripts, plugins, and extensions.

4. Community Support:

- Benefit from a large and active community that contributes to ongoing improvements and provides support.

Use Cases:

1. Load Testing:

- Simulate a large number of users to assess how well an application performs under heavy load.

2. Stress Testing:

Evaluate system behavior under stress conditions, determining its robustness and capacity limits.

3. Performance Testing:

- Measure and analyze various performance metrics, such as response times and throughput, to optimize application performance.

4. Regression Testing:

- Verify that recent code changes do not negatively impact the application's performance.



The website adeptly managed an augmented user count and an increased number of loops during our testing. It demonstrated strong performance and reliability under these elevated conditions, showcasing its capacity to efficiently handle higher user loads without compromising functionality. This positive outcome reflects the website's scalability and ability to seamlessly accommodate increased user engagement, affirming its robust design and responsiveness.

Selenium - User interface Testing

The website underwent a comprehensive User Interface (UI) testing phase utilizing the Selenium tool. This meticulous testing process focused on evaluating the website's user interface elements, interactions, and overall user experience. The utilization of Selenium allowed for a thorough examination of the website's UI functionality, ensuring that it not only meets but exceeds user expectations. The results of this testing phase provide valuable insights into the website's user interface robustness, identifying any potential issues and affirming its usability and responsiveness.

Using Selenium We are testing manually:

Testing the navigation of a website:

- **Verify that all menus and links take users to the appropriate pages.**
- **Make sure visitors can simply move between the website's various sections.**

Eclipse IDE workspace showing a Selenium test suite for CMC Vellore. The test suite is named 'UntitledTest' and is located in the 'Test/src' package. The test suite is currently running, and the failure trace indicates a 'NoSuchElementException' for the element 'li:nth-child(2) > a'.

```
1 import org.junit.Test;
2 import org.junit.Before;
3 import org.junit.After;
4 import org.openqa.selenium.By;
5 import org.openqa.selenium.WebDriver;
6 import org.openqa.selenium.chrome.ChromeDriver;
7 import org.openqa.selenium.Dimension;
8 import org.junit.After;
9 import java.util.*;
10
11 public class UntitledTest {
12     private WebDriver driver;
13
14     @Before
15     public void setUp() {
16         driver = new ChromeDriver();
17     }
18
19
20
21     @Test
22     public void untitled() throws InterruptedException {
23         driver.get("https://www.cmcv-vellore.edu/");
24         driver.manage().window().setSize(new Dimension(974, 1032));
25
26         // Add a delay of 2 seconds (2000 milliseconds)
27         Thread.sleep(3000);
28
29         driver.findElement(By.cssSelector(".menu2")).click();
30         Thread.sleep(3000);
31
32         // Store the window handles before opening a new window
33         Set<String> windowHandles = driver.getWindowHandles();
34
35         driver.findElement(By.id("txttNum")).click();
36         driver.findElement(By.id("txttNum")).sendKeys("12345");
37
38         driver.findElement(By.id("txttVrBirth")).click();
39         driver.findElement(By.id("txttVrBirth")).sendKeys("12345");
40
41         driver.findElement(By.cssSelector("li:nth-child(2) > a")).click();
42
43         // Wait for a brief moment for the new window to open
44         Thread.sleep(3000);
45
46         // Switch to the new window
47         for (String windowHandle : driver.getWindowHandles()) {
48             if (!windowHandles.contains(windowHandle)) {
49                 driver.switchTo().window(windowHandle);
50                 break;
51             }
52         }
53     }
54 }
```


Failure Trace:

```
org.openqa.selenium.NoSuchElementException: no such element: Unable to locate
(Session info: chrome=124.0.6367.79)
For documentation on this error, please visit: https://www.selenium.dev/document
Build info: version: '4.18.1', revision: 'b163319e48'
System info: os.name: 'Windows 11', os.arch: 'amd64', os.version: '10.0', java.version:
Driver info: org.openqa.selenium.chrome.ChromeDriver
Command: [f65ba0eb55aa721b4abd1e1368d2fab, findElement (value=txttNum, u
Capabilities {acceptInsecureCerts: false, browserName: chrome, browserVersion: 120-
ress: localhost:50122, networkConnectionEnabled: false, pageLoadStrategy: normal
(implicit: 0, pageLoad: 300000, script: 30000), unhandledPromptBehavior: dismiss a
tators: true}
Session ID: f65ba0eb55aa721b4abd1e1368d2fab
at java.base/jdk.internal.reflect.DirectConstructorHandleAccessor.newInstance(Dir
at java.base/java.lang.reflect.Constructor.newInstanceWithCaller(Constructor.java:
at java.base/java.lang.reflect.Constructor.newInstance(Constructor.java:486)
```

CMC Vellore


cmch-vellore.edu


Chrome is being controlled by automated test software.



