Temporal Assertion Language for Testing Web Applications

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Abstract : This research paper presents a temporal logic based assertion language that can help in detecting dynamic errors in web applications. Temporal logic may be advantageous because it deals with the development of situations over time. The operators, syntax, and semantic of the language are introduced. Also in this paper, we introduce an architecture and software details of agent based dynamic analyzing tool for testing web applications that have been written in JAVA programming language. The tool uses temporal based assertion language to detect run time error in web applications. Our tool investigates the applicability of temporal logic in building a dynamic analyzer for testing web applications. In this research we will see the efficiency of the temporal assertion language in detecting run time errors in web applications.

Keywords: temporal logic , Assertion , java , web application , Agent

I. INTRODUCTION

Web application is a client server application which use browser as its client, browser send the request to the server and the server send back the respond to the client (Brower) , there are many advantages to use web browser as a Client such as . 1)Web browser can be found on any desktop and used to interact with many different web application , 2)Client do not need to install new program on PC to run the web applications the browse can do the job. 3)Browser can interact with complex clients (Applet , ActiveX components, and Flash movie players)   and securely download them [10]

Moving toward web application is considered one of the most important trends in those days. Most common reasons behind that are the automatic use of new version of the software and universal accessibility from any browser in any machine [1].

Many companies   trade their product online, universities perform most of their activities online such as (registration,   submitting applications, distance learning), banking system also can be done online [11]. In a sense, constructing web applications to facilitate and speed up the tasks and their deployments are inevitable in our daily lives. Therefore, application's testing and quality assurance are needed and they are necessary to discover failures that suspend the Web Application from doing the required function.

Failures in web applications might occur because of the fault in communicating several web application's components together or with the environment. Other failures might arise from the application's interface and the environment. Detecting several types of failures could be discovered through applying diversity testing approaches, which could be applied to web applications [2].   Some of these approaches are Unit integration testing and system testing . Unit testing is to inspect every source code of the application so the user can test one unit   at a time, the unit could be (web pages, scripting modules, forms, applets or servlets) . However, the integration testing combines the components of the application (the whole classes) to check how the application work   together. An integration criterion has to be used to choose the pages to be combined   and testing together [2].   System testing is to discover the defects in the entire web