Assignment 5: Software Configuration Management (SCM)

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Introduction:

Software Configuration Management (SCM) is the organized process of tracking, managing, and controlling changes in software to maintain its consistency, traceability, and integrity across the entire development lifecycle.

Importance of SCM:

- Prevents conflicts during collaborative development.
- Allows tracing of code changes and origins of defects.
- Supports rollbacks and recovery mechanisms.
- Ensures regulatory compliance.
- Facilitates Continuous Integration and Deployment (CI/CD).

Key Activities:

- Configuration Identification
- Configuration Control
- Configuration Status Accounting
- Configuration Audits

Roles and Responsibilities:

- Developer: Develops and documents changes.

- Configuration Manager: Oversees version control and approvals.
- Quality Analyst: Audits the system to ensure compliance.

Sample Change Control Form:

- Change ID: CHG-2025-001
- Change Title: Update Login Module to Support Azure AD
- Proposed By: Rahul Sharma (Developer)
- Affected Items: LoginService.cs, AzureAuthSettings.json
- Description: Replace email-password login with Azure Active Directory SSO.
- Reason: Comply with enterprise authentication standards.
- Impact: Potential role-mapping issues; needs thorough testing.
- Approved By: Priya Desai (Configuration Manager)
- Status: Approved / In Progress / Completed / Rejected

Configuration Audit Checklists:

Physical Configuration Audit (PCA):

- Modules submitted
- Version numbers match release plan
- All dependencies included
- Build scripts updated

Functional Configuration Audit (FCA):

- Features tested against acceptance criteria
- Test cases executed and passed
- Security validations complete

- No open critical bugs

Conclusion:

SCM is vital for ensuring the orderly evolution of software, particularly in complex, multi-developer or cloud-based projects. It fosters traceability, accountability, and quality assurance throughout the software lifecycle.