

ASM Linter - Test Suite

Testing Ideology

To verify the correctness of the Linter's implementation, we developed an extensive test suite consisting of 47 unit tests, 14 integration tests, and 6 acceptance tests using TDD. Since a majority of the Linter's functionality revolves around the individual code checks being correct, a large focus was placed on ensuring those checks were correct.

As a result, most of our unit tests consist of tests for the linter checks, with a few other individual units tested as well, ultimately leading toward a large number of unit tests. Our integration testing consisted of testing the interactions between the Linter class and the checks, the presentation information and the checks, adapters and plant uml writer, and the autocorrecting of failing naming conventions. The integration of the different units of the Linter were determined to be the most important in proving the correctness of the Linter due to the essential role they play in making the system functional. Finally, our acceptance tests, while small in size, are essential in demonstrating that the user functionality outlined in section VII is correct and functional. Our acceptance tests cover the interaction between the user, GUI, and console. Since we were not able to implement fully autonomous GUI tests, acceptance tests were also manually performed to ensure that the use cases could be followed as they were written.

Continuous Integration

To ensure the validity of our system during development and release, a continuous integration (CI) framework was used through Github Actions. This allowed the team to develop and merge changes into the main branch only if the system was fully passing tests. This ensured any potential build of the final release was functional and ready for the user to experience.

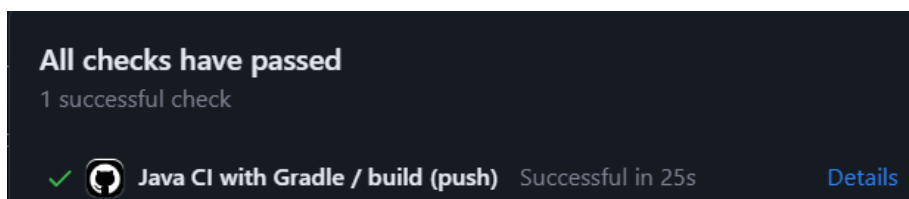


Figure _: Passing tests through Github CI.

Suite of Tests

The suite of tests for the system and the results of their most recent CI run can be found below. The suite is broken up into 3 different sections corresponding to unit, integration, and acceptance tests for easy identification.

Tested Classes	Test Case Name	Test Case Results
Unit Tests		
Adapter	testLoadBytes()	Pass <input checked="" type="checkbox"/>
	testCreateAdapter()	Pass <input checked="" type="checkbox"/>
	testClassAdapterHasAllInfo()	Pass <input checked="" type="checkbox"/>
DataClass Check	testDataClassWithGetters()	Pass <input checked="" type="checkbox"/>
	testDataClassWithGettersAndSetters()	Pass <input checked="" type="checkbox"/>
	testDataClassWithOnlyFields()	Pass <input checked="" type="checkbox"/>
	testNotADataClass()	Pass <input checked="" type="checkbox"/>
Decorator Pattern Detector	hasPattern()	Pass <input checked="" type="checkbox"/>
	doesntExtend()	Pass <input checked="" type="checkbox"/>
	doesntHaveFieldInstance()	Pass <input checked="" type="checkbox"/>
Equals HashCode Check	hasEqualsNoHashCode()	Pass <input checked="" type="checkbox"/>
	hasHashCodeNoEquals()	Pass <input checked="" type="checkbox"/>
	hasNeither()	Pass <input checked="" type="checkbox"/>
	hasBoth()	Pass <input checked="" type="checkbox"/>
Hollywood Principle Check	testDetectsPattern()	Pass <input checked="" type="checkbox"/>
	testDetectsPatternObserver()	Pass <input checked="" type="checkbox"/>
	testDetectsMultiplePattern()	Pass <input checked="" type="checkbox"/>

