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ROBOTIC PROCESS AUTOMATION FOR RESULT ANALYSIS: USING UIPATH

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Abstract: Robotic Process Automation (RPA) has received growing attention within the digital transformation. However, the adoption in the educational sector is hardly been explored. The traditional method of result analysis has certain drawbacks. Checking a large number of student results and storing the data in an excel file will be very difficult. It is not time efficient as the process is repeated for each student.

There is no automated technology that is implemented for such a process. In this project, we are using RPA technology which automates the process and is very useful for the educational institute. RPA is used to get rid of human tasks, every automation is supposed to achieve something, so knowing and defining that end goal is important. It is specially designed to collect, record, store, and display results. Instead of recruiting and training new employees, software bots support and replace human operators by automating their behaviour.

Keywords: Robotic Process Automation, UiPath.

INTRODUCTION

Robotic process automation (RPA) is a technology used for software tools that automate human tasks, which are manual, rule-based, or repetitive. Typically, it is like a bot that performs such tasks at a much higher rate than the human alone. These software bots make zero mistakes and can interact with in–house applications, websites, user portals, etc. Robotic process automation is a form of business process automation technology based on metaphorical software robots (bots) or artificial intelligence (AI)/digital workers. It is sometimes referred to as software robotics.

In traditional the workflow automation tools, a software developer produces a list of actions to automate a task and interface to the back-end system using internal application programming interfaces (APIs) or dedicated scripting language. RPA systems develop the action list by watching the user perform that task in the application's graphical user interface (GUI) and then perform the automation by repeating those tasks directly in the GUI. This will be lower for the barrier to the use of automation in products that might not otherwise feature APIs for this purpose.

RPA tools have strong technical and graphical user interface testing tools. These tools also automate interactions with the GUI and by repeating a set of demonstration actions performed by a user. RPA tools differ from such systems in that they allow data to be handled in and between multiple applications, receiving the email containing an invoice, extracting the data, and typing that into a bookkeeping system. The robot uses keyboard and mouse controls to take actions and execute automation. All of these actions take place in a virtual environment and not on screen; the robot does not need a physical screen to operate, but it interprets the screen display electronically.

TOOL USED: UiPath

RPA tools are the software that helps users to configure various tasks to get automated. One of the best tools for automation is UiPath. UiPath is a highly extensible Robotic Process Automation tool that helps to automate desktop or web applications. It provides multiple hosting options, such as cloud environments, virtual machines, and terminal services. UiPath is a software company that makes robotic process automation software. The company's software monitors user activity to automate repetitive front and back-office tasks, including those performed using other business software such as customer relationship management or enterprise resource planning software.

UiPath develops software to automate repetitive digital tasks normally performed by people. The technology combines emulating how humans read computer screens with APIs and gives users access to prebuilt automation components that can be combined to automate routine processes. Its earlier products simplified tasks performed using other business software such as CRM or ERP systems, in internal and back-office areas like accounting, human resources paperwork, and claims processing.

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Newer applications for the company's software include coordinating with artificial intelligence systems to simplify repetitive front office tasks including customer management.
Additional available software includes:
1) UiPath AI Centre
2) UiPath Action Centre
3) UiPath Assistant
4) UiPath Automation Hub
5) UiPath Document Understanding
6) UiPath Insights
7) UiPath Process Mining
8) UiPath StudioX
9) UiPath Test Suite

I. LITERATURE SURVEY

Paper 1: Robotic Process Automation of Operations in an Organizations using UiPath
Author: Anvesh Reddyannem, Satyanarayana Mummana
Year: 2018
In this paper, Sending Emails at a time to the employees automatically regarding their work. In the future scope of RPA can be observed in the field of data entry jobs. Today ‘s IT functions experience multiple, often conflicting, pressures and demands. Business pressures are now intense. The high-profile area is business-IT alignment. This is very difficult to achieve, with dynamic business contexts leading to constantly changing requirements. IT functions are now judged increasingly on business metrics in terms of quality, responsiveness, business value, end-customer service and satisfaction, cost efficiency, fit with business needs, and time to market. IT functions are also judged by increasingly knowledgeable, IT literate, and demanding users at _coalface ‘operational levels. RPA does not require changing the existing IT systems, as robots mimic human behavior. Thus, robots can operate fully within the user interface (UI), leaving IT systems unchanged.

