# Cypress Automation Project – UI Test

# Automation Framework

A Project report submitted in partial fulfilment of the requirement for the Award of the Degree in

**B.SC. DESIGN & COMPUTING, WILP**

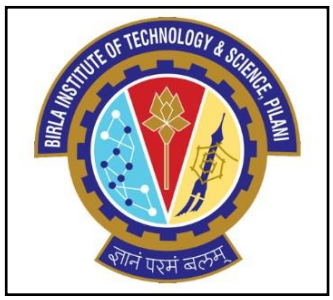
By

Gatla Sai Vamshi**(202217BH045)**

Under the esteemed guidance of

Sandeep Reddy

**HCL TECH, hyd**




**BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE**

**PILANI (RAJASTHAN)**

**August 2024**

**WORK INTEGRATED LEARNING PROGRAMME DIVISION**

## CERTIFICATE

This is to certify that the Design Project entitled **Identifying** Cypress Automation by **Gatla Sai Vamshi** having BITS

ID No. **202217BH045** for the partial fulfilment of the requirements of the B.Sc. (

Design and Computing) degree program of BITS, embodies the Bonafide work done by him/her under my supervision.

Signature of the Mentor

Sandeep Reddy
Senior Technical lead
HCL Technologies Ltd
Hyd

## ACKNOWLEDGEMENT

I express my sincere gratitude to my project **guide Sandeep Reddy**, whose continuous guidance, technical expertise, and constructive feedback played a vital role in the successful completion of the **Cypress Automation Project**. His mentorship helped me understand best practices in test automation and significantly improved the quality of my work.

I would also like to acknowledge **Abhishek KM** for his valuable suggestions, evaluation, and encouragement, which strengthened the project's alignment with its objectives.

I extend my sincere thanks to HCL Innovations for providing the necessary infrastructure, professional environment, and technical exposure that enabled the practical execution of this automation project.

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## ABSTRACT

In the modern software development lifecycle, ensuring application quality through efficient testing is critical. Manual UI testing is time-consuming, error-prone, and difficult to scale with frequent releases. The **Cypress Automation Project** leverages the Cypress end-to-end testing framework to automate the testing process of a web application using JavaScript.

This project focuses on automating UI workflows, validating application **behaviour**, and improving regression testing efficiency. Cypress provides a fast, reliable, and developer-friendly environment for executing UI tests directly in the browser. The automation framework supports interactive and headless execution modes, enabling early defect detection and improving software reliability.

By implementing automated UI testing, the project reduces manual testing effort, increases test coverage, and improves confidence in application releases. The solution demonstrates how Cypress can be effectively used to build scalable UI automation frameworks for modern web applications.

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## 1. INTRODUCTION

In today's fast-paced development environment, applications undergo frequent updates, making manual regression testing inefficient and unreliable. UI defects directly impact user experience and business outcomes. Automated UI testing is essential to ensure consistency, accuracy, and faster feedback cycles.

The **Cypress Automation Project** aims to automate the testing process of a web application using Cypress. Cypress is a JavaScript-based end-to-end testing framework that runs directly in the browser, offering real-time execution, automatic waits, and easy debugging.

This project demonstrates the use of Cypress to automate UI interactions such as page navigation, input validation, and element verification, thereby improving software quality and reducing human error.

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## 2. OBJECTIVES

The primary objectives of the **Cypress Automation Project** are:

- To design and implement an automated UI testing framework using Cypress
- To reduce dependency on manual UI regression testing
- To automate critical user workflows of a web application
- To support both interactive and headless test execution
- To improve test reliability, maintainability, and execution speed
- To enhance application quality and release confidence

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## 3. CURRENT SYSTEM

### 3.1 Existing System

In many organizations, UI testing is performed manually or with limited automation. Existing approaches often require repetitive execution of the same test cases, leading to inefficiency and inconsistency.

### 3.2 Disadvantages of the Current System

- High time consumption for regression testing
- Increased human error
- Limited scalability with frequent releases
- Delayed feedback to development teams
- Higher maintenance effort for UI validation

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## 4. PROPOSED SYSTEM

The proposed system is a Cypress-based UI Automation Framework that automates the testing of a web application.

### 4.1 Overview

The **Cypress Automation Project** automates UI workflows using JavaScript and Cypress commands. Test cases simulate real user interactions and validate expected application **behaviour**.

