SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE

A

MINI PROJECT REPORT ON "Regular Expression Testcases for testing purpose"

SUBMITTED TO THE SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE

IN THE FULFILLMENT OF THE REQUIREMENT

OF

Laboratory Practice IV

Final Year Computer Engineering

Academic Year 2024-25

BY

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Under the Guidance of

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CERTIFICATE

This is to certify that,

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studying in SEM-VII, B.E. Computer Engineering, they have successfully completed their LP-IV Lab Mini-Project report titled **“Regular Expression Testcases for testing purpose”** under the supervision of **Mr. B. B. Waghmode**, in fulfillment of the requirements for Laboratory Practice-IV for the academic year 2024-2025, as prescribed by Savitribai Phule Pune University, Pune.

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Guide
Department of Computer Engineering

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Department of Computer Engineering

Dr. S. D. Markande
Principal

SINHGAD INSTITUTE OF TECHNOLOGY AND SCIENCE, NARHE, PUNE– 411041

Place:

Date:

ACKNOWLEDGEMENT

We take this opportunity to acknowledge each and every one who contributed towards our work. We express our sincere gratitude towards guide **Mr. B. B. Waghmode**, Assistant Professor at Sinhgad Institute of Technology and Science, Narhe, Pune for her valuable inputs, guidance and support throughout the course.

We wish to express our thanks to **Dr. G. S. Navale,** Head of Computer Engineering Department, Sinhgad Institute of Technology and Science, Narhe for giving us all the help and important suggestions all over the Work.

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Name of Students:	**Sign:**
Pratik Abhang	
Darshana Borase	
Omkar Darekar	
Chaitanya Gunde	

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1. INTRODUCTION

Regular Expressions (RegEx) are indispensable tools in modern software development, providing a flexible and efficient way to search, manipulate, and validate text data. They are particularly valuable in scenarios that require strict input validation, such as form fields for email addresses, passwords, phone numbers, and other user inputs. By defining specific patterns, RegEx ensures that data adheres to predetermined formats, reducing the risk of invalid or malicious entries that could compromise system functionality or security.

RegEx plays a vital role in preventing errors, enhancing data accuracy, and improving user experience by ensuring inputs conform to expected structures. For instance, a RegEx pattern can ensure an email has a valid format, a password meets security standards, or that phone numbers follow regional formats. However, given the complexity of user inputs and edge cases that can arise, comprehensive testing of these regular expressions is necessary.

Creating RegEx test cases is a key aspect of ensuring pattern reliability. These test cases are designed to evaluate how well the regular expression performs against different inputs, including typical data, invalid data, and edge cases. For example, test cases can include valid emails with different domains, invalid emails missing "@" symbols, or passwords that do not meet complexity requirements.

Testing with both valid and invalid scenarios helps ensure that the RegEx patterns are robust and behave as intended, correctly accepting or rejecting data. By covering a wide range of input cases, developers can confidently ensure that their regular expressions are not only functional but also secure and reliable, thereby safeguarding applications from erroneous or harmful data.

Problem Statement:

Software Testing and Quality Assurance Mini Project Dynamic webside of covid19 information using HTML, CSS, JAVASCRIPT And PHP, MySQL database used to store user account, comment, and registration form details. Regular Expression testcases for testing purpose.

2. OBJECTIVE

- To ensure the reliability, functionality, and security of a dynamic website through comprehensive software testing and quality assurance practices.
- To implement regular expressions (RegEx) for input validation to enhance data integrity and user experience.
- To create a robust framework that captures valid data formats while rejecting erroneous inputs.
- To improve user satisfaction by providing clear feedback on input errors and validation messages.
- To prevent security vulnerabilities such as SQL injection and cross-site scripting (XSS) through effective input validation.
- To validate various user inputs, including email addresses, usernames, passwords, and comments, using appropriate RegEx patterns.
- To perform regression testing to ensure that new updates do not introduce bugs into existing functionalities.
- To document the testing process and results, facilitating easier maintenance and future enhancements of the website.

3. TESTING STRATEGY

Scope and Overview:

The scope of this project involves developing and testing a dynamic website that provides real-time information related to COVID-19. The primary focus is on ensuring the website's functionality, security, and user experience through rigorous testing and quality assurance processes. The website will allow users to create accounts, share insights, and engage with content while ensuring accurate input validation and data integrity.

