Analysis of testing framework in Canterbury

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Project Proposal

2017

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# Project Name

Analysis of testing framework in Canterbury

# Background

Like the rest of JavaScript market, the testing environment is highly competitive one, with rapid release cycles, feature and performance comparisons, and constant superiority between the frameworks. This project aims to identify the popular JavaScript testing frameworks.

As being the Research Assistant in the project, will have the capacity to develop knowledge on diverse testing frameworks. Unit testing is the type of testing used to identify the different testing frameworks. Testing of individual functions or classes by mocking input and making sure the output is as expected. Unit Testing is performed by using the White Box Testing method. Unit Testing is a component of TDD (Test Driven Development) a down to business technique that adopts a careful strategy to building an item by methods for nonstop testing and amendment. Test-driven advancement requires that designers initially compose fizzling unit tests. At that point, they compose code and refactor the application until the point when the test passes. TDD ordinarily brings about an express and unsurprising code base. BDD (Behaviour Driven Development) is an arrangement of best practices for composing extraordinary tests. BDD can, and ought to be, utilized together with TDD and unit testing techniques. One of the key things BDD addresses is usage detail in unit tests. (Davis, 27 May 2013)

Diverse testing frameworks are utilized to reproduce the current handy tests. Mocha, Jasmine and Cumber are the three frameworks which is used for BDD, QUnit and AVA is used for TDD (Test Driven Development). At present, The Jasmine testing tool is utilized for the SE101 practical test at the Computing Department of Ara Institute of Canterbury, which requires some alteration to enhance the execution. Few Unit testing frameworks are applied on the practice tests to understand and develop knowledge on its working process. The unit testing framework which will be utilized for testing are (QUnit, Mocha-Chai should, Mocha-Chai expects).

Surveys and Interviews held among the IT experts inside the Canterbury area to distinguish the most normally utilizing testing framework at their work environment. The Study, which is led inside the IITP or Tech cluster to comprehend the quantity of experts working with the JavaScript testing framework. Interviews with employees to comprehend their utilization of various frameworks. The gathered information will be profoundly investigated to recognize the well-known testing framework.

Research and creation on an in-browse test utilizing another framework will be held. Research will be on the different testing frameworks which is popularly used in the industry. With all the data that are collected from the interviews and surveys will be validated to understand and develop knowledge on the popular framework in the industry. Moreover, there is plan of figuring out how to utilize noode.js. Will likewise have the capacity to build up a mastery with selenium IDE.

# Project Goal

The Goal of the project is to develop understanding and knowledge of various JavaScript testing frameworks used in the industry to be employable as Automation testers by the end of the project.

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# Expected Outcomes

* Documentation of the testing framework
* An existing practical test will be recreated with the new framework.
* An in-browser test can be researched and created using a new framework.
* Analysis Report of the survey and interview
* Knowledge about popular testing tool and its usage
* Knowledge in automation testing
* Develop expertise with Selenium IDE
* Quality assurance processes identified and documented, discussing the overall quality of the testing framework
* Risk management to identify the expected risks that occur in the testing phase.
* Reflection for the execution and program modification at run time.

# Project Hierarchy - people involved

|  |
| --- |
| Academic Supervisor |
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# Project Parameters

## Timeframe

|  |  |  |
| --- | --- | --- |
| Phase | Weeks | Topics |
|  |  |  |
| Phase1 | **2 Weeks** | * Initial Project Discussion and finalizing the topic |
|  | 24/7/2016 - 6/8/2017 | * Preparation for the interview and survey questions |
|  |  | * Drafting Initial Proposal Draft for the verification |
|  |  |  |
| Phase2 | **2 Weeks** | * Recreate the existing practical tests |
|  | 7/8/2017 - 19/8/2017 | * Test the existing practical test with the new testing framework |
|  |  | * Drafting and submission of Final Project Proposal |
|  |  |  |
| Phase3 | **2 Weeks** | * Learning different testing framework |
|  | 20/8/2017 - 03/9/2017 | * Performing sample tests |
|  |  |  |
|  |  | * Conducting Interview and Survey |
| Phase4 | **2 Weeks** | * Research and create an in-browser test using a new framework |
|  | 03/9/2017 - 17/9/2017 | * Implementation of code using the new framework |
|  |  |  |
| Phase5 | **2 Weeks** | * Identifying the issues in current jasmine tool which is being used for the SE101 |
|  | 17/9/2017 - 1/10/2017 | * Coding JavaScript for Jasmine automation |
|  |  | * Requirements are documented – which is reviewed and finalised |
|  |  |  |
| Phase6 | **2 weeks** | * Review of all the data collected |
|  | 1/10/2017 - 15/10/2017 | * Drafting of report for the final submission |
|  |  | * Preparing for the final panel |

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## Quality Assurance

* Quality assurance is required to ensure that the system meets the pre-established requirements and standard.
* Quality Assurance involvement will be from the beginning to the end of the project life cycle.
* It is also a plan effort to ensure that the software product fulfil criteria and has additional attribute specific to that product.
* Project has few external and internal quality assurance, the external quality assurance are Correctness, Integrity and Accuracy and the internal quality assurance are Maintainability, Portability, Reusability, Testability
* **Correctness** and **Accuracy** are mainly used for the survey and interview at the Canterbury Cluster, IITP. To comprehend the precision of the data gave by the employee about the testing frameworks.
* **Portability** and **Reusability** are utilized as a part of coding to check the straight forwardness with which code can be altered and work in a situation not quite the same as that for which it was particularly outlined , the degree to which and the simplicity with which code can be utilized as a part of the parts framework.

