Week 9 Activity – SOLID & GRASP

Part 3

The proposed task management system is designed according to the SOLID and GRASP principles to ensure a robust and maintainable architecture. Each class has a single responsibility, such as `Task` for task details, and `Project` for managing tasks and team members, ensuring meeting the Single Responsibility Principle. The system is extensible without modifying existing code, adhering to the Open/Closed Principle, by allowing new task types like `RecurrentTask` and `HighPriorityTask` to inherit from `Task`. Furthermore, the design follows the Liskov Substitution Principle by allowing `RecurrentTask` and `HighPriorityTask` to be used interchangeably with their base class `Task` without disrupting the program's behavior. Interface Segregation Principle is maintained with `Frequency` and `HighPriority` interfaces, so classes only implement the necessary methods. `Project` serves as a controller, assigning all tasks while minimizing dependencies, thus, meeting the Dependency Inversion Principle. Finally, the design applies the principle of Low Coupling as outlined in GRASP, that is, the absence of bi-directional couplings and the limitation that a class is connected to no more than two others.

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