Coding & Development Prompts

Analyze outdated, messy, or difficult-to-maintain codebases and generate structured recommendations for refactoring, modularization, architecture improvements, performance optimization, and technical debt reduction.
Difficulty: Advanced
Model: ChatGPT / Claude
Use Case: Refactoring & Technical Debt
Updated: May 2026
Why This Prompt Exists
Most development problems are not caused by building new software.

They come from maintaining old software.

Over time, codebases accumulate:

- duplicate logic
- inconsistent naming
- poor separation of concerns
- outdated dependencies
- performance bottlenecks
- fragile architecture
- technical debt

As systems grow, even simple updates become risky and expensive.

Developers often avoid refactoring because the code feels too interconnected, poorly documented, or dangerous to modify safely.

This framework helps break down legacy systems systematically so improvements can be

planned intelligently instead of emotionally.

The Prompt

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Assume the role of a senior software architect and refactoring specialist experienced in large-scale application maintenance, technical debt reduction, performance optimization, and scalable system design.

Your task is to analyze an existing codebase or software component and generate a structured refactoring strategy.

Before generating recommendations, analyze:
- code organization
- dependency complexity
- duplication patterns
- maintainability risks
- performance bottlenecks
- architectural weaknesses
- naming consistency
- scalability limitations
- security concerns
- coupling between modules

Then generate the following:

1. High-Level System Assessment
2. Primary Technical Debt Issues
3. Maintainability Concerns
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4. Refactoring Priorities
5. Suggested Modularization Strategy
6. Dependency Cleanup Recommendations
7. Naming & Structure Improvements
8. Performance Optimization Opportunities
9. Security or Stability Risks
10. Suggested Folder/Architecture Structure
11. Testing & Regression Recommendations
12. Incremental Refactoring Roadmap
13. Risk Assessment
14. Long-Term Scalability Recommendations
15. Recommended Documentation Improvements

INPUTS:

Programming Language:
[INSERT LANGUAGE]

Framework:
[INSERT FRAMEWORK]

Application Type:
[WEB APP / API / MOBILE APP / INTERNAL TOOL]

Codebase Description:
[INSERT DETAILS]

Known Problems:
[INSERT ISSUES]

```
Scalability Requirements:
[LOW / MEDIUM / HIGH]

RULES:
- Prioritize maintainability over cleverness
- Avoid unnecessary rewrites
- Recommend incremental improvements when possible
- Focus on reducing long-term complexity
- Separate high-risk vs low-risk changes clearly
- Explain architectural reasoning carefully
- Emphasize practical implementation strategies
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How To Use It

- Start by analyzing isolated modules instead of entire enterprise codebases at once.
- Use this framework before major rewrites to identify safer incremental improvements.
- Focus on maintainability and clarity rather than purely aesthetic refactoring.
- Combine with debugging and performance analysis workflows for deeper system audits.
- Document recurring architectural problems so future developers avoid repeating them.

Example Input

Programming Language: PHP

Framework: Laravel

Application Type: SaaS Platform

Known Problems: duplicated business logic, slow database queries, inconsistent naming conventions, difficult onboarding for new developers

Scalability Requirements: High

Why It Works
Most refactoring efforts fail because teams attempt massive rewrites without understanding the underlying system structure.

This framework improves outcomes by forcing:

- structured technical debt analysis
- risk-aware modernization planning
- incremental architecture improvements
- maintainability-focused reasoning
- clear prioritization of refactoring efforts

Good refactoring is not about making code look modern.

It is about making systems easier to understand, safer to modify, and cheaper to maintain over time.

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