## Risk

* **IT professionals using the same testing framework**

Difficulties in finding IT professionals in the survey and while conducting interviews using the same Java Script testing framework.

* **Clarity of data obtained**

Lack of clarity in the data obtained. The information which was received after the interview and survey being incomplete.

* **Issues in the data analysis**

The data being improper and in-appropriate after the data analysis

* **Privacy and security issues in collecting the data from interviewee.**

The data collected after the survey and interview should be secured and protected. Leaking the confidential data causes major risk.

* **Product Risk**

The factor in which what is produced by work, i.e. the things which is being tested Testing of the code after the implementation is required to check if the implemented code do not have any errors.

* **Project Risk**

The Factor relating to the way the work is carried out, i.e. the test project.

* **Tight timelines**

Unable to complete the project within the expected timeline.

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* **Inaccurate identification of complexities, functionalities, or operations**

Unable to identify the project complexities and functionalities before the project execution.

* **Operational Risks**
* Failure to address priority conflicts
* Improper subject training
* Improper communication in team
* Failure to resolve the responsibilities
* No resource training.
* **Technical Risks**
* Continuously changing requirements - Change of product requirements continuously can cause delay in project submission and also unclear about the details required to execute the project.
* Difficult project module integration.
* No advanced technology available or the existing technology is in initial stages
* Complex product to implement.
* **Schedule Risk**
* Wrong time estimation
* Failure to identify complex functionalities and time required to develop those functionalities.
* Resources are not tracked properly.
* **Programmatic Risks**
* Unaware of the latest technology and trends.
* Changing customer priority and strategy.
* Running out of funds.
* Change in market strategies.
* **Personal Risk**
* Multiple exams and assignments, which may interrupt the project.
* Impact on personal career and life if the project fails or succeeds.
* Emotional impact.
* Impact on health.
* Ethical and professional compromise required
* Quality of the product which is developed.
* Conformity required for the external and internal policy.
* Misuse by authorized end users
* Natural Disaster can cause data lose and the scheduled activities can be ruined.

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* **Loss caused by failure to mitigate risk**
* The software issues (malware or virus) can cause the data corrupted or deleted. However, it can be fixed easily within short span of time
* Missing development deadline.
* Poor quality software.
* Loss of data.(Basics of Software testing, 2017)

All the above mentioned risks can be managed by the ways in which the information is searched for approaches to dispense with the wellspring of necessity changes by doing a good job of gathering requirements in the first place. It necessary to permit just those prerequisites changes that are completely important.

* Utilizing a UI model toward the start of the venture to make sure to accumulate top notch prerequisites. Will keep demonstrating the project stages to the supervisor’s, refining it until the point that all the required information is attained.

# Reporting Procedure

* **Academic Supervisor(AS)**

Submission of the weekly report and meetings will be held with academic supervisor to inform the level of progress. AS assists, navigate to provide the required information and make appropriate decisions in the project.

* **Industry Supervisor(IS)**

Submission of the report and daily meetings will be held with industrial supervisor to inform the level of progress as well as to get the input of the tasks which needs to be completed on the weekly basis.

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# The Project Plan

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| --- | --- | --- |
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| Phase 1 | * Initial Project Discussion with the IS and AS to finalize the topic. * Preparing rough project proposal in group * Submitting the initial project proposal to the IS for verification * Preparation for the interview and survey * IS provides the list of tasks to be done on the weekly basis | 2 Weeks  24/7/2016 - 6/8/2017 |
| Phase 2 | * Recreate the existing practical tests. * Testing the existing practical test with a new testing framework. * Drafting the final project proposal * Getting the project proposal approved | 2 Weeks  7/8/2017 - 19/8/2017 |
| Phase 3 | * Identifying the popular testing frameworks used * Performing sample tests * Learning different types of testing framework * Getting the confirmation on the survey and interview questions. | 2 Weeks  20/8/2017 - 03/9/2017 |
| Phase 4 | * Submitting the questions to IS and AS to finalize the questionnaire for survey and interview. * Getting Ethical clearance from the department * Planning the interview place and date * Conducting Interview and Survey (Tech Cluster and IITP meeting) * Comparing the results in different frameworks * Create and submit Half-way report | 2 Weeks  03/9/2017 - 17/9/2017 |
| Phase 5 | * Research and create an in-browser test using a new framework * Develop expertise with Selenium IDE * Ten testing frameworks used: * Mocha * Screw Unit * Jasmine * QUnit * Selenium * Ava * Buster.JS * YUI Test * Cucumber * Jest * Identifying the issues in current jasmine tool which is being used for the SE101 * Coding JavaScript for Jasmine automation * Testing the result * Risk Analysis and Quality Assurance check | 2 Weeks  17/9/2017 - 1/10/2017 |
| Phase 6 | * Collecting all the required information for the documentation of the final report * Creating and Submitting the final report * Preparing for the Final Panel | 2 Weeks  1/10/2017 - 15/10/2017 |

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# References

Basics of Software testing, Q. a. (2017). *Software testing Risks.*

Davis, J. (27 May 2013). *TDD and BDD.*

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