CHRISTIAN MEDICAL COLLEGE VELLORE

Not to be ministered unto but to minister



Depts moving to Ranipet  Give to CMC

Vision Statement: The Christian Medical College, Vellore, seeks to be a witness to the healing ministry of Christ, through excellence in education, service and research

Our Campuses

Events

Newsroom

General

Photos and Videos

Patient Portal

Are you

Chrome is being controlled by automated test software.

CMC Patient Portal

WITH PATIENT ID

WITH USER ID

Do you have Patient ID to login?

PATIENT ID *

PATIENT ID

PASSWORD / OTP *

[CLICK TO GET ONE TIME PASSWORD \(OTP\)](#)

[NEW / FORGOT PASSWORD?](#)

Login

New Patient (First time to CMC)?

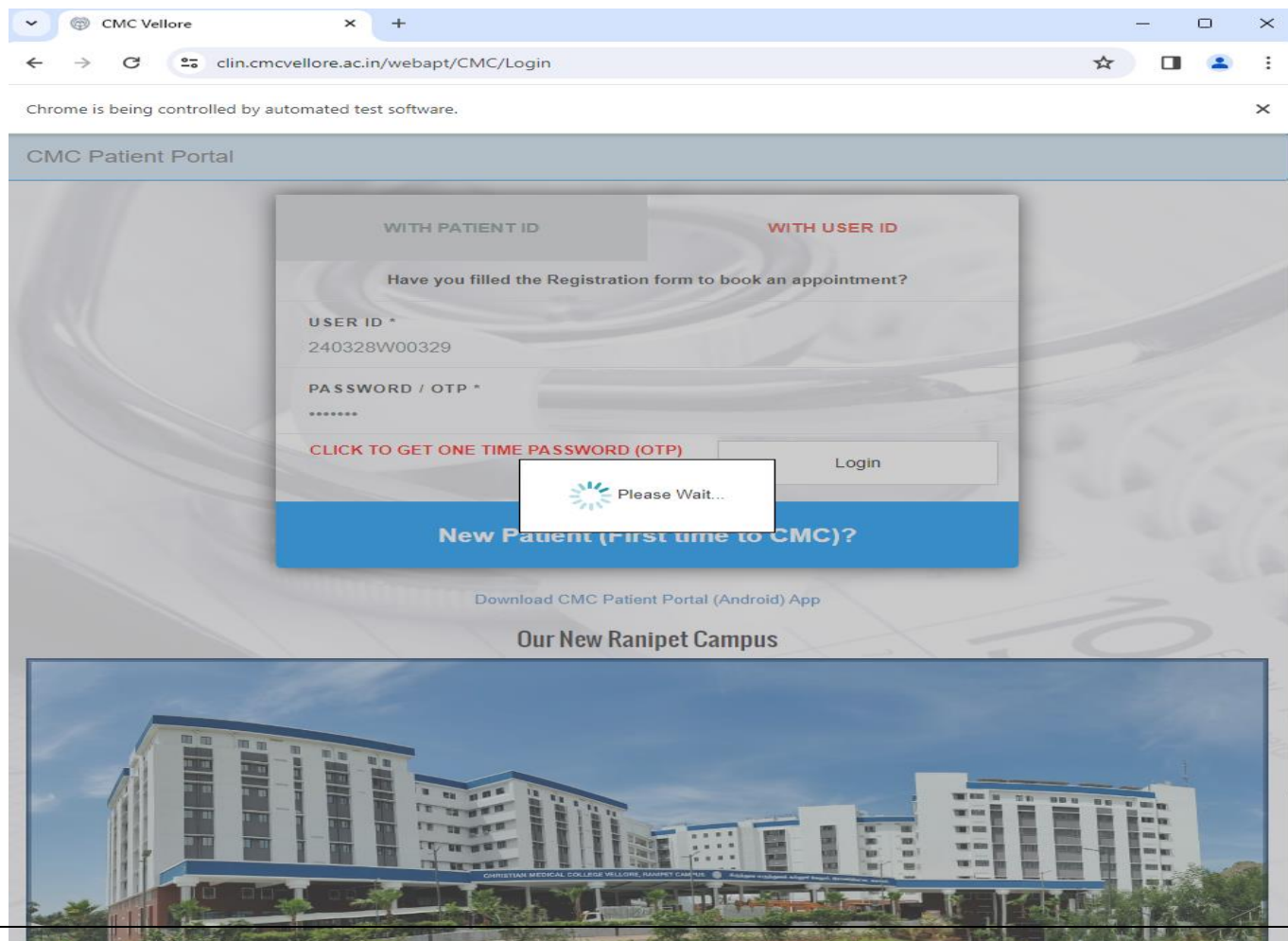
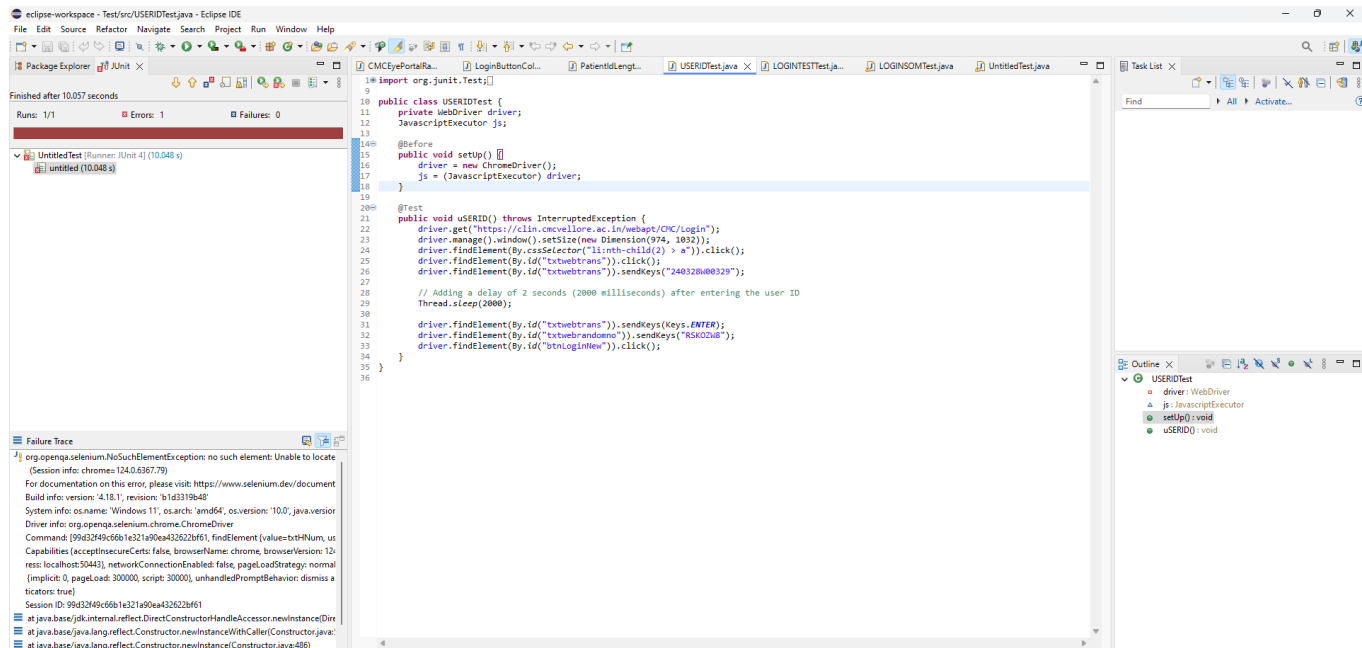
[Download CMC Patient Portal \(Android\) App](#)

