

Automated testing of REST API

Executive Summary

Our clients, a California, USA based smart and innovative IT solutions provider (Healthcare Management industry) wanted an automated test suite for REST APIs they have, which takes a major role on delivering the core business logic to the applications on various platforms, used by end users. Automating Http based REST APIs which needs the complete understanding of functionality/business logic of the project itself was a challenging and well experiencing task for us. We provided an automation solution which makes sure that every new build has minimal defects by providing reports for Bugs. We provided solutions like test case updation and maintenance of the script for the new builds of the application with added features at a later stage. Automated test of APIs (consumed in all the applications which are customer facing), opened the door for very early detection of defects - even before we find defect on UI level.

About Our Client

Client: A major innovative and smart IT service provider in Healthcare management domain (IOT based) | **Location:** California, USA | **Industry:** Healthcare Management

Business Situation

Our client wanted an automated test suite for the REST APIs they have, which has a major role on delivering various crucial data to the customer facing applications made for different platforms. They wanted the project to be hassle free, which can be easily executed by anybody from their end and to output easily interpreted test results. They looked for fully automated solutions that would be a suitable candidate for integration with Continuous Integration tools like Jenkins. The idea behind automating APIs was to have a complete regression suite which can output defects before it breaks the UI severely. Our client wanted this regression suite to be flexible enough to be executed with any of the testing environments along with production itself, with any set of credentials. Not only the validations were to be done from a set of expected results, our client wanted data to be matched from the application database on real time basis.

Our Solution and Customer Benefits

We suggested an approach of combining Apache HttpClient, JSON/XML/HTML parser libraries, JDBC dependencies along with other supporting Java libraries to achieve the goal we had set. Apache HttpClient is a great tool to interact via http protocol and complements other libraries

like JSON parsers to be easily integrated with it. This approach best suited the requirement of CI support and better test coverage.

We wrote test cases covering positive ,along with negative test scenarios which helped protecting APIs from a security point of view.

We validated test expectations from the application database using JDBC.

We prepared documentation containing instructions to handle script running in Mac OS and configuration details etc.

Divided the test suites according to the functionality of the application to best suite Job configuration with Jenkins. We configured the Jobs with a VM provided by client using Share Screen and configured that machine to be friendly with the script run.

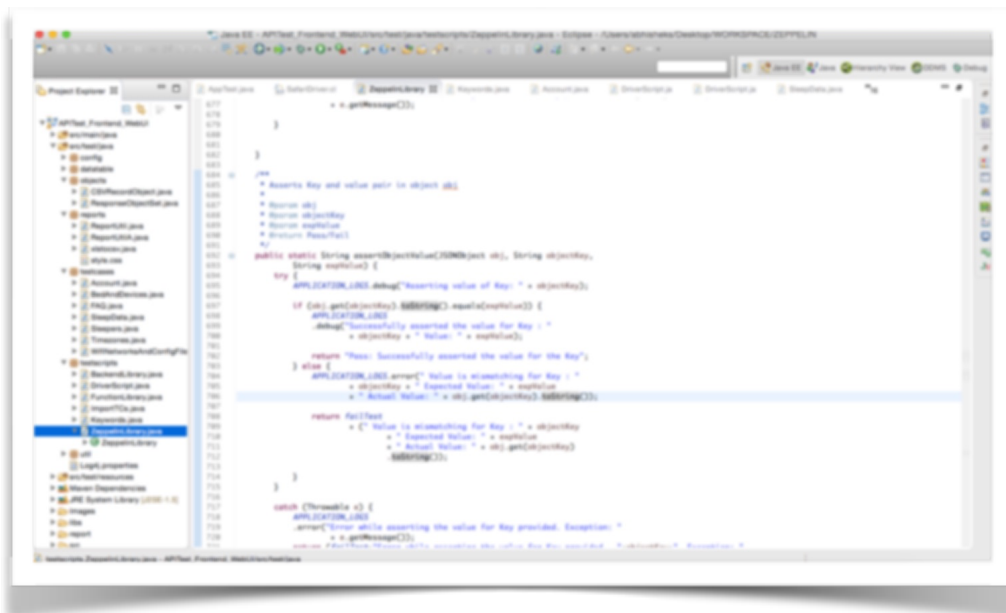
Our automation test reports gets generated in HTML, Spreadsheet and csv format as well. Demonstrating test results test case wise (along with complete request and response details), which helped client to figure out the exact portions of the application which has defects.

Later we integrated our automation test suite with a test case application which made defect tracking process an automated solution. Whenever a test case fails , it saves a record in test case application database and at any point of time , we can track which build had the issue on which date.

