

Core Differences Between Debugging and Testing

Feature	Testing	Debugging
Purpose	Verify software meets requirements.	Identify and fix the root cause of defects.
Scope	Broad; validates entire system or modules.	Narrow; focuses on specific code sections.
Timing	Planned activity throughout development.	Reactive; triggered by failed tests or errors.
Process	Systematic execution of test cases.	Investigative process of finding the error.
Outcome	Pass/Fail result.	Corrected code.
Tools	JUnit, TestNG, Mockito, Selenium.	IntelliJ IDEA Debugger, logging frameworks.
Level	Unit, Integration, System, Acceptance.	Code level.
Automation	Highly automatable.	Partially automatable, often requires manual analysis.