**Defect Tracking and Management**

Defect tracking and management are crucial for maintaining software quality. It involves **identifying, documenting, prioritizing, fixing, and verifying** defects throughout the software development lifecycle.

**1. What is Defect Tracking?**

Defect tracking is the **process of monitoring and managing defects** found in software to ensure they are properly addressed before release. A **defect tracking system** allows teams to **log, prioritize, assign, and track defects** until they are resolved.

**2. Defect Life Cycle (Bug Life Cycle)**

The defect life cycle defines the different states a defect goes through:

1. **New** – A defect is identified and logged.
2. **Assigned** – The defect is assigned to a developer.
3. **In Progress** – The developer is working on fixing the defect.
4. **Fixed** – The defect is resolved by the developer.
5. **Retest** – Testers verify if the fix is successful.
6. **Reopened** – If the issue still exists, it is reopened.
7. **Closed** – If the fix is successful, the defect is closed.

**3. Key Attributes of a Defect Report**

A defect report should include:

* **Defect ID** – Unique identifier for tracking
* **Summary** – Short description of the defect
* **Steps to Reproduce** – Clear steps to reproduce the issue
* **Expected Result** – What should happen
* **Actual Result** – What happens instead
* **Severity** – Impact on the system (**Critical, Major, Minor**)
* **Priority** – Urgency of fixing the defect (**High, Medium, Low**)
* **Status** – Current state of the defect (**New, Open, In Progress, Fixed, Closed**)

**Example Defect Report**

| **Defect ID** | **Summary** | **Severity** | **Priority** | **Status** | **Assigned To** |
| --- | --- | --- | --- | --- | --- |
| 101 | Login button not working | Critical | High | Open | Dev Team |
| 102 | Incorrect password error message missing | Major | Medium | In Progress | Dev Team |
| 103 | Page layout issue on mobile | Minor | Low | New | UX Team |

**4. Defect Tracking Tools**

Defect tracking tools help teams manage and resolve defects efficiently.

**Popular Tools:**

* **JIRA** – Most widely used tool for Agile and defect tracking.
* **Bugzilla** – Open-source bug tracking tool.
* **Redmine** – Web-based issue tracker with project management features.
* **MantisBT** – Simple bug tracking system.
* **Azure DevOps** – Integrated tracking for Agile teams.

**5. Best Practices for Defect Management**

1. **Maintain Clear Defect Reports** – Provide detailed descriptions with screenshots.
2. **Prioritize Defects Effectively** – Fix **high-severity, high-priority** issues first.
3. **Use Automation** – Automate bug tracking workflows using tools.
4. **Regularly Review Defects** – Conduct defect triage meetings to review open issues.
5. **Retest and Verify Fixes** – Ensure defect fixes do not introduce new issues.

**Conclusion**

Defect tracking and management ensure **high software quality** by systematically identifying, documenting, and resolving defects. Using **tools like JIRA or Bugzilla**, teams can efficiently track defects, prioritize fixes, and ensure smooth software delivery.