



RPA Based System for Result Notification

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ABSTRACT

Automation means making things happen by themselves without needing people to do them. Remote Process Automation (RPA) is a type of computer program that helps with this. It uses little computer programs called "bots" to do tasks automatically. For example, filling out forms or organizing data. In schools, there's a need for systems that can do things on their own instead of relying on people. RPA can help by doing repetitive tasks like data entry or making reports automatically. This saves time and lets teachers and staff focus on more important things. Think about managing student records. Instead of typing in information manually, RPA can do it automatically. This helps prevent mistakes and makes sure the information is correct.

Keywords: *Robot process automation, Task automation, Bots, workflow automation, UiPath, UiPath Studio, UiPath Orchestrator, UiPath Robots, UiPath Automation, UiPath workflow.*

I. INTRODUCTION

The abstract provides a thorough overview of automation's potential, particularly through Remote Process Automation (RPA), in transforming work processes. It emphasizes RPA's transformative capabilities in automating digital tasks, enabling users to create software robots or "bots" capable of executing rules-based processes. This automation is crucial for replacing time-consuming and repetitive tasks traditionally performed by teaching and non-teaching staff, thereby enhancing productivity in educational institutions.

The problem definition identifies challenges associated with manually disseminating academic results, especially in institutions with large student populations. The proposed solution is the development of a Student Result Notifier, aiming to automate the process of notifying parents or guardians about their child's academic performance. By automating the collection and processing of students' marks or grades, the system

will facilitate seamless delivery of notifications to registered mobile numbers.

The outlined objectives include preparing data formats compatible with RPA, creating automated processes using RPA tools, and developing a model capable of working automatically without errors. These objectives underscore the need for a systematic and error-free approach to implementing RPA technology in student result notification systems.

The expected outcome of the proposed model is the generation of automatic and customized messages sent to parents whenever new marks are recorded in the institution's data format. Leveraging RPA technology, the system aims to streamline the notification process, ensuring timely and efficient communication between educational institutions and parents.

II. LITERATURE SURVEY

The introduction outlines the significance of automation in alleviating routine office tasks and

introduces UiPath as a user-friendly tool for developing automated processes. [G. Karthikeyan et al. in 2022] highlighted the role of software robots (SRs) and the orchestrator in executing and monitoring tasks efficiently, emphasizing their accuracy and adaptability to various business functions. The applications section illustrates how UiPath can benefit different industries such as sales, banking, healthcare, public sector, manufacturing, retail, and telecom through examples like invoice development, KYC checks, and appointment scheduling. The implementation steps guide businesses in selecting suitable processes for automation, conducting feasibility assessments, gathering user stories, and initiating the development process. It emphasizes testing and refining the RPA process before deployment to ensure optimal performance. The benefits and advantages section emphasizes the productivity improvements, compliance enhancement, cost reduction, data accuracy, and scalability offered by UiPath implementation, underscoring its potential to streamline operations across various industries [2].

[A. Khare et al. in 2022] proposed the development of an E-Mail Assistant using Robotic Process Automation (RPA) to streamline email management and handling tasks. It addresses the significant time spent by office workers on email-related activities, highlighting the need for automation in managing email communications effectively. The proposed E-Mail Assistant aims to automate various tasks such as identifying senders, filtering out advertising emails, classifying emails into categories, and organizing attachments. It consists of several components including a Native Email Application Server, Email Processor Engine, and Segregated Mail Router, all working together to achieve efficient email management. The algorithm outlined by A. Khare et al. [3] describes the steps involved in configuring the E-Mail Assistant, including accessing emails, classifying and organizing them, and performing actions based on predefined rules. Future enhancements include incorporating machine learning techniques for image processing, OCR, and intelligent response generation. Challenges such as RPA maintenance and adapting to changes in user interfaces are acknowledged, with suggestions for optimization and future directions for research [3].