Test Approach:

The testing approach will encompass several strategies to ensure comprehensive coverage:

- Static Testing: Review of documentation and code to identify potential issues before execution.
- Dynamic Testing: Executing test cases in the testing environment to validate functionality and performance.
- Automated Testing: Where feasible, implement automated test scripts for repetitive tasks such as regression testing.
- Manual Testing: Conduct manual testing for exploratory, usability, and ad-hoc scenarios to gather qualitative feedback.
- Security Testing: Focus on vulnerability assessments and penetration testing to ensure the security of user data and the application.

Test Environment:

- Staging Environment: A staging environment will be set up to replicate the production environment as closely as possible. This includes:
    - Web server configuration
    - Database setup
    - Necessary software dependencies
- Isolation: The staging environment will be isolated from the production environment to prevent any disruption to live users.
- Testing Database: A separate testing database will be used to avoid data contamination and to ensure data privacy during testing activities.

Testing Tools:

- Test Management Tool: Tools like Jira or TestRail for managing test cases, defects, and progress tracking.
- Automation Tools: Selenium or Cypress for automated functional and regression testing.
- Performance Testing Tools: SoapUI, Apache JMeter or LoadRunner for assessing website performance under various load conditions.
- Security Testing Tools: OWASP ZAP or Burp Suite for conducting vulnerability assessments and security testing.
- Version Control System: Git for version control and collaboration among the development and testing teams.

Risk Analysis:

- Identification of Risks: Analyze potential risks associated with the project, including:
    - Technical risks (e.g., integration issues, performance bottlenecks)
    - Security risks (e.g., data breaches, vulnerabilities)
    - Resource risks (e.g., availability of skilled personnel, tool limitations)
- Risk Mitigation Strategies: Develop strategies to mitigate identified risks, such as:
    - Regular code reviews to catch issues early
    - Implementing robust security measures from the outset
    - Ensuring proper training and resources for team members

Review and Approvals:

- Regular Review Meetings: Schedule regular meetings with stakeholders to review testing progress, results, and any identified issues.
- Documentation Review: Ensure all documentation, including test plans, test cases, and defect reports, is thoroughly reviewed and approved by relevant stakeholders.
- Final Approval: Before the final release, conduct a review session where stakeholders must approve the testing outcomes, sign off on the quality assurance processes, and agree on the deployment to production.

4. HARDWARE AND SOFTWARE REQUIREMENT

Hardware Requirements:

- Server Requirements
- Processor
- RAM
- Storage
- Network Switch/Router
- Display
- Cabling and Networking Equipment
- Backup Power Supply (UPS)
- Power Supply

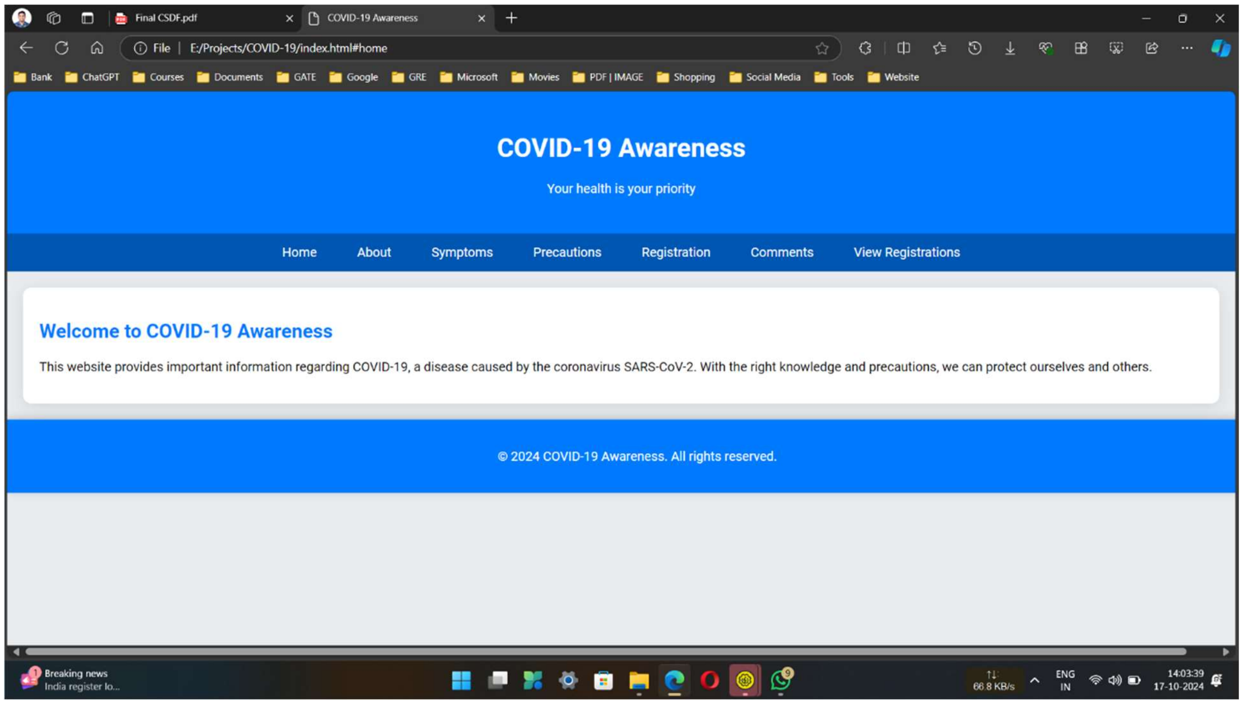
Software Requirements:

