

Writing several unit tests for each rule, to check all possible scenarios that can happen for each rule.
Test cases are documented below, separately for each Scrum Rule.
Synthetic data is used for testing, very similar to the real data.

R1 - No more than five weeks should elapse for a single sprint.

Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R1_shouldPassWithSprintsLessThan28Days	[[1, '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305'], [2, '2020-03-03T11:10:08.305', '2020-03-05T11:10:08.305'], [3, '2020-03-06T11:10:08.305', '2020-03-09T11:10:08.305'], [4, '2020-06-12T11:10:08.305', '2020-06-13T11:10:08.305']]]	Checks and verifies if all sprints recorded have lasted less than 4 weeks, as prescribed by the Scrum Guide.	All sprints pass the test	All sprints pass the test	85%
T2	test_R1_shouldFailWith1SprintMoreThan28Days	[[1, '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305'], [2, '2020-03-03T11:10:08.305', '2020-03-05T11:10:08.305'], [3, '2020-03-06T11:10:08.305', '2020-05-09T11:10:08.305'], [4, '2020-06-12T11:10:08.305', '2020-06-13T11:10:08.305']]]	Checks and verifies that 1 sprint has deviated from the prescribed duration and has lasted more than 28 days, as opposed to other sprints.	1 sprint fails the test	1 sprint fails the test	
T3	test_R1_shouldFailWithMultipleSprintsMoreThan28Days	[[1, '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305'], [2, '2020-03-03T11:10:08.305', '2020-03-05T11:10:08.305'], [3, '2020-03-06T11:10:08.305', '2020-05-09T11:10:08.305'], [4, '2020-06-12T11:10:08.305', '2020-08-13T11:10:08.305']]]	Checks and verifies that multiple sprints have deviated from the prescribed duration and have lasted more than 28 days.	More than 1 sprint fail the test	More than 1 sprint fail the test	
<pre>platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 3 items test_R1.py ... [100%] ===== 3 passed in 0.45 seconds =====</pre>						

R4 - The duration of all sprints should follow similar pace.

Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R4_shouldPassWithSprintsFollowingSimilarCompletionTimeframe	[1, '2020-03-01T11:10:08.305', '2020-03-06T11:10:08.305'], [2, '2020-03-07T11:10:08.305', '2020-03-12T11:10:08.305'], [3, '2020-03-13T11:10:08.305', '2020-03-18T11:10:08.305'], [4, '2020-03-19T11:10:08.305', '2020-03-24T11:10:08.305'], [5, '2020-03-25T11:10:08.305', '2020-03-30T11:10:08.305'], [6, '2020-04-01T11:10:08.305', '2020-04-06T11:10:08.305'], [7, '2020-04-07T11:10:08.305', '2020-04-12T11:10:08.305'], [8, '2020-04-13T11:10:08.305', '2020-04-18T11:10:08.305'], [9, '2020-04-19T11:10:08.305', '2020-04-24T11:10:08.305'], [10, '2020-04-25T11:10:08.305', '2020-04-30T11:10:08.305'],	Checks and verifies that all present sprint have taken a similar/same time to complete	All sprints pass the rule	All sprints pass the rule	83%
T2	test_R4_shouldFailWithSprintsNotFollowingSimilarCompletionTimeframe	[1, '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305'], [2, '2020-03-07T11:10:08.305', '2020-03-15T11:10:08.305'], [3, '2020-03-13T11:10:08.305', '2020-03-18T11:10:08.305'], [4, '2020-03-19T11:10:08.305', '2020-03-24T11:10:08.305'], [5, '2020-03-25T11:10:08.305', '2020-03-30T11:10:08.305'], [6, '2020-04-01T11:10:08.305', '2020-04-26T11:10:08.305'], [7, '2020-04-07T11:10:08.305', '2020-04-08T11:10:08.305'], [8, '2020-04-13T11:10:08.305', '2020-04-28T11:10:08.305'], [9, '2020-04-19T11:10:08.305', '2020-04-24T11:10:08.305'], [10, '2020-04-25T11:10:08.305', '2020-04-30T11:10:08.305'],	Checks and verifies that multiple present sprint have taken way more or less time to complete as compared to the majority of the sprints, thus not recording a similar pace of completion.	Multiple sprint fail the rule	Multiple sprint fail the rule	

