Automated Calculation of Candidate Participation Based on the Robotic Process Automation Technology

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Abstract – The automation of repetitive and time-consuming tasks for employees is becoming more and more popular nowadays. Automation of attendance has a lot of benefits but it also has limits and strictly relies on the requirement. RPA is an approach to workflow automation, where the program emulates user actions with a graphical user interface (GUI) to achieve the desired result. In this paper, the basic approach for automation of attendance using RPA is investigated. This paper describes the proposed method for attendance automation which allows informing absentee through messaging services in a faster and more reliable way.

Keywords – Robotic process automation, attendance, mail automation.

I. INTRODUCTION

Robotic Process Automation is an alternative approach to business process automation. It allows the user to avoid doing repetitive tasks that need manual data entry and processing. The key feature of Robotic Process Automation is using the RPA framework. A software robot is an application that interacts with another application, not through API (Application Programming Interface) or the integration bus, but the existing UI (User Interface). Due to RPA one program communicates with another program as same as the typical user does. Simulating user actions and provides some benefits, for example, there is no need to change the existing system to deploy the RPA infrastructure. Since Robotic Process Automation does not change the solution itself but the implementation is very fast. And for any reason, which is necessary to disable the software robot and return the processing of the task to the employee while the automation steps are being changed. Automation is being introduced gradually, and the result comes with the very first process automation. RPA significantly reduces time, cost and increases the operational performance with a little change in technology, particularly when open source solutions that do not require license costs are used in this.

Also, the robots are ready to perform assigned tasks 24 hours a day. Once they are properly configured, the software robots perform their tasks without any errors. The only requirement for the software robot to run is that the system must be kept on for the scheduled process. If the process requires modification, it is enough for the robot to change the rules of operation (modify the script). The RPA is usually applied to the following types of tasks:

- Regularly and frequently repeated tasks. Any automation is effective only for repetitive processes [1];
- Tasks that have a great influence on the organization. In this case, the process may or may not be repeated often;
- Tasks that require the processing of a significant amount of data.
- With rising loads, people tend to make more mistakes, while the software robot will continue to work stable;
- The robotic process, by definition, implies the exclusion of a person from the decision-making process. Therefore, any judgment, agreement, use of external data should also be excluded. The robot can make decisions regarding the course of processing, but the rules must be strictly defined and fixed;
- Tasks that require to work with at least one electronic system (external, internal).

- Of course, the robot is obliged to interact with the system to perform its task. However, the greatest effect is observed when it interacts with two or more systems, for example, transferring data from one system to another.
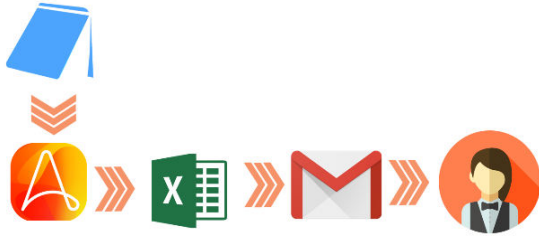

Fig. 1. Architecture diagram for attendance automation

RPA technology is widely used in various organizations due to its advantages. For example, in IT (Information Technology), it helps to process the information from the mail from the clients, forms a pool of requests and status of the request. Human resource management is another area where RPA can be successfully implemented. Also, RPA can be applicable to the finance and accounting sphere. The robots can execute a wide range of different tasks and can also be scheduled to perform tasks, for example loading primary information into the financial and accounting systems, initial processing of orders and integration with legacy and low-level systems that do not have software interfaces.

II. ROBOTIC PROCESS AUTOMATION IN ATTENDANCE

Robotic Process Automation provides a more useful and efficient attendance process for organizations, especially in the context of developing and implementing a large scale system. There are numerous automation tools for extracting and sorting from the word. However, the RPA tools are versatile, so they can be used for attendance sorting. Due to this, it allows making users input data into bots more efficiently and quickly.

The main challenges of attendance automation are resource consumption, long execution time, extraction of data, test conditions, and mail automation.