[B. Sindhura et al. in 2018] discussed the implementation of Robotic Process Automation (RPA) using UiPath tool to automate the backend process of feedback management. It introduces the concept of automation and highlights the advantages of RPA, including low risk, reliability, accuracy, cross-industry

applicability, consistency, and increased productivity. The methodology section outlines the steps involved in automating the feedback process, including HTML page development for login, survey, and thank you pages, table creation in the database for storing survey data, automation using UiPath Studio project, connecting to the MySQL database, and implementing email automation to send survey data to administrators. The future scope section emphasizes the growing adoption of RPA across various industries and highlights its potential in automating manual processes such as data entry, email sending, and rule-based tasks. It anticipates continued advancements in robotics science leading to RPA being capable of performing a wide range of operations currently done by humans [6].

[Y Ketkar et al. in 2021] explored the effectiveness of Robotic Process Automation (RPA) for data mining using UiPath as the tool of choice. It begins by highlighting the increasing reliance on automation to eliminate time-consuming and repetitive business processes. RPA technology is introduced as a solution, capable of simulating human interaction with Information Systems (IS) to perform tasks without human intervention. Key objectives of the study include demonstrating how RPA, specifically with UiPath, can efficiently collect data from various sources, including systems lacking API support. The design section outlines the construction of an RPA system using UiPath, emphasizing its user-friendly interface and integration capabilities with open-source libraries. Key findings indicate that RPA is effective in completing repetitive tasks with minimal errors, even in older legacy systems without API integration. Additionally, RPA tools like UiPath enable regular users with no programming experience to create and deploy software bots for data mining purposes. The benefits of RPA include improved workflow efficiency, scalability, and reliability, particularly for high-volume document-intensive processes [8].

III. METHODOLOGY

1) Workflow of Bot

Before proceeding to the implementation phase, one must be aware of the robot's workflow. Let's examine Fig. 1, which illustrates the basic workflow of the robot in relation to the automated process.

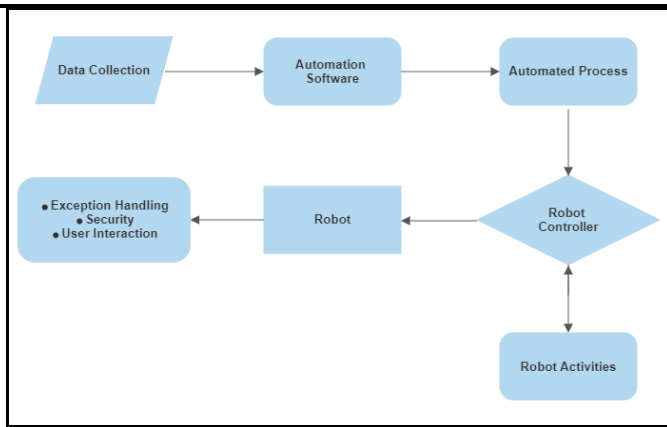


Figure 1: Workflow of Bot

The above figure outlines the different parameters required for an RPA (Robotic Process Automation) process.

- **DATA COLLECTION:**

Data Collection involves gathering data from various sources to automate tasks using RPA. The collected data is stored in structured data storage and utilized in different automated processes.

- **AUTOMATION SOFTWARE:**

Automation Software consists of computer programs or systems used to execute repetitive tasks and processes. It employs algorithms and artificial intelligence to minimize errors, save time, and enhance accuracy and efficiency.

- **AUTOMATED PROCESS:**

An Automated Process involves automating different tasks and workflows using RPA technology. This encompasses activities such as data entry, report validation, and sending reminder emails.

- **BOT:**

A Robot, also known as a software robot or "bot," is employed to automate repetitive tasks within various processes. These bots carry out tasks like data entry, invoice processing, etc.

- **BOT CONTROLLER:**

The Bot Controller is responsible for ensuring RPA bots operate efficiently and effectively. It serves as a central hub for orchestrating automated processes, monitoring performance, scheduling tasks, and handling exceptions.

2) Automated Process Workflow

Every automated process involves a workflow consisting of various activities within a single

process. Figure 2 illustrates the workflow for sending emails, which comprises several activities.

