Sanya Ramchandani
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EXPERIMENT NO. 6

STUDYING AGILE METHODOLOGY AND TEST CASE MANAGEMENT USING JIRA TOOL

Theory:

1. Introduction to Agile Methodology

Agile methodology is an iterative approach to software development and project management that emphasizes flexibility, collaboration, and customer feedback. It helps teams deliver high-quality software in incremental steps rather than following a rigid plan.

1.1 Agile Manifesto

Agile is based on four core values:

1. **Individuals and interactions** over processes and tools.
2. **Working software** over comprehensive documentation.
3. **Customer collaboration** over contract negotiation.
4. **Responding to change** over following a plan.

1.2 Agile Principles

Agile follows 12 principles, including:

- Customer satisfaction through early and continuous delivery.
- Embracing changing requirements for the customer's competitive advantage.
- Delivering working software frequently.
- Close collaboration between business and development teams.
- Motivated individuals and self-organizing teams.
- Continuous attention to technical excellence.

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2. Agile Frameworks

Several frameworks exist under Agile, including:

1. **Scrum** – A framework for iterative and incremental product development.
2. **Kanban** – A visual workflow management system.
3. **Extreme Programming (XP)** – Focuses on engineering practices.
4. **Lean Software Development** – Focuses on minimizing waste and maximizing value.

2.1 Scrum Framework

Scrum is one of the most popular Agile frameworks. It consists of:

- **Scrum Team:** Product Owner, Scrum Master, Development Team.
- **Scrum Artifacts:** Product Backlog, Sprint Backlog, Increment.

- **Scrum Events:** Sprint Planning, Daily Stand-ups, Sprint Review, and Sprint Retrospective.
- **Sprint Cycle:** A time-boxed period (usually 2-4 weeks) where a team completes selected backlog items.

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3. Introduction to Jira

Jira is a popular tool developed by Atlassian for Agile project management, issue tracking, and test case management. It helps teams plan, track, and manage software development projects efficiently.

3.1 Features of Jira

- **Customizable dashboards** for tracking project progress.
- **Issue tracking** for creating, assigning, and monitoring tasks.
- **Workflow automation** to improve efficiency.
- **Integration** with various development and testing tools.

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4. Test Case Management Using Jira

Jira can be used to manage test cases effectively by integrating with testing plugins like Zephyr and Xray.

### 4.1 Steps to Manage Test Cases in Jira

1. **Creating a Test Case:**
   - Navigate to the Jira project.
   - Click on **Create Issue** and select **Test Case** (if using Zephyr/Xray).
   - Define the test case with details such as Test Summary, Preconditions, Test Steps, and Expected Results.
   - Click **Create** to save the test case.

2. **Executing a Test Case:**
   - Open the created test case.
   - Click **Execute** and select the test cycle.
   - Update the test execution status (Pass, Fail, In Progress, Blocked).

3. **Tracking Test Results:**
   - Use Jira dashboards to generate reports on test execution progress.
   - Analyze defects by linking test cases to bug reports.

4. **Integrating Jira with CI/CD Pipelines:**
   - Jira can integrate with Jenkins, Bamboo, and other DevOps tools to automate testing workflows.

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5. Benefits of Using Jira for Agile and Test Case Management

- **Centralized Tracking:** All tasks, sprints, and test cases are managed in one place.
- **Collaboration:** Teams can communicate and update task statuses in real-time.