Paper 2: Robotic Process Automation in purchasing and supply management: A multiple case study on potential, barriers and implementations.
Authors: Christian Flechsig, Franziska Anslinger, Rainer Lasch
Year: 2020
It maintains the supply of each product and it also manages the purchasing of the product automatically. This process is not that accurate the chances are that the product can be misplaced. We received rich and comprehensive empirical data by examining eleven RPA adopters (including the consultancies) and eight nonadopters (including those with adoption plans). Based on the triangulated primary and secondary data, we categorize the participating private and public organizations regarding their RPA experience, digital procurement readiness, and maturity level of PSM digitalization. RPA experience comprises the aggregated information on RPA maturity, i.e., the number and scope of completed and planned projects, the number of deployed bots in the procurement department, and the extent of automated PSM transactions.

Paper 3: Turning Robotic Process Automation into Commercial Success –Case OpusCapita.
Authors: Asatiani A, Penttinen E
Year: 2016
It automates invoice processing, bookkeeping, or data entry in the Commercial Sector. It cannot keep the backup of all the records. Advocates of RPA frequently present it as a replacement for outsourcing. A company is typically looking to outsource routine, non-core tasks requiring a lot of FTEs (full-time equivalent) 2, such as invoice processing, bookkeeping, or data entry, to low-cost destinations such as India. While outsourcing helps to reduce staff costs and concentrate on core operations, there are some challenges to outsourcing such as hidden costs of management, communication problems, and overwhelmingly complex service level agreements. The promise of RPA is not only to reduce costs even further (robots can work around the clock with no salary), but also to eliminate the problems with management and miscommunication. However, estimates of RPA-related cost savings vary greatly.

Paper 4: Automating Student Management System Using Chatbot and RPA Technology.
Authors: Vrushil Gajra, Khwajaavais Lakdawala, Rahul Bhanushali, Dr. Sunita Patil
Year: 2020
It is an ERP-based solution like Student Profile/Faculty Profile, Marks Submission, Attendance Record, Record of Examination Result, Record of student and faculty detail, Time table management. Currently, the system can perform

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Create, Read, Update and Delete Operations. But shortly system will be able to function in all kinds of SQL Operations in database-related systems.

Paper 5: Automation of a Business Process Using Robotic Process Automation (RPA): A Case Study
Authors: Santiago Aguirre and Alejandro Rodriguez
Year: 2017
It automatically generates the payment receipt process. Error reduction is also a measure, that although not measured in the case study, could be improved by RPA. RPA applications have been reported over the last 5 years in the business process like accounts payable, accounts receivable, travel expenses, fixed asset accounting, master data management, billing, and keeping employee records, among others. Most of these processes are back office or support processes for services where the customer is not directly involved.

Paper 6: Bank Reconciliation Bot
Authors: Nilesh Iyer, Harsh Gori, Diksha Kumawat, Uday Rote
Year: 2019
It Automates the tasks such as - Personal Loan Reconciliation, - Personal Accounts Reconciliation, - Credit Card Reconciliation. In the future, more net banking features can be added. By implementing a chatbot we intend to reduce the time spent by individuals interacting with the system and minimize the efforts of an individual. This chatbot will be capable of answering basic questions like finding the account balance of an individual, finding the details of the transaction, resolving any other banking-related query, and will be able to perform the reconciliation task.

Paper 7: Robotic Process Automation: A Scientific and Industrial Systematic Mapping Study
Authors: J. G. Enriquez, A. Jimenez -Ramirez, F. J. Dominguez-Mayo, and J. A. Garcia-Garcia
Year: 2020
Here, it is used to generate automatic messages to the customers after purchasing any product or after successful payment of the money digitally. Another important research line is related to software testing. In traditional software development methodologies, testing environment before deployment in the production environment, however, this environment is rarely offered in RPA, which involves a high risk for the deployment phase. When running an automated process, it is fundamental to ensure that there are no errors during the execution of the robots in production environments. phase. When running an automated process, it is fundamental to ensure that there are no errors during the execution of the robots in production environments.