Our New Ranipet Campus



Valid Login Testing:

- Use legitimate user credentials to test the login process.
- Make that users are able to access their accounts and log in successfully.
- After a successful login, confirm that all features and functionalities are accessible.



CMC Vellore

clin.cmcvellore.ac.in/webapt/New/Book

Chrome is being controlled by automated test software.

CMC Patient Portal

User ID : 240328W00329

Name : DHANUSH S

Gender : MALE

DOB : 20

FAQ | Logout

CONSULTATION FEE	
REGULAR OPD PRIVATE	Rs.900/-
REGULAR OPD GENERAL	Rs.290/-
TELE CONSULTATION (AUDIO-VIDEO) PRIVATE	Rs.900/-
TELE CONSULTATION (TELE-PHONE) PRIVATE	Rs.900/-

Please note down the User ID and Password for future Reference
You can also use this User ID to book an appointment in CMC Cash Counter.

User ID	240328W00329
Password	RSKOZW8

Consultation

Category

Department

Clinic

REGULAR OPD (Campus Visit)

PRIVATE

Select One..

Select One..

Choose by Doctor

Choose by Date

SLOTS VIEW BY DOCTOR

Doctor

Select One..

VIEW SLOTS

If you are unable to get an appointment on your chosen date please
a) Go to 600 Silver Gate, CMC
OR
b) Email webappointment@cmcvellore.ac.in with a copy of
a. Referral / Recent Medical Report
b. Valid Govt. ID proof (if Indian) OR Passport (if Foreign)

Terms & Conditions

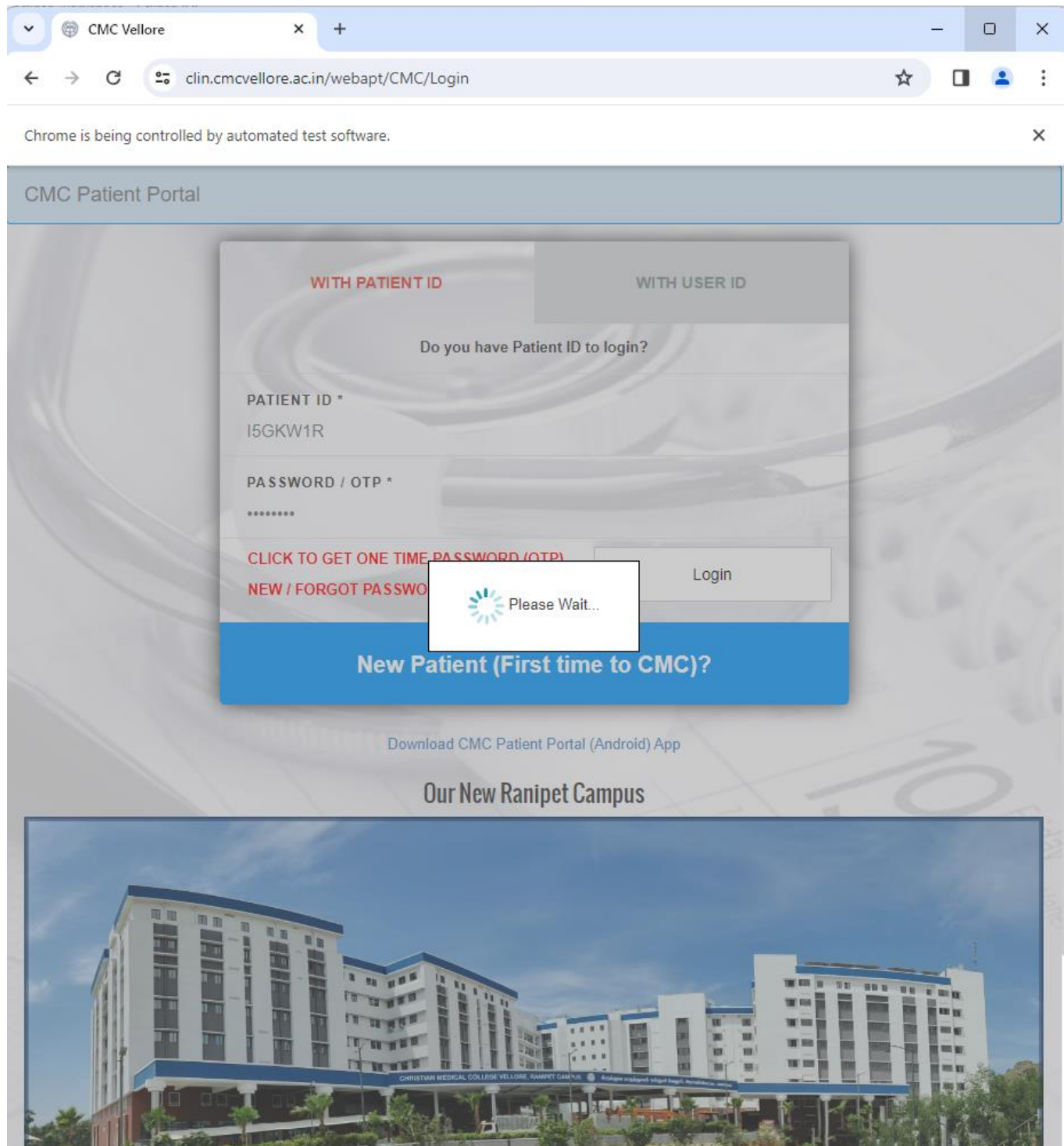
Privacy Policy

Christian Medical College Vellore.