<pre>===== test session starts ===== platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 2 items test_R4.py .. [100%] ===== 2 passed in 0.39 seconds =====</pre>						
R5 - The next Sprint execution should begin only after the previous Sprint's resolution.						
Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R5_shouldPassWithSprintsFollowingCorrectCompletionOrder	[1, '2020-03-01T11:10:08.305', '2020-03-06T11:10:08.305'], [2, '2020-03-07T11:10:08.305', '2020-03-12T11:10:08.305'], [3, '2020-03-13T11:10:08.305', '2020-03-18T11:10:08.305'], [4, '2020-03-19T11:10:08.305', '2020-03-24T11:10:08.305'], [5, '2020-03-25T11:10:08.305', '2020-03-30T11:10:08.305'], [6, '2020-04-01T11:10:08.305', '2020-04-06T11:10:08.305'], [7, '2020-04-07T11:10:08.305', '2020-04-12T11:10:08.305'], [8, '2020-04-13T11:10:08.305', '2020-04-18T11:10:08.305'], [9, '2020-04-19T11:10:08.305', '2020-04-24T11:10:08.305'], [10, '2020-04-25T11:10:08.305', '2020-04-30T11:10:08.305'],	Checks and verifies that all present sprints have started when/after the previous sprint has been completed.	All sprints pass the test	All sprints pass the test	
T2	test_R5_shouldFailWith1SprintNotFollowingCorrectCompletionOrder	[1, '2020-03-01T11:10:08.305', '2020-03-06T11:10:08.305'], [2, '2020-03-07T11:10:08.305', '2020-03-12T11:10:08.305'], [3, '2020-03-13T11:10:08.305', '2020-03-18T11:10:08.305'], [4, '2020-03-19T11:10:08.305', '2020-03-24T11:10:08.305'], [5, '2020-03-25T11:10:08.305', '2020-03-30T11:10:08.305'], [6, '2020-04-01T11:10:08.305', '2020-04-06T11:10:08.305'], [7, '2020-04-07T11:10:08.305', '2020-04-12T11:10:08.305'], [8, '2020-04-13T11:10:08.305', '2020-04-18T11:10:08.305'], [9, '2020-04-19T11:10:08.305', '2020-04-26T11:10:08.305'], [10, '2020-04-25T11:10:08.305', '2020-04-30T11:10:08.305'],	Checks and verifies that 1 present sprint has started before the previous sprint has been completed.	1 sprint fails the test	1 sprint fails the test	98%
T3	test_R5_shouldFailWithMultipleSprintsNotFollowingCorrectCompletionOrder	[1, '2020-03-01T11:10:08.305', '2020-03-06T11:10:08.305'], [2, '2020-03-07T11:10:08.305', '2020-03-12T11:10:08.305'], [3, '2020-03-13T11:10:08.305', '2020-03-21T11:10:08.305'], [4, '2020-03-19T11:10:08.305', '2020-03-24T11:10:08.305'], [5, '2020-03-25T11:10:08.305', '2020-03-30T11:10:08.305'], [6, '2020-04-01T11:10:08.305', '2020-04-08T11:10:08.305'], [7, '2020-04-07T11:10:08.305', '2020-04-12T11:10:08.305'], [8, '2020-04-13T11:10:08.305', '2020-04-18T11:10:08.305'], [9, '2020-04-19T11:10:08.305', '2020-04-26T11:10:08.305'], [10, '2020-04-25T11:10:08.305', '2020-04-30T11:10:08.305'],	Checks and verifies that 3 present sprints have started before the previous sprint has been completed.	3 sprints fail the test	3 sprints fail the test	
<pre>===== test session starts ===== platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 3 items test_R5.py ... [100%] ===== 3 passed in 0.38 seconds =====</pre>						
R6 - There should be a project clarity identifier attached to each issue.						
Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R6_shouldPassWithAllIssuesContainingValidProjectID	['issue_1', 'developer1', 'open', 'major', 'sprint_1', 'XD'], ['issue_2', 'developer2', 'in pr', 'minor', 'sprint_2', 'XD'], ['issue_3', 'developer2', 'open', 'major', 'sprint_1', 'XD'], ['issue_4', 'developer1', 'in test', 'major', 'sprint_3', 'XD'], ['issue_5', 'developer2', 'open', 'critical', 'sprint_2', 'XD'], ['issue_6', 'developer1', 'closed', 'minor', 'sprint_4', 'XD'], ['issue_7', 'developer4', 'closed', 'major', 'sprint_1', 'XD'],	Checks and verifies that all issues have a valid project ID, which is needed to validate the issue in Jira for other business purposes.	All issues pass the test	All issues pass the test	

T2	test_R6_shouldFailWith5IssuesContainingNoValidProjectID	['issue_1','developer1','open','major','sprint_1','XD'], ['issue_2','developer2','in pr','minor','sprint_2','XD'], ['issue_3','developer2','open','major','sprint_1','XD'], ['issue_4','developer1','in test','major','sprint_3','XD'], ['issue_5','developer2','open','critical','sprint_2','XD'], ['issue_6','developer1','closed','minor','sprint_4','np.nan'], ['issue_7','developer4','closed','major','sprint_1','XD'], ['issue_8','developer2','open','major','sprint_4','XD'],	Checks and verifies that 1 issue does not have a valid project ID, which is needed to validate the issue in Jira for other business purposes.	5 issues out of 35 fail the test	5 issues out of 35 fail the test	100%
<pre> ===== test session starts ===== platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 2 items test_R6.py .. [100%] ===== 2 passed in 0.33 seconds ===== </pre>						

R7 - No considerable amount of time should elapse between the finish of a sprint and the beginning of the new sprint.

Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R7_shouldPassWithAllNextSprintsStartingImmediatelyAfterPreviousSprints	[1, '2020-03-01T11:10:08.305', '2020-03-06T11:10:08.305'], [2, '2020-03-07T11:10:08.305', '2020-03-12T11:10:08.305'], [3, '2020-03-13T11:10:08.305', '2020-03-18T11:10:08.305'], [4, '2020-03-19T11:10:08.305', '2020-03-24T11:10:08.305'], [5, '2020-03-25T11:10:08.305', '2020-03-30T11:10:08.305'], [6, '2020-04-01T11:10:08.305', '2020-04-06T11:10:08.305'], [7, '2020-04-07T11:10:08.305', '2020-04-12T11:10:08.305'], [8, '2020-04-13T11:10:08.305', '2020-04-18T11:10:08.305'], [9, '2020-04-19T11:10:08.305', '2020-04-24T11:10:08.305'], [10, '2020-04-25T11:10:08.305', '2020-04-30T11:10:08.305'],	Checks and verifies that no more than double the average duration of sprints has passed between the finish of previous sprint and beginning of the new sprint.	All 10 sprints pass the test	All 10 sprints pass the test	98%
T2	test_R7_shouldFailWith1NextSprintStartingPreviousSprintsForMoreThanDoubleMeanSprintCompletionTime	[1, '2020-03-01T11:10:08.305', '2020-03-06T11:10:08.305'], [2, '2020-03-07T11:10:08.305', '2020-03-12T11:10:08.305'], [3, '2020-03-13T11:10:08.305', '2020-03-18T11:10:08.305'], [4, '2020-03-19T11:10:08.305', '2020-03-24T11:10:08.305'], [5, '2020-03-25T11:10:08.305', '2020-03-30T11:10:08.305'], [6, '2020-04-01T11:10:08.305', '2020-04-13T11:10:08.305'], [7, '2020-04-07T11:10:08.305', '2020-04-12T11:10:08.305'], [8, '2020-04-13T11:10:08.305', '2020-04-18T11:10:08.305'], [9, '2020-04-19T11:10:08.305', '2020-04-24T11:10:08.305'], [10, '2020-04-25T11:10:08.305', '2020-04-30T11:10:08.305'],	Checks and verifies that 1 sprints has taken more than double the average duration of sprints to start from the finish of previous sprint.	1 sprint out of 10 fails the test	1 sprint out of 10 fails the test	
<pre>===== test session starts ===== platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 2 items test_R7.py .. [100%] ===== 2 passed in 0.39 seconds =====</pre>						

R8 - There should not be a considerable amount of time for a developer to volunteer and start a new issue after she/he has completed the previous one.

Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R38_shouldPassWithAllDevelopersWorkingOnConsecutiveIssuesInTimelyManner	['issue_1','developer1','2020-03-01T11:10:08.305','2020-03-02T11:10:08.305','sprint_1','XD'], ['issue_2','developer1','2020-03-04T11:10:08.305','2020-03-07T11:10:08.305','sprint_1','XD'], ['issue_3','developer1','2020-03-08T11:10:08.305','2020-03-12T11:10:08.305','sprint_1','XD'], ['issue_4','developer2','2020-03-15T11:10:08.305','2020-03-20T11:10:08.305','sprint_1','XD'], ['issue_5','developer2','2020-03-20T11:10:08.305','2020-03-21T11:10:08.305','sprint_1','XD'], ['issue_6','developer2','2020-03-22T11:10:08.305','2020-03-23T11:10:08.305','sprint_1','XD'], ['issue_7','developer3','2020-03-24T11:10:08.305','2020-03-25T11:10:08.305','sprint_1','XD'], ['issue_8','developer3','2020-03-26T11:10:08.305','2020-03-27T11:10:08.305','sprint_1','XD'], ['issue_9','developer3','2020-03-28T11:10:08.305','2020-03-29T11:10:08.305','sprint_1','XD'],	Checks and verifies that in all sprints, developers have not recorded any idle time while completing the issues.	All 18 issues and 6 developers comply and pass the test	All 18 issues and 6 developers comply and pass the test	98%

T2	test_R38_shouldFailWith2DevelopersBeingIdleDuring Sprints	['issue_1', 'developer1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', 'XD'], ['issue_2', 'developer1', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', 'XD'], ['issue_3', 'developer1', '2020-03-11T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', 'XD'], ['issue_4', 'developer2', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'sprint_1', 'XD'], ['issue_5', 'developer2', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'sprint_1', 'XD'], ['issue_6', 'developer2', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'sprint_1', 'XD'], ['issue_7', 'developer3', '2020-03-24T11:10:08.305', '2020-03-25T11:10:08.305', 'sprint_1', 'XD'], ['issue_8', 'developer3', '2020-03-26T11:10:08.305', '2020-03-27T11:10:08.305', 'sprint_1', 'XD'],	Checks and verifies that in all sprints, 2 developers have recorded idle time (more than 2 days) while completing the issues.	2 developers in 2 respective issues fail the test	2 developers in 2 respective issues fail the test
<pre> ===== test session starts ===== platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 2 items test_R8.py .. [100%] ===== 2 passed in 0.45 seconds ===== </pre>					