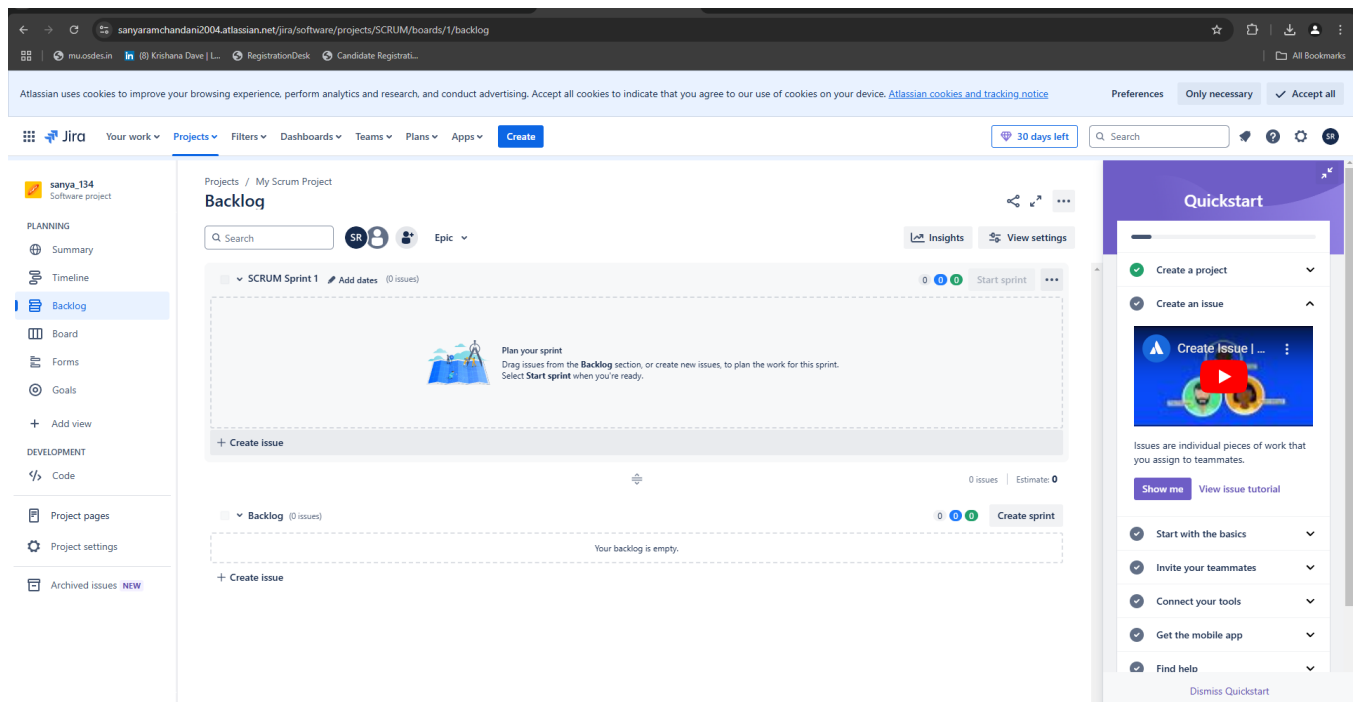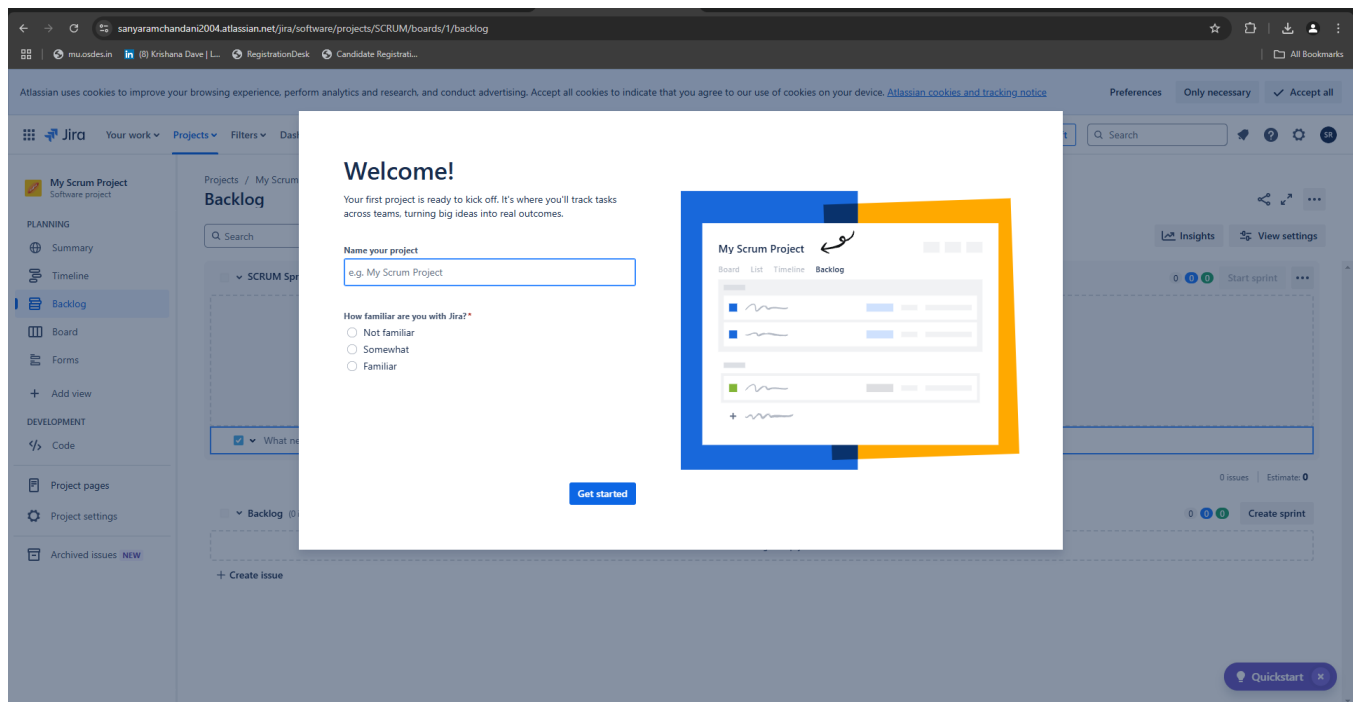Sanya Ramchandani