II. PROPOSED SYSTEM

Considering the traditional method of analysing the result for a large number of students is a complex process. By doing it manually, the data can be misplaced and time-consuming. The adoption of RPA still lags in a few sectors such as the educational sector, accounting, or human resource management. The above-said problems can be reduced with the help of RPA.
Each industry should aware of where RPA is applicable and what values it can offer to their business given the evolution of the operating model as well as the IT landscape. Here are the most significant of those benefits:
1. Increase Productivity: Most of the robots made from the RPA system are fully focused on specific tasks.
2. Increase Efficiency: RPA software never needs a break – it can work 24 hours a day, seven days a week, and 365 days a year. Similarly, it does not take a vacation or fall sick. Generally, a single RPA robot can be equal to two to five full-time employees, and even more.
3. Increase Security: Since employees are human, there is a chance for mistakes. The main feature of robotic process automation is its power to eliminate processing errors. As it is not a turn-key solution, it requires testing, training as well as governance. However, as long as the business processes are properly optimized and accurately mapped, businesses need not be concerned that the robots will make errors that their employees might.
4. Enhance Accuracy: Among the benefits of robotic process automation, the most convincing one is that it functions on a granular level. As the bot performs only single tasks, there is no worry of information leakage from one part to another. Here, the data accesses are well controlled and documented. The most ignored factor in RPA implementation is the myth that robots may replace the need for human employees. However, RPA implementation demands the employees who handle the system with the skills to control a workforce that includes both people and machines.
5. Boost Scalability Opportunities: Robotic process automation offers flexibility to adapt to what the moment demands in means of the type and the number of tasks needed for any given objective. Robotic automation can support businesses to accommodate the selected requirements of certain objectives. Since the robotic workforce is adjustable to time- and task-specific requirements, even smaller businesses can manage the unpredictably evolving market demands.

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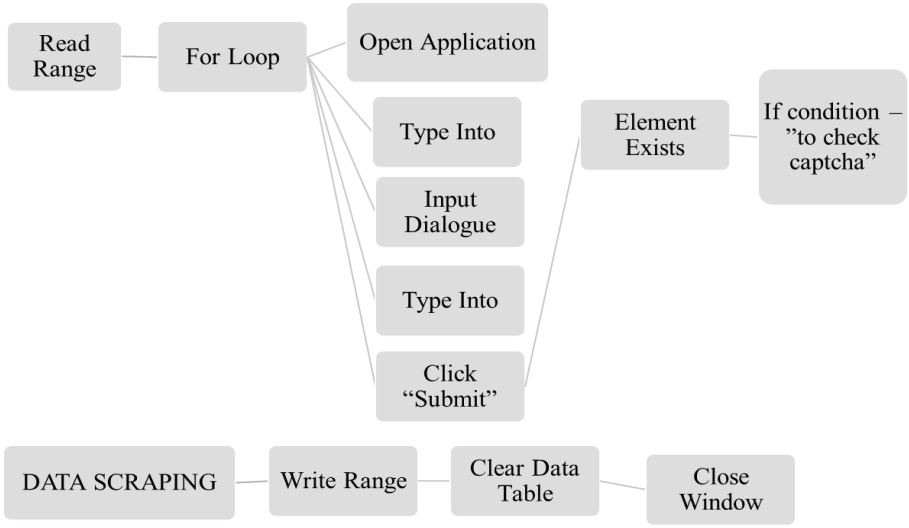
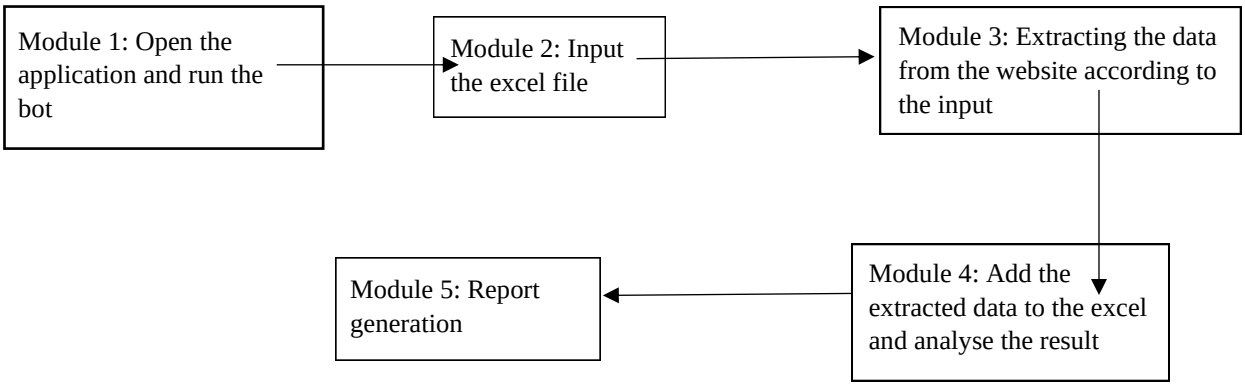
By the end of this project work, we can do the result analysis automatically and report to the whole class/section. Here the teachers can easily do the result analysis.
The objective of this project is to collect the results of each student from the website and store them.
Then we analyse the results of the students according to each subject and marks obtained. The results of overall students can be represented in a bar chart