R24 - The backlog does not contain meaningless or empty issues. I consider meaningless issues the issues that belong to no project and have no issue body, description, start and end time and other details that are relevant to developers and other roles.						
Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R24_shouldPassWithIssueContainingAllNecessary Details	['issue_1', 'developer1', 'reporter1', 'login bug fix', 'login button does not work properly', 'open', 3, 'major', 'sprint_1', 'XD'], ['issue_2', 'developer1', 'reporter1', 'description2', 'Lorem ipsum dolor sit amet', 'in progress', 2, 'minor', 'sprint_1', 'XD'], ['issue_3', 'developer2', 'reporter1', 'description3', 'Lorem ipsum dolor sit amet', 'in test', 2, 'critical', 'sprint_1', 'XD'], ['issue_4', 'developer2', 'reporter1', 'description4', 'Lorem ipsum dolor sit amet', 'open', 4, 'minor', 'sprint_1', 'XD'],	Checks that all 26 issues have all necessary information relevant to the developers and other Scrum roles.	All 26 issues pass the test	All 26 issues pass the test	
T2	test_R24_shouldFailWith5IssuesContainingNoInformationAboutReporter	['issue_1', 'developer1', 'reporter1', 'login bug fix', 'login button does not work properly', 'open', 3, 'major', 'sprint_1', 'XD'], ['issue_2', 'developer1', 'reporter1', 'description2', 'Lorem ipsum dolor sit amet', 'in progress', 2, 'minor', 'sprint_1', 'XD'], ['issue_3', 'developer2', 'reporter1', 'description3', 'Lorem ipsum dolor sit amet', 'in test', 2, 'critical', 'sprint_1', 'XD'],	Checks that 5 issues have no information about their reporter, which is an uncommon behavior recorded in Jira.	5 issues fail the test	5 issues fail the test	
T3	test_R24_shouldFailWith4IssuesContainingNoInfoAboutIssueDescriptionAndSummary	['issue_1', 'developer1', 'reporter1', np.nan, np.nan, 'open', 3, 'major', 'sprint_1', 'XD'], ['issue_2', 'developer1', 'reporter1', 'description2', 'Lorem ipsum dolor sit amet', 'in progress', 2, 'minor', 'sprint_1', 'XD'], ['issue_3', 'developer2', 'reporter1', 'description3', 'Lorem ipsum dolor sit amet', 'in test', 2, 'critical', 'sprint_1', 'XD'], ['issue_4', 'developer2', 'reporter1', 'description4', 'Lorem ipsum dolor sit amet', 'open', 4, 'minor', 'sprint_1', 'XD'],	Checks that 4 issues have no information about the description and/or summary, which renders the issue as meaningless and difficult to understand.	4 issues fail the test	4 issues fail the test	
T4	test_R24_shouldFailWith2IssueContainingNoPriorityLabelOutAllIssues	['issue_1', 'developer1', 'reporter1', 'login bug fix', 'login button does not work properly', 'open', 3, 'major', 'sprint_1', 'XD'], ['issue_2', 'developer1', 'reporter1', 'description2', 'Lorem ipsum dolor sit amet', 'in progress', 2, 'minor', 'sprint_1', 'XD'], ['issue_3', 'developer2', 'reporter1', 'description3', 'Lorem ipsum dolor sit amet', 'in test', 2, np.nan, 'sprint_1', 'XD'], ['issue_4', 'developer2', 'reporter1', 'description4', 'Lorem ipsum dolor sit amet', 'open', 4, 'minor', 'sprint_1', 'XD'], ['issue_5', 'developer2', 'reporter2', 'description5', 'Lorem ipsum dolor sit amet', 'in progress', 2, 4, 'minor', 'sprint_1', 'XD'],	Checks that only 2 issues out of 26 have no information about the priority label attached to them.	2 issues fail the test	2 issues fail the test	100%
T5	test_R24_shouldFailWith3IssuesAssignedToNoDevelopers	['issue_1', 'developer1', 'reporter1', 'login bug fix', 'login button does not work properly', 'open', 3, 'major', 'sprint_1', 'XD'], ['issue_2', np.nan, 'reporter1', 'description2', 'Lorem ipsum dolor sit amet', 'in progress', 2, 'minor', 'sprint_1', 'XD'], ['issue_3', 'developer2', 'reporter1', 'description3', 'Lorem ipsum dolor sit amet', 'in test', 2, 'critical', 'sprint_1', 'XD'], ['issue_4', 'developer2', 'reporter1', 'description4', 'Lorem ipsum dolor sit amet', 'open', 4, 'minor', 'sprint_1', 'XD'], ['issue_5', 'developer2', 'reporter2', 'description5', 'Lorem ipsum dolor sit amet', 'in progress', 2, 4, 'minor', 'sprint_1', 'XD'],	Checks that only 3 issues out of 26 have no information about the developer assigned to them.	3 issues fail the test	3 issues fail the test	

