

Project Name:Debug Log Analysis and Bug Fixing in Salesforce Apex: PHASE 1

PHASE 1: Problem Understanding & Industry Analysis

1. Problem Understanding

Developing and testing Apex code in Salesforce often becomes difficult because:

- Debug logs are hard to read
- It is difficult to reproduce issues in complex Apex logic
- Traditional debugging requires manual effort
- Developers cannot step through code like a normal IDE
- Errors in asynchronous processes are difficult to trace

Because of these challenges, the quality of Apex code decreases and debugging becomes time-consuming. Salesforce DX and the **Apex Replay Debugger** solve this problem by providing a modern, powerful debugging environment.

Goal of the Project:

To build a **Salesforce DX-based debugging setup using Apex Replay Debugger** which allows step-by-step analysis, breakpoint setting, and easier debugging of Apex code for testing and issue resolution.

2. Industry Analysis

Modern software development requires fast and accurate debugging tools. Salesforce developers face difficulties because Apex runs inside a cloud environment, not locally. Traditional debugging methods are limited compared to tools available in other programming languages.

Industry Problems:

- No traditional breakpoints in Apex without Replay Debugger
- Debug logs are difficult to understand for new developers
- Complex Apex code (triggers, batch jobs, asynchronous calls) takes time to troubleshoot
- High chance of missing important log statements
- Testing Apex code requires detailed log replay capability

Industry Need:

Companies working with Salesforce need tools that:

- Allow step-by-step debugging
- Replay entire debug logs like a video
- Provide breakpoints, variable inspection, call-stack view
- Improve developer productivity and reduce debugging time
- Integrate with version-control systems
- Provide a powerful CLI toolset for DevOps teams

Why Salesforce DX + Apex Replay Debugger is Important:

- DX provides a modern developer experience (CLI, scratch orgs, version control)
- Replay Debugger allows developers to simulate real debugging
- Faster identification of errors in Apex code
- Useful for automated test execution
- Essential for large companies with complex Apex logic
- Supports clean development lifecycle and CI/CD pipelines

3. Phase Outcome

At the end of Phase 1, we have:

- A clear understanding of the debugging challenges in Apex
- Identification of the need for a modern debugging tool
- Industry analysis that highlights why this project is relevant
- Confirmation that **Salesforce DX + Apex Replay Debugger** is the correct solution
- Clearly defined goals for the next phases