- Operating System
- SOAPUI
- Web Server
- Database Management System
- Programming Language
- Development Tools
- Testing Tools
- Antivirus/Firewall Software
- Browser Support

5. TEST SCHEDULE

Sr. No.	Phase	Activities	Start Date	End Date	Days
1.	Test Planning	Define scope and objectives	01-09-2024	05-09-2024	5
		Identify resources and tools			
		Establish testing criteria			
2.	Test Design	Create test cases	06-09-2024	12-09-2024	7
		Develop RegEx patterns for input validation			
		Review and finalize test cases			
3.	Test Environment Setup	Configure staging environment	13-09-2024	15-09-2024	3
		Set up test database and tools			
4.	Test Execution	Execute functional tests	16-09-2024	22-09-2024	7
		Conduct input validation tests			
		Perform security and performance testing			
5.	Defect Tracking	Log and manage defects	23-09-2024	26-09-2024	4
		Prioritize and assign defects for resolution			
6.	Regression Testing	Re-test after defect fixes	27-09-2024	30-09-2024	4
		Conduct final regression tests			
7.	Review and Approval	Review test results and documentation	01-10-2024	03-10-2024	3
		Obtain stakeholder approval for release			
8.	Deployment	Deploy the website to the production environment	04-10-2024	05-10-2024	2

6. RESULT


Final CSDF.pdf
COVID-19 Awareness
File | E:/Projects/COVID-19/index.html#home
Bank ChatGPT Courses Documents GATE Google GRE Microsoft Movies PDF | IMAGE Shopping Social Media Tools Website
Home About Symptoms Precautions Registration Comments View Registrations
Breaking news
India register lo...
14:03:39
17-10-2024

COVID-19 Awareness

Your health is your priority

Welcome to COVID-19 Awareness

This website provides important information regarding COVID-19, a disease caused by the coronavirus SARS-CoV-2. With the right knowledge and precautions, we can protect ourselves and others.

