EDUBOT: AUTOMATED SUPPORT TICKET MANAGEMENT FOR EDUCATIONAL INSTITUTIONS

A PROJECT REPORT

Submitted by

KARISHMA KANNADASAN (210701106)

in partial fulfillment for the course

CS19P21 - ADVANCED ROBOTIC PROCESS AUTOMATION

for the award of the degree
of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

RAJALAKSHMI
ENGINEERING COLLEGE
An AUTONOMOUS Institution
Affiliated to ANNA UNIVERSITY, Chennai

NOVEMBER 2024

BONAFIDE CERTIFICATE

Certified that this project **"EDUBOT:AUTOMATED SUPPORT TICKET MANAGEMENT FOR EDUCATIONAL INSTITUTION"** is the bonafide work of **"KARISHMA KANNADASAN –210701106"** who carried out the project work under my supervision.

SIGNATURE

Dr. P. KUMAR

HEAD OF THE DEPARTMENT

Professor and Head

Dept. of Computer Science and Engg,
Rajalakshmi Engineering College
Chennai.

SIGNATURE

Mr. B. BHUVANESWARAN, M.E.,

SUPERVISOR

Assistant Professor (SG)
Dept. of Computer Science and Engg,
Rajalakshmi Engineering College
Chennai.

EXTERNAL EXAMINER

INTERNAL EXAMINER

ABSTRACT

The management of support tickets in educational institutions is often hindered by inefficiencies such as lack of prioritization, delayed routing, and inconsistent resolution timelines. This results in frustration among students, faculty, and staff. To address these challenges, this project develops an AI-powered system that classifies and prioritizes tickets using a text classification model in AI Center. Tickets are categorized as High, Medium, or Low priority and routed to appropriate departments using UiPath Studio. Email notifications and Excel automation streamline the workflow, while a tracking dashboard monitors response times. This system improves operational efficiency, reduces delays, and enhances user satisfaction through faster and more accurate ticket handling.

ACKNOWLEDGEMENT

Initially we thank the Almighty for being with us through every walk of our life and showering his blessings through the endeavor to put forth this report. Our sincere thanks to our Chairman **Mr. S.Meganathan, B.E, F.I.E.,** our Vice Chairman **Mr. Abhay Shankar Meganathan, B.E., M.S.,** and our respected Chairperson **Dr. (Mrs.) Thangam Meganathan, Ph.D.,** for providing us with the requisite infrastructure and sincere endeavoring in educating us in their premier institution.

Our sincere thanks to **Dr. S.N.Murugesan, M.E., Ph.D.,** our beloved Principal for his kind support and facilities provided to complete our work in time. We express our sincere thanks to **Dr. P.Kumar, M.E., Ph.D.,** Professor and Head of the Department of Computer Science and Engineering for his guidance and encouragement throughout the project work. We convey our sincere and deepest gratitude to our internal guide, **Dr. N.Durai Murugan, M.E., Ph.D.,** Associate Professor, Department of Computer Science and Engineering, Rajalakshmi Engineering College for their valuable guidance throughout the course of the project. We are very glad to thank our Project Coordinator and Supervisor, and **Mr.B.Bhuvaneswaran, M.E.,** Assistant Professor (SG), Department of Computer Science and Engineering and **Ms.J.Jinu Sophia ,** Assistant Professor for their useful tips during our review to build our project.

KARISHMA KANNADASAN (210701106)

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
AI	Artificial Intelligence
RPA	Robotic Process Automation
LMS	Learning Management System
SIS	Student Information System
SLA	Service Level Agreement
SMTP	Simple Mail Transfer Protocol
API	Application Programming Interface
UI	User Interface
AI	Artificial Intelligence

CHAPTER I

INTRODUCTION

1.1 DESCRIPTION

Educational institutions manage a diverse range of support tickets related to IT issues, administrative queries, and academic concerns. The manual handling of these tickets often leads to delays, mismanagement, and user dissatisfaction. This project aims to integrate artificial intelligence and automation to address these challenges. By leveraging AI and UiPath Studio, the system will classify tickets, prioritize them, and ensure timely routing to the correct departments. Additionally, tracking response times will help institutions enhance their operational efficiency and user experience.

1.2 SCOPE OF WORK

The project focuses on addressing the inefficiencies in support ticket management within educational institutions. It aims to utilize Artificial Intelligence (AI) and Robotic Process Automation (RPA) to create an intelligent and automated system. The solution involves using AI for ticket classification based on issue type and priority, thereby ensuring a structured approach to handling tickets. UiPath Studio is employed for automation, including routing tickets to appropriate departments and sending email notifications based on ticket priority levels. Additionally, Excel automation is used to log ticket details and generate performance reports. The project scope extends to monitoring response times and enhancing operational efficiency while ensuring scalability to handle varying ticket volumes and complexities.

Ultimately, the system aims to improve user satisfaction among students, faculty, and staff by providing timely resolutions and robust tracking mechanisms.

1.3 PROBLEM STATEMENT

Educational institutions generate numerous support tickets daily, encompassing issues ranging from IT problems to administrative concerns. The current systems lack automated processes to classify, prioritize, and route tickets efficiently, often resulting in delays and unresolved queries. This inefficiency causes frustration among users, diminishes institutional credibility, and hampers productivity. A comprehensive solution is required to automate ticket management, improve prioritization, and ensure timely resolutions.

1.4 AIM & OBJECTIVE

The aim of this project is to design and implement an automated support ticket management system leveraging AI and RPA technologies. The primary objective is to use AI-driven text classification to categorize tickets and prioritize them based on urgency. UiPath Studio will automate ticket routing and email notifications to ensure prompt delivery to the appropriate departments. Additionally, the system will log ticket data using Excel automation and provide performance metrics through a tracking dashboard. This will enhance operational efficiency, improve response times, and increase user satisfaction, ultimately creating a streamlined and reliable ticket management process.

1.5 EXISTING SYSTEM

The existing support ticket management system in most educational institutions is manual and prone to inefficiencies. Tickets are logged without consistent categorization or prioritization, leading to delays in addressing critical issues. The absence of automated workflows means tickets are often misrouted or overlooked, further compounding delays. Response times are inconsistent, with little to no tracking mechanisms in place to measure performance or adherence to service level agreements (SLAs). This manual approach fails to provide actionable insights or streamline operations, leaving room for significant improvement.

1.6 PROPOSED SYSTEM

he proposed system is an AI-driven and automation-enabled solution for managing support tickets in educational institutions. It addresses the inefficiencies of manual ticket management by utilizing Artificial Intelligence (AI) and Robotic Process Automation (RPA). The system integrates a text classification model within AI Center to analyze and categorize support tickets based on their content. Tickets are tagged with priority levels (High, Medium, or Low) to ensure timely and appropriate resolution.

UiPath Studio is employed to automate the ticket routing process, sending categorized tickets to the respective departments via email. Excel automation is used to log ticket details, track resolution times, and generate performance reports. A tracking dashboard further monitors ticket progress and adherence to service level agreements (SLAs), providing real-time insights into system performance.

This system streamlines operations, minimizes delays, and enhances user satisfaction by ensuring that critical issues are resolved promptly and efficiently. Additionally, the scalable design allows it to adapt to varying ticket volumes and institutional requirements, making it a robust solution for modern educational environments.

CHAPTER II

LITERATURE REVIEW

Support ticket management systems have evolved significantly with the advent of Artificial Intelligence (AI) and Robotic Process Automation (RPA). Numerous studies and applications emphasize the importance of leveraging AI to enhance operational efficiency in handling large volumes of unstructured data, such as text from support tickets. Text classification models, often built using machine learning and natural language processing (NLP) techniques, have been widely researched for their ability to automatically analyze ticket descriptions, identify issue categories, and prioritize them effectively. These systems rely on algorithms like Random Forest, Support Vector Machines (SVM), and deep learning models such as Transformers to process textual data with high accuracy.

In a study by Triage Systems (2020), AI-based ticket categorization reduced processing times by 40%, demonstrating its ability to streamline workflows. Similarly, research on AI-driven IT helpdesk solutions highlighted how predictive analytics and sentiment analysis could identify critical tickets and improve customer satisfaction rates. These systems enhance operational workflows by enabling preemptive actions, such as routing high-priority tickets to the most skilled personnel or providing automated solutions for repetitive queries.

RPA tools, such as UiPath and Blue Prism, complement AI by automating repetitive and rule-based tasks. UiPath, in particular, is known for its seamless integration with AI models and its ability to automate workflows like ticket routing, email notifications, and task tracking. A case study conducted by an

educational institution in 2021 revealed that implementing an RPA-enhanced ticket management system reduced manual effort by 60% while improving resolution times by 30%.

Existing literature also highlights the limitations of standalone systems. Traditional manual ticketing systems often lack prioritization mechanisms, leading to inefficiencies in addressing critical issues. Some studies indicate that even semi-automated systems fail to scale effectively with increasing ticket volumes, making the case for fully integrated AI and RPA solutions. Furthermore, performance tracking in these systems is either inadequate or absent, which hampers institutions' ability to optimize operations or meet SLAs.

The integration of AI and RPA, as proposed in this project, builds on the strengths of both technologies. AI handles intelligent decision-making, such as ticket classification and prioritization, while RPA executes routine tasks with speed and accuracy. This dual approach addresses existing system gaps and creates a comprehensive framework for efficient ticket management. Additionally, leveraging data analytics for performance monitoring and reporting offers educational institutions actionable insights to further refine their processes.

Recent developments also suggest incorporating advanced capabilities, such as chatbots and voice-based ticket submissions, for an even more user-friendly system. These systems can integrate sentiment analysis to gauge user satisfaction and ensure continuous improvements. The growing adoption of AI-powered systems across industries demonstrates their potential to transform support ticket management, making them indispensable in dynamic environments like educational institutions.

CHAPTER III

SYSTEM DESIGN

3.1 SYSTEM FLOW DIAGRAM

The **System Flow Diagram** shows the ticket journey from submission by users, classification and prioritization by AI, to routing the ticket to the appropriate department. The department is notified via email, and ticket details are logged in Excel. Finally, the department resolves the issue and updates the ticket status. This streamlined process ensures efficient ticket management.