In this research, we separate three main approaches to attendance automation. As long as we need to execute the process, we used Automation Anywhere to develop automation. Automation Anywhere is a paid software with a large community that supports many automation commands. It allows running the developed bot over any sort of browser,

software, etc. The execution must not be interrupted until the bot completes its task.

We implemented the Automation Anywhere Enterprise Client software. The attendance automation includes the following steps: user launches notepad and enters the absentee's list. The delimiters (comma) must be used between each absentee in the list. After entering the data the notepad must be saved.

In Automation Anywhere Enterprise Client, a new workbench is created. To read the absentees list from the notepad, read from text file tool is used. In the variable manager, create a new variable by clicking on the add button to create a variable to store the data. Now with variable operation tools assign the read data into the created variable. The first approach is completed by getting information from the user.
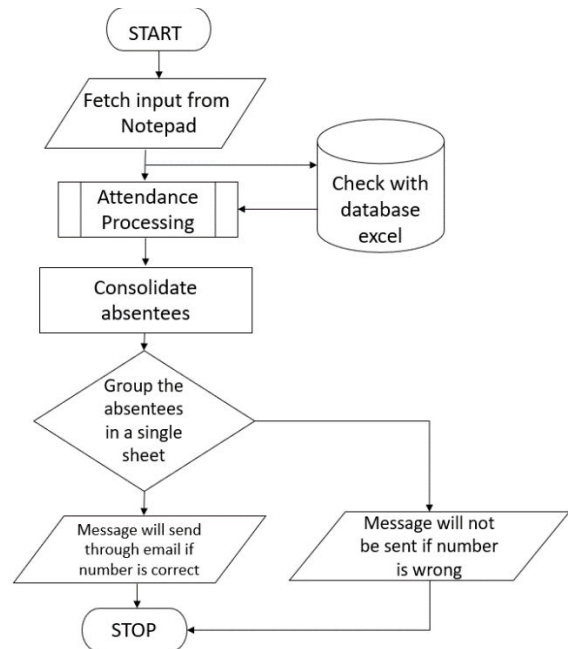

