SMART SDLC

(Software Development life cycle)

Project Title Project Documentation

1. Project Overview

1.1 Project Title:

Smart Software Development Life Cycle (SDLC) Program

- Team leader : Parthiban.B
- Team member : Prasuraman .v
- Team member : Mohamaed navith imran.M
- Team member : Porkovan.K
- Team member : Raju.S

1.2 Project Description:

The Smart SDLC Project aims to enhance the traditional software development life cycle by integrating intelligent automation, machine learning, and analytics to improve efficiency, reduce errors, and accelerate delivery. This project will redefine processes across all SDLC phases—planning, analysis, design, implementation, testing, deployment, and maintenance.

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2. Objectives

- Automate repetitive development and testing tasks.
- Enhance requirement analysis through NLP-driven tools.
- Integrate AI for predictive project management.
- Enable smart CI/CD pipelines with anomaly detection.
- Improve software quality with intelligent testing frameworks.
- Provide real-time project insights and KPIs through dashboards.

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3. Scope

In Scope:

- Development of an AI-enabled SDLC framework.
- Integration with existing DevOps tools.
- Automated documentation and requirement parsing.
- Smart project management dashboards.
- Automated testing with test case generation.
- Code review assistance using ML models.

Out of Scope:

- Hardware-level integrations.
- Legacy systems modernization (unless compatible with the platform).
- Manual project management tools.

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4. Methodology

- Agile Scrum with 2-week sprints
- Continuous Integration and Continuous Delivery (CI/CD)
- DevOps and MLOps integrations
- Cloud-native architecture

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5. SDLC Phases & Smart Enhancements

Phase	Smart Enhancement
Planning	AI-based risk and resource estimation, NLP for requirement collection
Analysis	Automated requirement validation and modeling
Design	Auto-generation of architecture diagrams using AI
Implementation	AI code assistants, code generation templates
Testing	Smart test case generation, anomaly detection, automated regression testing
Deployment	Predictive deployment scheduling, smart rollback systems
Maintenance	Real-time bug prediction, auto-patching suggestions

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6. Tools & Technologies

- **Languages:** Python, JavaScript (Node.js), Java
- **AI/ML Frameworks:** TensorFlow, Scikit-learn, OpenAI API
- **DevOps Tools:** Jenkins, GitLab CI, Docker, Kubernetes
- **Project Management:** Jira, Trello (integrated with AI bot)
- **Testing:** Selenium, TestNG, Cypress, AI-based testing tools
- **Cloud Platforms:** AWS / Azure / GCP

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7. Team Structure

Role	Responsibility
Project Manager	Oversee execution, stakeholder communication
Solution Architect	Design architecture, tool selection
AI/ML Engineer	Build intelligent modules (e.g., predictive analysis)
DevOps Engineer	Set up CI/CD and smart deployment systems
Backend Developer	Core logic and database integration
Frontend Developer	UI/UX development for dashboards
QA Engineer	Automated and smart testing implementation
Business Analyst	Requirement gathering and validation

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8. Milestones & Timeline (Example)

Milestone	Estimated Completion
Requirements & Planning	Week 1-2
AI Model Prototypes	Week 3-4
Architecture Finalization	Week 4
Development Sprint 1-3	Week 5–10
Integration and Testing	Week 11–13
UAT & Feedback Incorporation	Week 14
Final Deployment	Week 15
Maintenance and Support Phase	Ongoing

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9. Risks & Mitigations

Risk	Likelihood	Impact	Mitigation Strategy
Model accuracy issues	Medium	High	Continuous training and feedback loop
Integration with legacy	High	Medium	Provide API-based connectors

Risk	Likelihood	Impact	Mitigation Strategy
systems			
Team adaptation to new workflows	Medium	Medium	Conduct regular training and onboarding
Data privacy or compliance concerns	Medium	High	Implement secure coding, GDPR compliance checks

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10. Budget Estimate *(sample)*

Item	Cost Estimate (USD)
Human Resources	$150,000
Tools & Subscriptions	$20,000
Cloud Infrastructure	$30,000
AI/ML Infrastructure	$25,000
Training & Workshops	$10,000
Contingency	$15,000
Total	**$250,000**

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11. Success Metrics

- 30% reduction in development time
- 40% fewer bugs in production
- 25% improvement in team productivity
- 50% automation of testing and documentation tasks
- Real-time insights on SDLC phases with 90% accuracy

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12. Appendices

- Appendix A: Tool Integration Map
- Appendix B: AI Model Design Flow
- Appendix C: Sample UI Screens for Smart Dashboard
- Appendix D: Risk Assessment Matrix

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13. Sign-Off

Name	Role	Signature	Date
	Project Manager		
	Tech Lead		
	QA Lead		
	Business Sponsor		