III. FLOW CHART



IV. IMPLEMENTATION

The entire project is divided into five modules. Each module consists of:

What is a Bot?
RPA bots, or just "bots", are software programs that you set up to do digital work. They're not just simple chatbots - they're a Digital Workforce. RPA bots can interact with any system or application the same way a human worker would. It's as simple as showing your bots what to do, then letting them do the work.

MODULE 1: Open the application and run the bot.
In this module, we need to install the latest version of the UiPath Application from the website. Then enter the basic details and create an account in the UiPath to open the application. In the application, we will be creating a sequence of our project by adding the necessary activities. After completing the entire project sequence, we need to save the project and run the bot.

Module 2: Input the excel file

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The first step of the project sequence is to input the excel file. The excel file consists of the USN (University Seat Number) of a class. The activity which is used to read the USNs from the excel sheet is "Read Range Activity".
After reading the USNs from the excel sheet, we will use the "Type Into Activity" and write the individual USN into the VTU result website. The Captcha is entered manually using the "Input Dialog Box Activity". If the Captcha is entered incorrectly, there will be another chance to renter the Captcha and click Submit.

Module 3: Extracting the data from the website according to the input
After submitting the USN and Captcha, we will be redirected to the Result Page of each USN. The second step of the project sequence is to extract the student result data from the website. By using the "Web Scraping Activity" we will be extracting the student marks along with their names.

Module 4: Add the extracted data to the excel and analyze the result
In this module, the scrapped data will be written into each excel sheet according to the USN. There will be a status column in the input excel sheet which indicates if the data is scrapped completely or not. The scrapped marks of individual students will be written in the desired format in the excel sheet.

Module 5: Report generation
In this module, a report will be generated in the form of a Bar graph. The bar graph is created concerning the Subject Code and the Total Pass Percentage of the entire class.

V. TESTING AND DEBUGGING

RPA is software. It goes through all the software development stages, including testing. RPA testing deals with issues that are typically discovered in production but aim to do it as early as possible in the process.

UiPath Test Suite offers a complete solution for RPA testing during automation development, as well as during integration and before moving it into production. Depending on the deployment model, RPA testing can be integrated with a continuous integration environment. But the first goal of RPA testing—at least chronologically—is to address application issues and automation issues as early as possible, in the RPA development phase.

Automation projects often deal with business applications not having separate non-production environments. In such cases, testing the RPA workflows during development can become risky, through the effects in production, or costly, through the special resources needed.

Mock testing, or mocking, offers a way of replacing dependencies by creating objects that simulate the behavior of real objects. These objects are typically out of scope for the testing effort, at least in the unit testing stages.
In the UiPath automation Debugging is the process of identifying and removing errors in the application. It is done to make sure the applications are error-free. Breakpoints are used to pause the project execution to check the state at a given point.