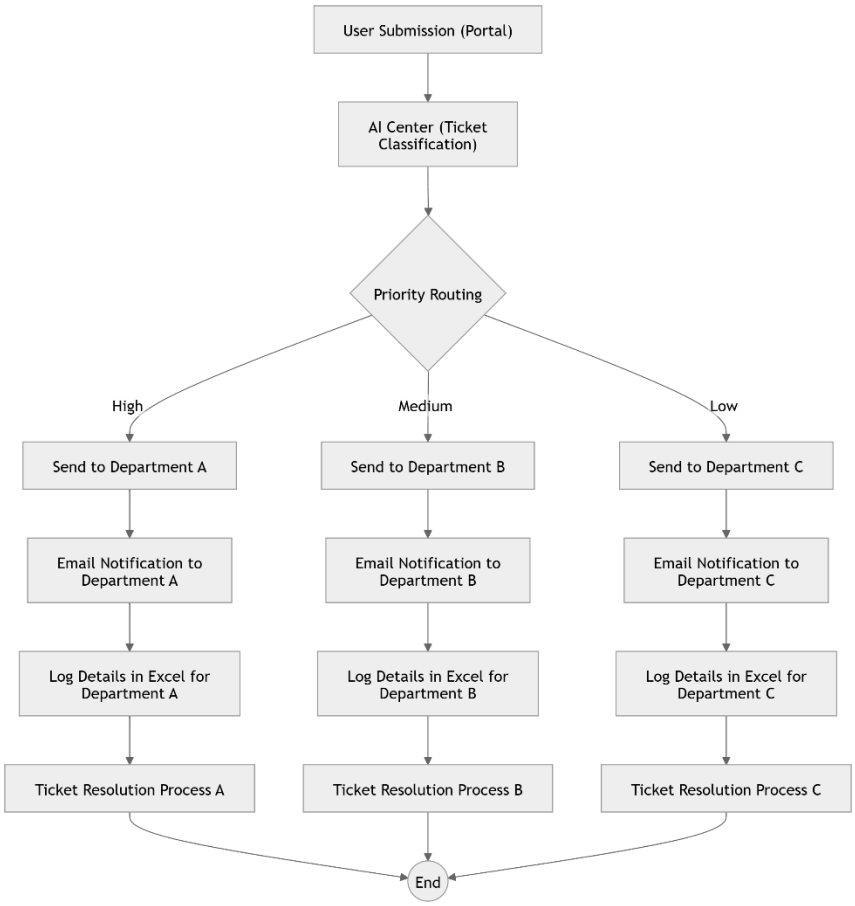


Fig.1 Flow diagram

3.2 ARCHITECTURE DIAGRAM

The **Architecture Diagram** outlines the flow of the support ticket system, starting with users submitting tickets via a portal or email. The AI model processes and classifies the tickets based on issue type and priority. UiPath automation then routes the tickets to the appropriate department and sends email notifications. Ticket details are logged in Excel for tracking, and departments resolve the issues and update the ticket status. This architecture ensures an efficient, automated ticket management system.

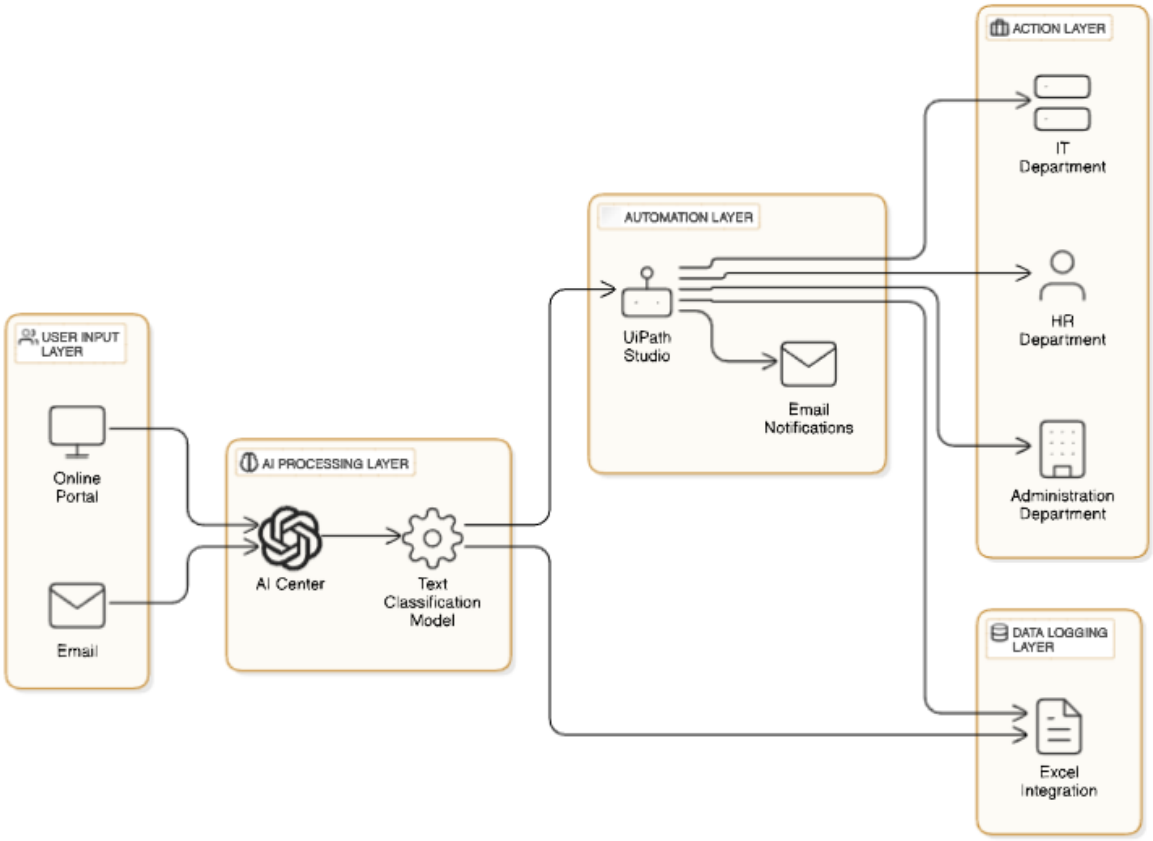


Fig.2 Architecture Diagram

3.3 SEQUENCE DIAGRAM

The **Sequence Diagram** shows how a user submits a ticket, which is then classified and prioritized by the AI model. UiPath automation routes the ticket to the appropriate department, and an email notification is sent. The ticket details are logged in Excel, and the department resolves the issue, updating the ticket status to closed. This sequence ensures efficient ticket processing and resolution.

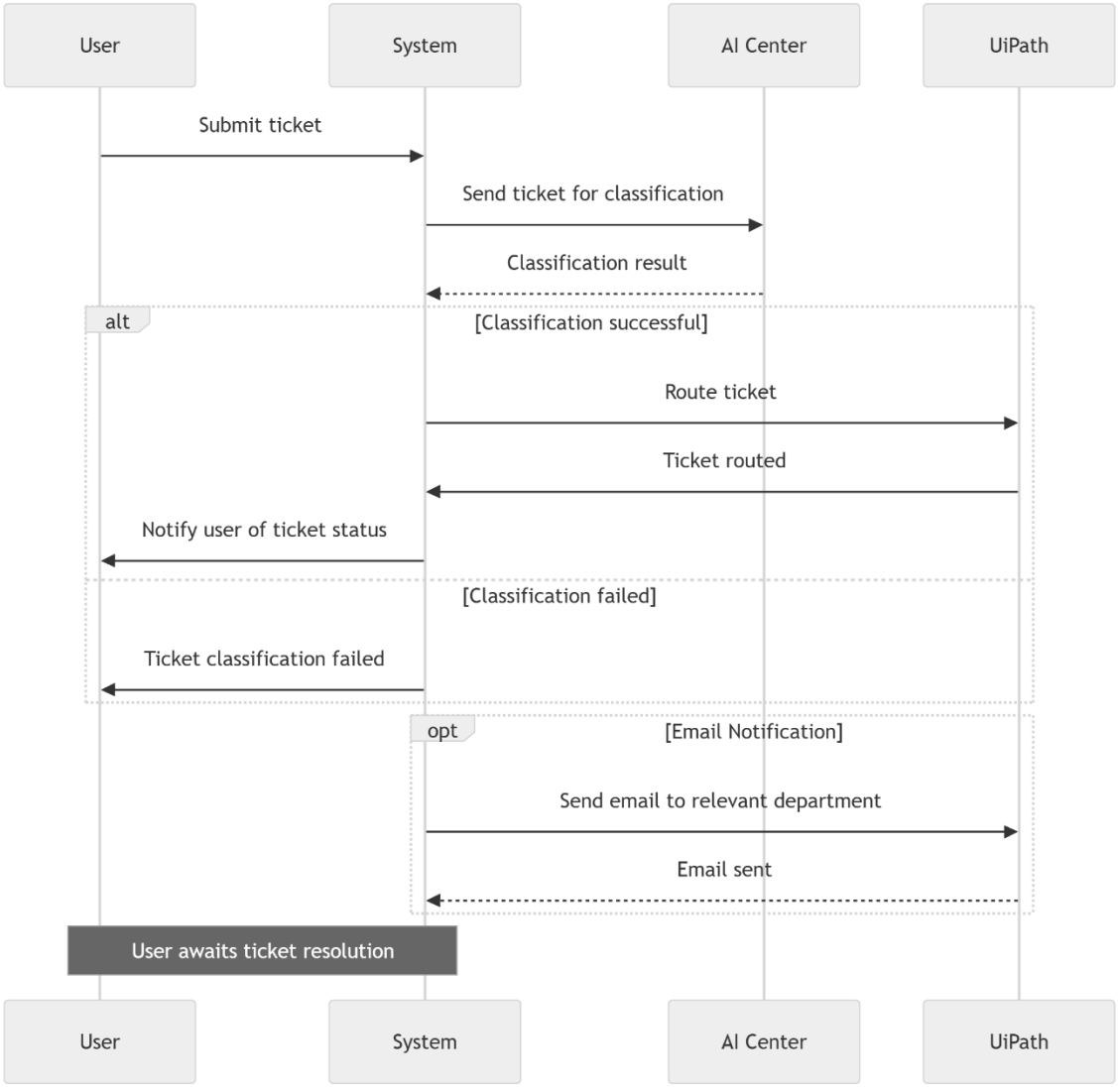


Fig.3 Sequence diagram

CHAPTER IV

PROJECT DESCRIPTION

4.1 MODULE DESCRIPTION

4.1.1 TICKET SUBMISSION MODULE

This module allows users (students, faculty, or staff) to submit support tickets through a web portal or email. It collects the ticket's details, including the issue description and user information.