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- **Customization:** Jira can be tailored to fit any workflow.
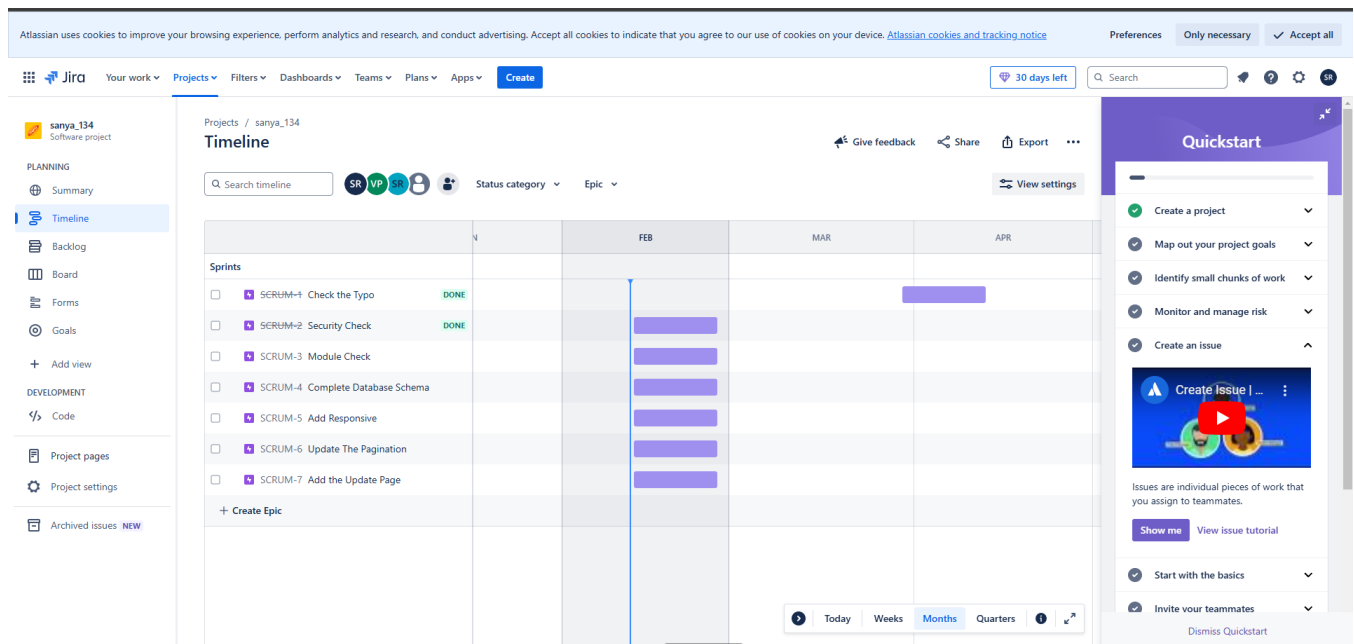- **Automation:** Reduces manual effort through workflow automation and integration with DevOps tools.

Output:

