XTREAMS TOOLKIT UI DEVELOPMENT ON MICROSOFT WINDOWS PRESENTATION FOUNDATION TECHNOLOGY

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ABSTRACT

This project is a software application that runs with the station controller. When an error appears at the station controller it triggers a response flow checklist (RFC). An RFC is a troubleshooting procedure that helps you fix problems in manufacturing. A RFC is a series of instructions you define to help a manufacturing technician troubleshoot an equipment-related problem while processing. Trigger is a combination of micro-conditions. When a trigger occurs XTREAMS system automatically, it retrieves the RFC associated with that trigger. Authoring is the process of creating RFCs using the XTREAMS authoring tool. One can use the XTREAMS authoring tool to create RFC flow diagrams that the XTREAMS execution tool will display as step-by-step instructions for the RFC user. During running of a tool if the equipment is not ok, there could be multiple reasons or causes (C1, C2). These causes could be isolated by running a pre-defined checklist, that is, RFC. After the RFC and the triggers than are associated are approved using the XTREAMS Authoring Application the contents are send over to the various Intel Sites which are XTREAMS enabled. The toolkit that is provided with XTREAMS product provides one a unique capability to translate the received RFC contents to geo-specific languages so that the RFCs are relevant for the users of that particular geo. The aim here is the XTREAMS toolkit UI development on Microsoft Windows Presentation Foundation Technology so as to make it even more efficient and reliable, also which will set it free for unit tests to be performed appropriately. The MVVM framework has been followed for the purpose of development.

Keywords: Response flow checklist, Windows Presentation Foundation, MVVM.

INTRODUCTION

The speedy growth of the World Wide Web has started taking full control of the medium of cooperation among several systems. Nowadays, web applications are legacy systems that demonstrate valuable resources to their host systems. Compare to a website, which supplies its users with only a chance to read information through the World Wide Web (www) framework, a Web Application is an authentic software system that exploits the World Wide Web infrastructure to give its clients the chance to change the status of their systems together with their current job status. Web services are interoperable, standards-based software components which can be accessed through Internet connections. They can be applied as construction blocks to construct software applications whose functionality may be simple or complex. They are extensively recognized in the IT industries. Foremost IT corporations such as Microsoft, Oracle, SAP, and Sun support web services. These technologies are becoming broadly established in commercial enterprise and multinational companies. Web services are definite in terms of a stack of developing XML-based open standards for service description Web Services Description Language, composition (Web Services Flow Language), and invocation (SOAP). Today, the evolution of software systems has become a central activity in the software business. The law of entropy of software dictates that overtime, most legacy software systems tend to be degraded gradually in quality, unless they are maintained. In this possibility, maintain means to enhance a software system updated with resent technologies. To upkeep a software, companies have two choices, either create new software to replace the old or migrating the existing system into a new architecture that uses novel technologies. Migrating, an existing system can keep a good deal of time and money compared to the founding of novel software. This work aims to achieve constructive planning approaches, methodologies, or techniques used in migrating legacy system into a web service, which is one of the most popular target architectures for software modernization (software migration).

WHAT IS WINDOWS PRESENTATION FOUNDATION (WPF)

WPF is a next-generation presentation system for building Windows client applications with visually stunning user experience. It is a graphical subsystem for rendering user interfaces in Windows-based applications by Microsoft. A wide range of both standalone and browser-hosted applications can be created using WPF. The core of WPF is a resolution-independent and vector-based rendering engine that is built to take advantage of modern graphics hardware. WPF extends the core with a comprehensive set of application development features that include extensible application markup language (XAML), controls, data binding, layout, 2-D and 3-D graphics, animation, styles, templates, documents, media, text, and typography. WPF is included in the Microsoft. NET framework and can be used to build applications that incorporate other elements of the.NET framework class library. Following the success of markup languages for web development, WPF introduces XAML, which is based on XML. XAML is designed as a more efficient method of developing application user interfaces.

LOGGING

The steps of execution and the errors that are encountered are recorded in the log files.

Some of the events logged are:
- The user's IDSID and the role request
- The status of connection establishment with the Docbase
- Status of the group requested
- Status of the groups in configuration file
- Status of the user in the docbase
- The status of the format of the request
- The success or failure of the operation (add or delete)
- The format of the name in the docbase
- There are in totality five log files - each for every application (VFA, SAMS, LCAD, and XTREAMS) and an additional main log

"RialtoService.log" which corresponds to the overall service like if the application logger has been configured or not.

In case of a new user request, if the user is not present already in the Docbase, a new user is created using the credentials retrieved from the CDIS.

The service maintains a request table "app_rialto_roles" which records the request for each role against the user name whose purpose is to keep a check on the requests the particular user has made.

This service exposes three functionalities.
- Add user role
  The user is changed to "active" for add role.
- Delete user role
  The user is changed "inactive" for delete user request.
- Delete user.

When a user, present in only one role, has requested delete role, it will be considered as delete user request and following will happen.

