**Software Requirements Specification**

**On**

**Diff set Based Automation**

**SUBMITTED BY**

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***Under the guidance of***

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1. **Project Overview**

To construct an effective mechanism to improve regression testing such that only the required modules are tested after updating one or more lines of the code. Regression Test Selection algorithm based on code coverage considers executing test cases which covers modified lines of code. Let P be the previous source code and M be the modified version of T. TH be a set of code coverage based test cases to test P. When P is modified to M the objective is to find T', which is a subset of TH that covers all modified lines of code at the earliest. If two or more test cases, have same number of modified lines and their values also matches then consider test case that has few lines of codes other than modified lines.

Not all modules need to be tested if an updation occurs. Only those modules that are dependent need to be taken into consideration for the testing. This will save both time and efforts required for testing.

1. **External Interface Requirements**
   1. *Hardware Interfaces:*

The application will run on BSD platform and ESA development tool.

* 1. *Software Interfaces:*

Inputs

The application takes code coverage files as input which are given to database as json input

Outputs

The application covers only only those Diff set which are changed.

* 1. *Communication Interfaces:*

The application requires intranet connection to execute several functions such as those running on server and build the code coverage files.

1. **Functional Requirements**
   1. *Identify the diffset which are changed on the on the developer’s system:*

The application takes code coverage files as a list of modified files and converts it to json format. It finds the test suites that use the modified file and adds them to the database.

* 1. *Identify the files which are not changed in the database:*

The application identifies all those files which are not changed and ignores when it is looking for changed files and corresponding testsuites.

* 1. *All the code coverage files are converted to json for input to database:*

The application takes care of updating the database whenever a new file comes in the development directory.

* 1. *Runs only changed files in development directory:*

The changed files will run on the server once the complete code coverage and update in the database in done in the next cycle.

1. **Software System Attributes**

*4.1* *Reliability:*

The application will meet all of the functional requirements without any unexpected behavior.

*4.2* *Availability:*

The application will be available on demand provided the user has the necessary interfaces for the proper functioning of the application.

*4.3* *Security:*

The application only covers the necessary processes and will not affect the proper functioning of other applications in the user’s system.

*4.4* *Portability:*

The application is designed to run on Microsoft Windows operating system.

*4.5* *Maintainability:*

The application will be written clearly and concisely. The code will be well documented. Particular care will be taken to design the project modularly to ensure that maintenance is easy.

1. **Performance Requirements**
   1. *Real-Time:*

The application requires latest build metadata and continuous dataset for current development stream.

* 1. *System Resource Consumption:*

Resource consumption of this application will not reach an amount that affects the normal processing of user’s system.

1. **Design Constraints**

The design constraints that will affect the design of this application are the schedule and the performance.

The project must be completed on schedule and the performance of the application must be very high. Parallelism will be exploited to increase the performance.

1. **Other Requirements(if any)**

Knowledge of PYTHON programming language, domain knowledge of Database like MongoDB, Mysql and knowledge of Machine Learning are the additional requirements required.