### 4.2 Key Features

- Automated UI testing using Cypress
- Browser-based test execution
- Headless execution support
- Clear test execution logs
- Improved debugging using Cypress Test Runner

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## 5. FUNCTIONAL REQUIREMENTS

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- Automated navigation and UI validation
- Input field validation and form submission testing
- Assertion of UI elements and page behavior
- Execution of test cases in different modes
- Display of test results and logs

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## 6. NON-FUNCTIONAL REQUIREMENTS

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- Performance: Fast test execution
- Reliability: Consistent results across runs
- Usability: Easy-to-understand test scripts
- Scalability: Ability to add more test cases
- Compatibility: Supports modern browsers

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## 7. SYSTEM DESIGN

### 7.1 Architecture Overview

The system consists of:

- Test scripts written in JavaScript
- Cypress execution engine
- Browser-based test runner

### 7.2 Activity Flow

1. User triggers test execution
2. Cypress launches browser
3. Test scripts interact with UI elements
4. Assertions validate expected behavior
5. Results are displayed in the Cypress runner

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## 8. IMPLEMENTATION DETAILS

### 8.1 Tools and Technologies

- Cypress – UI automation framework
- JavaScript – Test scripting language
- Node.js & npm – Dependency management
- GitHub – Version control and repository management

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## 9. RESULTS AND OBSERVATIONS

- UI test cases executed successfully using Cypress
- Reduced need for repetitive manual testing
- Faster detection of UI-related defects
- Improved confidence in application stability
- Easy debugging using Cypress's real-time execution

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## 10. CONCLUSION

The **Cypress Automation Project** successfully demonstrates the effectiveness of Cypress in automating UI testing for web applications. By replacing manual testing with automated test scripts, the project improves testing efficiency, reliability, and maintainability.

The framework provides a solid foundation for scalable UI automation and can be extended further to include additional workflows and CI/CD integration.

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## 11. FUTURE SCOPE

- Add more UI test cases for extended coverage
- Integrate with CI/CD pipelines
- Enhance reporting mechanisms
- Introduce cross-browser testing
- Improve test data management

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## 12. BIBLIOGRAPHY


- Cypress Documentation – https://docs.cypress.io
- JavaScript Documentation – https://developer.mozilla.org

- GitHub Repository – https://github.com/SaivamshiGatla/CypressAutomationProject

## 9. Declaration

**This checklist is to be duly completed, verified and signed by the student.**

| | | |
|---|---|---|
| 1. | Is the final report neatly formaAed with all the elements required for a technical Report? | Yes |
| 2. | Is the Cover page in proper format as given in Annexure A? | Yes |
| 3. | Is the Title page (Inner cover page) in proper format? | Yes |
| 4. | (a) Is the CerNficate from the Mentor in proper format?<br>(b) Has it been signed by the Mentor? | Yes<br>Yes |
| 5. | Is the Abstract included in the report properly wriAen within one page?<br>Have the technical keywords been specified properly? | Yes<br>Yes |
| 6. | Is the Ntle of your report appropriate? The Ntle should be adequately descripNve, precise and must reflect scope of the actual work done. Uncommon abbreviaNons / Acronyms should not be used in the Ntle | Yes |
| 7. | Have you included the List of abbreviaNons / Acronyms? | Yes |
| 8. | Does the Report contain a summary of the literature survey? | Yes |
| 9. | Does the Table of Contents include page numbers?<br>(i). Are the Pages numbered properly? (Ch. 1 should start on Page # 1)<br>(ii). Are the Figures numbered properly? (Figure Numbers and Figure Titles should be at the boAom of the figures) | Yes<br>Yes |
| | (iii). Are the Tables numbered properly? (Table Numbers and Table Titles should be at the top of the tables)<br>(iv). Are the CapNons for the Figures and Tables proper?<br>(v). Are the Appendices numbered properly? Are their Ntles appropriate | Yes<br>Yes<br>Yes |
| 10 | Is the conclusion of the Report based on discussion of the work? | Yes |

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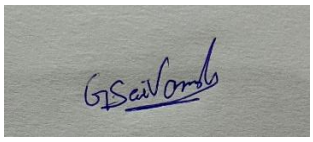
| 11 | Are References or Bibliography given at the end of the Report?<br>Have the References been cited properly inside the text of the Report?<br>Are all the references cited in the body of the report | Yes<br>Yes<br>Yes |
| 12. | Is the report format and content according to the guidelines? The report should not be a mere printout of a Power Point PresentaNon, or a user manual. Source code of so‘ware need not be included in the report. | Yes |

**Declaration by Student:**

I certify that I have properly verified all the items in this checklist and ensure that the report is in proper format as specified in the course handout.



**Signature of the student**
**Name: Gatla Sai Vamshi**
**Place: Hyderabad**
**Date: 21-02-2026**
**ID No: 202217BH045**