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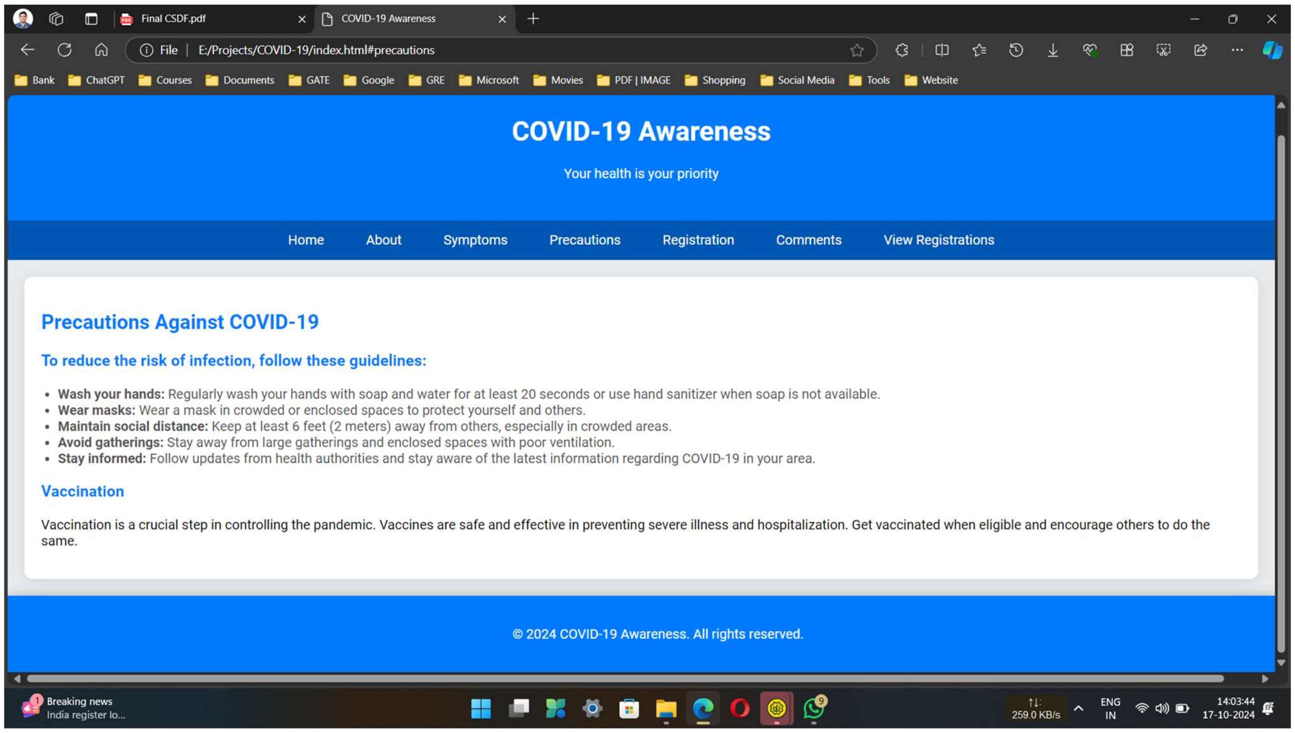
Fig: Dashboard


Final CSDF.pdf
COVID-19 Awareness
File | E:/Projects/COVID-19/index.html#precautions
Bank ChatGPT Courses Documents GATE Google GRE Microsoft Movies PDF | IMAGE Shopping Social Media Tools Website
Home About Symptoms Precautions Registration Comments View Registrations
Breaking news
India register lo...
14:03:44
17-10-2024

COVID-19 Awareness

Your health is your priority

Precautions Against COVID-19

To reduce the risk of infection, follow these guidelines:

- **Wash your hands:** Regularly wash your hands with soap and water for at least 20 seconds or use hand sanitizer when soap is not available.
- **Wear masks:** Wear a mask in crowded or enclosed spaces to protect yourself and others.
- **Maintain social distance:** Keep at least 6 feet (2 meters) away from others, especially in crowded areas.
- **Avoid gatherings:** Stay away from large gatherings and enclosed spaces with poor ventilation.
- **Stay informed:** Follow updates from health authorities and stay aware of the latest information regarding COVID-19 in your area.

Vaccination

Vaccination is a crucial step in controlling the pandemic. Vaccines are safe and effective in preventing severe illness and hospitalization. Get vaccinated when eligible and encourage others to do the same.

