DESIGN PATTERNS USED

The system applies multiple design patterns and GRASP principles to ensure a well-structured and maintainable design. The Controller pattern is implemented through the *Cart Manager*, which acts as an intermediary between the UI layer and the business logic, handling all cart-related user actions such as adding, updating, and removing items. The Information Expert pattern is used by the *Item* class, as it holds essential data like price and quantity and is therefore responsible for providing accurate information for calculations. Low Coupling is achieved by clearly separating the UI, business logic, and storage layers, allowing each layer to evolve independently without affecting others. High Cohesion is maintained by assigning each class a single, well- defined responsibility, such as managing cart operations or handling data persistence. In addition, the Layered Architecture pattern organizes the system into distinct layers, improving readability, scalability, and ease of maintenance.