Delineated Analysis of Robotic Process Automation Tools

Ruchi Isaac
Computer Engineering
Shri Bhagubhai Mafatlal Polytechnic
Mumbai, India
shuklaruchi1063@gmail.com

Riya Muni
Computer Engineering
Shri Bhagubhai Mafatlal Polytechnic
Mumbai, India
riya.muni1999@gmail.com

Kenali Desai
Computer Engineering
Shri Bhagubhai Mafatlal Polytechnic
Mumbai, India
desaikenali@gmail.com

Abstract- In this age and time when celerity is expected out of all the sectors of the country, the speed of execution of various processes and hence efficiency, becomes a prominent factor. To facilitate the speeding demands of these diverse platforms, Robotic Process Automation (RPA) is used. Robotic Process Automation can expedite back-office tasks in commercial industries, remote management tasks in IT industries and conservation of resources in multiple sectors. To implement RPA, many software platforms are developed and the objective of this paper will be providing an analysis of three of the leading RPA platforms namely, UiPath Studio, Automation Anywhere and Blue Prism. Our analysis will help the commercial industries- not only the front-office but also for back-office personnel; to determine which platform is the most eligible to use.

Keywords: Robotic Process Automation, UiPath, Blue Prism, Automation Anywhere, Structured Analysis

I. INTRODUCTION

To automatically control manual or logical processes, a technique known as Process Automation is used. The current developments in technology have made it possible to introduce industry automation systems into all possible fields. Process Automation is broadly categorized into two parts – Hard Automation and Soft Automation.

Hard Automation (fixed automation) refers to a machine or robot designed to perform a specific yet repetitive task whereas Soft Automation (flexible automation) is a developed version of the former since it allows programming of different tasks as per the need of the products.
Robotic Process Automation (RPA) comes under Soft Automation.

Robotic Process Automation is a software that can be programmed to automate a variety of manual processes that human workers do, to reduce the burden of recurring tasks.

The software bot is taught a workflow with multiple steps and applications such as reading data, writing data, numeric calculations, modification and renewal of data, and so on. Currently, there are multiple tools being used for RPA such as UiPath Studio, Automation Anywhere, Blue Prism, Workfusion, Redwood, Kryon, etc. [1]

The outline of this paper can be described as: Part II explains the history and description of the top 3 tools in the RPA market. Part III provides a comprehensive and detailed comparison of the three respective platforms. Part IV shows the implementation of a robot that we created through UiPath Studio. Part V inculcates the conclusion of our analysis and the future scope.

II. SYSTEM OVERVIEW

A. UiPath

UiPath dates back to 2005, in what was back then an outsourcing company. With a strong demand from the market, they saw the need for RPA (Robotic Process Automation), and hence decided to start building an industry standard platform for training and orchestrating software robots. [2]

Their source code is being is used on millions of machines around the world, embedded in different products and companies with activities ranging from document management to call centre, healthcare, financial, data extraction and migration, process automation, or API enablement. [3]

B. Automation Anywhere

In 2010, the company, Tethys Solutions, LLC, re-branded itself as Automation Anywhere, Inc. The company's products are designed to allow execution of automated business and IT processes across multiple machines, allowing for variations in systems, application loading times

and internet speeds. It is available in a Server edition that allows users to develop automation processes with centralized security, user management, collaboration, and deployment and backup. [4]

C. Blue Prism

Blue Prism was founded in 2001 by a group of process automation experts to develop a technology that could be used to improve the efficiency and effectiveness of organizations. Initially their focus was on the white-collar back office where they recognized an enormous unfulfilled need for automation.