Debugging of a single file or whole project can be performed by using a debug option. There are 3 debugging processes:

1. Step Into
2. Step Over
3. Step Out

Step Into: The Step Into is used for debugging one activity at a time. When this action is triggered, the debugger opens and highlights the activity before it is executed. The Step Into will execute all the activities present in an activity

Step Over: When used, the action debugs the next activity, highlighting containers (such as flowcharts, sequences, or Invoke Workflow File activities) without opening them.

Step Out: The Step Out completes the execution of activities in the current container, before pausing the debugging. This option works well with nested sequences.

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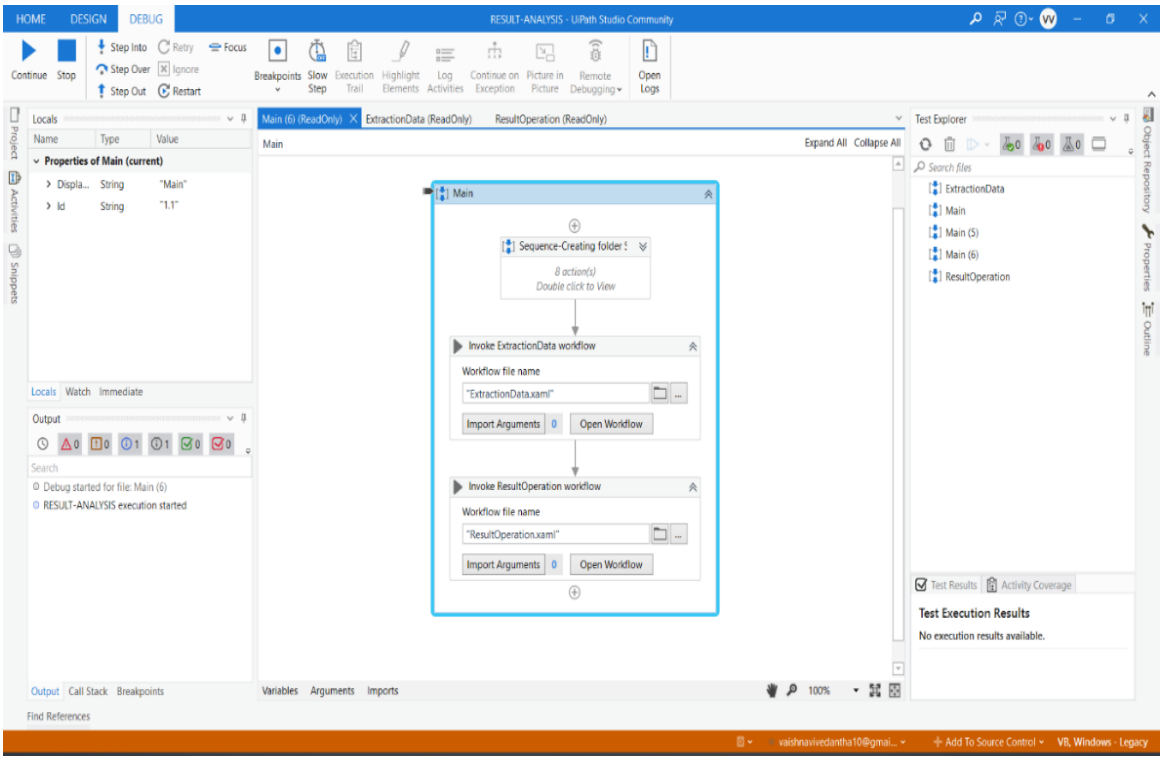

VI. RESULT

RPA bots hold promise in helping academic institutions automate repetitive tasks and improve operational efficiency. In this paper, using the RPA bots we were successfully able to perform the result analysis for the entire class. We were able to retrieve the marks from the VTU website, the scrapped data was added in the desired format in the excel sheet and the result analysis was performed in the form of a bar graph using the Subject code and the Total pass percentage.

