Java Unit Testing Exercises

# Exercise 1: Math Operation Unit Tests

Use JUnit to write unit tests for all classes that implement the MathOperation interface (AddMathOperation, SubtractMathOperation, MultiplyMathOperation, DivideMathOperation). The unit tests for AddMathOperation are already completed and you can use these as a guide for the other classes.

**Hint**: Don’t forget to test for error conditions and exceptions such as a divide by zero.

# Exercise 2: Calculator Integration Tests

Use JUnit to write integration tests for the Calculator class. Remember that a unit test is used to test a class in isolation whereas an integration test is used to test multiple classes together.

**Hint**: The Calculator class uses constructor injection to inject an implementation of the MathOperationFactory interface. If this were a unit test, we might inject a mock object. However, since this is an integration test, you can inject a new MathOperationFactoryImpl object.

# Exercise 3: Calculator Unit Tests

Use JUnit and Mockito to write unit tests for the Calculator class. Remember that unit tests test a class in isolation. Since we want to write unit tests and the Calculator class uses constructor injection, we will need to inject a mock object.