Fig. 2. Workflow structure for attendance automation

The second approach is to extract the data from the database. The database consists of the list of all the member details in the organization. The database must be in the format of the excel (.xlsx) file. Each field in the database need to be extracted using the excel commands present in Automation Anywhere Enterprises Client (Fig. 3). Get all cells command is used to read all the cells from the given excel. Here variable manager performs a major role in creating new variables for each field in the given database. Now start the loop with each row in an excel dataset command. Variable operation is used to assign the data from each field into the given variable.
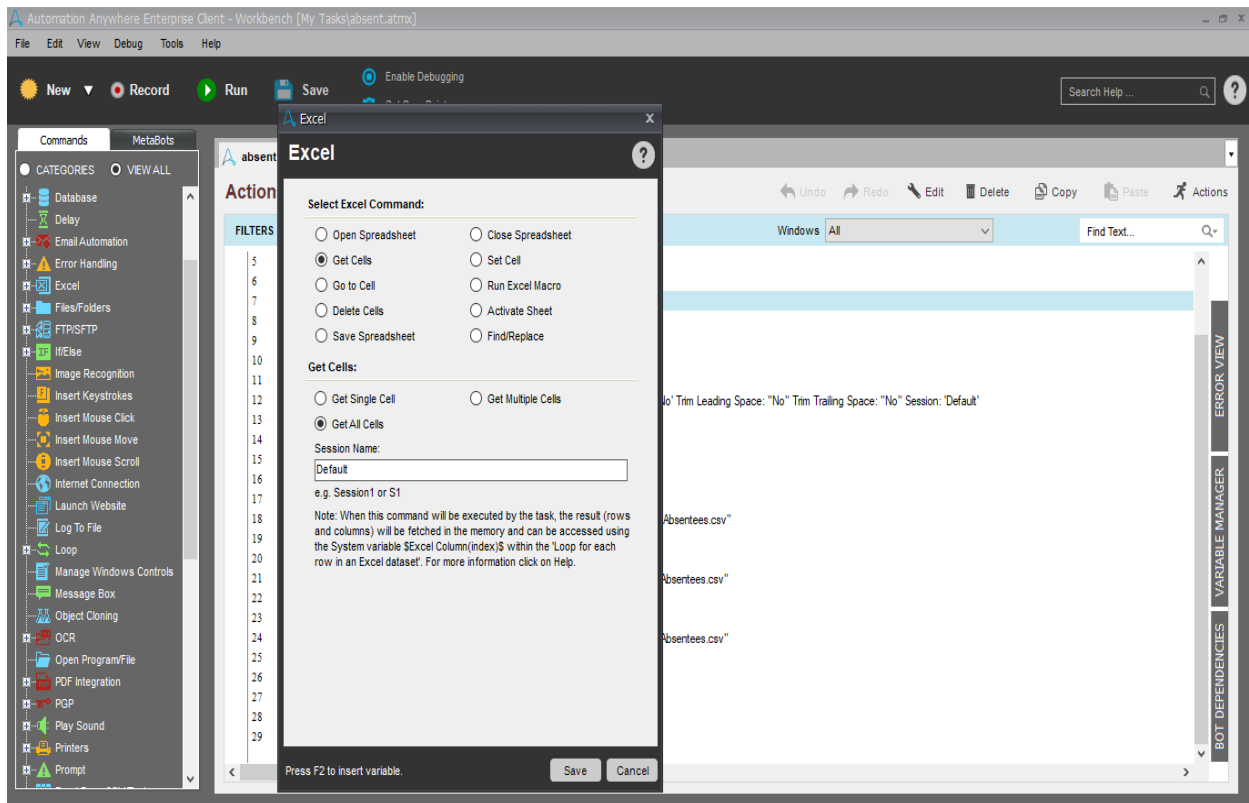
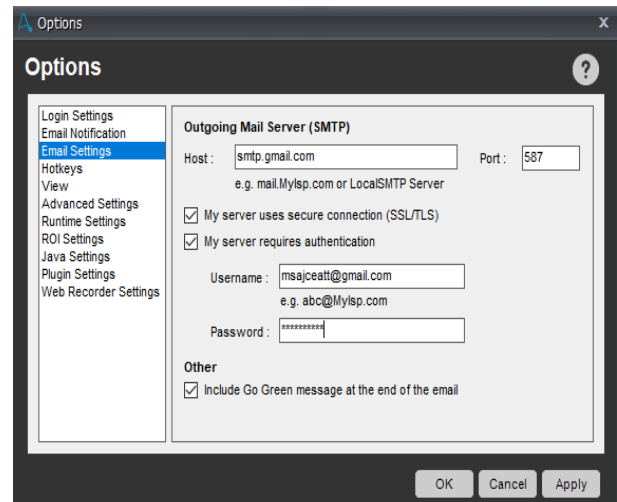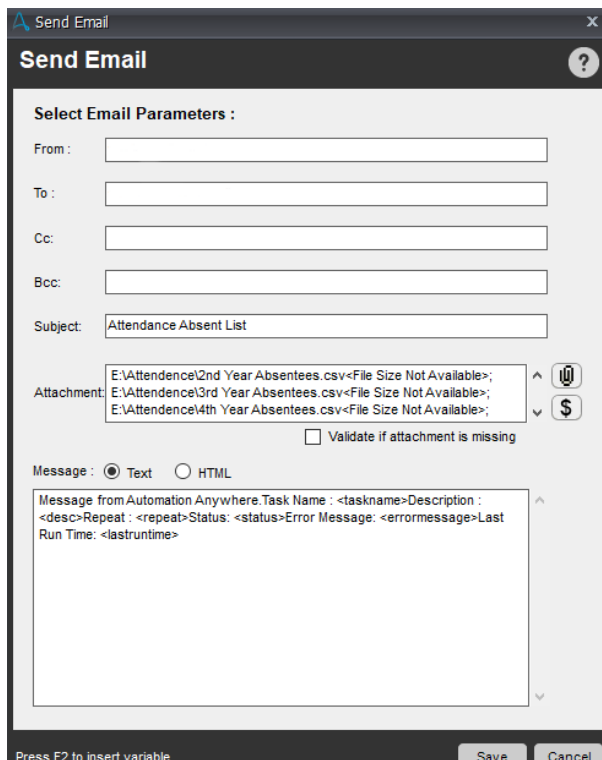Fig. 3. Excel automation via Automation Anywhere Enterprises Client

