Object-Oriented Methodology Quiz 11

2024 Fall Semester

21 CST H3Art

Final Score: 92.5/100

1. The Strategy Pattern and the Template Method Pattern both encapsulate:

A. Data
B. Behaviors
C. Interfaces
D. Algorithms

2. The main difference between the Strategy Pattern and the Template Method Pattern is:

A. Both patterns use inheritance
B. The Strategy Pattern uses inheritance, while the Template Method Pattern uses composition
C. The Template Method Pattern uses inheritance, while the Strategy Pattern uses composition
D. Both patterns use composition

3. What method does the Enumeration Iterator adapter throw an UnsupportedOperationException for?

A. hasNext()
B. hasMoreElements()
C. nextElement()
D. remove()

4. What is the principle of Least Knowledge also known as?

A. The Law of Demeter
B. The Liskov Substitution Principle
C. The Dependency Inversion Principle
D. The Open/Closed Principle

5. In the Facade Pattern, what does the facade class provide?

A. Access to all the methods of the subsystem classes.
B. A single method to perform all operations.
C. A unified interface to a set of interfaces in a subsystem.
D. Additional functionality to the subsystem.

6. The Hollywood Principle states:

A. Don't call us, we'll call you
B. Subclasses should never implement methods
C. Always call the superclass
D. High-level components should never depend on low-level components

7. Why is it important to use the Principle of Least Knowledge?

A. To make it easier to add new behaviors to classes.
B. To reduce the number of interactions between objects.

C. To increase the number of dependencies between classes.
D. To ensure that a class can only be instantiated by its subclasses.

❌ **8. What is the purpose of the Duck Adapter class in the example?**

A. To simplify the interface of the Duck class.
B. To make a Turkey quack like a Duck.
C. To convert a Duck to a Turkey.
D. To add flying capabilities to a Duck.

Correct Answer: C

9. In the example of making coffee and tea, the prepareRecipe() method is defined as:

A. Not used at all
B. Concrete in both Coffee and Tea classes
C. Abstract in both Coffee and Tea classes
D. Final in the CaffeineBeverage class

10. Which pattern allows classes to work together that couldn't otherwise because of incompatible interfaces?

A. Factory Method Pattern
B. Decorator Pattern
C. Facade Pattern
D. Adapter Pattern

11. Which of the following is an example of the Adapter Pattern in real life?

A. A decorator on a cake
B. A facade of a building
C. A singleton class in an application
D. A power adapter for a laptop

12. What is the main benefit of using the Facade Pattern?

A. It adds new functionality to the subsystem.
B. It provides a unified interface to a single class.
C. It ensures that the subsystem classes are encapsulated
D. It simplifies the interface of the subsystem.

13. The prepareRecipe() method in the CaffeineBeverage class:

A. Is optional for subclasses to implement
B. Must be overridden by subclasses
C. Can be changed by any class
D. Cannot be changed by subclasses

14. Which of the following is a specialization of the Template Method Pattern?

A. Factory Method Pattern
B. Singleton Pattern
C. Observer Pattern
D. Strategy Pattern

15. In the Adapter Pattern, who makes the request to the adapter?

A. The client
B. The target interface
C. The vendor class
D. The adaptee

16. The method brew() in the CaffeineBeverage class is:

A. Final
B. Abstract
C. Concrete
D. Not defined

17. In the JFrame example, the paint() method is:

A. An abstract method
B. A hook method
C. A concrete method
D. A template method

18. In the example of sorting Ducks, the compareTo() method is implemented in:

A. The Comparable interface
B. The CaffeineBeverage class
C. The Arrays class
D. The Duck class

19. The sort() method in the Java Arrays class is:

A. A static method
B. An abstract method
C. A concrete method
D. A hook method

20. Which of the following best describes the Facade Pattern?

A. It allows objects to be created without specifying their concrete classes.
B. It ensures that a class can only have one instance.
C. It provides a simplified interface to a subsystem.
D. It wraps an object to add new responsibilities.

❌ **21. The DuckAdapter class converts a Duck object to a Turkey object.**

❌

Correct Answer: ✅

22. The Principle of Least Knowledge guides us to reduce the interactions between objects.

✅

23. The Factory Method Pattern is a specialization of the Template Method Pattern.

✅

24. The Principle of Least Knowledge prevents objects from interacting with too many other objects.

✅

25. Both object adapters and class adapters can be implemented in Java.

> ❌

26. In the Duck sorting example, the Ducks must subclass the Arrays class to be sorted.

> ❌

❌ **27. The Facade Pattern encapsulates the subsystem classes from direct access.**

> ✅
>
> Correct Answer: ❌

28. The Template Method Pattern is not commonly found in real-world code.

> ❌

29. The Decorator Pattern and the Adapter Pattern are essentially the same.

> ❌

30. The boilWater() method is defined as abstract in the CaffeineBeverage class.

> ❌

31. The prepareRecipe() method in the CaffeineBeverage class is declared as final to prevent subclasses from changing the algorithm.

> ✅

32. The Hollywood Principle promotes creating circular dependencies between components.

> ❌

33. The Adapter Pattern is used to add new behaviors to an existing class.

> ❌

34. The Template Method Pattern is less efficient than the Strategy Pattern because it requires more objects.

> ❌

35. The brew() method in the CaffeineBeverage class must be implemented by both Coffee and Tea subclasses.

> ✅

36. The watchMovie() method in the Home Theater example performs all the steps needed to start watching a movie.

> ✅

37. The start() method in the Applet class is a hook method that allows the applet to perform actions when it is about to be displayed.

> ✅

38. The Strategy Pattern is more flexible than the Template Method Pattern because it uses object composition.

> ✅

39. The Facade Pattern provides a simplified interface to a complex subsystem.

> ✅

40. The customerWantsCondiments() method is a hook method in the CaffeineBeverageWithHook class.

> ✅