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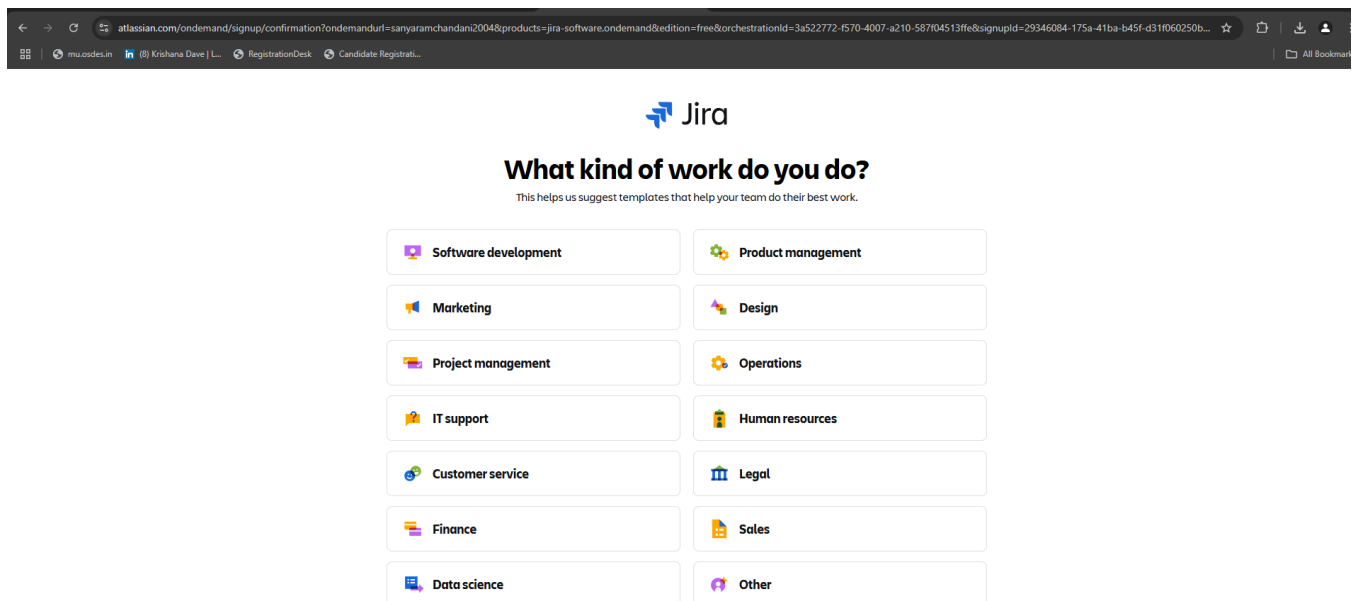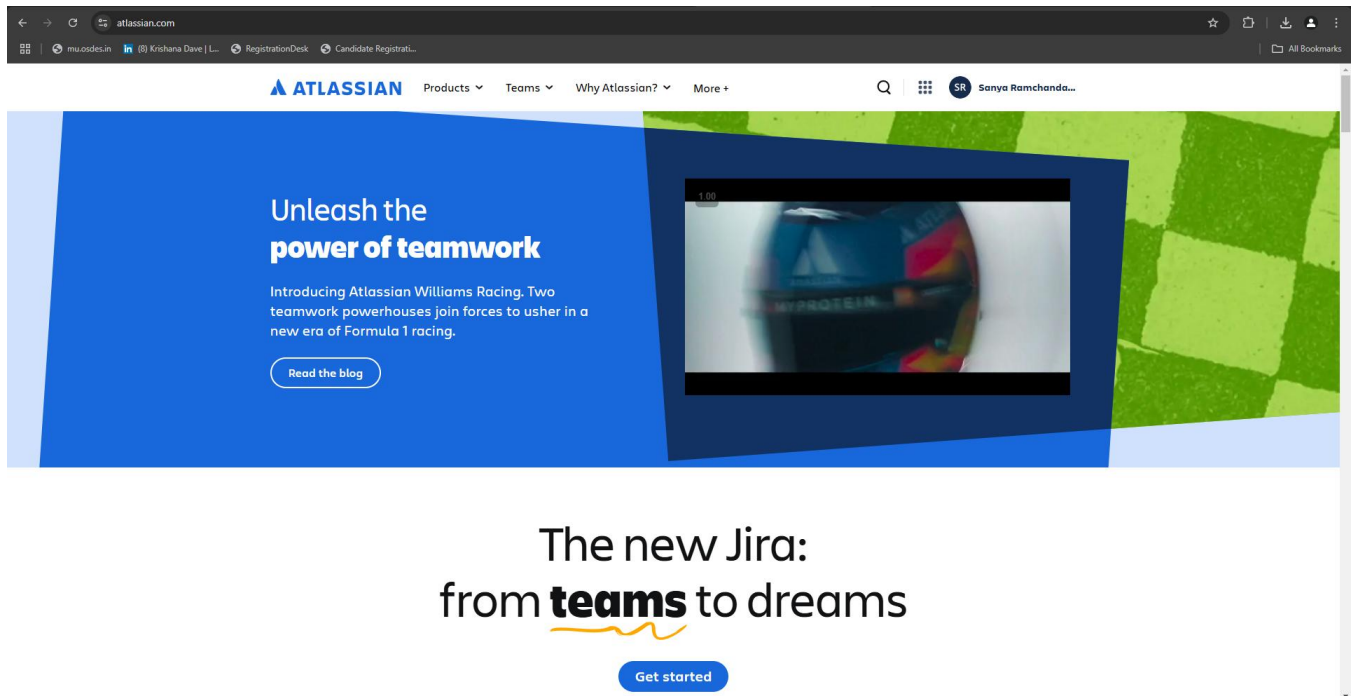
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Conclusion

This experiment provided an overview of Agile methodology and how Jira is used for project and test case management. Jira enhances Agile practices by improving workflow efficiency, collaboration, and test case execution tracking, making it a valuable tool in modern software development.

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