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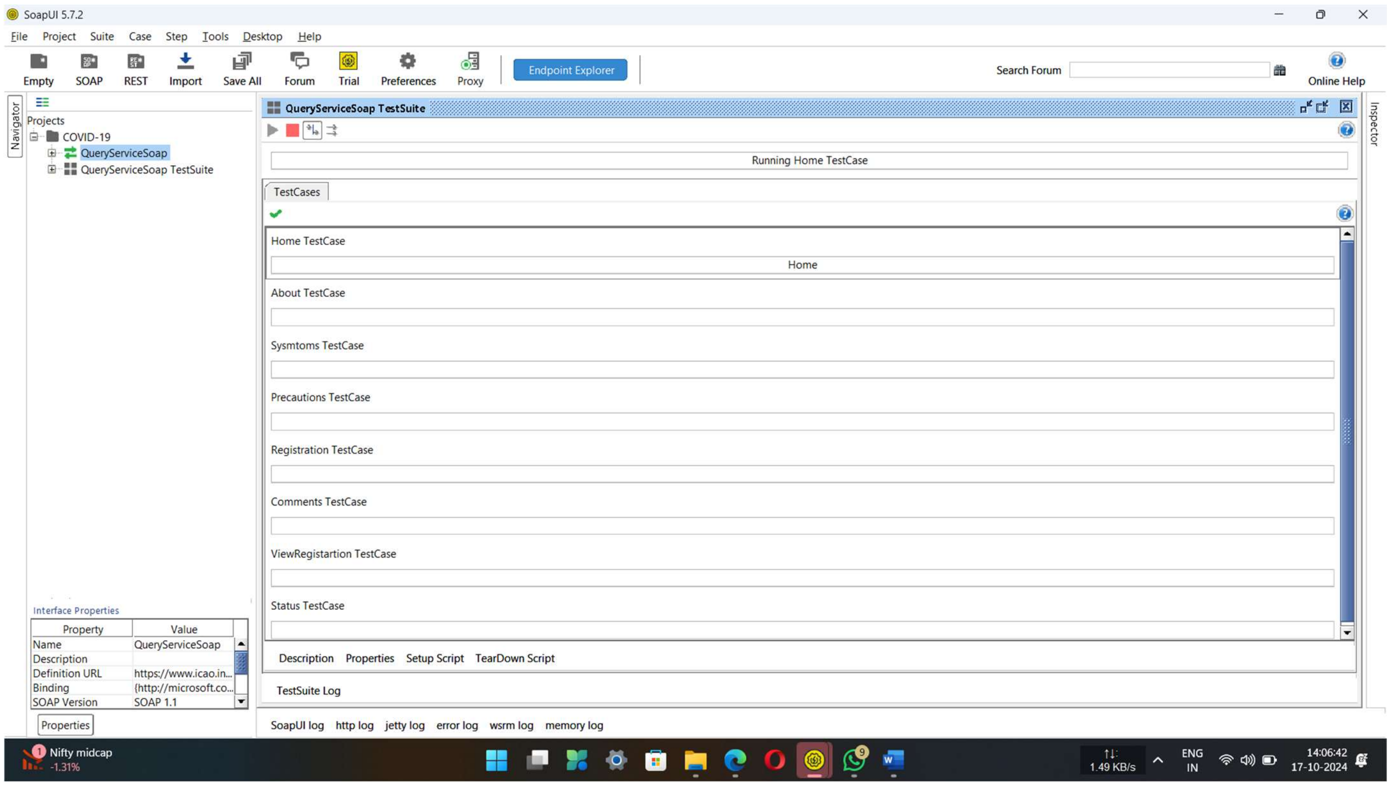