Automated Testing and Testing for Invalid Login:

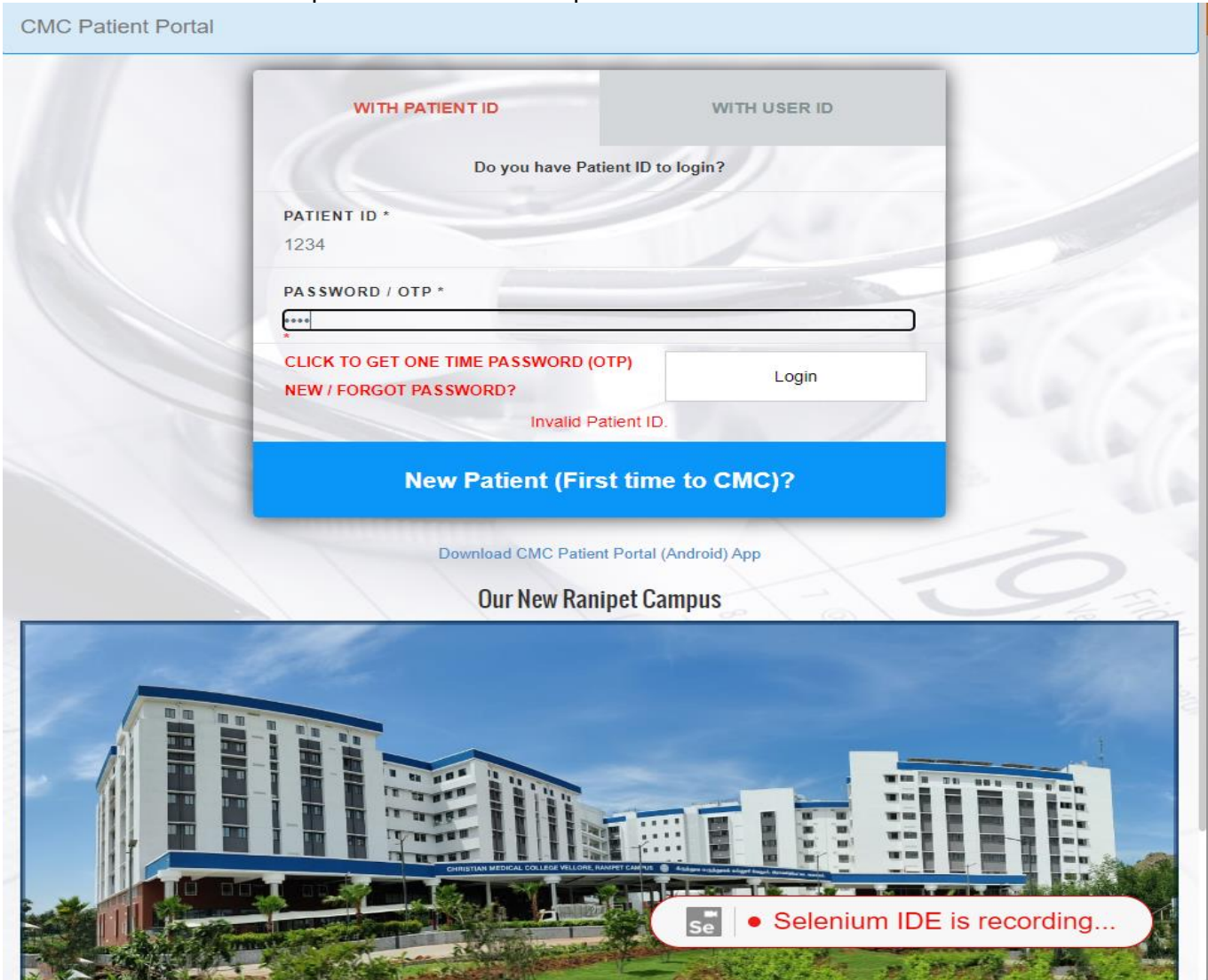
- Look into automated testing programs like Cypress or Selenium.
- Create automated test scripts to expedite repetitive processes.
- Run automated tests to verify the behavior and functionality of websites.