T6	test_R24_shouldFailWith5IssuesAssignedToNoProject	['issue_1', 'developer1', 'reporter1', 'login bug fix', 'login button does not work properly', 'open', 3, 'major', 'sprint_1', 'XD'], ['issue_2', 'developer1', 'reporter1', 'description2', 'Lorem ipsum dolor sit amet', 'in progress', 2, 'minor', 'sprint_1', 'XD'], ['issue_3', 'developer2', 'reporter1', 'description3', 'Lorem ipsum dolor sit amet', 'in test', 2, 'critical', 'sprint_1', 'XD'],	Checks that only 5 issues out of 26 have no information about the project id or name they belong to.	5 issues fail the test	5 issues fail the test
T7	test_R24_shouldFailWith4IssuesAssignedToNoSprints	['issue_1', 'developer1', 'reporter1', 'login bug fix', 'login button does not work properly', 'open', 3, 'major', 'sprint_1', 'XD'], ['issue_2', 'developer1', 'reporter1', 'description2', 'Lorem ipsum dolor sit amet', 'in progress', 2, 'minor', 'sprint_1', 'XD'], ['issue_3', 'developer2', 'reporter1', 'description3', 'Lorem ipsum dolor sit amet', 'in test', 2, 'critical', np.nan, 'XD'], ['issue_4', 'developer2', 'reporter1', 'description4', 'Lorem ipsum dolor sit amet', 'open', 4, 'minor', 'sprint_1', 'XD'],	Checks that only 4 issues out of 26 have no information about the sprint id or name they belong to.	4 issues fail the test	4 issues fail the test
<pre> ===== test session starts ===== platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 7 items test_R24.py [100%] ===== 7 passed in 0.41 seconds ===== </pre>					

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R27 - No more than 8 active developers should be involved in development tasks

Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R27_shouldPassWithExactly8Developers	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'developer1', 'sprint_1', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'developer1', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'developer2', 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'developer3', 'sprint_1', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'developer4', 'sprint_1', 'XD'], ['issue_6', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'developer5', 'sprint_1', 'XD'],	Checks and verifies that there are exactly 8 active unique developers per sprint	All 4 sprints pass the test	All 4 sprints pass the test	100%
T2	test_R27_shouldPassWithLessThan8Developers	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'developer1', 'sprint_1', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'developer1', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'developer2', 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'developer3', 'sprint_1', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'developer4', 'sprint_1', 'XD'], ['issue_6', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'developer5', 'sprint_1', 'XD'], ['issue_7', '2020-03-24T11:10:08.305', '2020-03-25T11:10:08.305', 'developer6', 'sprint_1', 'XD'],	Checks and verifies that there are less than 8 active unique developers per sprint	All 4 sprints pass the test	All 4 sprints pass the test	
T3	test_R27_shouldFailWithMoreThan8Developers	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'developer1', 'sprint_1', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'developer1', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'developer2', 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'developer3', 'sprint_1', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'developer4', 'sprint_1', 'XD'], ['issue_6', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'developer5', 'sprint_1', 'XD'],	Checks and verifies that there are more than 8 active unique developers per sprint, which does not comply to the prescriptions from Scrum Guide.	1 sprint out of 4 fails the test	1 sprint out of 4 fails the test	

<pre> ===== test session starts ===== platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 3 items test_R27.py ... [100%] ===== 3 passed in 0.38 seconds ===== </pre>					
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R28 - The status of issues should always follow the agreed workflow, depending on the project and development team.

Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
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T1	test_R28_shouldPassWithAllIssuesRespectingTheWorkflow	['issue_1', '2020-03-01T11:10:08.305', 'open', 'in progress', 'sprint_1', 'XD'], ['issue_2', '2020-03-03T11:10:08.305', 'in progress', 'in test', 'sprint_1', 'XD'], ['issue_3', '2020-03-05T11:10:08.305', 'in test', 'resolved', 'sprint_1', 'XD'], ['issue_4', '2020-03-06T11:10:08.305', 'resolved', 'closed', 'sprint_1', 'XD'], ['issue_5', '2020-03-08T11:10:08.305', 'open', 'in progress', 'sprint_1', 'XD'], ['issue_6', '2020-03-10T11:10:08.305', 'in progress', 'in test', 'sprint_1', 'XD'], ['issue_7', '2020-03-12T11:10:08.305', 'in test', 'resolved', 'sprint_1', 'XD'], ['issue_8', '2020-03-14T11:10:08.305', 'resolved', 'open', 'sprint_1', 'XD'], ['issue_9', '2020-03-16T11:10:08.305', 'open', 'in progress', 'sprint_1', 'XD'],	Checks and verifies that all issues follow the agreed workflow of issue statuses transition,	All 12 out of 12 issues pass the test	All 12 out of 12 issues pass the test	97%
T2	test_R28_shouldFailWith2IssuesRecordingUnusualStatusTransitions	['issue_1', '2020-03-01T11:10:08.305', 'open', 'in progress', 'sprint_1', 'XD'], ['issue_2', '2020-03-03T11:10:08.305', 'in progress', 'in test', 'sprint_1', 'XD'], ['issue_3', '2020-03-05T11:10:08.305', 'in test', 'resolved', 'sprint_1', 'XD'], ['issue_4', '2020-03-06T11:10:08.305', 'resolved', 'closed', 'sprint_1', 'XD'], ['issue_5', '2020-03-08T11:10:08.305', 'open', 'in progress', 'sprint_1', 'XD'], ['issue_6', '2020-03-10T11:10:08.305', 'in progress', 'in test', 'sprint_1', 'XD'], ['issue_7', '2020-03-12T11:10:08.305', 'in test', 'resolved', 'sprint_1', 'XD'], ['issue_8', '2020-03-14T11:10:08.305', 'resolved', 'open', 'sprint_1', 'XD'], ['issue_9', '2020-03-16T11:10:08.305', 'open', 'in progress', 'sprint_1', 'XD'],	Checks and verifies that 2 issues do not follow the agreed workflow of issue statuses transition, rather, they have recorded unusual transitions, e.g. from 'closed' to 'open', etc.	2 out of 12 issues fail the test	2 out of 12 issues fail the test	
<div>===== test session starts =====</div> <div>platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1</div> <div>rootdir: /content, inifile:</div> <div>plugins: typeguard-2.7.1</div> <div>collected 2 items</div> <div>test_R28.py ..</div> <div>[100%]</div> <div>===== 2 passed in 0.38 seconds =====</div>						

