Quality Assurance

CSCI 5308

Assignment 2: S. O. L. I. D.

Submitted by

Abinaya Raja

B00799562

ab515836@dal.ca

Question 1:

1. Which SOLID principle does the Customer class violate?

Single Responsibility principle

2. Why does the code violate the principle?

Single Responsibility Principle states that every class should have only one responsibility. But the Customer class is responsible for multiple tasks: validating the customer and emailing special offers to customer. Hence it violates the Single Responsibility Principle.

Question 2:

1. Which SOLID principle does the USDollarAccount class violate?

Liskov Substitution Principle

2. Why does the code violate the principle?

The class “USDollarAccount” inherits the class “Account”. But the class “USDollarAccount” alters the behaviour of the methods “credit” and “debit” provided by its parent class “Account”. Hence, there is a violation of Liskov Substitution Principle.

Question 3:

1. Which SOLID principle does the Student class violate?

Single Responsibility Principle

2. Why does the code violate the principle?

The “Student” class has 2 responsibilities:

- holding the information about student
- saving and loading the student information

Modifications to any of the above functionalities, require changes on the same class “Student”. Hence, the class “Student” violates the Single Responsibility Principle.

Question 4:

1. Which SOLID principle does the Employer class violate?

Dependency Inversion Principle

2. Why does the code violate the principle?

Dependency Inversion Principle states that classes should depend on abstractions instead of concrete classes. The class “Employer” depends on the concrete class “SalaryWorker” and “HourlyWorker” leading to tight coupling between those entities. Hence, the “Employer” class violates Dependency Inversion Principle.

Question 5:

1. Which SOLID principle does the following code violate?

Interface Segregation Principle

2. Why does the code violate the principle?

Interface Segregation principle states that classes should not be forced to implement any method that is not used by them. Both the classes “AquaticInsect” and “FlyingInsect” implements the interface “IInsect”. “The class “AquaticInsect” is forced to implement the method “fly” which it does not use. The class “FlyingInsect” is forced to implement the method “swim” which it does not use. Hence, the principle violated in this case is Interface Segregation.

Question 6:

1. Which SOLID principle does the following code violate?

Open/Closed Principle

2. Why does the code violate the principle?

Open/Closed principle states that entities should be closed for modification and open for extension. Every time a new country’s GDP report has to be printed, the class “CountryGDPReport” has modification. The class “CountryGDPReport” is not closed for modification.

Question 7:

1. Which SOLID principle does the following code violate?

Interface Segregation Principle

2. Why does the code violate the principle?

Book and DVD classes implement the interface “ILibraryItem”. The interfaces “ILibraryItem” forces the class “Book” to implement the methods getPlayTime, isDigitalOnly, and getCastList which are not used by that class. It forces the class “DVD” to implement the methods getAuthor and isDigitalOnly which are not used by them.