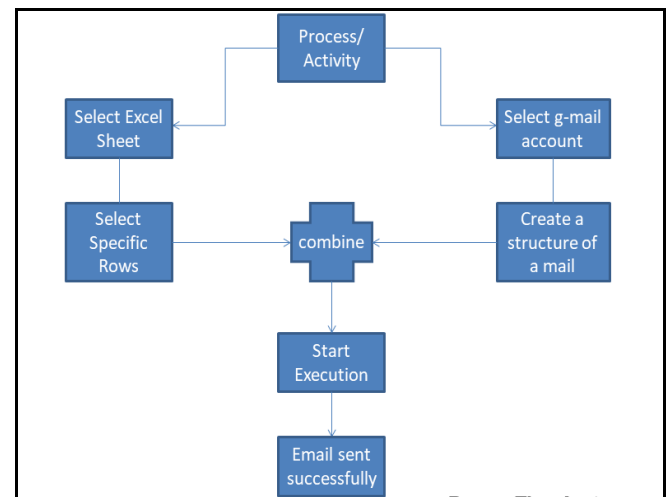


Figure 2: Process Workflow

The depicted workflow demonstrates how the email automation process operates. Let's explore the activities required for the Student Result Notification.

- **SELECT EXCEL SHEET:**

The "Select Excel Sheet" activity involves choosing the specific excel sheet from which various details such as email addresses, marks, and names will be fetched and utilized by other activities.

- **SELECT SPECIFIC ROWS:**

This activity involves selecting particular rows to access data in the excel sheet, such as the rows containing marks to be sent and the email addresses of the students' parents along with the students' names.

- **SELECT GMAIL ACCOUNT:**

The sender needs to select their Gmail account and grant all necessary GSuite permissions so that emails can be automatically sent to the email addresses listed in the excel sheet.

- **CREATE STRUCTURE OF MAIL:**

This activity allows the creation of the mail structure, including the mail body and subject. Once the subject and body are specified, they are utilized by the bots to send the emails.

By combining all the mentioned activities, a process is created and automated with the assistance of RPA Tools. During execution, emails are sent one by one to each email address listed in the excel sheet.

Additionally, to send the results as text message notifications to parents' mobile numbers, the email addresses mentioned above will be replaced with the parents' mobile numbers. It will be necessary to integrate with an SMS partner such as Twilio or Upwire to send messages automatically. However, all other activities and processes remain the same.

Using the activities mentioned above, the flowchart can be created as shown in the figure below. This figure is generated using UiPath Studio, with each activity executed sequentially.

