Chapter 6
Selection and Prediction of Sustainable Software Test Bed for Sustainable Test Environment

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ABSTRACT

The perception of the entire world is to have sustainable products to maintain the green environment. But nowadays the environment temperature is slightly increased in many urban places due to many reasons. One of the reasons is the heavy usage of computer machines for running all commercial applications. To build such applications, the CASE (computer-aided software engineering) tools are used from 'requirements analysis' phase to 'software maintenance' phase. Among all SDLC (software development life cycle) phases, the software testing consumes more power and computing resources for delivering good quality software products to the customer.

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1. INTRODUCTION

The perception of entire world is to have sustainable products to maintain the Green Environment. But nowadays the environment temperature is slightly increased in many urban places due to many reasons. One of the reasons is the heavy usage of computer machines for running all commercial applications. To build such applications the CASE (Computer Aided Software Engineering) tools are used from 'Requirements Analysis' phase to 'Software Maintenance' phase. Among all SDLC (Software Development Life Cycle) phases, the Software Testing consumes more power and computing resources for delivering good quality software products to the customer. Most of the commercial applications are Web Applications type and the Web Application Testing to be done automatically using Selenium framework. So, a sustainable software testing bed has to be made for automate the testing using automated script with Selenium Framework. A comparative analysis is done on 'PyCharm', 'Python IDLE' and 'Jupyter Notebook' for executing the automated test script using Python Programming platform for identifying the sustainable test bed for web application testing. Along with this, the prediction of test bed performance is also possible by using the datasets made from the past executions and Regression Model. This may help the software engineers and developers to take appropriate decisions with respect to save the globe from 'Global Warming'.

Sustainable software development is highly motivated in the software industry to develop and deliver software systems effectively by consuming less energy withheld the environment free from the heat or carbon emission. By introducing the sustainable software development principles in the software development process thus may help the developers to prepare the plan effectively to fulfill the customer requirements as soon as possible and limit the resources to be used for implementing the project (Winschiers & Paterson,). Software Engineering is a systematic approach to build the software products effectively by applying software development principles, methods and tools. As we know the software development is happening in five different development phases such as 'Requirement Analysis', 'System Design', 'Coding', 'Testing' and finally 'Maintenance' phase. All these phases and their activities are important to deliver a quality software system which can satisfy the expectations of customers and stakeholders.

Nowadays, the software development business is a competitive one because it is happening in small scale industries and/or large scale industries. Many software companies invest huge effort and resources to stand in the software market to dominate others products and gain more customers. Due to the growth of IT industries, huge number of computers and higher end machines are used in worldwide to provide continuous support and services to the users or customers to use the product functions. The higher order machines usage for 24x7 may be a harmful to the environment.

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