COLLEGE of CHARLESTON
COMPUTER SCIENCE
1770

sugarlabs

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About the Project

For this project, our team was tasked with selecting an HFOSS (Humanitarian Free Open Source Software) project to create an automated testing framework for, with further specifications that the project runs in an Ubuntu environment and performs 25 tests on the software. To validate that the framework worked as intended 5 faults were injected into the source code.

About sugarlabs

Sugarlabs is a Humanitarian Free Open Source Software (HFOSS) Project with the goal of providing children a free education learning environment. The project is currently active with changes being made monthly. As this is an open source project the developers encourage anyone with the expertise to join their team.

Test Cases

Out test cases files exist within a folder labeled 'testCases' which are used by the testing script to give the script the correct information about what driver and inputs are needed to to correctly call the method being tested. An example of a Test Case will be given below.

Example Test Case 10:
test_remove_friend
Adds then removes friend object
Friends.py
remove_friend
'one', 'keyOne', 'accountOne', 'idOne'
False

For each test case, the first line determines which Test Case Executable to run, the second line offers a description of the test, the third line gives which program file will be tested, while the fourth line specifies the method to be tested. Line 5 consists of the inputs to be passed in, and line 6 consists of the expected outcomes.

Testing Framework

Our script runs the specified test case executable, passing in two sys.argv parameters: The input and the expected output. At the end of each test case there is an assertion that a value equals the expected value argument, and if true, "Test Passed!" is returned, but if false, returns "Test Failed" + the error specifications. All individual test results are then sent to the temp directory. After all tests have been run, the results are compiled into a single html file that is automatically opened to display the test results.

Fault Injection

To ensure that our testing framework was working as expected, 5 faults were added to the sugarlabs source code. These faults affected all tests that used the add_object(), add_friend(), normalize_string(), calculate_age(), and calculate_birth_timestamp() methods. All tests using these methods then failed due to the faults placed in them.

Conclusion

This project has provided our team with valuable insight as to how testing on industry software is conducted. The automated testing framework that was developed by our team will significantly increase the speed at which this codebase can be tested. It is also very easy to add additional tests to the framework as the codebase is expanded upon.