Student Result Administration System Using RPA

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ABSTRACT - This project, Student's Results Administration System was carried out to automate the manual processes of compiling Students Examination Results. The system was designed to automatically take raw scores from excel files and store them in a database. Getting information and quickly turning it into a product that consumers want is the essential key to staying in business and all of this is done nowadays using computers and applications or information systems. And the education system is undeniably the backbone of the society, it focuses at preparing the young talents for the future. Robotic Process Automation (RPA) is a technology that is being increasingly used as a tool that allows users to automate, manage and update existing databases efficiently [9]. This paper highlights how RPA is being used to integrate repetitive tasks within an ERP system and automate many of the processes that exist when managing a Student Management System. The solution allows faculty and admin to automatically convert the pdf files into excel format. The essence is to design an efficient computerized system that will replace manual result processing which is prone to a lot of paperwork and errors. This reduces the tedious tasks involved.

KEYWORDS - *RPA, ERP, LMS, data extraction, read pdf text, read text file, write text file.*

I. INTRODUCTION

The Student Administration System is generally an ERP based solution that handles information related to the students. This solution has been designed into modules and provides a plethora of information. The system keeps up-to-date marks records of the entire student body in the Department. But the installation of the ERP system is costly. ERP consultants are very expensive, and it takes approximately 60% of the budget. The success depends on the skills and experience of the workforce, including education and how to make the system work properly. Hence, to support procedures like registration, data upload, RPA has also been extensively used to process manual processes. This has not only automated everyday repetitive processes with little or no human intervention but has also improved the efficiency of the Student Management System. Robotic process automation is a form of business process automation technology based on metaphorical software robots or on artificial intelligence/digital workers. It is sometimes referred to as software robotics. It is the combination of several technologies, brought together under one toolkit for different automation purposes. Though the term 'RPA' emerged in the early 2000s, the initial development was started after the 1990s. So, we have used RPA in our project for easy automation so that the workload for the teachers reduces, to save time and to avoid manual errors in the result.

Student Information Management has been traditionally managed using ERP based database solutions. For student records to be continuously updated it requires a permanent operator to update the records. While data entry is a known risk that has the capability to be mitigated through query-based up-dating or macros. The application will manage the result information about students enrolled in this course in different years, the subjects opted, the marks obtained, etc. The application will greatly simplify and speed up the result preparation and management process. **RPA** is a technology that not-only automates the processes but also provides business swiftness.

To develop a system that will manage information about the students from all branches and Information about subjects offered in various semesters. Marks obtained by Students in semesters and the generation of reports. The main objective of the Project on Student Result Management System is to manage the details of Student, Result, Subject Class, Semester. It manages all the information about Student Subject, Semester, Student. The project is totally built at the administrative end and thus only the administrator is guaranteed access. The purpose of the project is to build an application program to reduce manual work. Despite having an application that generates the result, it is not very effective as the system consumes a lot of time and human resources in performing various tasks, it is costly, it lacks data security and efficiency. And at present, the institution needs an

advanced and computerized environment. And once implemented, it will minimize all the problems mentioned.

II. LITERATURE SURVEY

In April 2020, Vrushil Gajra, Khwajaavais Lakdawala, Rahul Bhanushali, Dr. Sunita Patil proposed a Result Management System in which the significant advantage of the Automated Student Management System is that the institute can keep a track of data related to users [1].

In July 2021, L Varun Ramesh, R Sai Anusha Priyanka, SNSS Venkata Lakshmi, V Mounika proposed a Result Management System which is an online website that can be used at any place, any time and by any student or faculty. This application will avoid the calculation and simplify the process of visualizing results by students as well as faculty [2].

In October 2018, Mohammad Gulam Lorgat proposed a Web-Based Student Result Management System which will allow the teachers to grade the students even from home, then automatically perform the grades calculation, and the students could easily access and print them [3].

In February 2020, Prof.Rohit.A.Kautkar , Tejas Vispute, Mayureshvar Jadhav, Sanket Wankhede proposed a Result Management System in which the application can help the staff to Perform various operations on the result like insert , update, delete and view result etc. very easily[4].