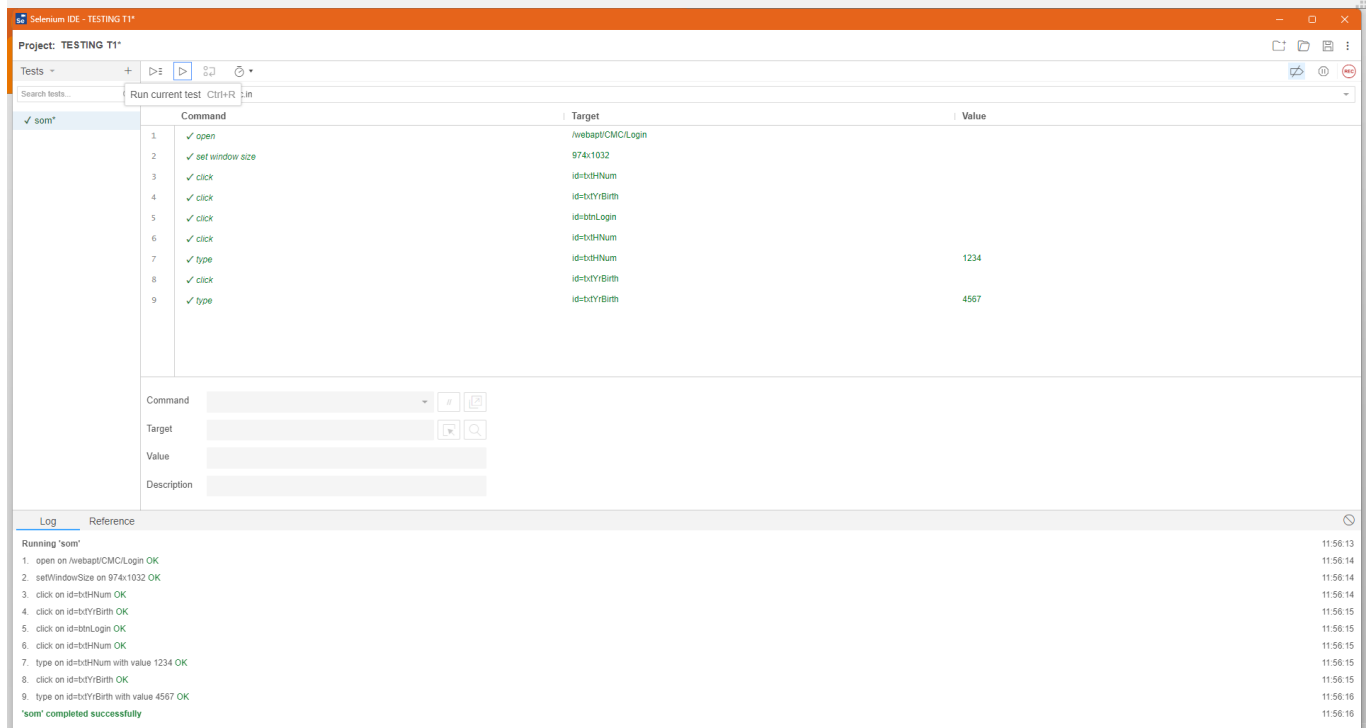
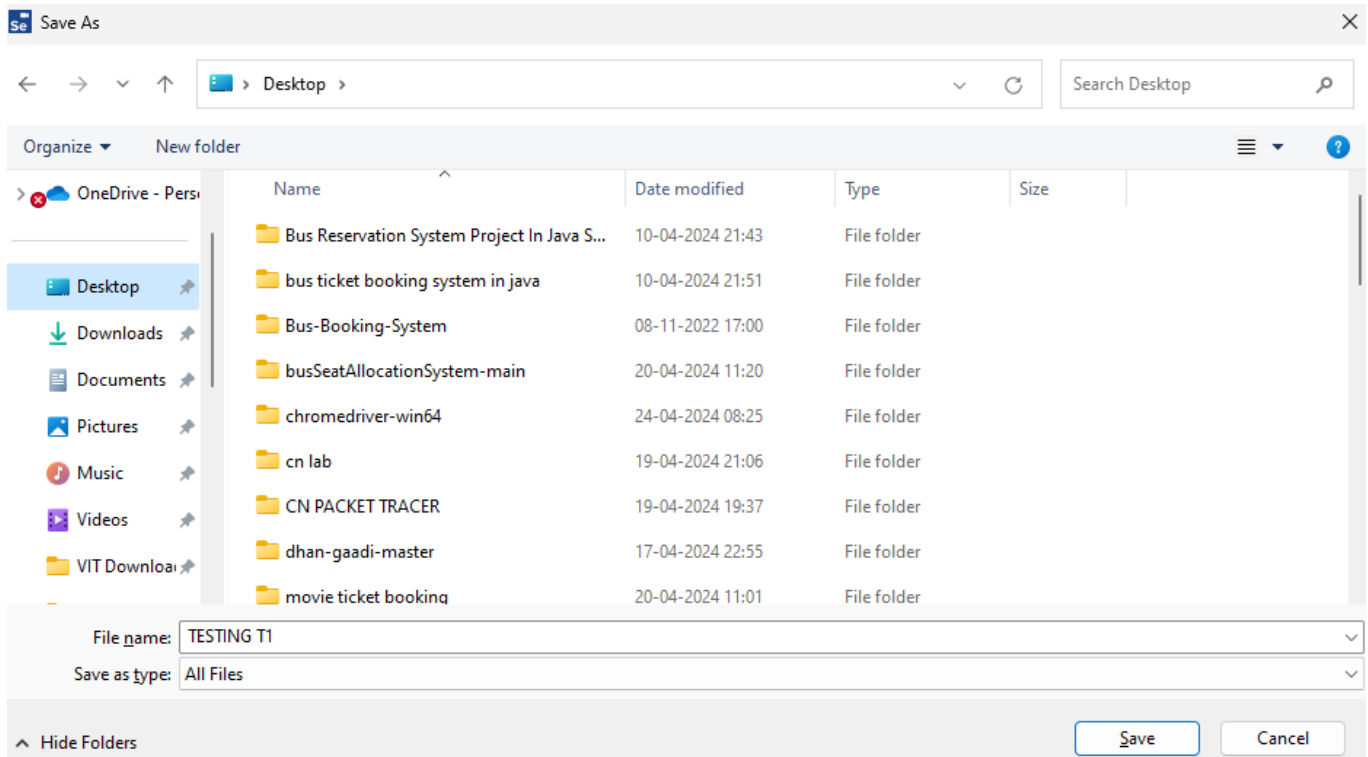


```
eclipse-workspace - Eclipse IDE
File Edit Navigate Search Project Run Window Help
CMCEyePortalRandomTest.java LoginButtonColorTest.java PatientIdLengthTest.java USERIDTest.java LOGINTesTTest.java LOGINSOMTest.java UntitledTest.java Problems Javadoc Declaration Console X
Apr 24, 2024 11:51:03 AM org.openqa.selenium.devtools.CdpVersionFinder findNearestMatch
WARNING: Unable to find CDP implementation matching 124
Apr 24, 2024 11:51:03 AM org.openqa.selenium.chromium.ChromiumDriver lambda$need$5
WARNING: Unable to find version of CDP to use for 124.0.6367.79. You may need to include a dependency on a specific version of the CDP using something similar to 'org.seleniumhq.selenium:selenium-devtools-v06:4.18.1' where the version ('v06') matches the version of
Login failed for username: xkkgRqH3
Login failed for username: i7Riguu6L
Login failed for username: tqG94yd6
Login failed for username: i5gkw1R4
Login failed for username: urLX1T4H
Total test cases: 5
Passed: 0
Failed: 5
```