4.1.2 AI CLASSIFICATION AND PRIORITIZATION MODULE

The AI model analyzes the submitted tickets, classifies the issues (e.g., IT, administrative, academic), and assigns a priority level (High, Medium, Low) based on predefined criteria.

4.1.3 TICKET ROUTING AND AUTOMATION MODULE

Using UiPath Studio, this module automates the process of routing tickets to the appropriate department (IT, HR, Admin) based on classification and priority. It ensures the right department receives the ticket in a timely manner.

4.1.4 EMAIL NOTIFICATION MODULE

Once tickets are routed, this module sends automated email notifications to the relevant department, informing them of the new ticket and providing all necessary details for resolution.

4.1.5 TICKET RESOLUTION MODULE

The respective departments handle and resolve the tickets based on their priority, updating the status as "resolved" or "pending" once the issue is addressed.

CHAPTER V

PROJECT OVERVIEW

5.1 IMPLEMENTATION

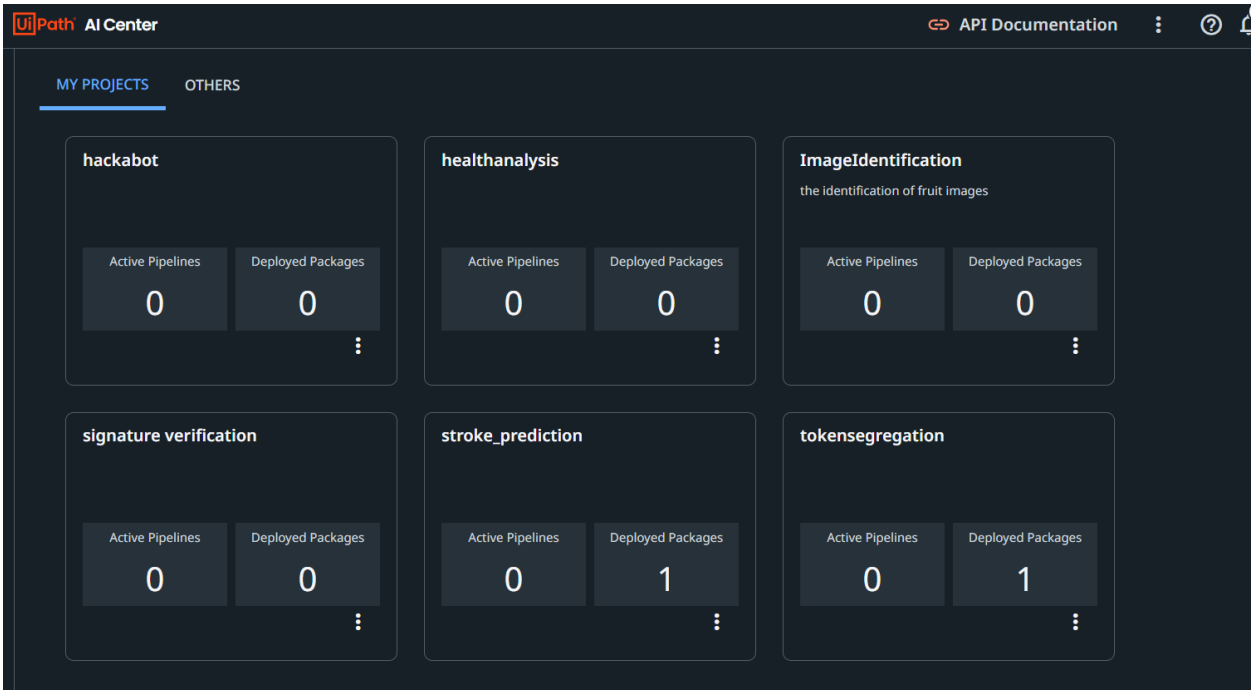


Fig.4 AI CENTER

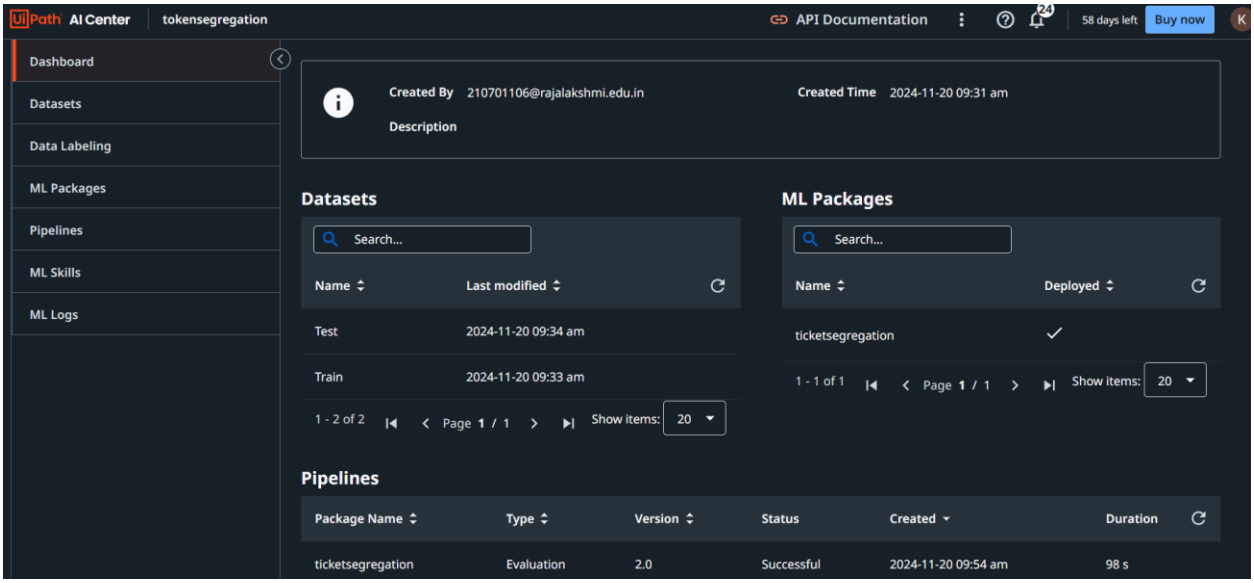


Fig.5 Ml skill creation

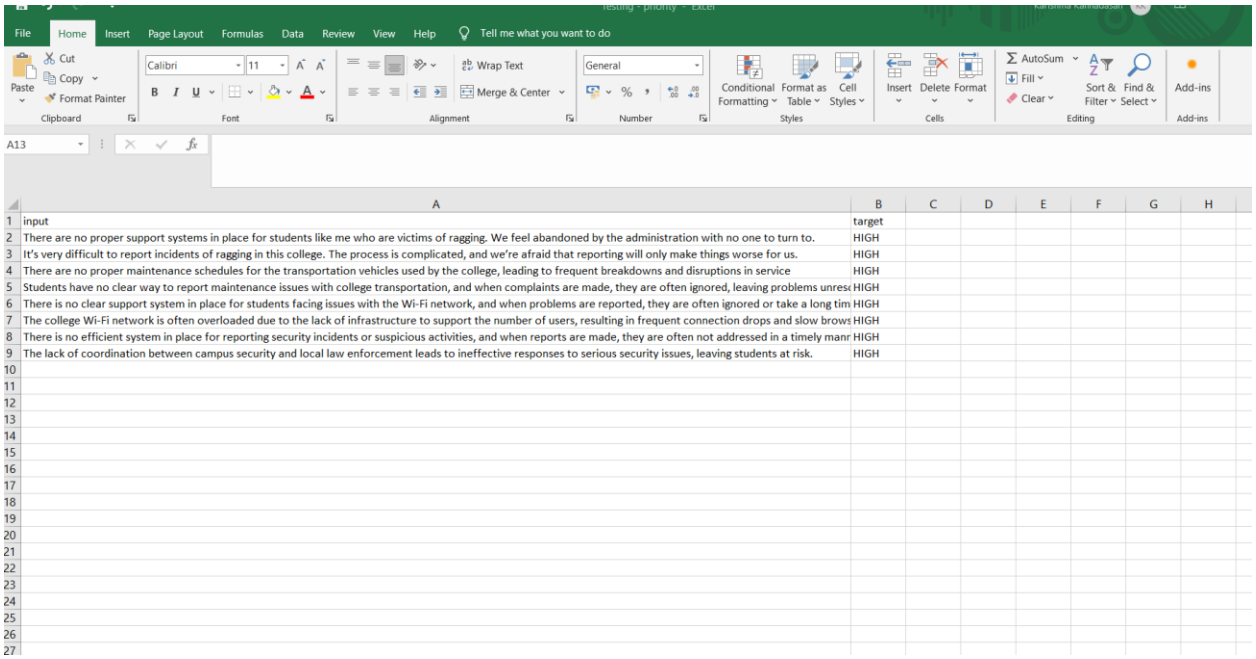
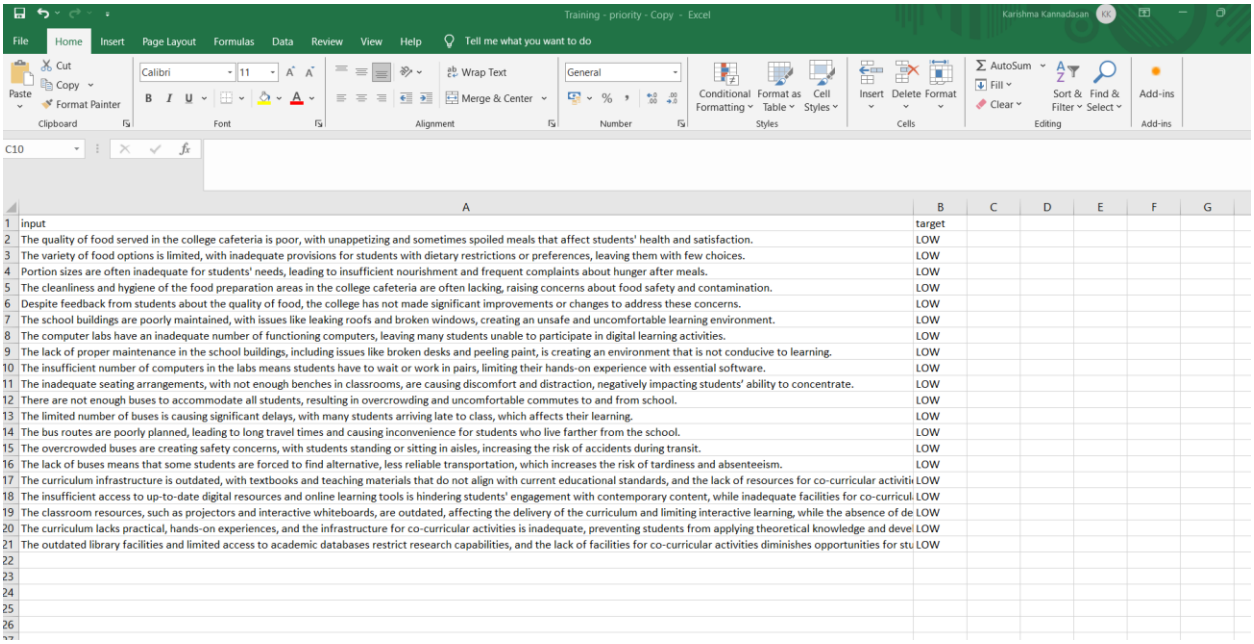