In February 2020, J. G. ENRÍQUEZ, A. JIMÉNEZ-RAMÍREZ, F.J. DOMÍNGUEZ-MAYO, J.A. GARCÍA-GARCÍA(IEEE) proposed Robotic Process Automation. The automation of robotic processes has been an increasing trend of interest in recent times. A ''robot'' corresponds to a software ''robot'' corresponds to a software program. For business processes, the objective of RPA is to tackle repetitive tasks, quickly and profitably [5].

In October 2017, UDEZE, CHINEDU L.: UMOREN, PAUL U.; OHERI, HENRY E.; and ATTAH HONESTY H. proposed an Automated Students' Results Management Information System (SRMIS). The aim was to automate the manual processes of compiling results. It automatically takes scores from excel files and stores them in a database. It uses past results to help the next course registration prior to results upload [6].

Shana and Venkatachalam have proposed a framework named Faculty Support System (FSS) which is low in cost as it uses cost effective open-source analysis software, WEKA to analyze the students' performance in a course offered by Coimbatore Institute of Technology of Anna University [7]. FSS can analyze the students' data dynamically as it is able to update students' data dynamically with the flow of time to create or add a new rule. The update of the new rule is possible with the help from domain experts and the rule is determined by data mining techniques such as classification techniques. Classification technique is used to predict the students' performance. Besides, FSS focuses on the identification of factors that contribute to performance of students in a particular course.

Student performance analysis system (SPAS) was published by Chew Li Sa,Dayang Hanani bt. Abang Ibrahim,Emmy Dahliana Hossain,Mohammad bin Hossin in the year 2015 [8]. This project proposes a system named Student Performance Analysis System (SPAS) to keep track of students' results in the Faculty of Computer Science and Information Technology (FCSIT).

III. PROPOSED SYSTEM

Robotic process automation (RPA) is a software-based technology utilizing software robots to emulate human execution of a business process. This means that it performs the task on a computer, uses the same interface a human worker would, clicks, types, opens applications and uses keyboard shortcuts. It reduces human error and costs. Foibles to which human workers are prone particularly during long repetitive tasks caused by tiredness and boredom are completely mitigated with RPA. This results in work that is more accurate, timely and consistent, ensuring that time and money is not lost correcting old work or creating duplicates [10].

RPA technology can be used to convert the student result pdf file to excel sheets. It has also been found to be critical in automating processes within an ERP system. Using RPA, the Student Result Management within an ERP system can be efficiently managed with no errors. But the installation of the ERP system is costly. ERP consultants are very expensive, and it takes approximately 60% of the budget. The success depends on the skills and experience of the workforce, including education and how to make the system work properly. Hence, we prefer Robotic process automation (RPA). It is a software technology that makes it easy to build, deploy, and manage software robots that emulate human actions interacting with digital systems and software. Just like people, software robots can do things like understand what's on a screen, complete the right keystrokes, navigate systems, identify, and extract data, and perform a wide range of defined actions. But software robots can do it faster and more consistently than people, without the need to get up and stretch or take a coffee break.

3.1 Proposed Architecture

The website will have a common page that everyone can view. Admin will have a unique username and password using which they can login. Once login is successful, the dashboard will be shown. From there, the admin will choose a year. Now for the particular year, the admin will choose which department's result they want to upload. A folder has been provided on our website that contains the link for the pdf conversion. Using the provided link, the user can go to RPA and upload the result's pdf file. They'll get the required excel file in which all the marks from the pdf will be

converted to excel format. This excel file will then be uploaded to the website.
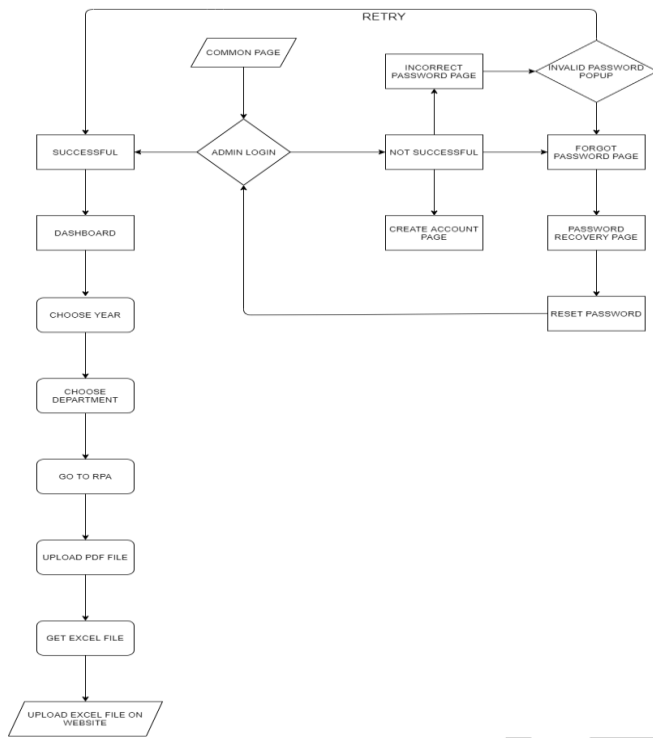

