

Homework #4

CSE 565: Software Verification/ Validation/ Test

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Submitted By:

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Part 1:

LoadStorm: “Easy and cost effective load testing tool for web and mobile applications in cloud”. Uses Amazon cloud, provides easy to read graphs, scalable to 300,000 concurrent users and is a SAAS [1].

Capabilities: LoadStorm provides different testing tools for load testing, stress testing, regression testing, endurance testing and agile testing [1]. It uses amazon EC2 cloud, so running a test is effortless and can process up to 100,000 requests per second. It provides environment for user no need buy, manage or configure the hardware, nothing to install. User can use the tool directly. It provides experienced technical support. No scripting language is required to create test cases, it provides capability to easily record session using browsers built in tools [2]. It is scalable to 150,000 VUsers and load is geographically distributed. It provides in depth reporting by showing real time interactive graphs, frequency distribution tables on several key metrics like concurrent users, total requests, errors, total data transferred [2] etc., per minute.

Problems tool detect? This can detect what can happen when a breakdown of component occurs [3]. It can detect maximum load that your web application can handle and how it behaves on heavy load. It is used to find memory leaks [4] and inconsistent bugs that occur because of heavy loads. It can detect errors caused because of change in feature/ bug fix. It can detect web site responsiveness and scalability. It can detect errors in the system and can find average response time. **Problems tool cannot detect?** It cannot detect in-house networking issues, cannot test load balancer and DNS Server [5]. It cannot detect complex bugs i.e., bugs which can be detected by doing effective regression testing [6]. It does not support everything that is needed for unit testing. As it is a cloud based testing tool, if software requires infrastructure, then it is not possible to create user defined infrastructure and it cannot detect infrastructure issues.

How LoadStorm supports regression testing? “Using breeze, user can create regression test, running and analyzing results for free of cost. To check if application is working properly, LoadStorm requires only one virtual user. It provides easy way to build uncomplicated quick test plans to automate regression test and on press of button we can run tests many times. To apply regression tests on more virtual users it uses the same tests that are developed for single virtual user and provides detailed analysis of test results” [6].

Part 2:

Regression testing in mobile application can be done both in functional and non-functional levels [7].

Testing to verify software working in previous release is also working in current release.

Challenges and possible approaches:

1. **To determine in which phase of mobile application development, one have to start regression testing to minimize regression cycles:** One way to approach this challenge to start regression testing individual components as developed, so that bugs can be fixed early in the development life cycle [8].
2. **Minimizing the test suite while maintaining the test coverage:** Size of the test suite increases as development goes and requires more time and memory to test. If one choose smaller subset of test cases then it is difficult to maintain test coverage. In this case, we can use different strategies like minimization techniques, dataflow techniques, and safe techniques [9] to select subset of test cases.
3. **To choose between type of regression testing/ tools:** Based on number of test cases or where we are testing, it can be selected. We can choose among automated testing or manual testing depending on need. Automated regression testing is useful when we need to keep track of resources, test state and frequent testing [10].
4. **To determine environment for testing [11]: Operating Systems (OS):** Mobile applications can run on a number of OS. Buying infrastructure requires lot of money and is not always feasible. Emulated devices are easy to maintain and test except they lack faults, characteristics and quirks only a real device can provide. **Network:** Different network providers have different network in various places. Regression testing also needs to take care of that. To avoid network provider issues we can simulate environment and test [11]. **Scripting, Repeatability challenge:** Automated scripting tools provides the ability to crawl a mobile application which tests entire application with one command [11].
5. **User Interaction:** One main challenge in regression testing the mobile application is how user interact with the system and age of the user. In such cases, we can test directly on different user groups and mimic their usage to test the application.

References

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