The user is deleted from that role deactivated

Added to the "deleted_users" group.
- In the latter two cases, a mail notification is sent to the DMIS regarding the manual steps to be performed in case of complete deletion.
- The manual steps taken are assigning new owner to the documents which had the deleted user as its functional/spec owner.

A console test client is built to test the service as shown below:
- In the latter two cases, a mail notification is sent to the DMIS regarding the manual steps to be performed in case of complete deletion.
- The manual steps taken are assigning new owner to the documents which had the deleted user as its functional/spec owner.

A console test client is built to test the service as shown in Fig. 1.

MOVING VERTICAL TEXT RECOGNITION TECHNIQUE

Most of the test tools can easily capture normal text in combo box, text box, or even text in images (Bitmaps). For horizontal text capturing, there are lots of methods including get visible text method (this method name is available in unified functional testing (UFT) in other tools method name changes but working remains same), Get RO property method (i.e., Text can be found in object repository), etc., but when it comes to find vertical text all these methods failed. If the text is fixed at one point, then using text area output, it is possible to find out text at that particular point. However, that method is also not useful because output of that text in message box will be in horizontal form so it will be very difficult to store that text into any string. Fig. 1 shows the exact problem of vertical text recognition. Text special is in vertically arranged fashion and its output from get visible text is also shown beside it which is incorrect. As seen in the output, graphical user interface (GUI) test
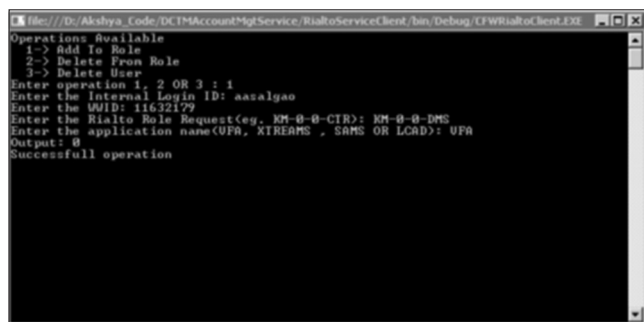

Fig. 1:

detects text in the image, but as text is not in required format, the tool fails to capture exact text. This problem can be eliminated by capturing a bitmap of image that contained text then using script to convert that bitmap into needed form (i.e., Using a method to rotate the image) then captures text using get visible text method. Bitmap capture is one of the important features of any testing software but capturing only needed part of bitmap and saving then has to be scripted. After saving bitmap containing only text can be open in script and made to be in required format. Vertical text recognition: Get visible text captured data implementation. Vertical text in an application with its text area output is shown which will give details about problem in direct method. Hence, to overcome, this problem first required bitmap is taken from the application using bitmap checkpoint and that bitmap is saved in one location. This bitmap is then called again in the script by creating object for that bitmap (using create object method). Then using rotation technique and making that bitmap in required horizontal form so that get visible text will give required text. Vertical text recognition: Bitmap checkpoint. Vertical text recognition: Get visible text captured data from modified bitmap 2015 International Conference on Smart Technologies and Management for Computing, Communication, Controls, Energy, and materials 468.

FINDING PART OF TEXT FOR WINDOWS BASED APPLICATION

The disadvantage of having Windows-based application in our hand is that automation tools may or may not recognize objects on the application, but even if they do, tools provide very little information regarding that object. Much of the time, they are not able to recognize text written in that object. Hence, the tool gives separate text recognition technique which can be used to detect all text displayed on that object (UFT uses OCR technique to detect text). This kind of methods works perfectly on WPF objects but when it comes to win object method may detect text with random characters. Even if it did recognize text correctly, it is important to find only required text and eliminate unnecessary text. Example - in the code first line - where get RO property method is used gives value in edit box but when unit text is required (in this example special) tool does not detect unit as separate box, but it detects whole as win object. In the property of this win object, there is no property to find unit text. As UFT provides a method to acquire text from an object which gives all text from that object so to capture the particular text, there are more than one way. The simplest one is that we can separate text using split method by giving a string as an expression and (blank space) as delimiter. This will give each word in the string so then we can select necessary text that we need. Another method is using scripting techniques which find length of text in win edit and win object using the Len method than using Trim method one can eliminate unnecessary text. Then using Instr and right method, one can find required text: Get visible text method for win edit box. Get visible text method for win object.

WORKING WITH EXCEL AND DATA TABLE

Automation tools including UFT come with data table which are similar to excel. Excel always has a greater advantage in storing data in table format so it becomes an important factor whenever one uses data table. Excel is one of the useful parameters for importing and exporting data. It gives greater advantage and ease if one want to import data for automation tool as most of the tools have direct command for importing and exporting excel through data table considering already excel data is stored in your computer. However, script gets tricky when excel need to get created from tool only and import it into data table. Implementation - excel can be created in UFT using the create object method. After creating excel file better approach is to import that excel file into UFT data table using import method because UFT provide lots of simplified methods for data table than excel object. There is method called AddParameter in get sheet to give column name for particular column which helps to import only required data in required column. Taking data into data table are very useful because of extensive methods and simple method to import and export data.