R30: No previously resolved issue should reappear in a future sprint.						
Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R30_shouldPassWithNoReappearing	<div>['issue_1', '2020-03-01T11:10:08.305', 'open', 'in progress', 'sprint_1', 'XD'],</div> <div>['issue_2', '2020-03-03T11:10:08.305', 'in progress', 'in test', 'sprint_1', 'XD'],</div> <div>['issue_3', '2020-03-05T11:10:08.305', 'in test', 'resolved', 'sprint_1', 'XD'],</div> <div>['issue_4', '2020-03-06T11:10:08.305', 'resolved', 'closed', 'sprint_1', 'XD'],</div> <div>['issue_5', '2020-03-08T11:10:08.305', 'open', 'in progress', 'sprint_1', 'XD'],</div> <div>['issue_6', '2020-03-10T11:10:08.305', 'in progress', 'in test', 'sprint_1', 'XD'],</div> <div>['issue_7', '2020-03-12T11:10:08.305', 'in test', 'resolved', 'sprint_1', 'XD'],</div> <div>['issue_8', '2020-03-14T11:10:08.305', 'resolved', 'closed', 'sprint_2', 'XD'],</div> <div>['issue_9', '2020-03-16T11:10:08.305', 'open', 'in progress', 'sprint_2', 'XD'],</div>	Checks and verifies that there are no reappearing issues that have been 'closed' in previous sprints.	All 16 issues in both sprints pass the test	All 16 issues in both sprints pass the test	96%
T2	test_R30_shouldFailWithReappearingIssues	<div>['issue_1', '2020-03-01T11:10:08.305', 'open', 'in progress', 'sprint_1', 'XD'],</div> <div>['issue_2', '2020-03-03T11:10:08.305', 'in progress', 'in test', 'sprint_1', 'XD'],</div> <div>['issue_3', '2020-03-05T11:10:08.305', 'in test', 'resolved', 'sprint_1', 'XD'],</div> <div>['issue_4', '2020-03-06T11:10:08.305', 'resolved', 'closed', 'sprint_1', 'XD'],</div> <div>['issue_5', '2020-03-08T11:10:08.305', 'open', 'in progress', 'sprint_1', 'XD'],</div> <div>['issue_6', '2020-03-10T11:10:08.305', 'in progress', 'in test', 'sprint_1', 'XD'],</div> <div>['issue_7', '2020-03-12T11:10:08.305', 'in test', 'resolved', 'sprint_1', 'XD'],</div> <div>['issue_8', '2020-03-14T11:10:08.305', 'resolved', 'closed', 'sprint_2', 'XD'],</div> <div>['issue_9', '2020-03-16T11:10:08.305', 'open', 'in progress', 'sprint_2', 'XD'],</div>	Checks and verifies that there 1 reappearing issue that have been 'closed' in the previous sprints.	1 out of 16 issues fails the test	1 out of 16 issues fails the test	
<div>===== test session starts =====</div> <div>platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1</div> <div>rootdir: /content, inifile:</div> <div>plugins: typeguard-2.7.1</div> <div>collected 2 items</div> <div>test_R30.py ..</div> <div>[100%]</div> <div>===== 2 passed in 0.45 seconds =====</div>						

R31 - Each Scrum Sprints can be considered a short project, therefore there should be a unique identifier/name associated with each Sprint						
Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R31_shouldPassWithAllSprintsHavingUniqueIdentifiers	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'sprint_1', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'sprint_1', 'XD'], ['issue_6', '2020-03-23T11:10:08.305', '2020-03-25T11:10:08.305', 'sprint_1', 'XD'], ['issue_7', '2020-03-28T11:10:08.305', '2020-03-29T11:10:08.305', 'sprint_1', 'XD'], ['issue_8', '2020-03-30T11:10:08.305', '2020-03-31T11:10:08.305', 'sprint_1', 'XD'], ['issue_9', '2020-04-01T11:10:08.305', '2020-04-02T11:10:08.305', 'sprint_1', 'XD'],	Checks and verifies that all present sprints have a valid ID or name assigned to them.	All 4 sprints pass the test	All 4 sprints pass the test	100%