Fig.6 Train data



	A	B
1	input	target
2	The quality of food served in the college cafeteria is poor, with unappetizing and sometimes spoiled meals that affect students' health and satisfaction.	LOW
3	The variety of food options is limited, with inadequate provisions for students with dietary restrictions or preferences, leaving them with few choices.	LOW
4	Portion sizes are often inadequate for students' needs, leading to insufficient nourishment and frequent complaints about hunger after meals.	LOW
5	The cleanliness and hygiene of the food preparation areas in the college cafeteria are often lacking, raising concerns about food safety and contamination.	LOW
6	Despite feedback from students about the quality of food, the college has not made significant improvements or changes to address these concerns.	LOW
7	The school buildings are poorly maintained, with issues like leaking roofs and broken windows, creating an unsafe and uncomfortable learning environment.	LOW
8	The computer labs have an inadequate number of functioning computers, leaving many students unable to participate in digital learning activities.	LOW
9	The lack of proper maintenance in the school buildings, including issues like broken desks and peeling paint, is creating an environment that is not conducive to learning.	LOW
10	The insufficient number of computers in the labs means students have to wait or work in pairs, limiting their hands-on experience with essential software.	LOW
11	The inadequate seating arrangements, with not enough benches in classrooms, are causing discomfort and distraction, negatively impacting students' ability to concentrate.	LOW
12	There are not enough buses to accommodate all students, resulting in overcrowding and uncomfortable commutes to and from school.	LOW
13	The limited number of buses is causing significant delays, with many students arriving late to class, which affects their learning.	LOW
14	The bus routes are poorly planned, leading to long travel times and causing inconvenience for students who live farther from the school.	LOW
15	The overcrowded buses are creating safety concerns, with students standing or sitting in aisles, increasing the risk of accidents during transit.	LOW
16	The lack of buses means that some students are forced to find alternative, less reliable transportation, which increases the risk of tardiness and absenteeism.	LOW
17	The curriculum infrastructure is outdated, with textbooks and teaching materials that do not align with current educational standards, and the lack of resources for co-curricular activiti	LOW
18	The insufficient access to up-to-date digital resources and online learning tools is hindering students' engagement with contemporary content, while inadequate facilities for co-curricul	LOW
19	The classroom resources, such as projectors and interactive whiteboards, are outdated, affecting the delivery of the curriculum and limiting interactive learning, while the absence of de	LOW
20	The curriculum lacks practical, hands-on experiences, and the infrastructure for co-curricular activities is inadequate, preventing students from applying theoretical knowledge and devel	LOW
21	The outdated library facilities and limited access to academic databases restrict research capabilities, and the lack of facilities for co-curricular activities diminishes opportunities for stu	LOW