Fig. 1 Flow chart
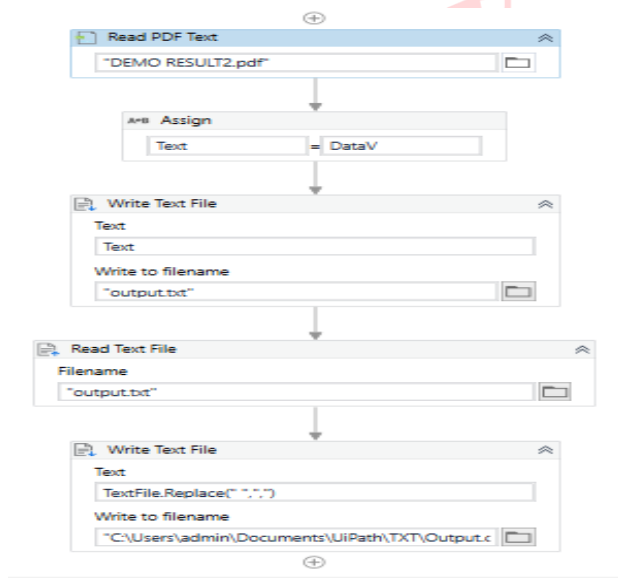
3.2 Algorithm and process design

Fig. 2 Process design

We have created a workflow that helps convert pdf files into excel form using UiPath. This workflow will be readily available for the teachers on our website. In this workflow, first we have used the read pdf files action which helps to read the pdf that will be uploaded by the teacher. This pdf file will be first converted into a text document using the action write text file. From there, the contents of the pdf will be read using the read text file action and would be further converted into the desired excel format.

IV.   RESULTS FOR VALIDATION AND VERIFICATION

A functional result administration system was developed using HTML, CSS and JavaScript as the client-side. The database used in the Student Result Administration System was designed with Firebase. All the information pertaining to the Student Result Administration System is stored in the system database. The sample output/results are shown in the various screen shots presented in this section.
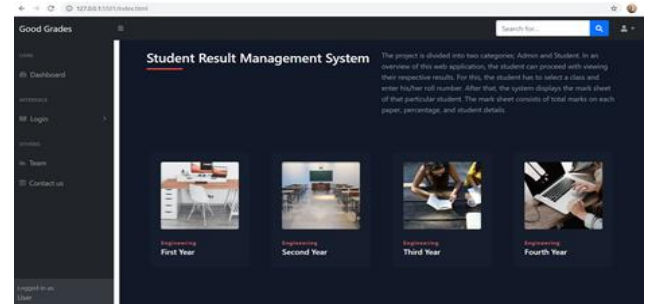
Fig. 3 Main Page

This is the main page which will be visible to all the users - the admin or any other user.
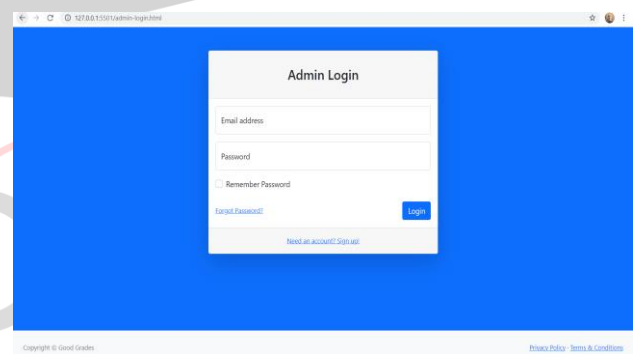
Fig. 4 Admin Login