Technologies and Tools

Apache HttpClient,org.json(JSON Parser), Java, Eclipse, Maven, Jenkins

Final Result



Glimpse of project being developed using Eclipse IDE

Automation Test Results

Test Details :

Run Date	05 October 2018
Run StartTime	05 October 2018 06:29:13 AM
Run EndTime	05 October 2018 07:58:52 AM
Environment	qa4.sleepiq.sleepnumber.com
Build	Finalty Backend
Version	Finalty Backend
Project	Backend API

TestSuite Report :

Test SuiteID	Test Suite Name	Status	Run Start Time	Run End Time
1	Account	Pass	05 October 2018 06:29:13 AM	05 October 2018 06:33:10 AM
2	Address	Pass	05 October 2018 06:33:16 AM	05 October 2018 06:34:51 AM
3	Administrative	Pass	05 October 2018 06:34:52 AM	05 October 2018 06:34:55 AM
4	Bed	Pass	05 October 2018 06:34:56 AM	05 October 2018 06:43:53 AM
5	Component	Pass	05 October 2018 06:43:10 AM	05 October 2018 06:48:39 AM
6	CustomerRegistration	Pass	05 October 2018 06:48:43 AM	05 October 2018 06:55:13 AM
7	CustomerServices	Pass	05 October 2018 06:55:14 AM	05 October 2018 06:56:41 AM
8	WavesServices	Pass	05 October 2018 06:56:48 AM	05 October 2018 06:57:20 AM
9	Steeper	Fail	05 October 2018 06:57:21 AM	05 October 2018 07:09:52 AM
10	TagJournalNote	Pass	05 October 2018 07:10:08 AM	05 October 2018 07:18:44 AM
11	Thumbnail	Pass	05 October 2018 07:18:49 AM	05 October 2018 07:19:13 AM
12	User	Pass	05 October 2018 07:19:15 AM	05 October 2018 07:21:41 AM
13	Wts	Pass	05 October 2018 07:21:43 AM	05 October 2018 07:22:50 AM
14	Faq	Pass	05 October 2018 07:22:52 AM	05 October 2018 07:23:54 AM
15	BedConfiguration	Pass	05 October 2018 07:23:54 AM	05 October 2018 07:26:20 AM
16	SteeperList	Pass	05 October 2018 07:26:27 AM	05 October 2018 07:35:44 AM
17	PushNotification	Pass	05 October 2018 07:35:49 AM	05 October 2018 07:38:13 AM
18	RegistrationCenterCall	Pass	05 October 2018 07:38:18 AM	05 October 2018 07:39:30 AM
19	CloudDeviceCall	Fail	05 October 2018 07:39:31 AM	05 October 2018 07:58:22 AM

19191	Execute and verify Download SleepData API with Steeper ID doesn't belong to same AccountId	downloadSleepDataAccountIdNotBelongToSameAccount	Pass: Download Sleep Data API executed and verified successfully with Steeper ID doesn't belong to same Account ID.	View Job
19192	Execute and verify Download SleepData API with Invalid Authorization	downloadSleepDataInvalidAuth	Pass: Download Sleep Data API executed and verified successfully with Invalid Authorization.	View Job
19193	Execute and verify Download SleepData API without data interval	downloadSleepDataWithoutDataInterval	Pass: Download Sleep Data API executed and verified successfully without data interval.	View Job
19194	Execute and verify Get All Steeper Sessions API	getAllSteeperSessions	Fail: There is no sleep data exists for the API.	View Job
19195	Execute and verify Get All Steeper Sessions API	getAllSteeperSessions	Pass: Get All Steeper Sessions API executed and verified successfully.	View Job
19197	Execute and verify Get All Steeper Sessions API with Invalid Account	getAllSteeperSessionsInvalidAccount	Pass: Get All Steeper Sessions API executed and verified successfully with Invalid Account.	View Job
19198	Execute and verify Get All Steeper Sessions API with Invalid Steeper			
19199	Execute and verify Get All Steeper Sessions API with Invalid SteeperID			
19200	Execute and verify Get All Steeper Sessions API without SteeperID			
19201	Execute and verify Get All Steeper Sessions API without Interval			
19202	Execute and verify Get All Steeper Sessions API with Invalid Interval			
19203	Execute and verify Get All Steeper Sessions API with Invalid Authorization			
19204	Execute and verify Get Family Wave Data API			
19205	Execute and verify Get Family Wave Data API with Invalid Account			
19206	Execute and verify Get Family Wave Data API with Invalid Steeper			

HTML Report

Customer Benefits

The powerful and easy-to-use automation script helped client in the same fashion they wanted it to be. Smooth Job execution from Jenkins and finding out failures in a detailed manner in reports facilitated to figure out the problems in more easier way, avoiding the exhaustive manual effort.

Testing hundreds of APIs and covering both positive and negative scenarios manually consumes a lot of time. Automation testing of APIs makes the regression testing superfast with best possible test coverage. So this helped our client to find defects in just 15 minutes of script run whenever a new build comes in.

Future Relationship

A work of new of its kind and successful execution of the project led us for a strong business relationship with a couple of other projects. Along with this we got the chance of maintenance as well as enhancement of script according to the features added in the further builds.