III.   COMPARATIVE STUDY

TABLE I.   Feature Based Comparative Study

Out of the plethora of grounds to compare the top three RPA platforms, we have enunciated the most prominent factors. The basic parameter suggests whether front office and back office automation is possible or not. The requirement to automate the very initial stages of an industry forms the initial layer of success for any automation tool or platform. Further ahead, the Script Based Designer and Visual Process Designers come into context where, we check whether the particular tool provides graphic user interface or not. The openness of a platform states whether the material to understand the tool, learn how to operate it and practice various applications on it; is provided for all or not. Macro Recorders help in faster coding and design implementation. The Control through Coding criteria is important since it suggests how efficient it would be for a user to control the function of the tool and the bots the tool implements. Whether the execution of automated test cases on remote machines is possible or not, curates the possibility of the tool being secure. If at all, a tool can fulfil the above criteria without compromising security, a massive improvement in this field would be made. For the last parameter, the extent of a tool's future scope determines how useful it would be in the long run when other technologies would be far ahead. UiPath dominates in this category since it's forever adaptive coded algorithms make an infinite future scope possible, unlike the other two.

Parameters	UiPath	Blue Prism	Automation Anywhere
Front Office/ Attended Automation	Yes	No	Yes
Back Office/ Unattended Automation	Yes	Yes	Yes
Script Based Designer	No	No	Yes
Visual Process Designer	Yes	Yes	Yes but, is more script based.
Openness of the Platform	Yes, has free forums and tutorials.	Yes but, all the forums are commercial.	Yes but, all the forums are commercial.[5]
Macro Recorder for Process Mapping	Yes	No, due to their rather outdated technology.	Yes
Control through Coding	No	Yes	Yes
Execution of Automated Test Cases on Remote Machines	No	No	Yes
Future Scope	Indefinite	Comparatively less	Comparatively less

TABLE II.   Comparative Study on Technical Aspects

Provision of a simple factual analysis might not be enough to sufficiently convince the backbones of various industries. This necessitates a comparison based on the technical aspects of the tools. In Table 2, we have cumulated the performance evaluation of the different tools out of 5, based on the different technological categories. This data has been amassed based on experts on RPA tools and our own implementations on UiPath since that was the only tool easily available at the current stage of our analysis. As Automation Anywhere has a script based design too, the bot development and core functioning can be implemented with higher accuracy However, the number of users might decrease precisely because it is script based. Control room, System Management, Reporting and Resilience incorporate the operating requirements and factors of the tools and UiPath and Blue Prism perform well in these areas. The RPA Analytics rating defines the analytical potential of that RPA tool. The architecture of Automations Anywhere is the most commendable since it is very detailed. Blue Prism provides the most security however UiPath and Automation Anywhere do fairly well in this criterion. However, overall UiPath triumphs all.

Technology Category	UiPath	Blue Prism	Automation Anywhere
Bot Development and Core Functions	3.25	2.50	3.70
Control Room, System Management, Reporting and Resilience	3.80	3.80	2.80
RPA Analytics	3.66	2.00	3.66
Architecture	3.99	3.66	4.33
Deployment, Governance and Security	3.66	4.00	3.66
Total RPA Technology Score	3.67	3.19	3.63 [6]

IV.   IMPLEMENTATION

We implemented a small bot for the evaluation of the tool that obtains the best results after a careful technical analysis; UiPath. The UiPath bot operates on the data of four different files to create a new file which has the accumulated data from all the files.

The bot also provides an option of calculating the percentage which can later be replaced with various other mathematical, statistical and logical operations.
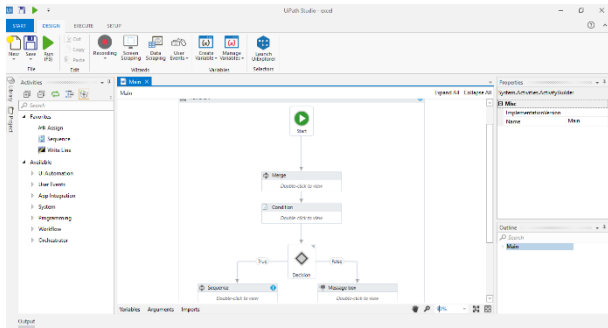
Figure 4.1: An overview of UiPath Studio