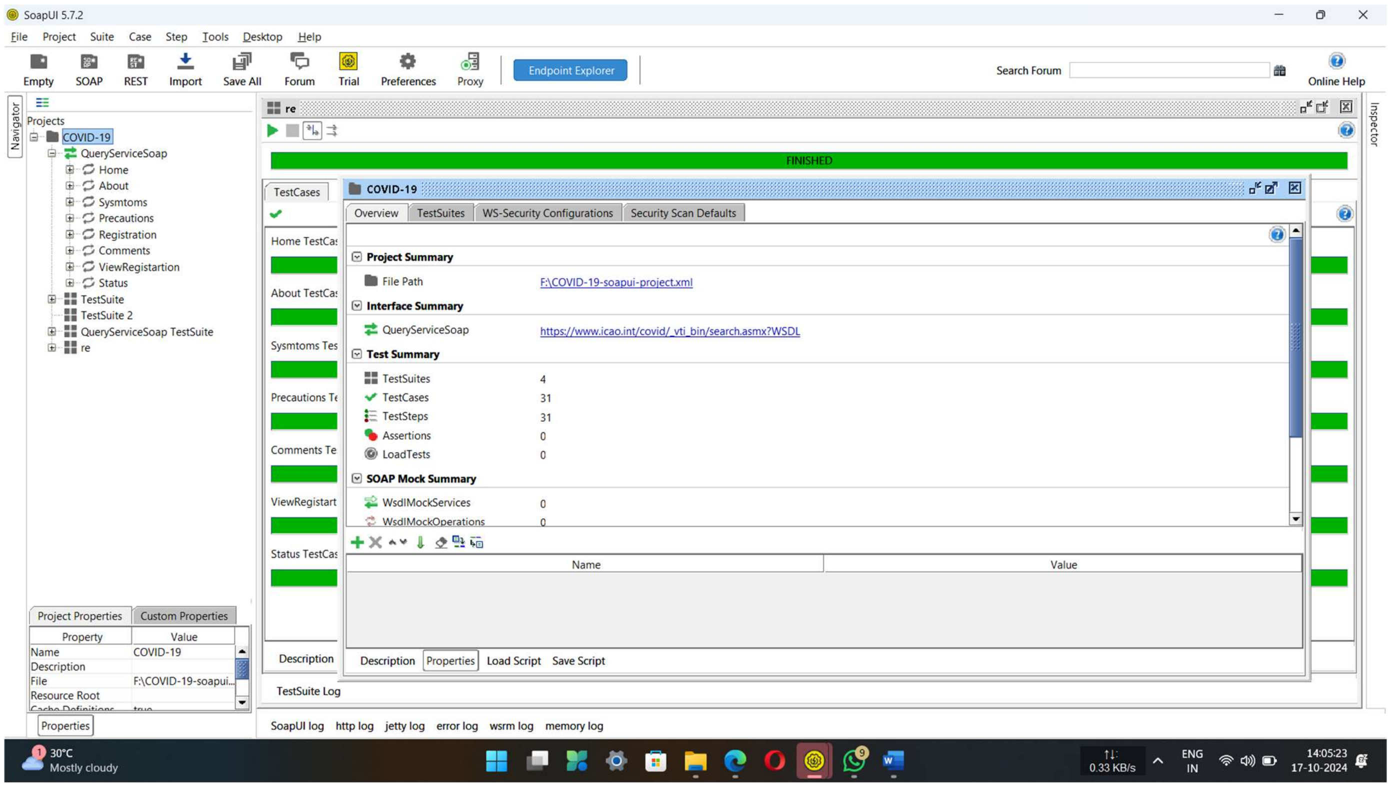
Fig: Navigation



