

# **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