The functioning of the bot is as follows:

A.   Step 1

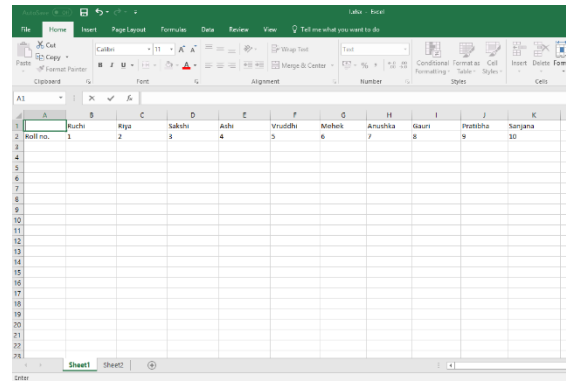In this test case, a file called "List.xlsx" is made that contains the names and roll numbers of 10 students.

Figure 4.2: List.xlsx Excel file

B.   Step 2

Three different files called "Maths.xlsx", "Science.xlsx" and "English.xlsx" are made that have records of the marks of all the ten students in the respective subjects.
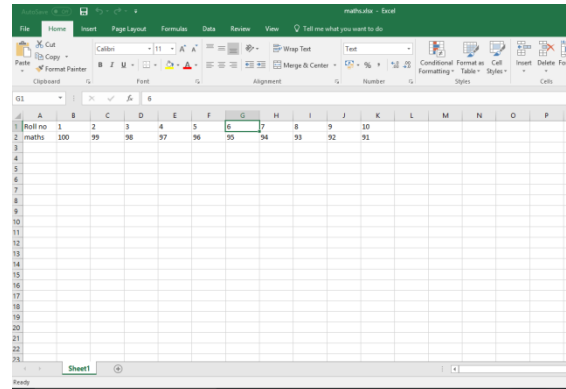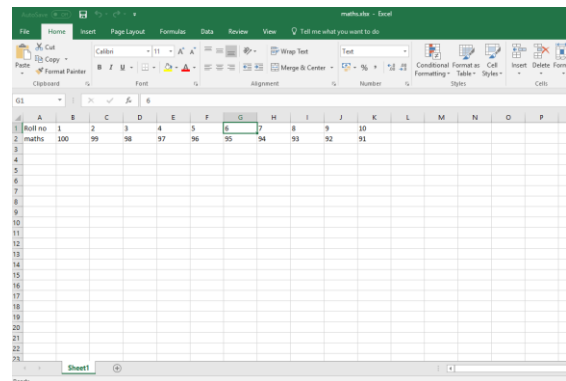