Fig.7 Test data

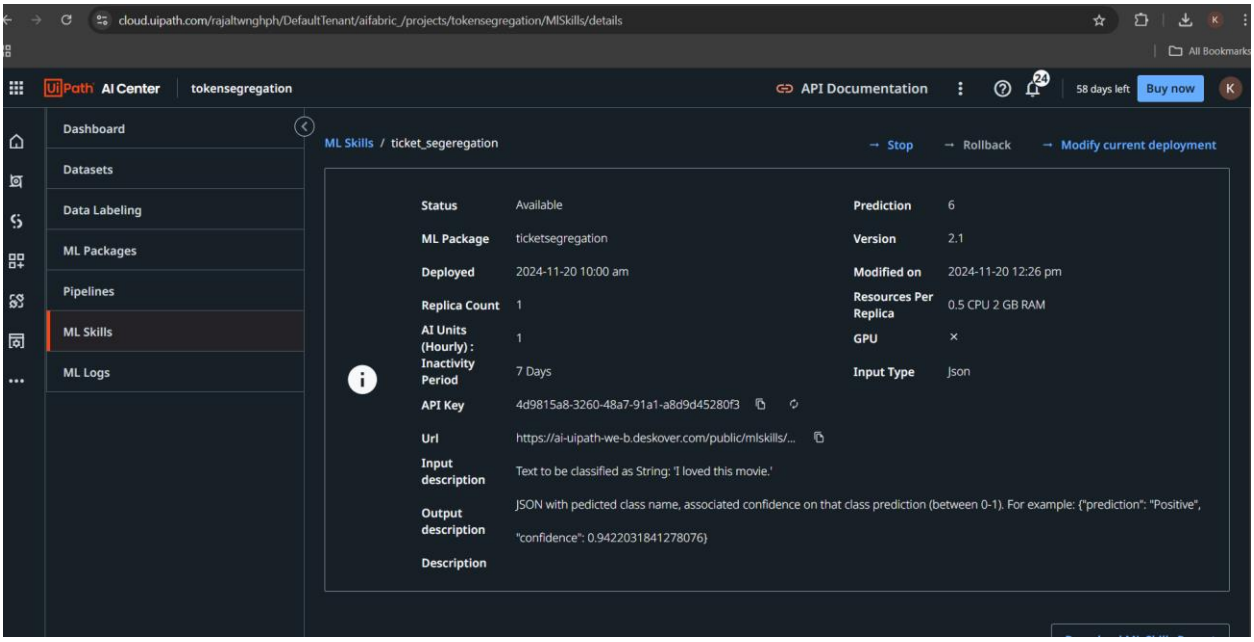


Fig.8 ML Skill API Key

•

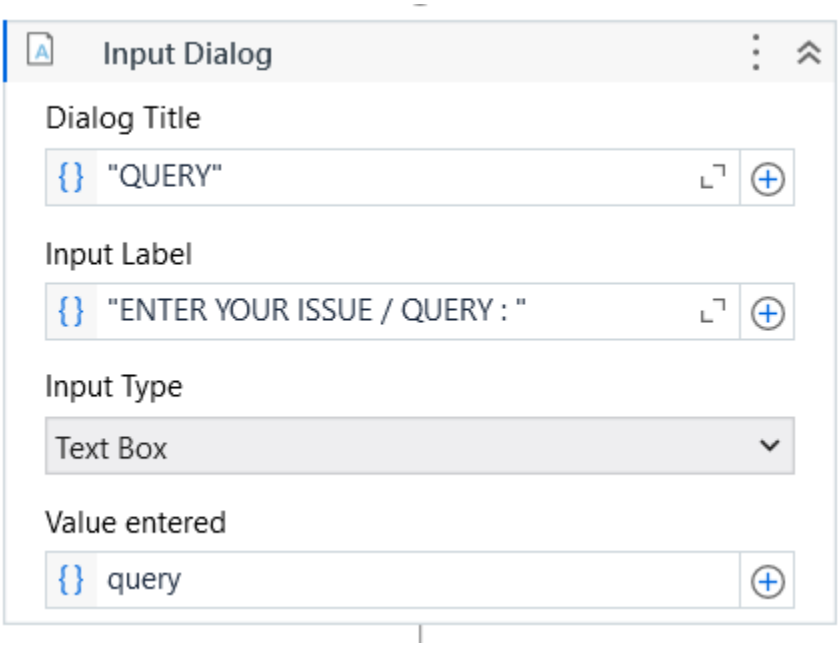


Fig.9 input dialogues

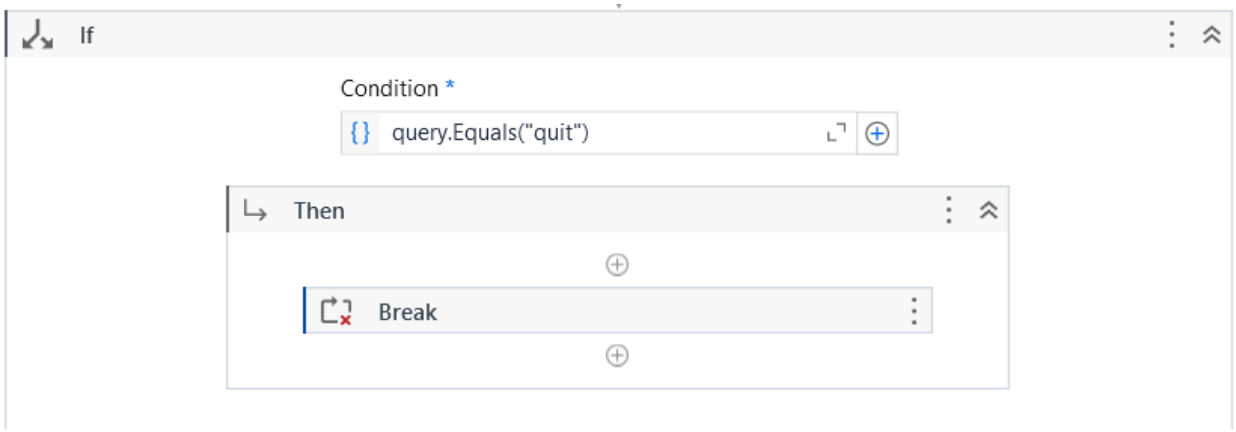


Fig.10 if Condition

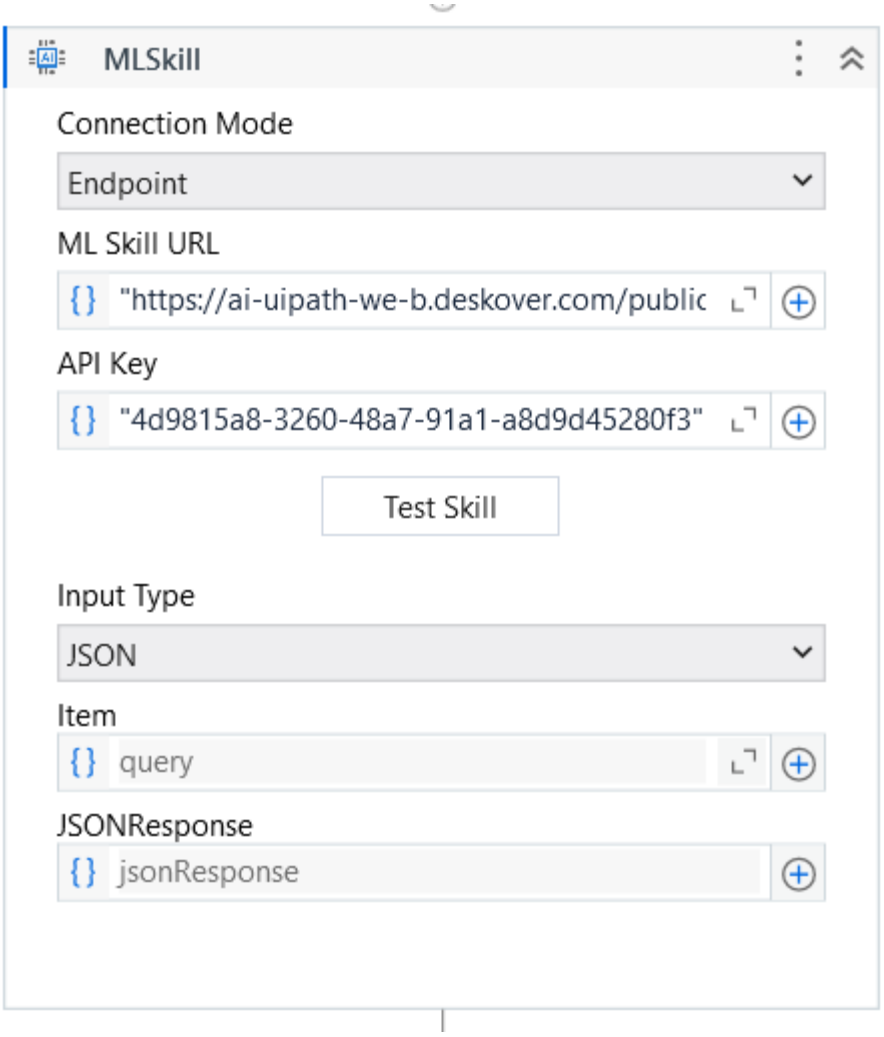


Fig.11 ML Skill in Uipath

Fig.12 Deserialize Json

Fig13 Excel application Scope

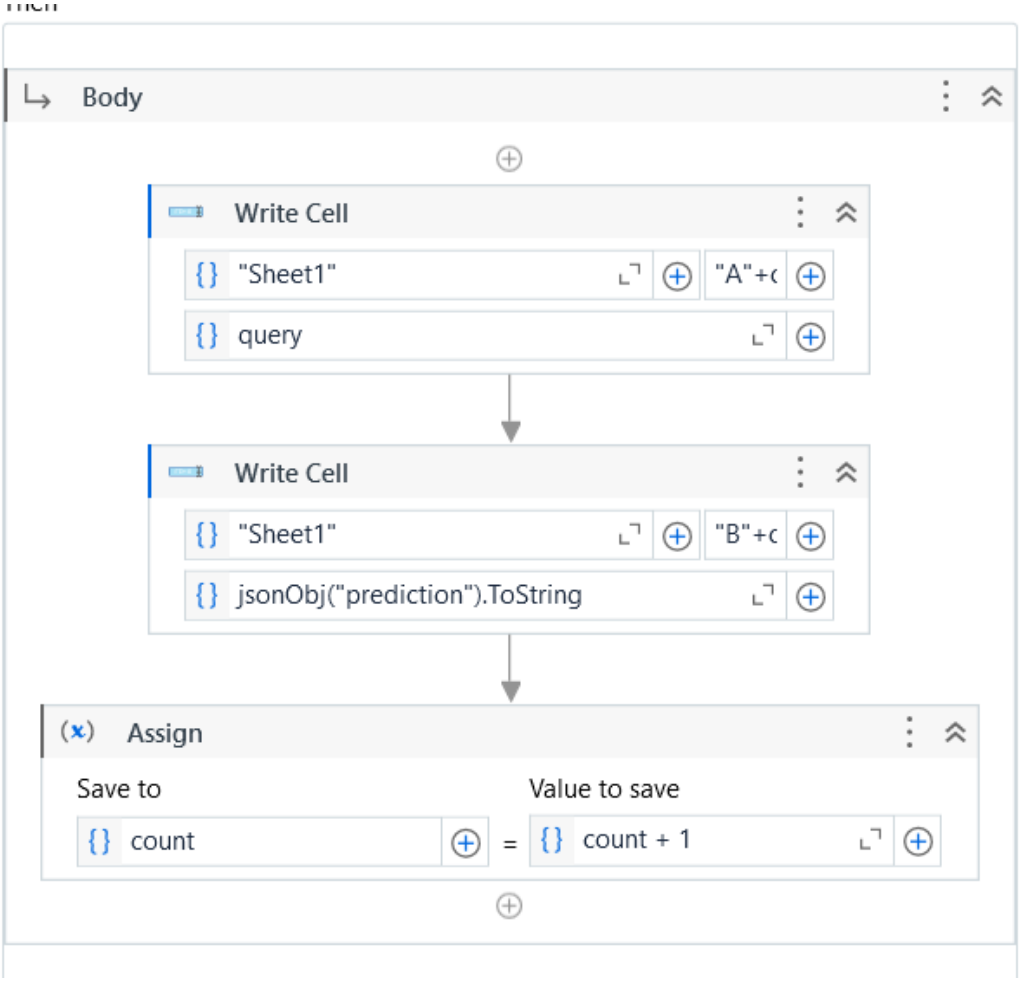


Fig.14 Excel automation

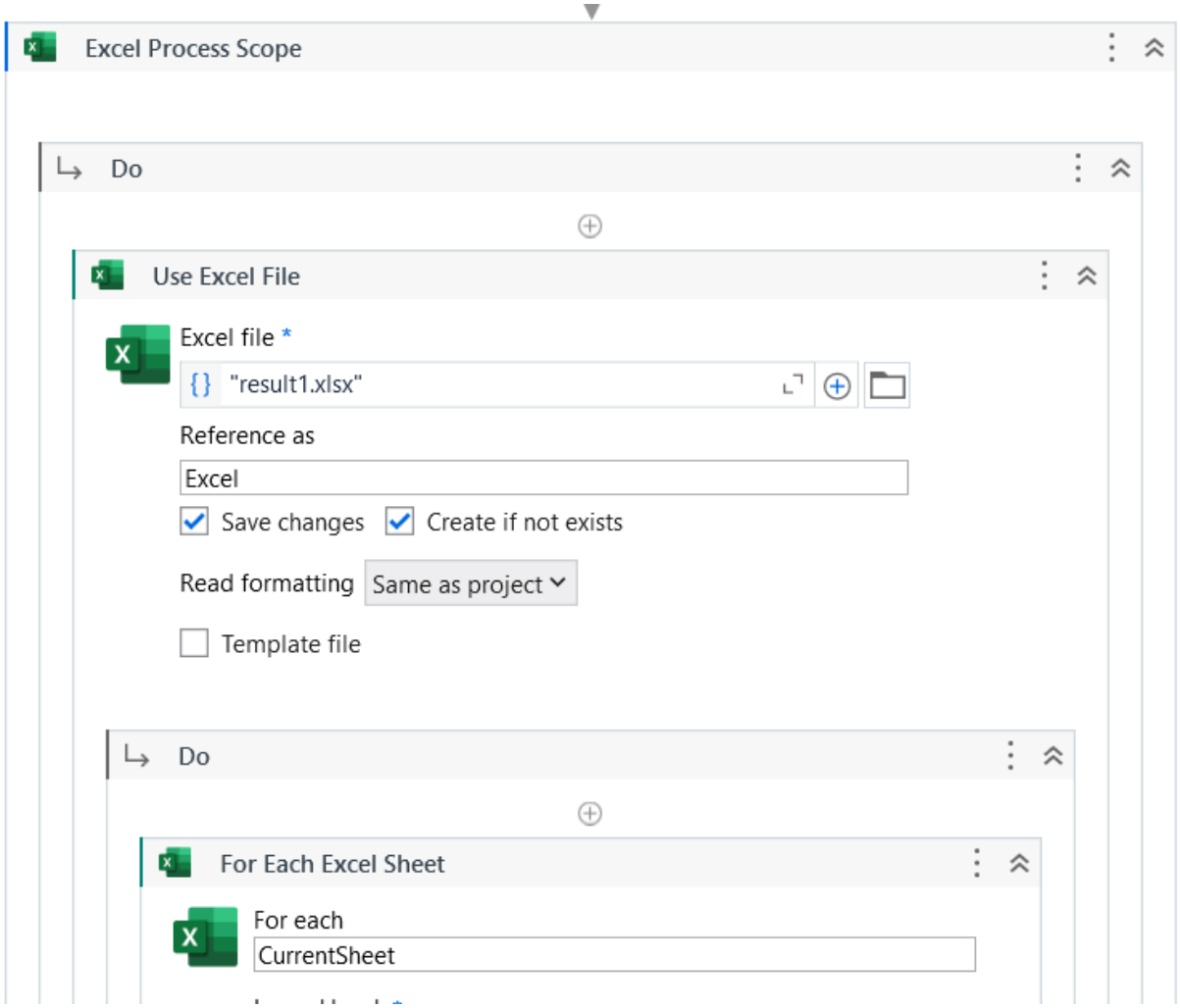


Fig.15 Sending mail through Excel Process

5.2 OUTPUT SCREENSHOT

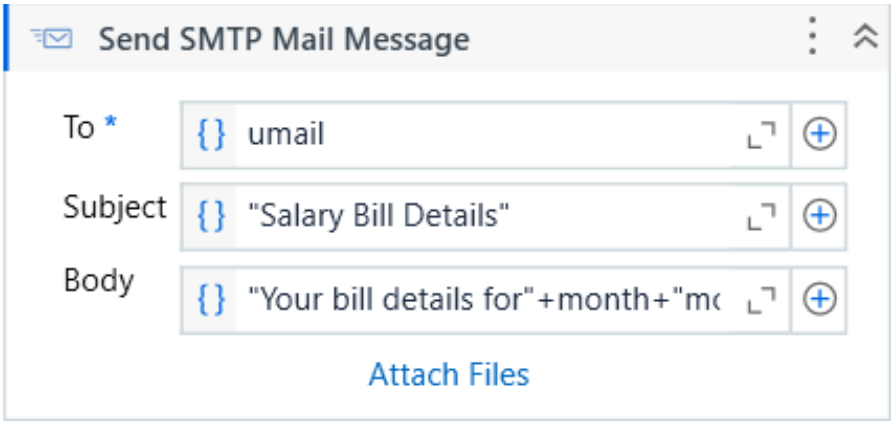


Fig.16 SMTP message activity

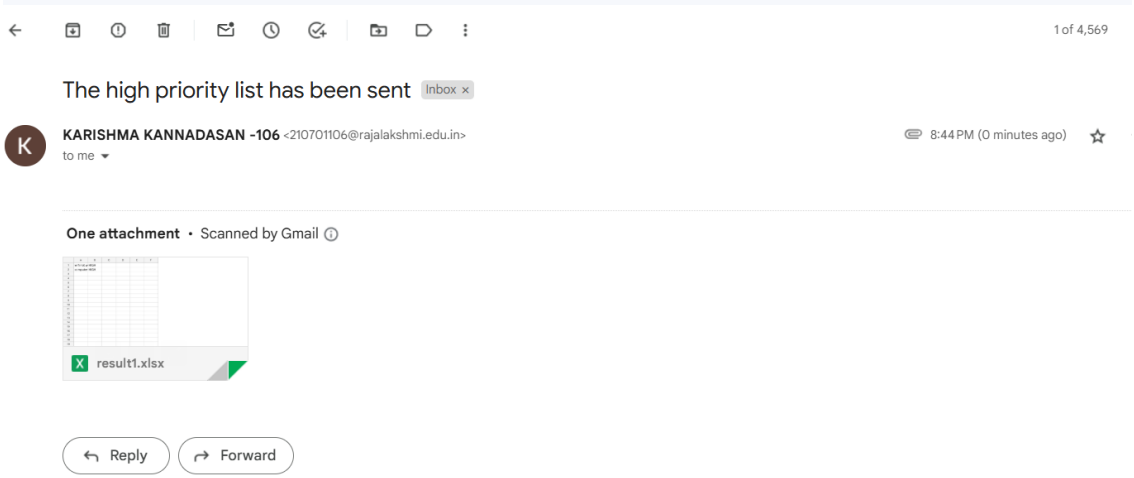


Fig.17 EMAIL

CHAPTER VI

CONCLUSION & FUTURE ENHANCEMENTS

6.1 CONCLUSION

The AI-powered support ticket management system effectively addresses the challenges faced by educational institutions in handling support tickets. By integrating Artificial Intelligence for ticket classification and prioritization, and using Robotic Process Automation (RPA) for routing and notification, the system streamlines the ticket handling process. This automation reduces manual effort, minimizes errors, and improves the response time for resolving issues. The integration of Excel for data logging ensures that ticket data is recorded for analysis and reporting, providing insights into