Admin will have a unique username and password provided by the college using which the admin can login.
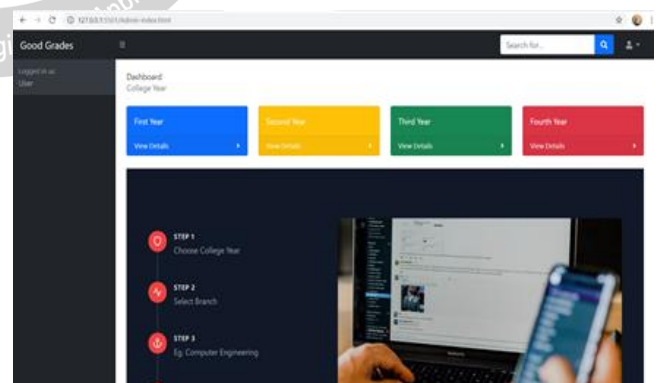

Fig. 5 Admin Page

This is the page that would be visible to the admin. Here, there will be student's results from 1st year to 4th year accordingly. The admin can select any particular year and view the results.
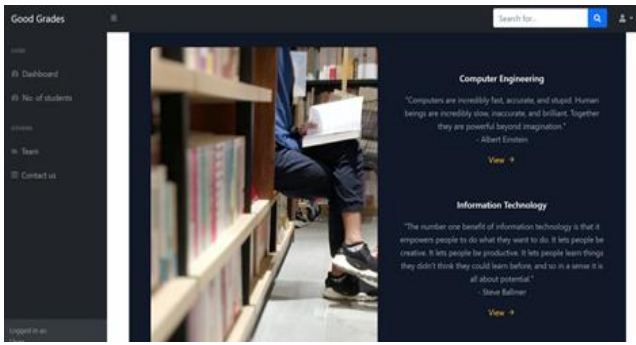
Fig. 6 Branch Section

After selection of the year, the year's branches will be available. To view the results of a particular branch, the admin must click on the view option.
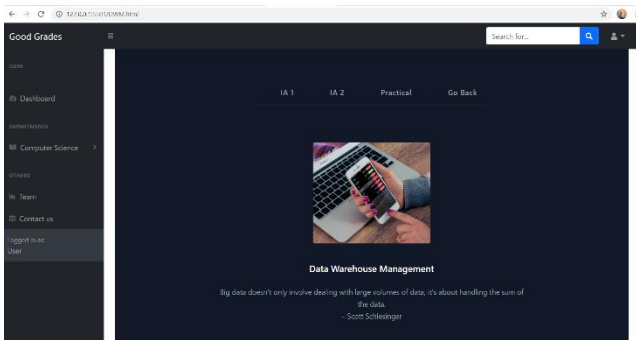

Fig. 7 Marks Updation

The admin can update or edit the marks if needed.
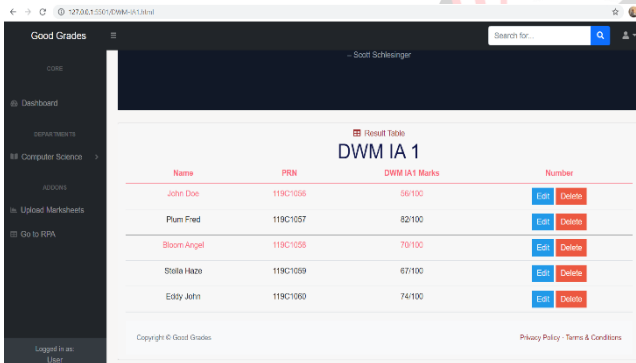

Fig. 8 Editable Table

If there are any corrections in the marks of any student, it can be edited by clicking on the editing button and entering the correct mark. Also, any information can be deleted and added too.
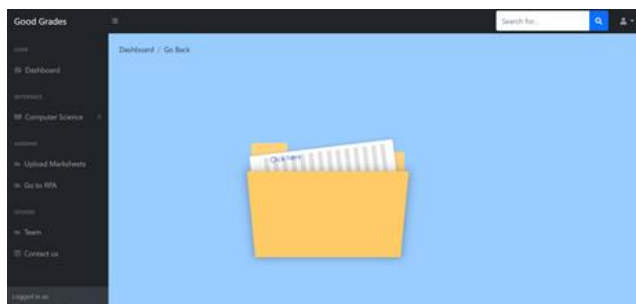

