A Testing Framework for Glucosio

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What is Glucosio?

Glucosio is an open-source project which develops and maintains Android and iOS apps for tracking blood-glucose levels. The apps are available for free to anyone through the Google Play and Apple App Stores.

Glucosio is meant to be used in a personal setting, as a tool for tracking progress through a research study, or in other applications in which glucose level over time is important.

Goals

Our goal is to create a testing framework for the Glucosio Android app which reads many test cases, which take the form of .txt files. The framework should be able to be run via a single command, and a report should be automatically generated and displayed.

Requirements

- Java Development Kit (8 or higher), with the JAVA_HOME environment variable set.
- Android Development Kit (3 or higher), with the ANDROID_HOME environment variable set.
- Linux or maxOS operating system, for running the Bash script
- Our testing framework's repository (available on GitHub)
- Basic text editor
- A default browser set for the system (some modern browser. E.g. Edge, Internet Explorer, Google Chrome, Firefox, etc.)

Process

Our testing framework uses a main Bash script, "runAllTests.sh", to find and execute test cases. Upon execution, the script searches our repository's "testCases" directory for applicable .txt files. On each line of these .txt files is a piece of information that the script needs to run a test. The layout of the test cases is defined in our Test Case Specification.

Each test case specifies the name of a Java driver which is used to set up and run each test. The drivers are contained in the "drivers" directory. Output is collected from the driver and compared to the expected output to determine whether the test passed or failed. The information for the test is then appended onto a report to be displayed in the system's default browser once all tests have been run.

#	TestID	Requirement	Pass/Fail	Com
1.	a1cToGlucose1	PASS	Tests converting a positive value.	org.glucosio.andr
2.	a1cToGlucose2	PASS	Tests converting a negative value.	org.glucosio.andr
3.	a1cToGlucose3	PASS	Tests converting a value in scientific notation.	org.glucosio.andr
4.	converterRound1	PASS	Tests a valid value to round.	org.glucosio.andr
5.	converterRound2	PASS	Tests an invalid number to round.	org.glucosio.andr
6.	converterRound3	PASS	Tests an invalid number of places to round to.	org.glucosio.andr
			Tests a	

Output from our testing framework, displayed in Mozilla Firefox.

Final Product

Our testing framework can be successfully run and applied by executing a single command from a terminal. It allows for anyone to add new test cases without changing the main Bash script. The report generated provides information used in each test case, including input, expected output, and actual output, to make troubleshooting an easier process.

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