Test

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Guideline

It is important that the tests can easily be improved and understood by others.
For each test file, the list of tests must be present

How write a test ?

The test must be follow the pattern AAA for the documentation and the structure
First, read this excellent document by Microsoft.
Here a little resume :

Term	Definition
Arrange	Arrange your objects, create and set them up as necessary.
Arrange - Assert	If you create assertion to check your arrange
Act	The function which is tested (and only this function !!!!)
Assert	All check to verify the result obtained by the call of the function(s) in the Act part.

New test file
- Create a new tab with a new Id [A,B, C…..]
- Create a new tab for in the section checklist
New test
For each new test : add an entry after the previous ones in the corresponding table
Example : you create a new test called “testCanTransferIsTrue” in the file RuleWhitelist.t.sol. You add then an entry in the corresponding table. After that, add the test in the checklist too.

Below is an example of an entry in the table

id	Test function	Target function	Expected result	Actual result	conclusion	Improvement
[...previous test]						
25	testCanTransferIsTrue	The function which is tested	What is the result supposed to be returned by the function ???	[As expected] or[Not as exepectd + the result]	[Ok, Not Ok]	Possible improvement for the test

Checklist

The checklist allows you to quickly check that all the functions are tested as well as to find the corresponding test

File : **RuleWhiteList.sol**

Functions	Test id
addListAddressToTheWhitelist	A3
removeListAddressToTheWhitelist	A4
addOneAddressToTheWhitelist	-
removeOneAddressToTheWhitelist	-
numberWhitelistedAddress	-
addressIsWhitelisted	A1 / A2
isTransferValid	A7 / A8
detectTransferRestriction	-
canReturnTransferRestrictionCode	A5
messageForTransferRestriction	A6

Test list

Test A

File : **RuleWhitelist.t.sol**

Contract RuleWhiteListTest

id	Test function	Target function	Expected result	Actual result	conclusion	Improvement
1	testReturnFalseIfAddressNotWhitelisted	addressIsWhitelisted	For all addresses the functions return false	As expected	Ok	
2	testReturnTrueIfAddressIsWhitelisted	addressIsWhitelisted	For all addresses in the whitelist the function return true	As expected	Ok	
3	testAddListAddressToTheWhitelist	addressIsWhitelisted	The call of the function addressIsWhitelisted returns true for the added addresses.	As expected	Ok	The test depends of the function addressIsWhitelisted. It will be better if there are other/several ways to check the result
4	testRemoveListAddressToTheWhitelist	removeListAddressToTheWhitelist	The call of the function addressIsWhitelisted returns false for the removed addresses	As expected	Ok	

5	testCanReturnTransferRestrictionCode	canReturnTransferRestrictionCode	Return true if the code exists, false otherwise	As expected	Ok	
6	testReturnTheRightMessageForAGivenCode	messageForTransferRestriction	For the different codes, the corresponding message is returned.	As expected	Ok	
7	testIsTransferValid	isTransferValid	Returns true for the different tested transfer	As expected	Ok	
8	testTransferDectedAsInvalid	isTransferValid	Returns false for the different tested transfer	As expected	Ok	

Test B

File : **RuleEngine.t.sol**

Test C

File : **CMTAT.t.sol**

Contract	Test function	Target function	Expected result	Actual result	conclusion	Improvement
CMTATRuleEngineTest						
	testCanBeChangedByOwner	setRuleEngine	The engine is configured ???	As expected	OK	
	testCannotCallByNonOwner	setRuleEngine	revert	As expected	OK	RuleEngineCommonTest
RuleEngineCommonTest						
	testAddressIsIndicatedAsWhitelisted	addressIsWhitelisted	true	As expected	Ok	
	testAddressIsNotIndicatedAsWhitelisted	addressIsWhitelisted	false	As expected	Ok	
	testCannotTransferWithoutAddressWhitelisted	transfer	revert	As expected	Ok	