system performance. Overall, the system enhances operational efficiency, improves user satisfaction, and ensures timely resolution of support tickets. The automation of routine tasks helps departments focus on resolving issues without delays, leading to a more organized and effective support process.

6.2 FUTURE ENHANCEMENT

Future enhancements to the AI-powered support ticket management system include integrating advanced AI and machine learning for improved ticket classification, and connecting with other institutional systems like LMS or SIS for automatic ticket generation. Real-time monitoring and alerts can be added to track ticket progress and ensure timely resolution. A self-service portal could allow users to solve simple issues independently, reducing ticket volume. Additionally, a mobile app could provide users and departments with on-the-go access, while automated ticket escalation could address critical unresolved tickets. Advanced reporting and multilingual support would further enhance system usability and accessibility, making it more efficient and adaptable to diverse needs.

CHAPTER VII

REFERENCES

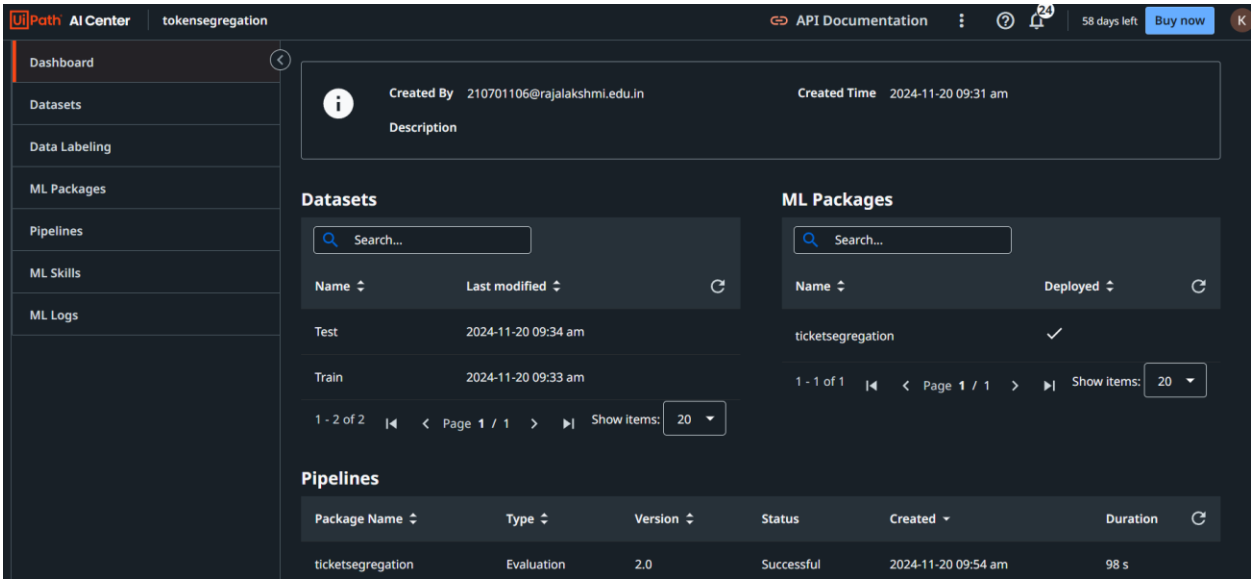
1. https://forum.uipath.com/

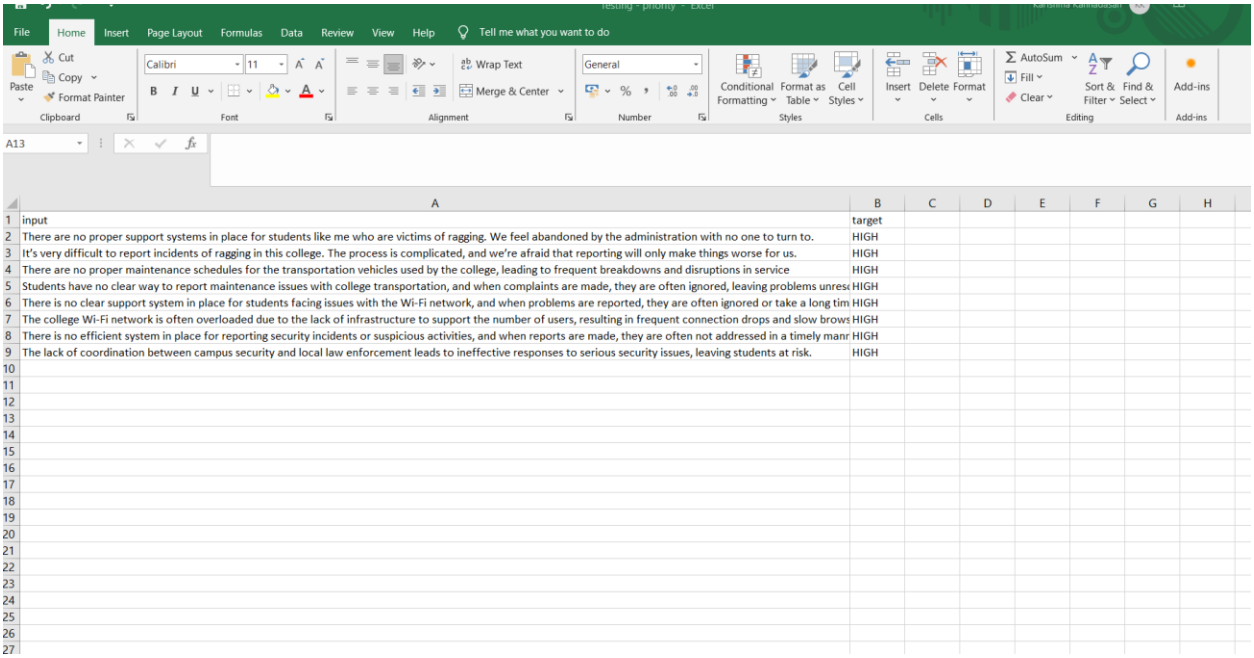
2. https://docs.uipath.com/orchestrator/standalone/2023.4/us