Figure 4.3: Maths.xlsx Excel file
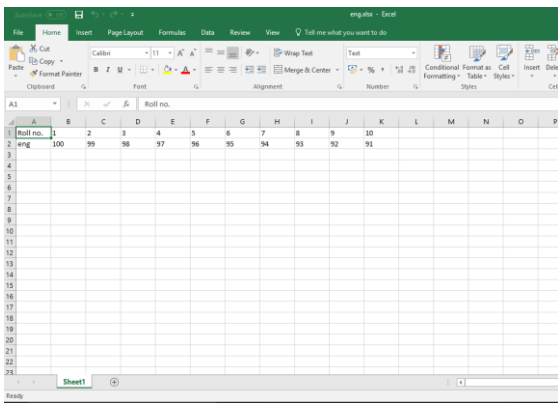

Figure 4.4: Science.xlsx Excel file

Figure 4.5: English.xlsx Excel file

C. Step 3

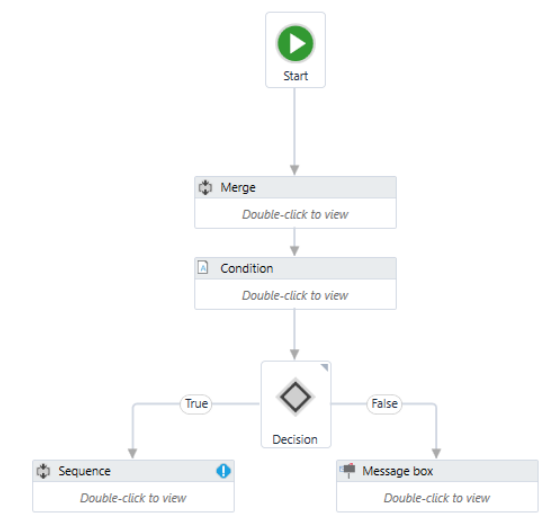A bot is created that accumulates the data from these four files.

Figure 4.6: An overview of the bot

D. Step 4

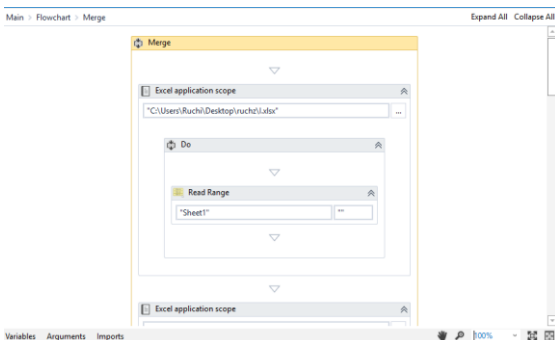The working of the blocks is as follows:

1. Merge

Figure 4.7: The Merge block

It is responsible for merging the four different files together and accumulating their data.
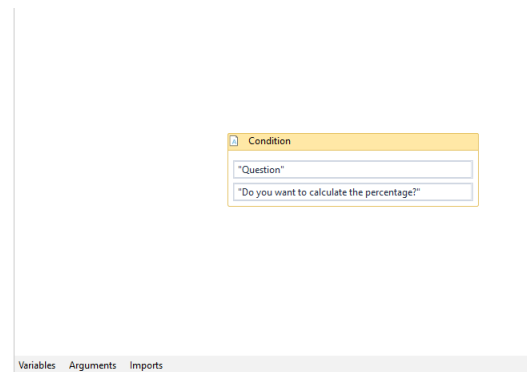
2. Condition

Figure 4.7: The Condition block

It is responsible for asking the user if he/she wishes to calculate the percentage of all the students.
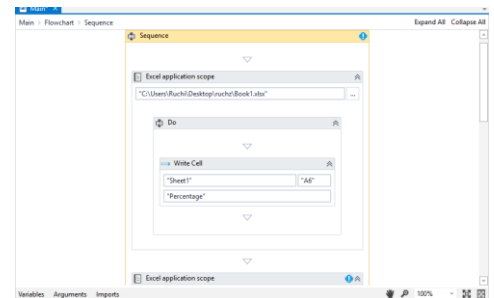
3. Decision
(i) True

Figure 4.8: The Decision block (*True*)

It is responsible for calculating the cumulative percentage from all three subjects and then displaying the result in the final excel sheet; for every student.
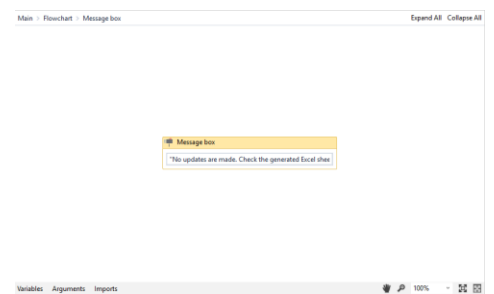
(ii) False

Figure 4.7: The Decision block (*False*)

It displays a message box saying that *'No changes were made. Check updated excel sheet.'*
And hence, the updated excel sheet is checked.

E. Step 5

The excel sheet called "Book1.xlsx" is checked since that is the excel sheet in which the accumulated data is saved in (with/without the percentage).