Fig. 9 Flowchart Folder

This folder will contain the link to the flowchart that was made to convert the pdf files into excel documents.
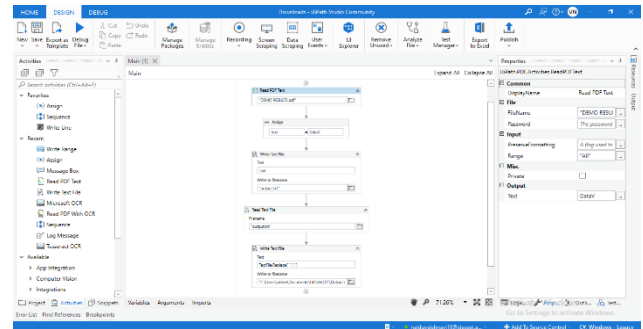

Fig. 10 Flowchart for pdf conversion (UiPath)

The user must upload the pdf which is to be converted into excel format in the already available workflow. After running the file, the desired excel sheet will be obtained.
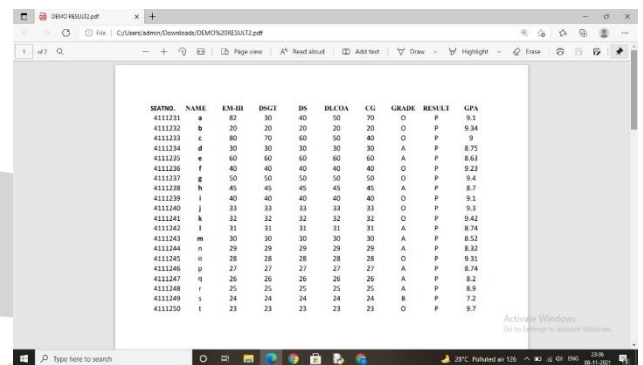

Fig. 11 Sample result pdf

For the demonstration, we have taken a sample result pdf file that will be converted into an excel sheet using our workflow.
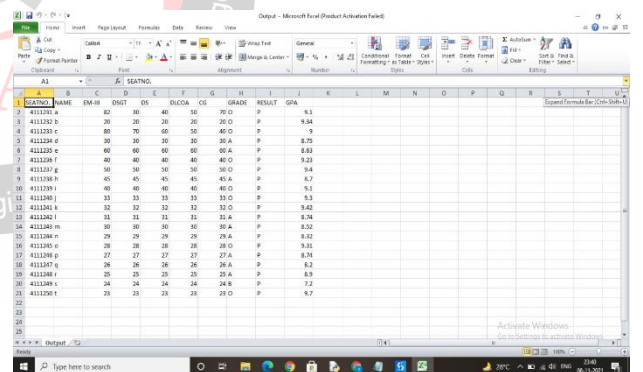

Fig. 12 Pdf converted to excel using UiPath

This is the result obtained after running the sample result pdf in the workflow made in UiPath.

This whole system comprises data such as student details, student result, etc. Faculty can completely track student performance and can communicate with the student in person. Users can have complete access to the system but with certain limits. With this system, human interventions can be minimized.

V.   CONCLUSION

It is concluded that the system will work well and thus, it will

fulfill the end user's requirement. This system is going to be user friendly so that everyone can use this application easily with less or no errors. And the objectives were achieved by following a process model such as system analysis, design, and system implementation. The system analysis was composed of two activities, requirement determination and structuring. The first activity focused on the collection of data or requirements through structured interview, work environment observation and by collecting procedures and other written documents. Thus, using RPA technology can reduce the tedious work and hence relieves the stress of result data entry from the faculty. While an attempt has been made using RPA as the backend technology, there are few areas that require further research especially related to the integration of unstructured data and providing necessary research ideas. An example is the integration and analysis of high volumes of data that uses RPA technology with AL and ML technologies. This involves efficient queries, calculations, and maintenance of records and transactions. In the near future, the system interface could be improved, with more attractive, interactive and meaningful images. Enhance the current system by computerizing almost all the services provided by the institution, turning it into a complete LMS and evolve the system by developing several versions through user feedback, if a complete solution has not been worked out.

VI.   ABBREVIATIONS AND ACRONYMS

SRAS - Student Result Administration System

LMS - Learning Management System

ERP - Enterprise resource planning

RPA -Robotic Process Automation

VII.   ACKNOWLEDGMENT

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