3. https://docs.uipath.com/activities/other/latest/productivity/send-mail/

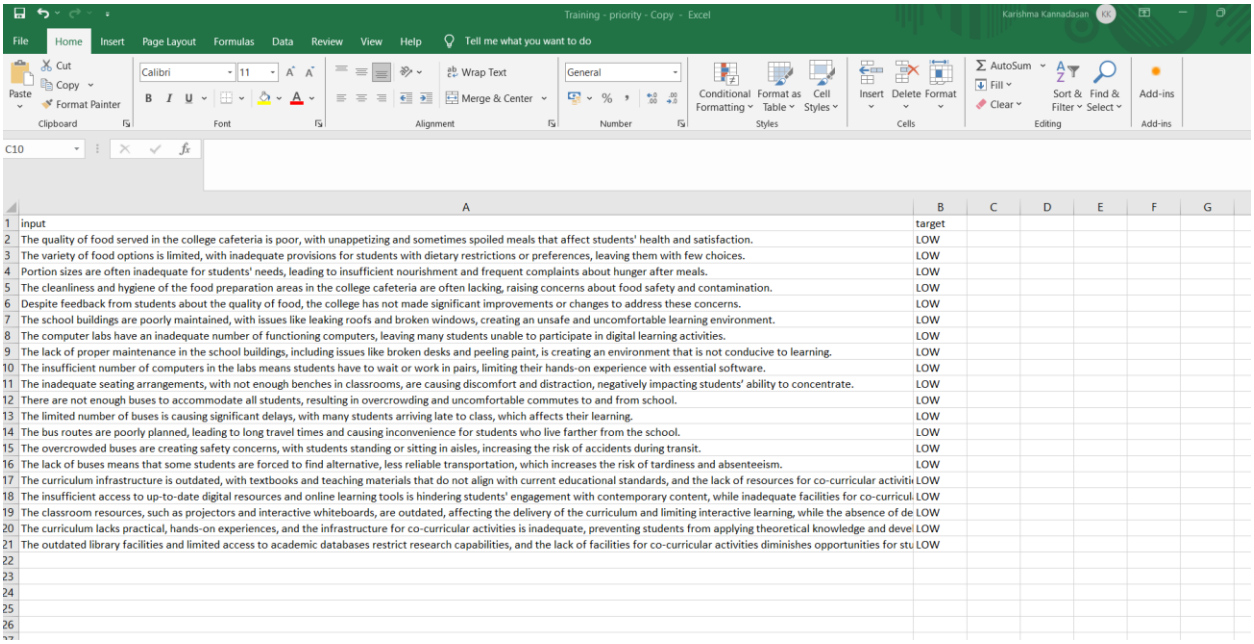
4. https://docs.uipath.com/studiox/standalone/2023.10/user-guide/introduction

APPENDIX

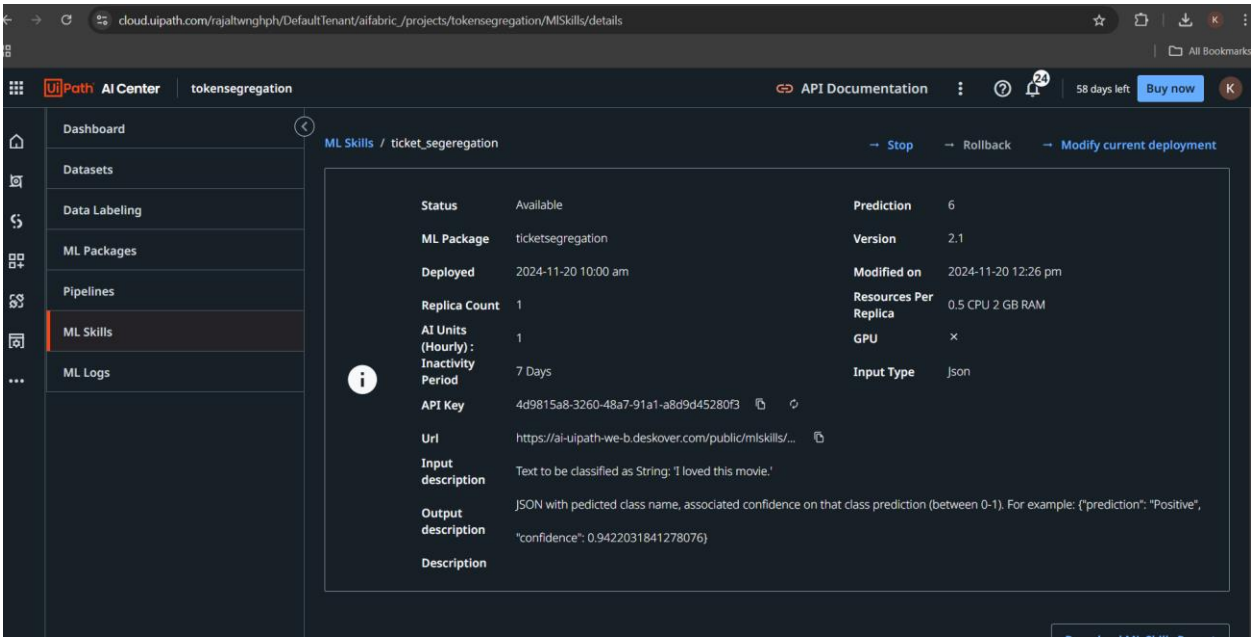


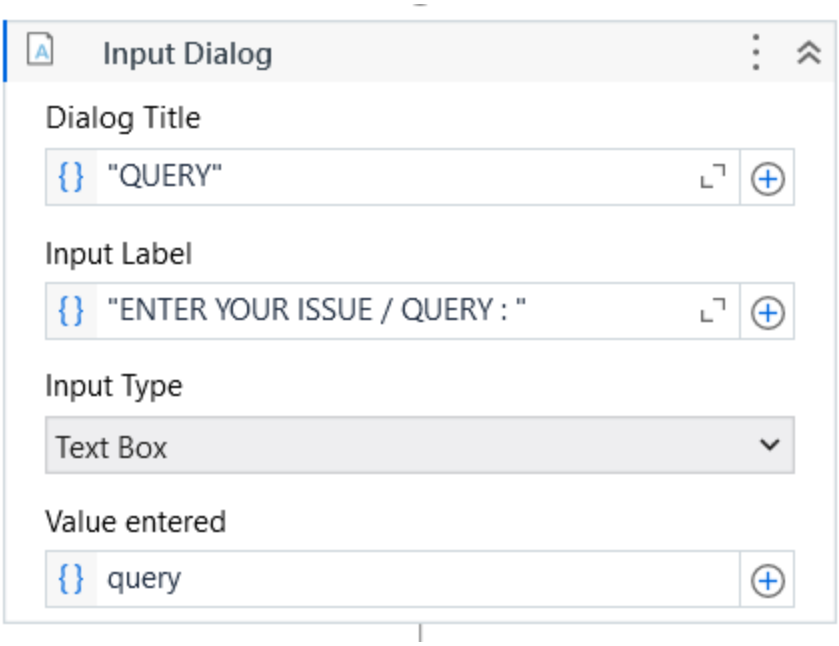


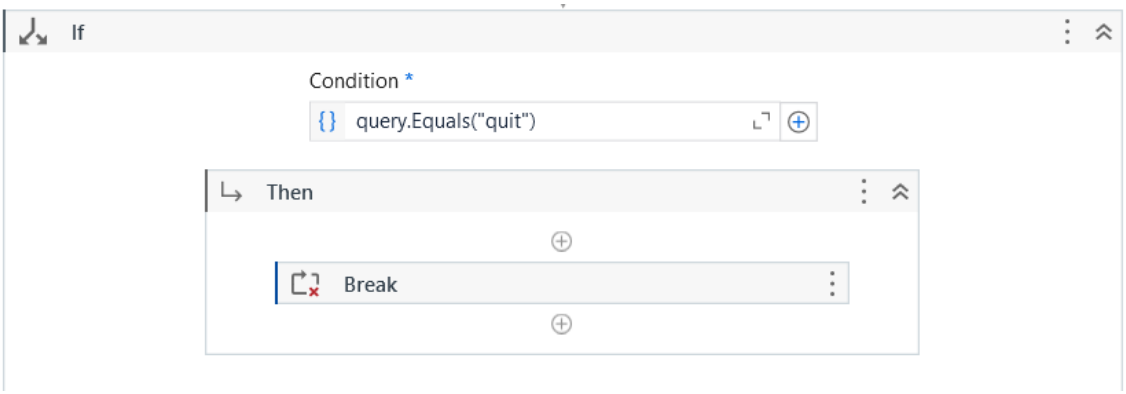
	A	B
1	input	target
2	There are no proper support systems in place for students like me who are victims of ragging. We feel abandoned by the administration with no one to turn to.	HIGH
3	It's very difficult to report incidents of ragging in this college. The process is complicated, and we're afraid that reporting will only make things worse for us.	HIGH
4	There are no proper maintenance schedules for the transportation vehicles used by the college, leading to frequent breakdowns and disruptions in service	HIGH
5	Students have no clear way to report maintenance issues with college transportation, and when complaints are made, they are often ignored, leaving problems unres	HIGH
6	There is no clear support system in place for students facing issues with the Wi-Fi network, and when problems are reported, they are often ignored or take a long tim	HIGH
7	The college Wi-Fi network is often overloaded due to the lack of infrastructure to support the number of users, resulting in frequent connection drops and slow brows	HIGH
8	There is no efficient system in place for reporting security incidents or suspicious activities, and when reports are made, they are often not addressed in a timely manr	HIGH
9	The lack of coordination between campus security and local law enforcement leads to ineffective responses to serious security issues, leaving students at risk.	HIGH