Writing Your Own Test Scripts:

- To automate tests, get proficient in scripting languages like Python or JavaScript.
- Create unique test scripts that are suited to the website's particular requirements.
- Include claims and proofs to confirm anticipated results.







Testing Colors:

- Make that the website's color schemes are all the same.
- To guarantee readability and accessibility, check the color contrast.
- Verify color changes that occur from clicks or hovers.

Selenium IDE - T1

Project: T1

Executing -

X T2

https://www.cmch-vellore.edu

Command	Target	Value
1. ✓ open	/	
2. ✓ set window size	974x1032	
3. ✓ click	css= menu2	
4. ✓ store window handle	root	
5. ✓ select window	handle=\$(win5055)	
6. LOGIN		
7. ✓ close		
8. ✓ select window	handle=\$(root)	
9. ✓ close		
10. X select window	handle=\$(undefined)	

Command

Target

Value

Description

Runs: 1 Failures: 1

Log

Reference

2. setWindowSize on 974x1032 OK 12:13:05

3. click on css= menu2 OK 12:13:05

4. storeWindowHandle on root OK 12:13:08

5. selectWindow on handle=\$(win5055) OK 12:13:08

6. Trying to find css=#btnLogin123456CD... OK 12:13:08

Warning Element found with secondary locator id=btnLogin. To use it by default, update the test step to use it as the primary locator. 12:13:40

7. close OK 12:13:40

8. selectWindow on handle=\$(root) OK 12:13:40

9. close OK 12:13:40

10. selectWindow on handle=\$(undefined) Failed: No such window locator 12:13:40

T2 ended with 1 error(s) 12:13:40

Testing Textbox and Textfield:

- Examine textbox and textfield input validity.
- Check that users are able to enter and edit text without any problems.
- Verify the character limitations, default values, and placeholder text.

