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AUTOMATIZED SOFTWARE TESTING

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Automated software testing is the use of special software to control the test execution and to compare actual and expected results. Automated testing can automatically perform some repetitive but necessary tasks in a functional testing process, or conduct additional testing that is difficult to perform manually. Like regression testing, automated testing is also used to test the application with consideration of load, performance and stress.

In other words, automated testing uses automation tools to write and execute test cases; no manual testing is required while executing an automated test suite. The main goal of automated testing is to increase the test efficiency and improve software quality.

We have chosen automated software testing for research of a simulation model due to the following reasons.

First of all, we have stable functionality, because the functionality of the application is not exposed to considerable changes in the course of the research.

Moreover, every time we run the simulation model, a huge set of input and output data is used for calculations.

In spite of the fact that the functionality is stable, if you make any changes, you need to make sure that all critical functionality continues to work correctly. This process is routine and monotonous and as a result may lose its effectiveness in the course of manual testing.

In our research we have used a testing tool called Protractor. Protractor is an end-to-end test framework for Angular and AngularJS applications. Protractor runs tests against your application running in a real browser and interacts with it as a user usually does that. The main advantages of this tool are:

1) protractor is built on top of WebDriverJS, which uses native events and browser-specific drivers to interact with the application;

2) protractor supports Angular-specific locator strategies, which allows testing Angular-specific elements without any setup effort on your part;

3) no waits and sleeps are needed to be added to your test. Protractor can automatically execute the next step in your test the moment the webpage finishes pending tasks, so you do not have to worry about waiting for your test and webpage to synchronize.

Automated testing helps us improve software quality, reduce testing time and effort. Besides, it reduces the numbers of bugs and errors of the tester missed during similar manual testing.