**14.Study and document the functionality of TestLink for test management.**

# Study Report: Functionality of TestLink for Test Management

## 1. Introduction to TestLink

**TestLink** is an open-source **web-based test management tool** that helps software teams **plan, develop, execute, and track** software testing activities.

- 🌐 **Official Website**: https://testlink.org

- 🛠️ **Developed in**: PHP and MySQL

- 📦 **Purpose**: Test planning, test case creation, test execution, reporting

## 2. Key Features of TestLink

| Feature | Description |
|---|---|
| 🧪 Test Case Management | Create, organize, and manage reusable test cases |
| 📋 Test Plans | Create test plans, assign test cases, schedule testing |
| ✅ Test Execution | Execute test cases, record pass/fail status, add notes |
| 👥 User Management | Multiple roles like admin, tester, leader with access control |
| 📊 Reports & Metrics | Summary reports, pie charts, test coverage, results |
| 🔄 Integration | Integrates with tools like Bugzilla, JIRA, Selenium, etc. |
| 📁 Requirements Mapping | Map test cases to requirements (traceability) |
| 🔐 Role-Based Access Control | Define what each user role can view or edit |
| 📅 Custom Fields and Keywords | Add metadata to organize and filter test cases |

# 3. Major Modules in TestLink

| Module | Function |
|---|---|
| 🔧 **Test Project** | Main container for all testing activities |
| 🧱 **Test Suites** | Logical grouping of test cases (folders) |
| 📝 **Test Cases** | Individual test scenarios with steps and expected outcomes |
| 📅 **Test Plan** | Collection of test cases for execution |
| ▶️ **Test Execution** | Performing and recording results |
| 🔍 **Requirements** | Define and map functional requirements |
| 📊 **Reports** | Generate summary, coverage, and result reports |

# 4. How TestLink Works (Step-by-Step)

## Step 1: Create a Test Project

- Define project name, prefix, requirements, and options

- Acts as a parent for all test activities

## Step 2: Create Test Suites and Test Cases

- Organize test cases in hierarchical folders (test suites)

- Add test steps, expected results, and keywords

## Step 3: Create a Test Plan

- Select which test cases will be executed

- Assign builds and assign test cases to users

## Step 4: Execute Test Cases

- Navigate to **Test Execution**

- Run test steps and mark them as:

  - ✅ Passed

  - ❌ Failed

  - ⚠️ Blocked

### Step 5: Generate Reports

- Use **Reports & Metrics** module to:

  - View execution status

  - Analyze test case coverage

  - Export reports to PDF/Excel

# 5. Integration Capabilities

| Tool | Purpose |
|---|---|
| 🐞 Bugzilla | Auto-report failed test cases as bugs |
| 📋 JIRA | Track issues linked to test execution |
| ⚙️ Selenium | Automated test execution through plugins |
| 🧪 CI/CD Tools | Integration with Jenkins for automation pipeline |

# 6. TestLink Test Case Lifecycle

Created → Reviewed → Approved → Assigned → Executed → Reported

- Test cases are first created and reviewed.

- Approved test cases are added to test plans.

- Testers execute them and report results.

- Bugs can be linked or reported.

# 7. User Roles and Permissions

| Role | Permissions |
|---|---|
| Admin | Full access to all features and user management |
| Test Leader | Manage projects, test plans, and test cases |
| Tester | Execute test cases, report results |
| Guest | Read-only access to reports |

# 8. Sample Test Case Entry in TestLink

| Field | Value |
|---|---|
| Test Case Title | Login Page – Valid Credentials |
| Summary | Verify login functionality with correct credentials |
| Preconditions | User is registered |
| Steps | 1. Enter username2. Enter password3. Click Login |
| Expected Result | User should be redirected to dashboard |
| Execution Type | Manual |
| Keywords | Login, Functional |

# 9. Advantages of Using TestLink

**Benefits**

- Open-source and free

- Web-based interface

- Easy test case reuse and traceability

- Integration with multiple tools

- Centralized test repository

**Limitations**

- UI is not modern

- Lacks detailed automation support natively

- Requires separate bug tracker (e.g., JIRA, Bugzilla)

# 10. Student Activity Example

**Task**: Create a project in TestLink for testing an e-commerce login module
**Steps**:

1. Create a test project: "E-commerce Login Testing"

2. Create a test suite: "Login Functionality"

3. Add 3 test cases (valid login, invalid login, empty fields)

4. Create a test plan and execute the test cases

5. Generate a test execution report and submit a screenshot

# 11. Conclusion

TestLink is an essential test management tool that helps software testers organize and track test cases, improve test coverage, and integrate with bug tracking systems. It's ideal for both manual testing and automation pipelines (via plugins).