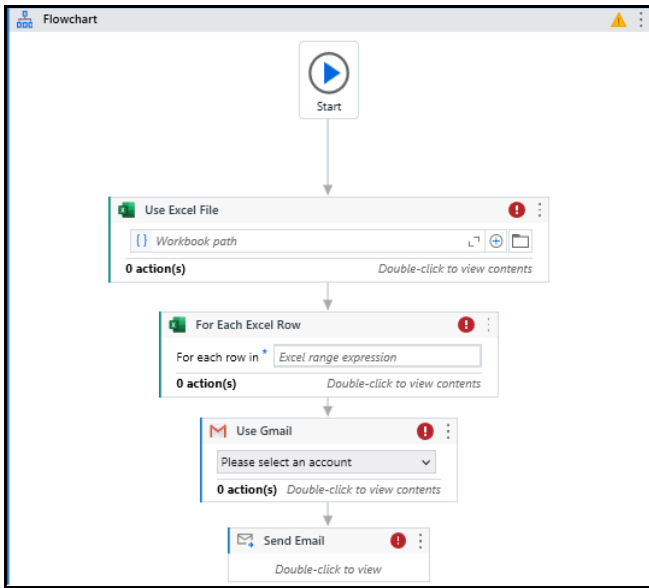


Figure 3: Email Notification Process Flowchart using UiPath Studio

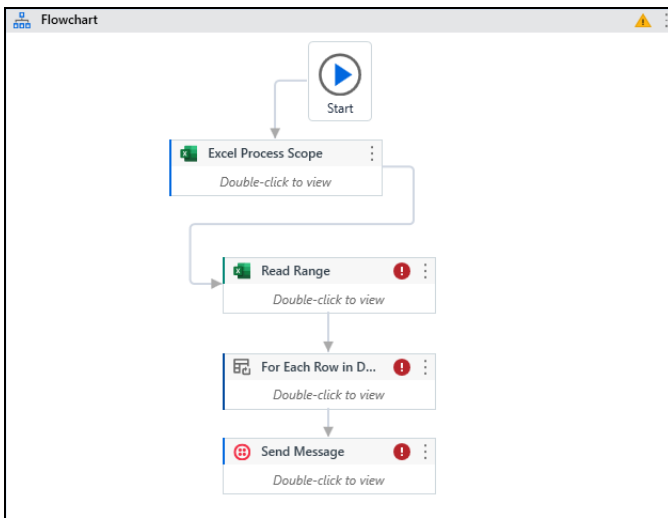


Figure 4: Text Notification Process Flowchart using Twilio

IV. Result

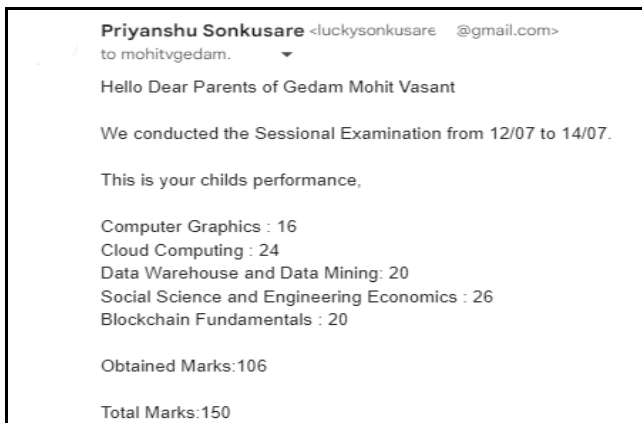


Figure 5: Email Sent using Email Notification

Figure 5 displays the output result of the Email Notification implemented through RPA, which automatically sends emails to multiple email addresses, including the relevant data for specific rows. These emails are successfully sent. Furthermore, Figure 6 illustrates the record of the sent emails once the execution is completed.

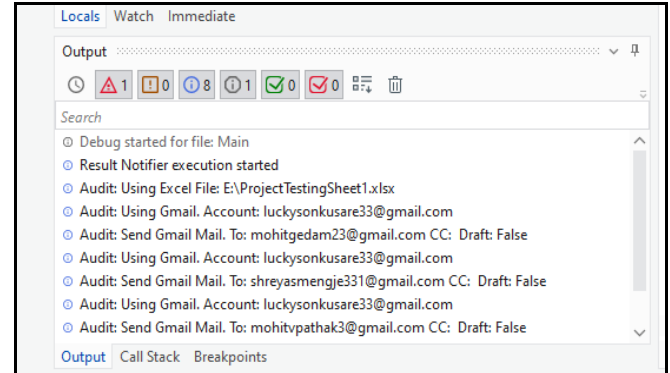


Figure 6: Email Sent Record

V. CONCLUSION

By using RPA, we can make the process of sharing students' academic results in schools much easier. This is especially helpful when dealing with a lot of students. Using RPA saves time and reduces mistakes since bots don't make errors like humans do. With RPA, we can also ensure that parents get accurate information about their children's grades. Each subject's marks will be included in the email or text message sent to the parents' email addresses or phone numbers. This makes the whole process smoother and more reliable for everyone involved.