Fig. 4. Mail automation via Automation Anywhere Enterprises Client

After storing the data in the variables, the consolidation of absentees needs to be done. The consolidation process is done using if-else commands in Automation Anywhere Enterprises Client. The unification of absentees is done by conditions based on a primary key variable which has a unique value set in the database.
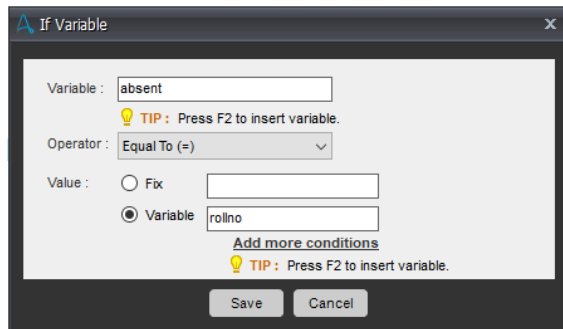

Fig. 5. Conditional statement to consolidate absentees

The condition is set based on the key-value (Fig. 5). Using this condition the process can be implemented in a small organization to perform the task more effectively.

The absentees of the total members in the organization are separated. The separated list is extracted from the database and entered into a separate excel sheet using the log to file command in the Automation Anywhere Enterprises Client. The excel is saved in a particular location.

The final approach is to implement mail automation. The mail automation is done through the send email command in the Automation Anywhere Enterprises Client. The sender's email id is to be set in the Automation Anywhere tools to access the sender's mail id. The email id is to be prefixed with the outgoing connections as smtp.gmail.com for Gmail accounts with port number 587. And for receiving the incoming connections as imap.gmail.com for Gmail accounts with port number 993 (Fig. 4).

However, the subject is fixed while developing the bot. The attachment of excel and the receiver's email id is also fixed. Here the extracted absentees excel from the saved location is sent to the particular given mail id. For example, in an organization, the selected absentee's list in excel is sent to the administrative officer (AO).

III. CONCLUSION

In this article, three main approaches to the attendance automation are analyzed and the new method based on RPA usage is suggested.

Here the Automation Anywhere Enterprises Client shows a significant reduction in the execution time for most operations but it does not provide data generation options and the possibility of switching to another program during test execution. So it requires additional scripts from the users to complete the workflow and tools to support it.

Further, this process of automating the attendance system in a small or medium-sized organization can be implemented in a larger scale organization which helps to calculate the absentee's list over its every branch just by running the software robot.

RPA is most effective when the user interacts with different applications and need to perform specific actions to be done in a repetitive process. It has a key error handling feature which handles errors during the execution of the bot. Also, it has a detailed description and an attached screenshot of the error occurred.

Therefore the proposed method is more efficient because it combined different approaches to eliminate the manual work with RPA software.

REFERENCES

[1] Solomiya Yatskiv, Iryna Voytyuk, Nataliia Yatskiv, Oksana Kushnir, Yuliia Trufanova, Valentyna Panasyuk, "Improved Method of Software Automation Testing Based on the Robotic Process Automation Technology," 9th International Conference on ACIT, 2019, pp. 293-296.

[2] Allam Maalla, "Development Prospect and Application Feasibility Analysis of Robotic Process Automation," IEEE 4th Advanced Information Technology, Electronic and Automation Control Conference (IAEAC), 2019.

[3] Jesús Chacón Montero, Andres Jimenez Ramirez, Jose Gonzalez Enríquez, "Towards a Method for Automated Testing in Robotic Process Automation Projects," IEEE/ACM 14th International Workshop on Automation of Software Test (AST), 2019.

[4] Abderrahmane Leshob, Audrey Bourgouin, Laurent Renard, "Towards a Process Analysis Approach to Adopt Robotic Process Automation," IEEE 15th International Conference on e-Business Engineering (ICEBE), 2018.