F. Result

"timeStamp": "17:28:40",

"fileName": "Main",

"totalExecutionTimeInSeconds": 28,

"totalExecutionTime": "00:00:28"

The above output from UiPath suggests that the bot was implemented in a total of 28 seconds including 'user input' time.

V. CONCLUSION

With the fast-paced developments, various industries are looking for ways to accommodate multiple tasks and operations in minimum time using less effort. This necessitates the possibility of automation and hence knowing which tool to use for the sake of different sectors based on their type of services becomes a major point of priority. Therefore, in this paper, an overarching study of all the tools has been provided, including their shortcomings and place of optimum use. This paper also specifies that UiPath should be considered the best automation tool out of all of those that are currently in the market and provides a test implementation based on the analytic preview and endless possibilities of processes that can be tentatively automated.

In the future, the scope for UiPath exceeds imaginable boundaries. Credits to this are due to the adaptive algorithms it uses. This platform facilitates, businesses of all sizes, BPO providers and shared service organizations around the world to provide exceptional benefits in operational quality, speed and cost. Until today, UiPath has been used to implement a number of applications successfully like the GUI Automation or SAP Automation. In the long term, UiPath will be enhanced to include cognitive capabilities to automate decision making or subjective processes. Hence, with the help of this tool we hope to efficiently implement a basic system using the enhanced features.

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REFERENCES

[1] "UIPath vs Automation Anywhere-Blue Prism", *UiPath Community Forum - Robotic Process Automation*, 2017. [Online]. Available: https://forum.uipath.com/t/uipath-vs-automation-anywhere-blue-prism/5305. [Accessed: 15- Oct- 2017].

[2] O. Cosman, "Shaping the future of work. The story of UiPath - How to Web", *How to Web*, 2017. [Online]. Available: https://www.howtoweb.co/blog/2015/12/shaping-the-future-of-work-the-story-of-uipath/. [Accessed: 15- Oct- 2017].

[3] D. Eddy, "5 Tips for Choosing the Best RPA Software Product", *Uipath.com*, 2017. [Online]. Available: https://www.uipath.com/blog/5-tips-for-picking-the-right-rpa-vendor. [Accessed: 15- Oct- 2017].

[4] "Robotic Process Automation", *Mphasis.com*, 2017. [Online]. Available: http://www.mphasis.com/RPA.html. [Accessed: 15- Oct- 2017].

[5] UiPath, "Everest Group FIT matrix for Robotic Process Automation (rpa) technol…", *Slideshare.net*, 2017. [Online]. Available: https://www.slideshare.net/UiPath/everest-group-fit-matrix-for-robotic-process-automation-rpa-technology. [Accessed: 15- Oct- 2017].

[6] C. Tornbohm, "Market Guide for Robotic Process Automation Software", *Gartner.com*, 2017. [Online]. Available: https://www.gartner.com/doc/3506217/market-guide-robotic-process-automation. [Accessed: 15- Oct- 2017].

[7] Inc., U. (2017). *RPA Overview*. [online] Uipath.com. Available at: https://www.uipath.com/platform [Accessed 15 Nov. 2017].

[8] Blue Prism. (2017). *What we do - Blue Prism*. [online] Available at: https://www.blueprism.com/whatwedo [Accessed 15 Nov. 2017].

[9] Automationanywhere.com. (2017). *Cite a Website - Cite This For Me*. [online] Available at: https://www.automationanywhere.com/ [Accessed 15 Nov. 2017].

[10] Ostdick, N. (2017). *The Benefits and Challenges of RPA Implementation*. [online] Uipath.com. Available at: https://www.uipath.com/blog/the-benefits-and-challenges-of-rpa-implementation [Accessed 15 Nov. 2017].

[11]]Eddy, D. (2017). *How Intelligent Automation Drives RPA Implementation Success*. [online] Uipath.com. Available at: https://www.uipath.com/blog/how-intelligent-automation-drives-rpa-implementation-success [Accessed 15 Nov. 2017].