Property	Value
Name	QueryServiceSoap
Description	
Definition URL	https://www.icao.in...
Binding	{http://microsoft.co...
SOAP Version	SOAP 1.1

Fig : Testing Menu


SoapUI 5.7.2
File Project Suite Case Step Tools Desktop Help
Empty SOAP REST Import Save All Forum Trial Preferences Proxy
Endpoint Explorer
Search Forum
Online Help
Navigator
Projects
COVID-19
QueryServiceSoap
Home
About
Sysmtoms
Precautions
Registration
Comments
ViewRegistartion
Status
TestSuite
TestSuite 2
QueryServiceSoap TestSuite
re
FINISHED
TestCases
Home TestCas
About TestCas
Symptoms Tes
Precautions Te
Comments Te
ViewRegistart
Status TestCas
COVID-19
Overview TestSuites WS-Security Configurations Security Scan Defaults
Description Properties Load Script Save Script
TestSuite Log
Project Properties Custom Properties
Properties
SoapUI log http log jetty log error log wsrm log memory log

Project Summary

File Path	F:\COVID-19-soapui-project.xml

Interface Summary

QueryServiceSoap	https://www.icao.int/covid/_vti_bin/search.asmx?WSDL

Test Summary

TestSuites	4
TestCases	31
TestSteps	31
Assertions	0
LoadTests	0

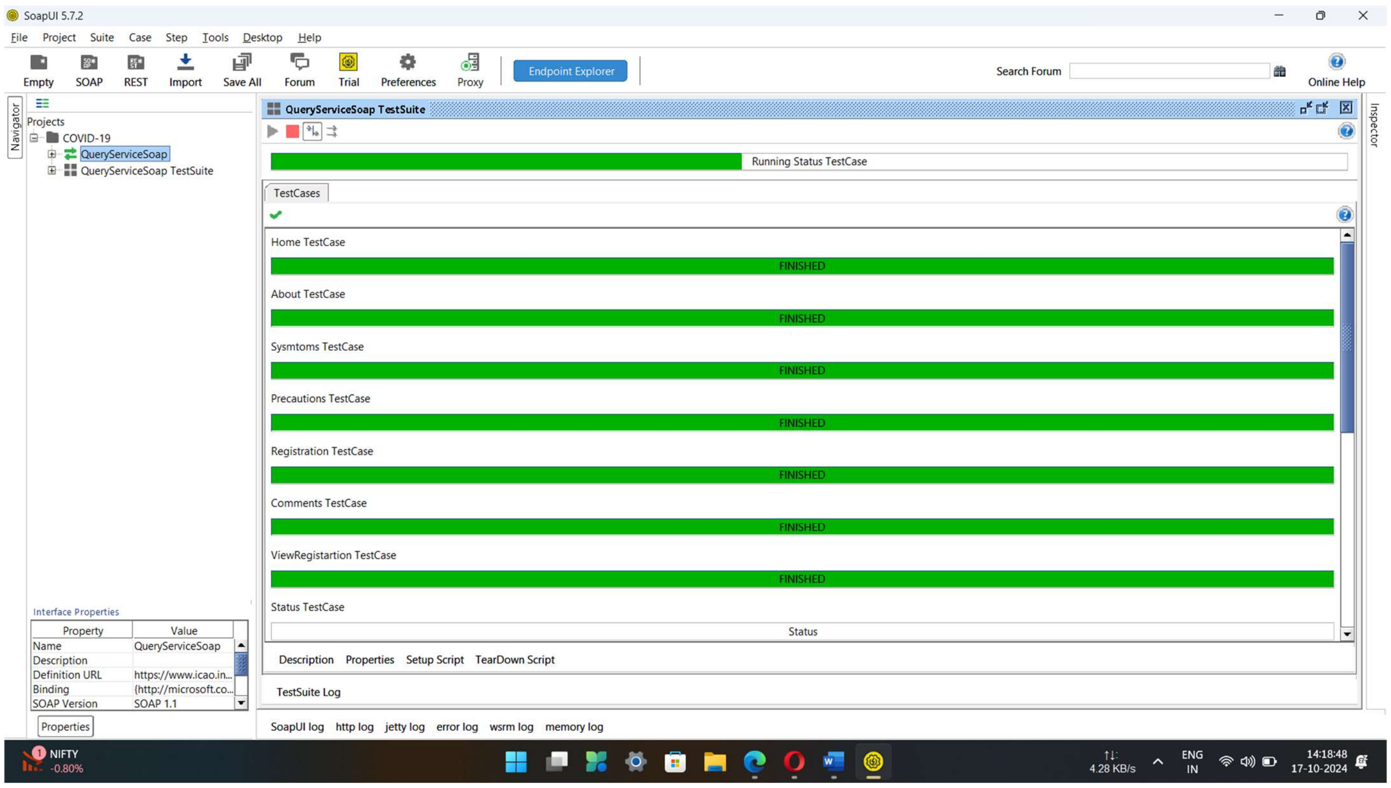
SOAP Mock Summary

WsdlMockServices	0
WsdlMockOperations	0

Name	Value

Property	Value
Name	COVID-19
Description	
File	F:\COVID-19-soapui...
Resource Root	
Cache Definitions	true

Fig: Testing Type


SoapUI 5.7.2
File Project Suite Case Step Tools Desktop Help
Empty SOAP REST Import Save All Forum Trial Preferences Proxy
Endpoint Explorer
Search Forum
Online Help
Navigator
Inspector
SoapUI log http log jetty log error log wsrm log memory log
Description Properties Setup Script TearDown Script
TestSuite Log
Properties