T2	test_R31_shouldFailWith1SprintHavingNoUniqueIdentifier	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'sprint_1', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'sprint_1', 'XD'],	Checks and verifiess that 1 sprint does not have a valid ID or name assigned to.	1 out of 4 sprints fails the test	1 out of 4 sprints fails the test	
<pre>===== test session starts ===== platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 2 items test_R31.py .. [100%] ===== 2 passed in 0.38 seconds =====</pre>						
R32 - There should be a type, such as bug, improvement or task, associated to each issue						
Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R32_shouldPassWithAllIssuesHavingTypes	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'story', 'sprint_1', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'task', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'bug', 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'story', 'sprint_1', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'bug', 'sprint_1', 'XD'], ['issue_6', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'story', 'sprint_1', 'XD'], ['issue_7', '2020-03-24T11:10:08.305', '2020-03-25T11:10:08.305', 'feature', 'sprint_1', 'XD'],	Checks and verifies that all present issues have a valid issue type assigned to them.	17 out of 17 issues pass the test	17 out of 17 issues pass the test	79%
T2	test_R32_shouldPassWith4IssuesHavingNoTypes	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', np.nan, 'sprint_1', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'task', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'bug', 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'story', 'sprint_1', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'bug', 'sprint_1', 'XD'], ['issue_6', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'story', 'sprint_1', 'XD'], ['issue_7', '2020-03-24T11:10:08.305', '2020-03-25T11:10:08.305', 'feature', 'sprint_1', 'XD'], ['issue_8', '2020-03-26T11:10:08.305', '2020-03-27T11:10:08.305', np.nan, 'sprint_1', 'XD'],	Checks and verifies that 4 present issues have no valid issue type assigned to them.	4 out of 17 issues fail the test	4 out of 17 issues fail the test	
<pre>===== test session starts ===== platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 2 items test_R32.py .. [100%] ===== 2 passed in 0.36 seconds =====</pre>						
R33 - Each issue belongs to a specific Sprint, therefore there should be a sprint identifier attached to each issue.						
Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R33_shouldPassWithAllIssuesHavingUniqueSprintIdentifier	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'sprint_1', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'sprint_1', 'XD'], ['issue_6', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'sprint_1', 'XD'], ['issue_7', '2020-03-24T11:10:08.305', '2020-03-25T11:10:08.305', 'sprint_1', 'XD'],	Checks and verifies that all present issues belong to a valid sprint (all issues have been completed during certain sprints)	17 out of 17 issues pass the test	17 out of 17 issues pass the test	79%
T2	test_R34_shouldPassWith3IssuesHavingNoUniqueSprintIdentifier	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', np.nan, 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'sprint_1', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'sprint_1', 'XD'], ['issue_6', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'sprint_1', 'XD'],	Checks and verifies that 3 present issues do not belong to a valid sprint (3 issues have not been completed during certain sprints)	3 out of 17 issues fail the test	3 out of 17 issues fail the test	

<pre>===== test session starts ===== platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 2 items test_R33.py .. [100%] ===== 2 passed in 0.39 seconds =====</pre>						
R34 - All issues must be uniquely identifiable, therefore there should be a unique identifier associated with each issue.						
Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R34_shouldPassWithAllIssuesHavingUniqueIdentifier	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'sprint_1', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'sprint_1', 'XD'], ['issue_6', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'sprint_1', 'XD'], ['issue_7', '2020-03-24T11:10:08.305', '2020-03-25T11:10:08.305', 'sprint_1', 'XD']	Checks and verifies that all present issues are uniquely identified.	17 out of 17 issues pass the test	17 out of 17 issues pass the test	100%
T2	test_R34_shouldPassWith5IssuesHavingNoUniqueIdentifier	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', 'XD'], [np.nan, '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'sprint_1', 'XD'], [np.nan, '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'sprint_1', 'XD'], ['issue_6', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'sprint_1', 'XD'], ['issue_7', '2020-03-24T11:10:08.305', '2020-03-25T11:10:08.305', 'sprint_1', 'XD']	Checks and verifies that 5 present issues are not uniquely identified.	5 out of 17 issues fail the test	5 out of 17 issues fail the test	
<pre>===== test session starts ===== platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 2 items test_R34.py .. [100%] ===== 2 passed in 0.36 seconds =====</pre>						
R35 - Scrum Sprints have a starting time. There should be timestamp indicating the sprints kick-off.						
Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R38_shouldPassWithAllIssuesHavingStartDate	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD']	Checks and verifies that all 2 present sprints have a valid timestamp indicating its start time and date.	2 out of 2 sprints pass the test	2 out of 2 sprints pass the test	100%
T2	test_R38_shouldFailWithIssuesHavingNoStartDate	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD']	Checks and verifies that 1 present sprint does not have a valid timestamp indicating its start time and date.	1 out of 2 sprints fails the test	1 out of 2 sprints fails the test	
<pre>===== test session starts ===== platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 2 items test_R35.py .. [100%] ===== 2 passed in 0.36 seconds =====</pre>						
R36 - Scrum Sprints have a completion time. There should be timestamp indicating the sprints completion/resolution.						
Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage

T1	test_R38_shouldPassWithAllIssuesHavingStartDate	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_6', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_7', '2020-03-24T11:10:08.305', '2020-03-25T11:10:08.305', 'sprint_2', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD']	Checks and verifies that all 2 present sprints have a valid timestamp indicating its end/completion time and date.	2 out of 2 sprints pass the test	2 out of 2 sprints pass the test	92%
T2	test_R38_shouldFailWithIssuesHavingNoStartDate	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_6', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'sprint_1', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD'], ['issue_7', '2020-03-24T11:10:08.305', '2020-03-25T11:10:08.305', 'sprint_2', '2020-03-01T11:10:00.305', '2020-03-30T11:10:08.305', 'XD']	Checks and verifies that 1 present sprint does not have a valid timestamp indicating its end/completion time and date.	1 out of 2 sprints fails the test	1 out of 2 sprints fails the test	
<pre>===== test session starts ===== platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 2 items test_R36.py .. [100%] ===== 2 passed in 0.36 seconds =====</pre>						

