

**VASIREDDY VENKATADRI INSTITUTE OF TECHNOLOGY NAMBUR-522508 ANDHRA PRADESH, INDIA**

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| Course Code: | **Subject Title: TEST AUTOMATION USING JAVA SELENIUM** |
| Year and Semester: III Year II semester | |

# Course Objectives:

1. Familiarize with real time concepts of Software Development Methodologies and GIT.
2. Learn various software functional test cases and Defects Reporting.
3. Familiarize with basic SQL statements.
4. Understand selenium IDE applicable to various tasks.
5. Understand about various tools and implement it on various Real Time Applications.

**Pre requisites:**

Introduction to the Java Basics Course, First Programs in Java, Data Types, Conditions and Loops, Arrays, Classes, Introduction to OOP, Abstract Classes and Interfaces, Nested Classes, Working with Strings.

**UNIT – I**

**Software Development Methodologies**: High-level overview, Waterfall, Agile, Scrum, Kanban, Extreme Programming. **Version Control with GIT:** Version Control concept, Centralized vs. distributed version control systems, Download, install and configure GIT, GitHub, SSK-KEY, GIT internals, undoing changes (Git Revert & Git Reset), Branching and merge, Tags, Stash, Remotes, Branching strategies, Practical tasks.

**UNIT – II**

**Introduction to Software Functional Test:** Software testing and Software development processes, checklist, Test cases, Test Suites, Defect Reports, Test plan and Test Result Report

**UNIT – III**

**Introduction to SQL:** Introduction to Database Testing, DML statements - Select, insert, update, delete, truncate, DDL Statements - Create, Alter, Drop, DCL & TCL statements-Grant, Revoke & commit, Rollback, Save point.

**UNIT – IV**

**Unit Testing Framework & Selenium API:** Introduction to Selenium, Selenium Locators, Finding Elements, Working with elements, Synchronizing Tests, Testng and list of annotations used in Testng.

**UNIT – V**

**API Functional Testing & Automation:** REST Architecture-Understanding of REST Architecture and Richardson Maturity Model, API Testing, Usage of Postman, Automated testing Web Services (Amazon, Flip kart, GitHub etc.).

**Content beyond syllabus:**

Core java: Java Annotations, Generics, Enums, Wrapper Classes, *Optional class,* Code Documentation, JDBC, XML, Logging & log4J, Java 8 – lambdas & Functional interfaces.

**Text Books:**

1. Software Testing - Base Course (Svyatoslav Kulikov) - 3rd edition – EN
2. Software Development A Practical Approach! Hans-Petter Halvorsen
3. Pro Git by Scott Chacon &Ben Straub – 2nd edition.
4. Database Concepts, 8th edition. David M. Kroenke, David J. Auer, Scott L.Vandenberg, Robert C. Yoder.
5. Selenium Testing Tools Cookbook (Second Edition)

# REST API Automation Testing from Scratch - REST Assured Java

# Automating and Testing a REST API: A Case Study in API testing using: Java, REST Assured, Postman, Tracks, cURL and HTTP Proxies.

**Reference Books:**

I would prefer [Selenium official](https://www.selenium.dev/documentation/) documentation than another textbook especially for Selenium.

1. <https://www.selenium.dev/documentation/>
2. Mastering Selenium Web Driver
3. <https://dev.mysql.com/doc/>
4. <https://www.postgresql.org/docs/>
5. <https://git-scm.com/docs>
6. <https://learngitbranching.js.org/>

**Micro Syllabus of Design and Analysis of Algorithms**

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| **UNIT I**  **Software Development Methodologies**: High-level overview, Waterfall, Agile, Scrum, Kanban, Extreme Programming. **Version Control with GIT:** Version Control concept, Centralized vs. distributed version control systems, Download, install and configure GIT, GitHub, GIT internals, undoing changes, Branching and merge, Tags, Stash, Remotes, Branching strategies, Practical tasks. | | | |
| **Unit** | **Module** | | **Micro Content** |
| **UNIT I**  **(Textbooks-2 & 3)** | Software Development Methodologies | | Waterfall |
| Agile, Scrum, Iterative Models |
| Comparison of Waterfall & Agile |
| Version Control with GIT | | The Need of Version Control Systems, Type of Repositories → Centralized Vs Distributed, Branches, Check in, Checkout. Conflict, Merge, Tags, Reverting changes, Basics of Branching strategy |
| **UNIT – II**  **Introduction to Software Functional Test:** Software testing and Software development processes, checklist, Test cases, Test Suites, Defect Reports, Test plan and Test Result Report | | | |
| **Unit** | **Module** | **Micro Content** | |
| **UNIT II**  **(Textbook 1)** | Introduction to Functional Testing | Introduction to Functional Testing, understanding importance of Testing, Testing Overview, QA, QC & Testing SDLC / STLC, Bug life cycle, Testing levels and types, Test Design (scenarios, test cases), Test execution and reporting, Test Design Techniques, Defect Tracking, Regression identification, Identify Automation Candidates | |
| **UNIT– III**  **Introduction to SQL:** Introduction to Database Testing, DML statements - Select, insert, update, delete, truncate, DDL Statements - Create, Alter, Drop, DCL & TCL statements-Grant, Revoke & commit, Rollback, Save point. | | | |
| **Unit** | **Module** | **Micro Content** | |
| **UNIT III**  **(Textbook-4)** | DML statements | Select, insert, update, delete, truncate | |
| DDL Statements | Create, Alter, Drop | |
| DCL & TCL statements | Grant, Revoke & commit, Rollback, Save point | |
| **UNIT – IV**  **Unit Testing Framework & Selenium API:** Introduction to Selenium, Selenium Locators, Finding Elements, Working with elements, Synchronizing Tests, Testng and list of annotations used in Testng . | | | |
| **Unit** | **Module** | **Micro Content** | |
|  | Selenium | Understand the Selenium Architecture | |
|  | Setup environment for writing the tests with Selenium | |
|  | Implement working with various browsers, Locating Strategies | |
|  | Selenium Web Driver basics + Locators | |
| **UNIT IV**  **(Textbook-5)** | Testng - @test @before test & @after test | |
| **UNIT V**  **API Functional Testing & Automation:** REST Architecture-Understanding of REST Architecture and Richardson Maturity Model, API Testing, Usage of Postman, Automated testing Web Services (Amazon, Flip kart, GitHub etc.). | | | |
| **Unit** | **Module** | **Micro Content** | |
| **UNIT V**  **(Textbook-6 & 7)** | API Functional Testing & Automation | REST Architecture-Understanding of REST Architecture and Richardson Maturity Model, API Testing, Usage of Postman, Automated testing Web Pages like Amazon, Flipkart and other commercial WebPages. | |