	testDetectsNoViolation()	Pass <input checked="" type="checkbox"/>
Information Hiding Check	dataClassNotFlagged()	Pass <input checked="" type="checkbox"/>
	noGettersSetters()	Pass <input checked="" type="checkbox"/>
	gettersSetters()	Pass <input checked="" type="checkbox"/>
Naming Convention Check	badFields_Methods_FINALS()	Pass <input checked="" type="checkbox"/>
	allGoodNames()	Pass <input checked="" type="checkbox"/>
	badClassName()	Pass <input checked="" type="checkbox"/>
No Finalizer Check	testDetectsViolation()	Pass <input checked="" type="checkbox"/>
	testDetectsNoViolation()	Pass <input checked="" type="checkbox"/>
Observer Pattern Detector	testCreateObserverPatternDetector()	Pass <input checked="" type="checkbox"/>
	testCheckForObserverPattern()	Pass <input checked="" type="checkbox"/>
	testCheckForInvalidObserverPattern()	Pass <input checked="" type="checkbox"/>
Redundant Interface Check	testCheckRedundantInterfaceFail()	Pass <input checked="" type="checkbox"/>
	testCheckRedundantInterfacePass()	Pass <input checked="" type="checkbox"/>
Single Responsibility Check	properlyFindsMedian()	Pass <input checked="" type="checkbox"/>
	canUseSelectedAmount()	Pass <input checked="" type="checkbox"/>
	canIdentifyIncorrectClassesWithMedian()	Pass <input checked="" type="checkbox"/>
	canIdentifyIncorrectClassesWithSelectedAmount()	Pass <input checked="" type="checkbox"/>
	doesNotCountPublicMethods()	Pass <input checked="" type="checkbox"/>
Singleton Pattern Detector	noSingletonExists()	Pass <input checked="" type="checkbox"/>
	eagerSingletonTest_hasPassedIsTrue()	Pass <input checked="" type="checkbox"/>
	eagerSingletonTest_DisplayLineWhenFound()	Pass <input checked="" type="checkbox"/>
	lazySingletonTest_hasPassedIsTrue()	Pass <input checked="" type="checkbox"/>
	lazySingletonTest_DisplayLineWhenFound()	Pass <input checked="" type="checkbox"/>

Strategy Pattern Detector	testCreatesAdapter()	Pass <input checked="" type="checkbox"/>
	testDetectsPattern()	Pass <input checked="" type="checkbox"/>
	testDetectsNoPattern()	Pass <input checked="" type="checkbox"/>
Output Writer	testOutputWriterEmptyString()	Pass <input checked="" type="checkbox"/>
	testOutputWriterPasses()	Pass <input checked="" type="checkbox"/>
	testOutputWriterWithMessage()	Pass <input checked="" type="checkbox"/>
Integration Tests		
Linter, Check, Project Data Manager	testLinterIOException()	Pass <input checked="" type="checkbox"/>
	testLinterRedundantInterfaceCheckIntegration()	Pass <input checked="" type="checkbox"/>
Naming Convention Check, Linter, Naming Convention Autocorrect, Linter	nothingToAutocorrect()	Pass <input checked="" type="checkbox"/>
	badClassNameAutoCorrect()	Pass <input checked="" type="checkbox"/>
	badFields_Methods_FINALS_Autocorrect()	Pass <input checked="" type="checkbox"/>
Presentation Information, Linter	testReinitialize()	Pass <input checked="" type="checkbox"/>
	testReset()	Pass <input checked="" type="checkbox"/>
	testCountLines()	Pass <input checked="" type="checkbox"/>
	testIsPresentingCheck()	Pass <input checked="" type="checkbox"/>
	testReturnUIMessage()	Pass <input checked="" type="checkbox"/>
UMLParser, Source String Reader, UMLText Writer	parsesPublicConcreteClassAndMethods()	Pass <input checked="" type="checkbox"/>
	parsesAbstractMethodsAndClassesAndPrivateMethodsAndExtensions()	Pass <input checked="" type="checkbox"/>
	parsesInterfaceHasAEnumAndFields()	Pass <input checked="" type="checkbox"/>
	parsesDependencies()	Pass <input checked="" type="checkbox"/>
Acceptance Tests		

GUI, Linter, ConfigParser, CheckFactory,	testSetUpGUIFromConfigFile()	Pass <input checked="" type="checkbox"/>
	testSelectAllChecksButton()	Pass <input checked="" type="checkbox"/>
	testConfirmChecksButton()	Pass <input checked="" type="checkbox"/>
ConfigParser, Linter, Check, ProjectDataMan ger, ConsoleUI	testRunAllChecks_WithCurrentState()	Pass <input checked="" type="checkbox"/>
	testRunAllChecks_IfNoChecksExist()	Pass <input checked="" type="checkbox"/>
	testRunAllChecks_With12Checks()	Pass <input checked="" type="checkbox"/>