SE3010 – Software Engineering Process & Quality Management
BSc (Hons) in Information Technology
Specialized in Software Engineering
3rd Year
Faculty of Computing
SLIIT

2025 – Assignment 02

Introduction to Software Test Automation

Course: SE3010 - Software Engineering Process and Quality Management
Weight: 20% of the final grade
Due Date: [3rd May 2025]

Objective

This assignment aims to provide students with hands-on experience in software test automation, enabling them to understand its importance, benefits, and challenges in the software development lifecycle and also to understand and apply key concepts in automated software testing. By the end of the assignment, students should be able to write, execute, and analyze basic automated test scripts.

Instructions and Submission Guidelines

- This is a **group assignment** (4 members per group).

- Refer the lecture materials and other resources on test automation concepts and best practices.

- There are three parts in the assignment (details given below):

    o Part A (4 marks) – Report on Software Test Automation

    o Part B (4 marks) – Demonstration of Test Automation

    o Part C (12 marks) – Individual Viva Presentation

- Plagiarism will not be tolerated; ensure you submit original work.

- Late submissions will result in deduction of marks.

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Part A: Report on Software Test Automation (4 marks)

Group should submit a report (6-8 pages) highlighting the following aspects of Test Automation

Research

- Manual Testing vs Automated Testing

- Evolution of Test Automation Tools

- Importance of Test Automation in Software Development

- Challenges in Software Test Automation

Implementation

- Justification for Automation Tool Selection (Why did you select the tool among others?)

- Test Cases Used (Test cases used to cover your automated test scenario. Consider both valid and invalid cases. Mention automation steps involved, and expected results)

- Automation Test Scripts

- Test Execution with scripts and Results (screenshots and logs to prove the execution and result)

The following guidelines should be followed when submitting the report

- **Format**: PDF Document.

- **Naming**: Rename the document with the group ID

- The names and registration numbers of all the members in the group should be included in the cover page of the report.

- **Length**: 6-8 pages.

- **Diagrams**: Include relevant visuals (flowcharts, graphs, etc.).

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Part B: Demonstration of Test Automation (4 marks)

- You can select a test automation tool of your choice (e.g., Selenium, JUnit, TestNG, Cypress, etc.) for this part the assignment

- Each group should select 4 basic test scenarios of their choice for automation. You may select test scenarios from Functional Testing, UI Testing, API testing, Database testing, or Performance testing. *At least two functional test scenarios should be included.*

- Need to present the implementation highlighting the following

    o Test Cases Used

    o Automation Test Scripts

    o Test Execution and Results

- Group should present their test automation exercise to a panel **within 20 mins**

Part C – Individual Viva Presentation (12 marks)

- Each individual student should be able to present the findings and knowledge gained from the report preparation and demonstration on test automation to a panel **within 20 minutes**.
- While it is encouraged to have the group work together in preparing the report and performing the demonstration, more emphasis is given to evaluate how each individual student is involved in this group assignment and understand the concepts and practical implementation of test automation.

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Marking rubric

Task	Criteria	Assessed Learning Outcome	Marks
Part A: Report on Software Test Automation **(4 Marks)**	Compares Manual Testing vs Automated Testing highlighting the advantages and disadvantages in each method	Analyze and compare the testing approaches to identify the pros and cons of these approaches	0.5
	Describes how test automation tools got evolved highlighting the timeline, characteristics, and some key tools	Understand the evolution of test automation tools at different time periods identifying the characteristics	0.5
	Justifies the importance of Test Automation in current Software Development industry.	Justify the importance of test automation in software industry	0.5
	Elaborates the challenges in software test automation	Explain the challenges faced by companies when implementing test automation	0.5
	Provides justification for selecting the test automation tool for the implementation	Apply justification criteria and select a tool among other available tools	0.5
	Identifies both valid and invalid test cases identifying automation steps involved, and expected results	Analyze the test scenario and identify all test cases required to perform the test automation successfully.	0.5
	Provides automation Test Scripts	Ability to write scripts to automate the selected test scenario.	0.5
	Shows Test Execution and Results with supporting screenshots and logs as applicable	Ability to use test automation tools and demonstrate a test automation scenario with proofs	0.5

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Part B: Demonstration of Test Automation **(4 marks)**	Demonstrates at least two functional test scenario and another two test scenarios with test scripts and result artefacts.	Ability to demonstrate a test scenario automation using test scripts with the selected tool	4 (1 for each scenario)
Part C – Individual Viva Presentation **(12 marks)**	Presents well and provides feedback with clarity to questions raised on any of the points in the Report (part A) and demonstration (part B)	Ability to present what student have gathered as part of research and able to elaborate the implementation details	9-12
	Presents satisfactorily and provides feedback reasonably to questions raised on any of the points in the Report (part A) and Implementation (part B)		5-8
	Presents averagely and provides little feedback to questions raised on any of the points in the Report (part A) and Implementation (part B)		1-4