Object-Oriented Methodology Quiz 08

2024 Fall Semester

21 CST H3Art

Final Score: 100/100

1. In the Strategy Pattern, where are the different algorithms encapsulated?

A. In the context class.
B. In the abstract class.
C. In the client code.
D. In separate behavior classes.

2. Which of the following is a correct statement about the Strategy Pattern?

A. It is a structural design pattern.
B. It is a creational design pattern.
C. It is a behavioral design pattern.
D. It is a pattern for data access.

3. What method in the WeatherData class is called when weather measurements update?

A. getTemperature()
B. getPressure()
C. measurementsChanged()
D. getHumidity()

4. In the context of the Observer pattern, what is a "subject"?

A. An object that initiates updates.
B. An object that receives updates.
C. An object that processes data.
D. An object that stores data

5. In the weather monitoring application described, which component retrieves actual weather data?

A. Forecast display
B. WeatherData object
C. Display board
D. Weather station

6. Which class in the example implements the Subject interface?

A. ForecastDisplay
B. WeatherData
C. CurrentConditionsDisplay
D. StatisticsDisplay

7. What is the primary advantage of using the Observer pattern?

A. Increased coupling between objects.
B. Ease of adding or removing observers without modifying the subject.

C. Enhanced security.
D. Improved performance

8. What is the role of the notifyObservers() method in the Subject interface?

A. To get the current state of the subject.
B. To update observers with new data.
C. To remove observers.
D. To register observers.

9. The Strategy pattern allows ___ to vary independently?

A. The data structure
B. The hardware platform
C. The algorithm
D. The user interface

10. What is the main idea of the Strategy Pattern?

A. To create reusable code.
B. To improve the speed of a program.
C. To simplify complex algorithms.
D. To provide a way for a system to vary independently of its parts.

11. What do patterns provide?

A. Detailed implementation plans
B. General solutions to design problems
C. Specific code solutions
D. Automated testing tools

12. What is the main advantage of using the Strategy Pattern over simple inheritance?

A. Greater flexibility in behavior.
B. Reduced code complexity.
C. Easier to understand.
D. Better performance.

13. What is the purpose of the HAS-A relationship in the context of the Strategy Pattern?

A. To indicate ownership.
B. To delegate behavior to other objects.
C. To ensure data integrity.
D. To define the behavior of a duck.

14. Swing, a GUI framework, makes heavy use of which pattern?

A. Command
B. Factory
C. Observer
D. Singleton

15. Which statement about patterns is correct?

A. Patterns are invented randomly.
B. Patterns are discovered.

C. Patterns have no relation to OO basics.
D. Patterns are only used in one programming language.

16. What is the relationship between a duck and its FlyBehavior in the Strategy Pattern?

A. Composition.
B. Association.
C. Inheritance.
D. Aggregation.

17. Which of the following is NOT a benefit of using the Strategy Pattern?

A. Simplified code reuse.
B. Improved maintainability.
C. Increased flexibility.
D. Reduced performance.

18. Which interface must be implemented by classes that want to receive updates from a subject?

A. WeatherData
B. Subject
C. DisplayElement
D. Observer

19. Which of the following is NOT a principle of OO design?

A. Encapsulate what varies
B. Strive for loosely coupled designs
C. Program to implementations, not interfaces
D. Favor composition over inheritance

20. What is the main purpose of the Observer pattern?

A. To minimize object interactions.
B. To define a one-to-many dependency between objects.
C. To ensure that objects are always updated in real-time.
D. To create a one-to-one relationship between objects.

21. The Observer pattern requires that all observers be of the same type.

❌

22. The Observer pattern is also known as the Publish-Subscribe pattern.

✅

23. Observers in the Observer Pattern are tightly coupled.

❌

24. In the Strategy Pattern, different algorithms are encapsulated in separate behavior classes.

✅

25. Using the Strategy Pattern can reduce the flexibility of a system.

❌

26. In the example provided, the WeatherData class implements the Observer interface.

> ❌

27. The Strategy Pattern is a behavioral design pattern.

> ✅

28. Simple inheritance is always better than using the Strategy Pattern.

> ❌

29. Encapsulation is one of the basic principles of Object-Oriented Programming.

> ✅

30. The java.util package includes classes for implementing the Observer pattern.

> ✅

31. Duck is a concrete class in the context of the example.

> ❌

32. In the example provided, the CurrentConditionsDisplay class implements both the Observer and DisplayElement interfaces.

> ✅

33. Good OO designs are reusable, extensible, and maintainable.

> ✅

34. Polymorphism allows a duck to change its behavior at runtime in the Strategy Pattern.

> ✅

35. The display() method in the DisplayElement interface is responsible for showing the updated data.

> ✅

36. Patterns are invented rather than discovered.

> ❌

37. To add a new display board to the weather monitoring application, you would need to modify the WeatherData class.

> ❌

38. The Observer Pattern defines a many-to-one relationship between objects.

> ❌

39. The update() method in the Observer interface is called when the subject's state changes.

> ✅

40. Pushing data from the observable is always the best way in the Observer Pattern.

> ❌