R37 - There should be a minimum of one issue, representing a Sprint Backlog Item, per each Sprint.						
Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R37_shouldPassWithMoreThan1PBIPerSprint	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'sprint_1', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'sprint_1', 'XD'], ['issue_6', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'sprint_1', 'XD'], ['issue_7', '2020-03-24T11:10:08.305', '2020-03-25T11:10:08.305', 'sprint_2', 'XD']	Checks and verifies that there are more than 1 issue or backlog items completed per each sprint.	All 3 out of 3 sprints pass the test	All 3 out of 3 sprints pass the test	100%
T2	test_R37_shouldFailWith0PBIPerSprint	[np.nan, np.nan, np.nan, 'sprint_1', 'XD'], [np.nan, np.nan, np.nan, 'sprint_1', 'XD'], [np.nan, np.nan, np.nan, 'sprint_1', 'XD'], [np.nan, np.nan, np.nan, 'sprint_1', 'XD'], [np.nan, np.nan, np.nan, 'sprint_1', 'XD'], [np.nan, np.nan, np.nan, 'sprint_1', 'XD'], [np.nan, np.nan, np.nan, 'sprint_2', 'XD'], [np.nan, np.nan, np.nan, 'sprint_2', 'XD']	Checks and verifies that there are 0 issue or backlog items completed in Sprint 1.	1 out of 3 sprints fails the test	1 out of 3 sprints fails the test	
<pre>===== test session starts ===== platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1 rootdir: /content, inifile: plugins: typeguard-2.7.1 collected 2 items test_R37.py .. [100%] ===== 2 passed in 0.37 seconds =====</pre>						

R38 - There should be timestamp indicating the issue development kick-off.						
Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R38_shouldPassWithAllIssuesHavingStartDate	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'sprint_1', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'sprint_1', 'XD'], ['issue_6', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'sprint_1', 'XD'], ['issue_7', '2020-03-24T11:10:08.305', '2020-03-25T11:10:08.305', 'sprint_2', 'XD']	Checks and verifies that all 17 present issues have a valid timestamp indicating its start time and date.	17 out of 17 issues pass the test	17 out of 17 issues pass the test	79%
T2	test_R38_shouldFailWith3IssuesHavingNoStartDate	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', 'XD'], ['issue_4', np.nan, '2020-03-20T11:10:08.305', 'sprint_1', 'XD'], ['issue_5', '2020-03-20T11:10:08.305', '2020-03-21T11:10:08.305', 'sprint_1', 'XD'], ['issue_6', '2020-03-22T11:10:08.305', '2020-03-23T11:10:08.305', 'sprint_1', 'XD'], ['issue_7', '2020-03-24T11:10:08.305', '2020-03-25T11:10:08.305', 'sprint_2', 'XD']	Checks and verifies that 3 present issues do not have a valid timestamp indicating its start time and date.	3 out of 17 issues fail the test	3 out of 17 issues fail the test	

```
===== test session starts =====
platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1
rootdir: /content, inifile:
plugins: typeguard-2.7.1
collected 2 items

test_R38.py ..                                [100%]

===== 2 passed in 0.37 seconds =====
```

R39 - There should be timestamp indicating the issue development completion.						
Test ID	Test Name	Test Data	Description	Test Result	Expected Result	Coverage
T1	test_R39_shouldPassWithAllIssuesHavingEndDate	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', '2020-03-07T11:10:08.305', 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', '2020-03-12T11:10:08.305', 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', '2020-03-20T11:10:08.305', 'sprint_1', 'XD']	Checks and verifies that all 17 present issues have a valid timestamp indicating its end/completion time and date.	17 out of 17 issues pass the test	17 out of 17 issues pass the test	77%
T2	test_R39_shouldFailWith4IssuesHavingNoEndDate	['issue_1', '2020-03-01T11:10:08.305', '2020-03-02T11:10:08.305', 'sprint_1', 'XD'], ['issue_2', '2020-03-04T11:10:08.305', np.nan, 'sprint_1', 'XD'], ['issue_3', '2020-03-10T11:10:08.305', np.nan, 'sprint_1', 'XD'], ['issue_4', '2020-03-15T11:10:08.305', np.nan, 'sprint_1', 'XD'], ['issue_5', '2020-03-15T11:10:08.305', np.nan, 'sprint_1', 'XD']	Checks and verifies that 4 present issues do not have a valid timestamp indicating its end/completion time and date.	4 out of 17 issues fail the test	4 out of 17 issues fail the test	

```
===== test session starts =====
platform linux -- Python 3.7.11, pytest-3.6.4, py-1.10.0, pluggy-0.7.1
rootdir: /content, inifile:
plugins: typeguard-2.7.1
collected 2 items

test_R39.py ..                                [100%]

===== 2 passed in 0.36 seconds =====
```