Code Review Reflection

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Part 1: Code Review Overview

What is code review?

Code review is the process of systematically examining source code written by oneself or by peers to identify bugs, improve code quality, and ensure adherence to coding standards before the code is merged into the main codebase. It is a collaborative quality assurance activity that allows developers to receive constructive feedback and improve both the code and their skills.

Why is code review important for computer science professionals?

Code review is a critical practice for computer science professionals because it promotes:

1. Code quality and consistency: It ensures that code adheres to organizational standards, reducing technical debt.
2. Bug detection: It helps catch logical, syntactic, and runtime errors before the software is released.
3. Knowledge sharing: It encourages team collaboration and spreads understanding of codebase features across the team.
4. Professional development: Reviewing code improves critical thinking and offers opportunities to learn new techniques from others.

Best Practices for Code Review

Some key best practices for effective code reviews include:

1. Review code in small chunks: This makes the review manageable and more thorough.
2. Automate what can be automated: Use linters and unit tests to handle basic checks before human review.
3. Focus on the code, not the coder: Maintain a professional tone and avoid making the feedback personal.
4. Use checklists: Checklists ensure consistent evaluation of security, logic, documentation, naming conventions, and test coverage.
5. Provide constructive and actionable feedback: Be specific about issues and recommend solutions.

When should code review occur in the development process?

Code reviews should occur after a developer completes a code segment (such as a new feature or bug fix) and before it is merged into the main branch or released. Conducting reviews at this stage ensures that issues are caught early when they are easier and less costly to fix. Early code reviews also help prevent compounding problems that may arise from integrating poorly written code into a shared codebase.

Part 2: Code Review Preparation

Software Chosen:

I have chosen to use OBS Studio (Open Broadcaster Software) to record my code review. OBS allows me to capture my screen and microphone commentary simultaneously, providing a clear walkthrough of my code with explanations for each section. It also enables me to pause, retake, or edit as needed for clarity and flow.

Approach to Creating an Outline or Script:

To ensure that my code review is structured and aligned with the course rubric and checklist, I will prepare a script that addresses the following three categories:

1. Software Design and Engineering

* Introduction to the artifact (Craps game project)
* Description of the initial design and what was enhanced
* Discussion on architectural patterns (e.g., MVC) and principles (e.g., SOLID)
* Review of code readability, modularity, and maintainability
* Checklist items: code clarity, use of comments, logical structure

2. Algorithms and Data Structures

* Overview of algorithm improvements (e.g., dice logic, game state)
* Justification of data structures used and their efficiency
* Complexity analysis and performance considerations
* Checklist items: algorithm correctness, efficiency, and proper usage

3. Databases

* Explanation of database integration (e.g., storing player data)
* Overview of schema design and data access patterns (CRUD)
* Review of security considerations and data validation
* Checklist items: SQL injection prevention, data normalization, code-database interaction quality

In the script, I will:

* Start each section with a brief context of what the code does.
* Highlight what was changed or improved and why.
* Point out specific lines or blocks of code during the screen recording.
* Use clear and concise language with annotations if needed on-screen.

This structured approach ensures that my review is professional, focused, and aligned with academic and industry expectations.