VI. REFERENCES

[1] Kevin C. Moffitt, Andrea M. Rozario, and Miklos A. Vasarhelyi (2018) Robotic Process Automation for Auditing. Journal of Emerging Technologies in Accounting: Spring 2018, Vol. 15, No. 1, pp. 1-10.
 URL: <https://publications.aahq.org/jeta/article-abstract/15/1/1/9252/Robotic-Process-Automation-for-Auditing?redirectedFrom=fulltext>

[2] Gayathri Karthikeyan and M. Dhavapriya "UIPATH ANALYSIS IN ROBOTIC PROCESS AUTOMATION TOOLS" in International Journal of Creative Research Thoughts (IJCRT) in 2022
 URL: <https://ijcrt.org/papers/IJCRT2205912.pdf>

[3] A. Khare, S. Singh, R. Mishra, S. Prakash and P. Dixit, "E-Mail Assistant – Automation of E-Mail Handling and Management using Robotic Process Automation," 2022 International Conference on Decision Aid Sciences and Applications (DASA), 2022, pp. 511-516, doi: 10.1109/DASA54658.2022.9765017.
 URL: https://www.researchgate.net/publication/360342990_E-Mail_Assistant_-_Automation_of_E-

Mail Handling and Management using Robotic Process Automation

[4] Laurence Viale & Dorsaf Zouari (2020): Impact of digitalization on procurement: the case of robotic process automation, Supply Chain Forum: An International Journal, DOI: 10.1080/16258312.2020.1776089

URL: <https://hal.science/hal-03695535/document>

[5] Baratam Sindhura and Satyanarayana Mummana "ROBOTIC PROCESS AUTOMATION OF BACKEND PROCESS OF FEEDBACK USING UIPATH TOOL" in Anveshana's International Journal of Research in Engineering and Applied Sciences in 2018

URL: <https://publications.anveshanaindia.com/wp-content/uploads/2018/11/ROBOTIC-PROCESS-AUTOMATION-OF-BACKEND-PROCESS-OF-FEEDBACK-USING-UIPATH-TOOL.pdf>

[6] Leslie Willcocks, Mary Lacity, "The IT Function and Robotic Process Automation", in The Outsourcing Unit Working Research Paper Series, Paper 15/05, October 2015

URL: https://eprints.lse.ac.uk/64519/1/OUWRPS_15_05_published.pdf

[7] S. Park, A. X. Zhang, L. S. Murray, and D. R. Karger, "Opportunities for automating email processing: A need-finding study," in Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems, 2019, pp. 1–12.

URL: <https://dl.acm.org/doi/abs/10.1145/3290605.3300604>

[8] UiPath [Web Document]

URL: <https://studio.uipath.com>

[9] Yashodhan Ketkar and Sushopti Gawade "Effectiveness of Robotic Process Automation for data mining using UiPath" (2021)

URL: https://www.researchgate.net/publication/351450064_Effectiveness_of_Robotic_Process_Automation_for_data_mining_using_UiPath

[10] Jimenez-Ramirez, H. A. Reijers, I. Barba, and C. Del Valle, "A method to improve the early stages of the robotic process automation lifecycle," in Advanced Information Systems Engineering. Cham: Springer International Publishing, 2019, pp. 446–461.

URL: <https://www.springerprofessional.de/en/a-method-to-improve-the-early-stages-of-the-robotic-process-auto/16756912>

[11] S. Gupta, S. Rani, and A. Dixit, "Recent trends in automation-a study of rpa development tools," in 2019 3rd International Conference on Recent Developments in Control, Automation Power Engineering (RDCAPE), 2019, pp. 159–163.

URL: <https://toc.proceedings.com/52499webtoc.pdf>

[12] R. Uskenbayeva, Z. Kalpeyeva, R. Satybaldiyeva, A. Moldagulova, and A. Kassymova, "Applying of rpa in administrative processes of public administration," in 2019 IEEE 21st Conference on Business Informatics (CBI), vol. 02, 2019, pp. 9–12.

URL: <https://www.semanticscholar.org/paper/Applying-of-RPA-in-Administrative-Processes-of-Uskenbayeva-Kalpeyeva/47d4e920d86918a0308e8249dd2b4649f76af497>