Project: T1

Command	Target	Value
1. open	/	
2. set window size	974x1032	
3. click	css= menu2	
4. store window handle	root	
5. select window	handle=\${win112}	
6. TEXT LOGIN		
7. close		
8. select window	handle=\${root}	
9. close		
10. X select window	handle=\${undefined}	
11. close		

Command: open
Target: /
Value:
Description:

Log Reference

- 2. setWindowSize on 974x1032 OK
- 3. click on css= menu2 OK
- 4. storeWindowHandle on root OK
- 5. selectWindow on handle=\${win112} OK
- 6. Trying to find name=c800Main\$td\$NumDHKCVH2... OK
- Warning: Element found with secondary locator id=td\$Num. To use it by default, update the test step to use it as the primary locator.
- 7. close OK
- 8. selectWindow on handle=\${root} OK
- 9. close OK
- 10. selectWindow on handle=\${undefined} **Failed**: No such window locator
- TV ended with 1 error(s)**

Testing Maximum Length:

- Check the text input field's maximum character limit.
- Make sure that users are not able to insert more characters than are permitted.
- Make sure the relevant error messages appear when the maximum length is exceeded.

```
1: import org.junit.Test;
2: import org.openqa.selenium.By;
3: import org.openqa.selenium.WebDriver;
4: import org.openqa.selenium.WebElement;
5: import org.openqa.selenium.chrome.ChromeDriver;
6: import org.openqa.selenium.chrome.ChromeOptions;
7:
8: import static org.junit.Assert.assertTrue;
9:
10: import java.util.Collections;
11:
12: public class PatientIdLengthTest {
13:
14:     @Test
15:     public void testPatientIdLength() {
16:         // Set up WebDriver
17:         System.setProperty("webdriver.chrome.driver", "C:\\Users\\EDWARD\\Downloads\\BROWSER DRIVERS\\chromedriver.exe");
18:         ChromeOptions options = new ChromeOptions();
19:         options.setExperimentalOption("useAutomationExtension", false);
20:         options.setExperimentalOption("excludeSwitches", Collections.singletonList("enable-automation"));
21:         WebDriver driver = new ChromeDriver(options);
22:
23:         // Navigate to the page where patient ID is entered
24:         driver.get("https://clin.cmcvellore.ac.in/webapt/CMC/Login");
25:
26:         // Find the patient ID input field
27:         WebElement patientIdInput = driver.findElement(By.id("txtNum"));
28:
29:         // Enter a patient ID greater than 10 characters
30:         patientIdInput.sendKeys("12345678901"); // 11 characters
31:
32:         // Find the submit button and click it
33:         WebElement submitButton = driver.findElement(By.id("btnLogin"));
34:         submitButton.click();
35:
36:         // Check if an error message is displayed
37:         WebElement errorMessage = driver.findElement(By.id("lblMessage"));
38:
39:         // Assert that an error message is displayed
40:         assertTrue(errorMessage.isDisplayed());
41:
42:         // Close the browser
43:         driver.quit();
44:     }
45: }
```


CMC Patient Portal

WITH PATIENT ID

WITH USER ID

Do you have Patient ID to login?

PATIENT ID *

1234567

PASSWORD / OTP *

[CLICK TO GET ONE TIME PASSWORD \(OTP\)](#)

[NEW / FORGOT PASSWORD?](#)

Login

Invalid Patient ID.

New Patient (First time to CMC)?

[Download CMC Patient Portal \(Android\) App](#)

Our New Ranipet Campus



Test Log Report

Project Information:

- Project Name: Testing CMC Hospital website

Testing Objectives:

The Main Objective of Testing the Application is to find the Errors and Bugs and to ensure that the product meets the expectations of the customer. It also increases the confidence in the quality of the Software.

Test Environment:

Software:

- Operating System(s): Windows 11 HOME
- Application used:
 - Jmeter
 - Selenium
 - Apache Netbeans
 - Eclipse
 - Pagespeed Insight

Testing Activities:

- Test Case Execution:
 - Test Cases Executed: 14
 - Results: Pass
- Performance Testing:
 - Areas Explored: Different Modules of the Website
 - Observations: Simple User Experience
- User Interface Testing:
 - Aspects Tested: Login Page
 - Results: Pass

Performance Testing:

We've identified a performance challenge on the website, primarily attributed to the utilization of next-gen image formats. This has resulted in a suboptimal website performance that warrants attention.

Issues and Incidents:

Despite the Minimal Functionality and Simple User Interface no Issues has Observed with the Application.

Recommendations:

The Functionality of the Application is minimal, and lot of features are missing likeupdate the data and the User Interface is very minimal. So, it is recommended to improve the User Interface, Features and Functionality of the Application.

In Conclusion:

SELENIUM is a versatile and powerful tool for performance testing, offering extensive features to assess the reliability, scalability, and responsiveness of web applications. Its user-friendly interface, diverse protocol support, and scalability make it a preferred choice for organizations seeking to ensure their applications can handle real-world user loads effectively