FINDING USEFUL DATA IN EXCEL DYNAMICALLY

Even if all data are present in data table, most of the time, it is necessary to find only particular value from data table and use it in data driven script. Most of the scripting languages do not provide direct method for it so it has to be scripted and script has to be in such a way that it cannot directly point to data (i.e., Giving directly row and column name in script is not good approach) and better approach is to find the data within whole data table. Sometime, it is required to find one particular column data and give its value as input to textbox one by one. Hence, the simple technique is to copy that column data one by one till the null value; using looping techniques which will work till null is arrived and then put that value in the required text box or as necessity of logic. Implementation - As UFT does not support many of the methods for excel compared to data table so it is better to import all data into data table then sorting can be done on that data. After importing, required value can store in an industrial research on GUI Testing Techniques for Windows based Application using UFT 469 variable to check with each cell value in data table. Using nested if statement, one can check for all values till null arrives code.

DISCUSSION

Duen-Kai Chen 2010 performed a systematic review of academic papers from IEEE explore regarding SOA in Networks by looking at the following issues; current state of the application of SOA for networking was highlighted, research efforts in related area were also discussed. Some of the weaknesses of this research are that the researcher only limits his research on the publications provided in the IEEE Explore Digital Library. Furthermore, his review did not follow a structured systematic literature review (SLR) methodology. Another review carried out by Alam *et al*. 2014 was based on a larger study to systematically review all available research on impact analysis and propagation in the context of business process management (BPM) and service-oriented architecture (SOA). Hutchinson *et al*. 2007 provide a review of a number of approaches that may contribute to a pragmatic strategy for addressing the problem (existing software systems) and outline the significant challenges that remain. The difference between their study and our SLR is that. They did not take into consideration web application that is not fully service-based. Further research conducted out by Sharma *et al*. 2012 was a systematic mapping study. Their paper provides an overview of the current state of research into testing of web services. To understand their subject, they conducted a systematic mapping on the testing of web service. The results suggest that research into testing web services is still in its preliminary stages. It is proven that from the list of existing SLR performed in reengineering of web service, there has not been any attempt to systematically review legacy software systems into web service-based. This is the unique feature and major contribution of this paper with the expectation to provide a systematic review regarding this topic. A SLR is aimed at identification, evaluation, and interpretation of all the available research related to a particular field of interest. An SLR must be achieved with a rigorous search plan which can be attributed as fair and unbiased. The search strategy or plan must ensure the completeness of the search for assessment.

The beginning point of this research is the planning phase, which is to determine the scope, research questions, and steps needed to answer the research questions. The next stage is conducting the review itself by searching for papers in two publication sources, filtering process based on inclusion and exclusion criteria, quality assessment, data extraction, and analysis process. The last stage of the research is the documentation stage, which includes the writing of the paper and validation process. Fig at the point of this report, there are little or no systematic study to provide a rigorous review and analysis of existing research in this domain. The target of this research is to fill this gap by conducting an SLR using SLR guidelines by Kitchen ham. Our systematic review process comprises several steps which have to be performed in a systematic and disciplined way. These steps include

development of a review protocol, conduct systematic review, analysis of results, reporting and visualization of results, and discussion of findings.

BACKGROUND

Duen-Kai Chen 2010 performed a systematic review of academic papers from IEEE Explore regarding SOA in Networks by looking at the following issues; current state of the application of SOA for networking was highlighted, research efforts in related area were also discussed. Some of the weaknesses of this research are that, the researcher only limits his research on the publications provided in the IEEE Explore Digital Library. Furthermore, his review did not follow a structured SLR methodology. Another review carried out by Alam *et al*. 2014 was based on a larger study to systematically review all available research on impact analysis and propagation in the context of BPM and SOA. Hutchinson *et al*. 2007 provide a review of a number of approaches that may contribute to a pragmatic strategy for addressing the problem (existing software systems) and outline the significant challenges that remain. The difference between their study and our SLR is that. They did not take in to consideration web application that is not fully service-based. Further research conducted out by Sharma *et al*. 2012 was a systematic mapping study. Their paper provides an overview of the current state of research into testing of web services. To understand their subject, they conducted a systematic mapping on the testing of web service. The results suggest that research into testing web services is still in its preliminary stages. It is proven that, from the list of existing SLR performed in reengineering of web service, there hasn't been any attempt to systematically review legacy software systems into web service-based. This is the unique feature and major contribution of this paper with the expectation to provide a systematic review regarding this topic. A SLR is aimed at identification, evaluation and interpretation of all the available research related to a particular field of interest. An SLR must be achieved with a rigorous search plan which can be attributed as fair and unbiased. The search strategy or plan must ensure the completeness of the search for assessment.

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