Projects
COVID-19
QueryServiceSoap
QueryServiceSoap TestSuite

QueryServiceSoap TestSuite

Running Status TestCase

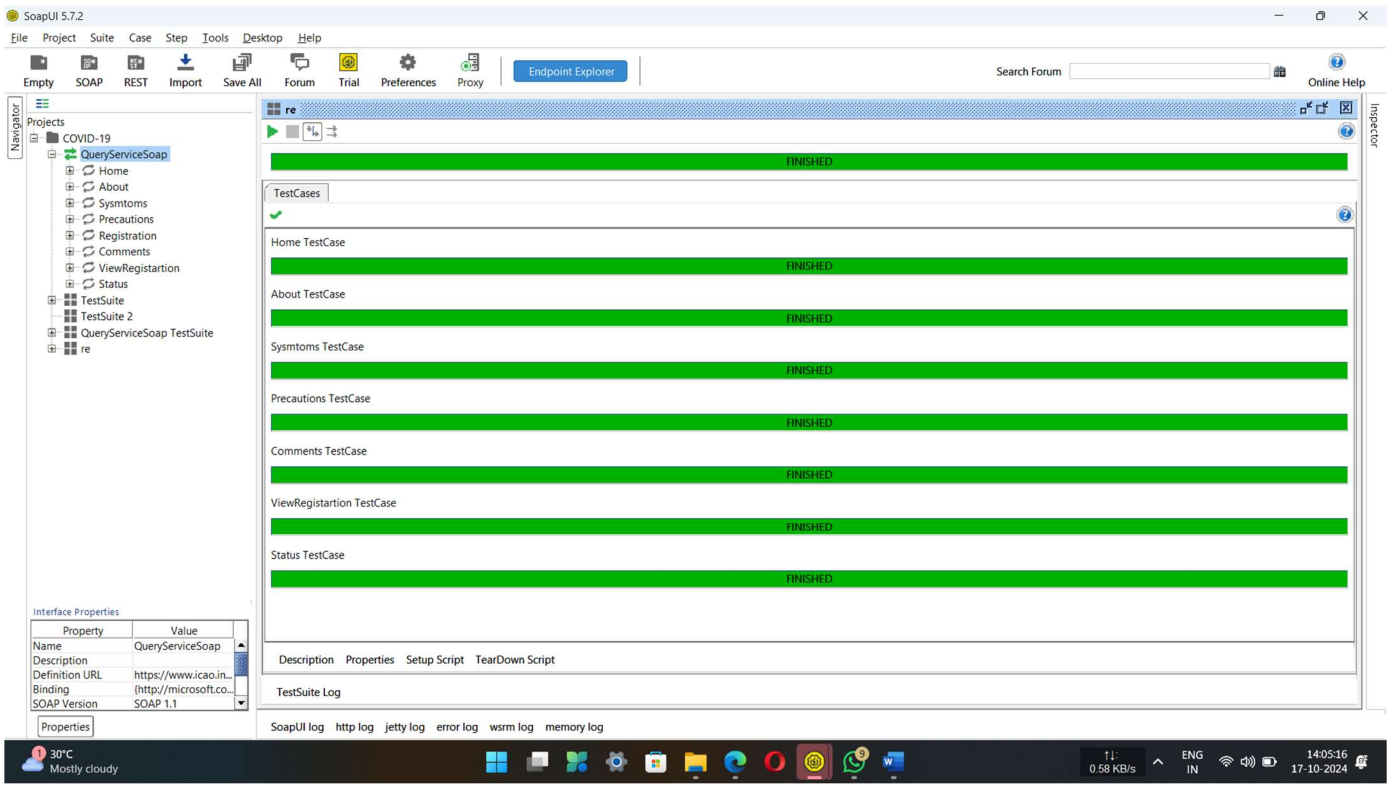
TestCases

Home TestCase FINISHED
About TestCase FINISHED
Sysmtoms TestCase FINISHED
Precautions TestCase FINISHED
Registration TestCase FINISHED
Comments TestCase FINISHED
ViewRegistartion TestCase FINISHED
Status TestCase Status

Interface Properties

Property	Value
Name	QueryServiceSoap
Description	
Definition URL	https://www.icao.in...
Binding	{http://microsoft.co...
SOAP Version	SOAP 1.1

Fig: Testing Process


SoapUI 5.7.2
File Project Suite Case Step Tools Desktop Help
Empty SOAP REST Import Save All Forum Trial Preferences Proxy
Endpoint Explorer
Search Forum
Online Help
Navigator
Inspector
SoapUI log http log jetty log error log wsrm log memory log
Description Properties Setup Script TearDown Script
TestSuite Log
Properties

Projects
COVID-19
QueryServiceSoap
Home
About
Sysmtoms
Precautions
Registration
Comments
ViewRegistartion
Status
TestSuite
TestSuite 2
QueryServiceSoap TestSuite
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FINISHED

TestCases

Home TestCase FINISHED
About TestCase FINISHED
Sysmtoms TestCase FINISHED
Precautions TestCase FINISHED
Comments TestCase FINISHED
ViewRegistartion TestCase FINISHED
Status TestCase FINISHED

Interface Properties

Property	Value
Name	QueryServiceSoap
Description	
Definition URL	https://www.icao.in...
Binding	{http://microsoft.co...
SOAP Version	SOAP 1.1

Fig: Testing Results

7. CONCLUSION

In the Software Testing and Quality Assurance Mini Project focused on a dynamic website, we explored key concepts of ensuring the functionality, performance, and security of a web application. A major component involved testing the website's dynamic aspects, including its response to user input, server communication, and data handling. We employed regular expressions (regex) as a crucial tool for validating and testing input fields, ensuring that data formats like emails, phone numbers, and dates adhered to specified patterns. By creating comprehensive test cases, we simulated real-world scenarios, identifying edge cases and potential vulnerabilities. The use of regex allowed for precise input validation, enhancing the reliability and robustness of the dynamic website while ensuring compliance with required data formats. This hands-on experience underscored the importance of thorough testing in delivering high-quality software that meets user expectations and functional requirements.

8. REFERENCES

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6) The World's Most Popular API Testing Tool | SoapUI
7) SoapUI
8) https://www.php.net/manual/en/
9) http://localhost/dashboard/
10) https://www.tutorialspoint.com/
11) https://apache.org/docs/tutorials.html
12) http://localhost/phpmyadmin/