	A	B	C	D	E	F	G
1	Subject Code	Subject Name	Internal Marks	External Marks	Total	Result	
2	18IS61	FILE STRUCTURES	47	26	73	P	ABHISHEK RAI
3	18IS62	SOFTWARE TESTIN	47	26	73	P	
4	18CS63	WEB TECHNOLOGY	40	26	66	P	
5	18MAT653	ADVANCED LINEAR	50	26	76	P	
6	18CS643	CLOUD COMPUTIN	45	26	71	P	
7	18ISL66	SOFTWARE TESTIN	44	26	70	P	
8	18ISL67	FILE STRUCTURES I	43	26	69	P	
9	18CSMP68	MOBILE APPLICATI	48	26	74	P	
10							
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1AT18IS001 | 1AT18IS002 | 1AT18IS003 | 1AT18IS004 | 1AT18IS005 | 1AT18IS006

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ANANDNAGAR, BANGALORE

RESULT OF BE STUDENTS 2018-22

BRANCH: INFORMATION SCIENCE ENGG.

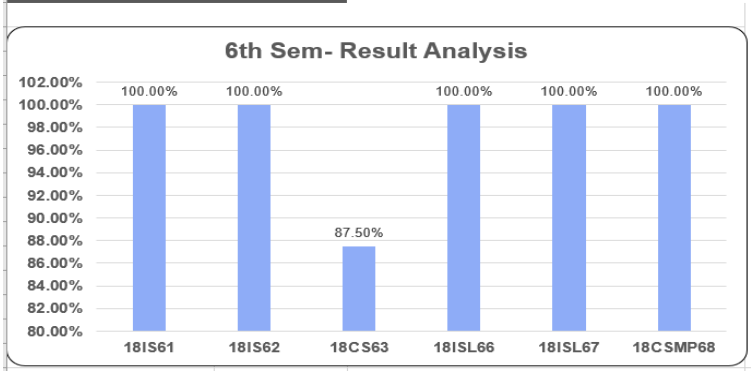
				6th Sem Subjects																			
Sl.No.	USN	Name of the candidate	Gender	INT	EXT	Total	Result	INT	EXT	Total	Result	INT	EXT	Total	Result	INT	EXT	Total	Result	INT	EXT	Total	Result	INT	EXT	Total	Result
				18IS61				18IS62				18CS63				18ISL66				18ISL67				18CSMP68			
1	1AT18IS001	ABHISHEK RAI		47	26	73	P	47	26	73	P	40	26	66	P	44	26	70	P	43	26	69	P	48	26	74	P
2	2	1AT18IS002	AJAY HEGDE	48	28	76	P	49	28	77	P	42	28	70	P	42	28	70	P	44	28	72	P	42	28	70	P
3	3	1AT18IS003	AKSHAY GOLE	47	31	78	P	47	31	78	P	43	31	74	P	45	31	76	P	45	31	76	P	42	31	73	P
4	4	1AT18IS004	AMRUTA ASHOK NAIK	49	33	82	P	50	33	83	P	45	33	78	P	47	33	80	P	43	33	76	P	44	33	77	P
5	5	1AT18IS005	AMRUTHA M	50	32	82	P	50	32	82	P	48	32	80	P	48	32	80	P	40	32	72	P	40	32	72	P
6	6	1AT18IS006	AMSHU S GAJENDRA	47	26	73	P	44	26	70	P	45	26	71	P	42	26	68	P	35	26	61	P	45	26	71	P
7	7	1AT18IS007	ANAGHA J A	50	33	83	P	50	33	83	P	50	33	83	P	44	33	77	P	48	33	81	P	47	33	80	P
8	8	1AT18IS008	ANAND SHANKAR	48	26	74	P	44	26	70	P	45	26	71	P	42	26	68	P	44	26	70	P	44	26	70	P

VII. CONCLUSION

From the proposed system, we can conclude that Robotic Process Automation for Result Analysis: Using UiPath will be of great advantage to the faculties to reduce their time and effort. The system will help to reduce the time to log in to the website and type the individual student marks and produce the overall result of the class. Reducing the unnecessary time to compute, increases the overall accuracy and efficiency of the system. This system minimizes the efforts of faculty to copy individual marks from the website to the excel sheet. We believe this Robotic Process Automation for Result Analysis: Using UiPath will help faculties to reduce time.

Subject Code	Total Pass	Pass %
18IS61	8	100.00%
18IS62	8	100.00%
18CS63	7	87.50%
18ISL66	8	100.00%
18ISL67	8	100.00%
18CSMP68	8	100.00%

Total Students	8



VIII. ACKNOWLEDGEMENT

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