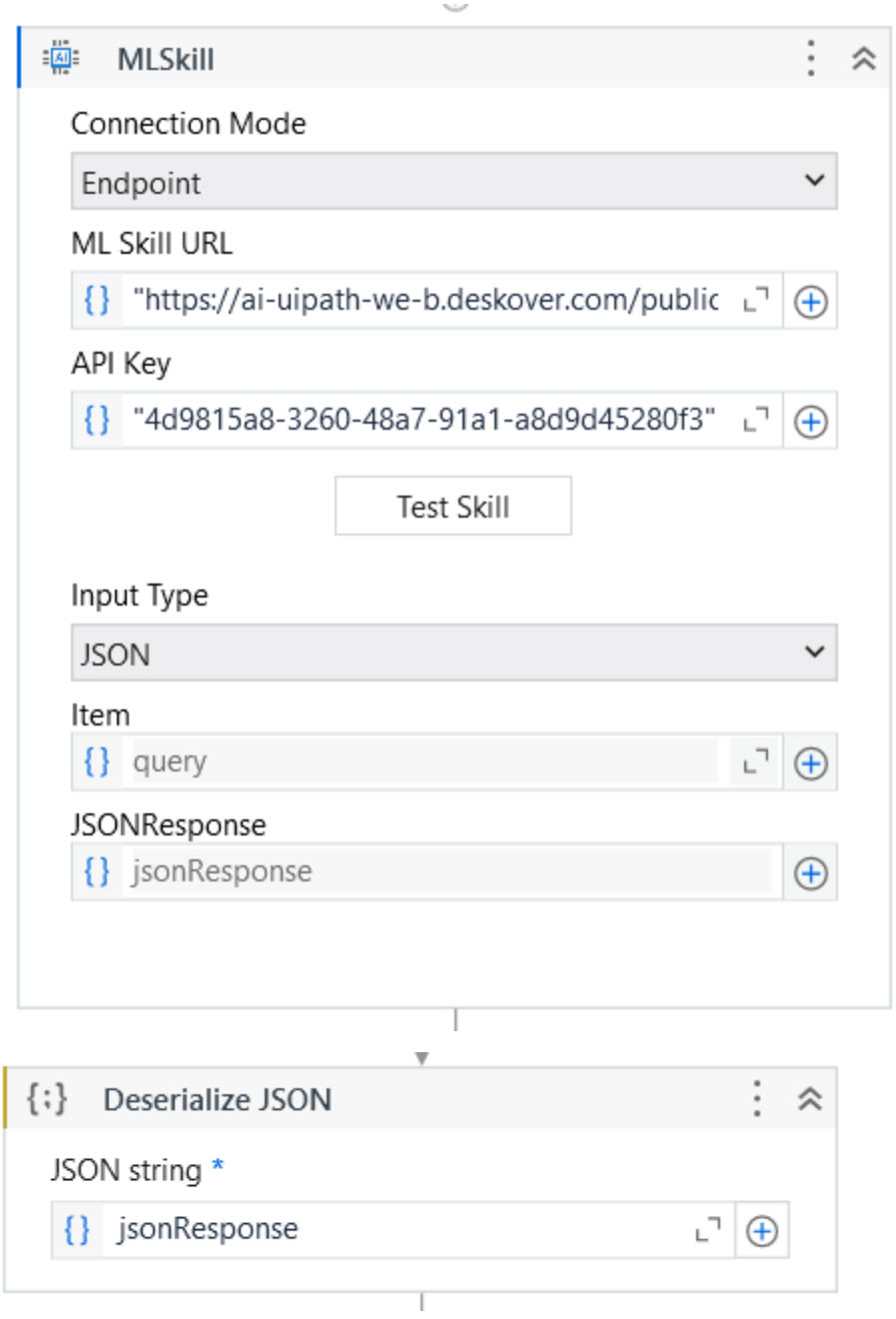


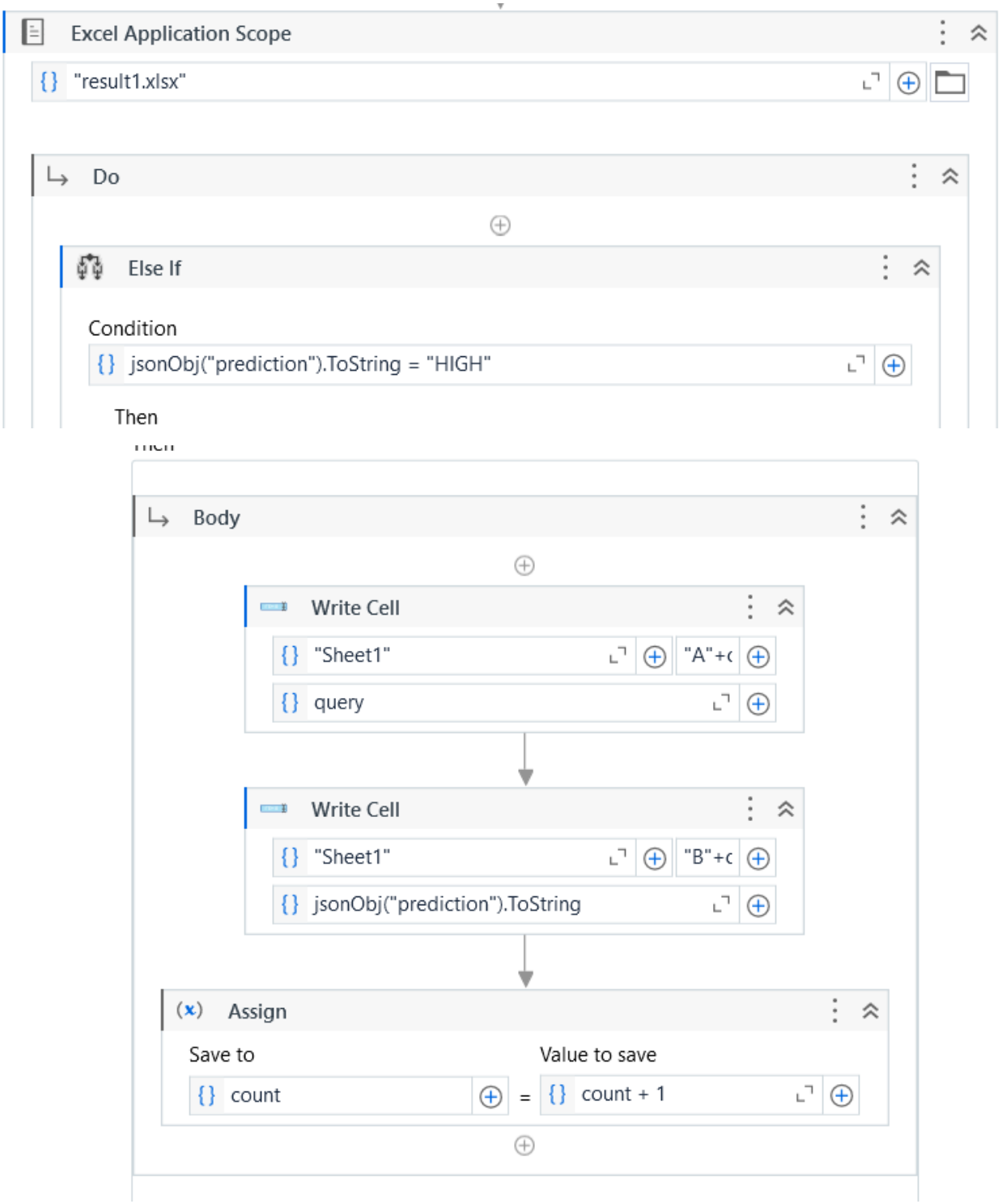
	input	target
1	input	target
2	The quality of food served in the college cafeteria is poor, with unappetizing and sometimes spoiled meals that affect students' health and satisfaction.	LOW
3	The variety of food options is limited, with inadequate provisions for students with dietary restrictions or preferences, leaving them with few choices.	LOW
4	Portion sizes are often inadequate for students' needs, leading to insufficient nourishment and frequent complaints about hunger after meals.	LOW
5	The cleanliness and hygiene of the food preparation areas in the college cafeteria are often lacking, raising concerns about food safety and contamination.	LOW
6	Despite feedback from students about the quality of food, the college has not made significant improvements or changes to address these concerns.	LOW
7	The school buildings are poorly maintained, with issues like leaking roofs and broken windows, creating an unsafe and uncomfortable learning environment.	LOW
8	The computer labs have an inadequate number of functioning computers, leaving many students unable to participate in digital learning activities.	LOW
9	The lack of proper maintenance in the school buildings, including issues like broken desks and peeling paint, is creating an environment that is not conducive to learning.	LOW
10	The insufficient number of computers in the labs means students have to wait or work in pairs, limiting their hands-on experience with essential software.	LOW
11	The inadequate seating arrangements, with not enough benches in classrooms, are causing discomfort and distraction, negatively impacting students' ability to concentrate.	LOW
12	There are not enough buses to accommodate all students, resulting in overcrowding and uncomfortable commutes to and from school.	LOW
13	The limited number of buses is causing significant delays, with many students arriving late to class, which affects their learning.	LOW
14	The bus routes are poorly planned, leading to long travel times and causing inconvenience for students who live farther from the school.	LOW
15	The overcrowded buses are creating safety concerns, with students standing or sitting in aisles, increasing the risk of accidents during transit.	LOW
16	The lack of buses means that some students are forced to find alternative, less reliable transportation, which increases the risk of tardiness and absenteeism.	LOW
17	The curriculum infrastructure is outdated, with textbooks and teaching materials that do not align with current educational standards, and the lack of resources for co-curricular activiti	LOW
18	The insufficient access to up-to-date digital resources and online learning tools is hindering students' engagement with contemporary content, while inadequate facilities for co-curricul	LOW
19	The classroom resources, such as projectors and interactive whiteboards, are outdated, affecting the delivery of the curriculum and limiting interactive learning, while the absence of de	LOW
20	The curriculum lacks practical, hands-on experiences, and the infrastructure for co-curricular activities is inadequate, preventing students from applying theoretical knowledge and devel	LOW
21	The outdated library facilities and limited access to academic databases restrict research capabilities, and the lack of facilities for co-curricular activities diminishes opportunities for stu	LOW



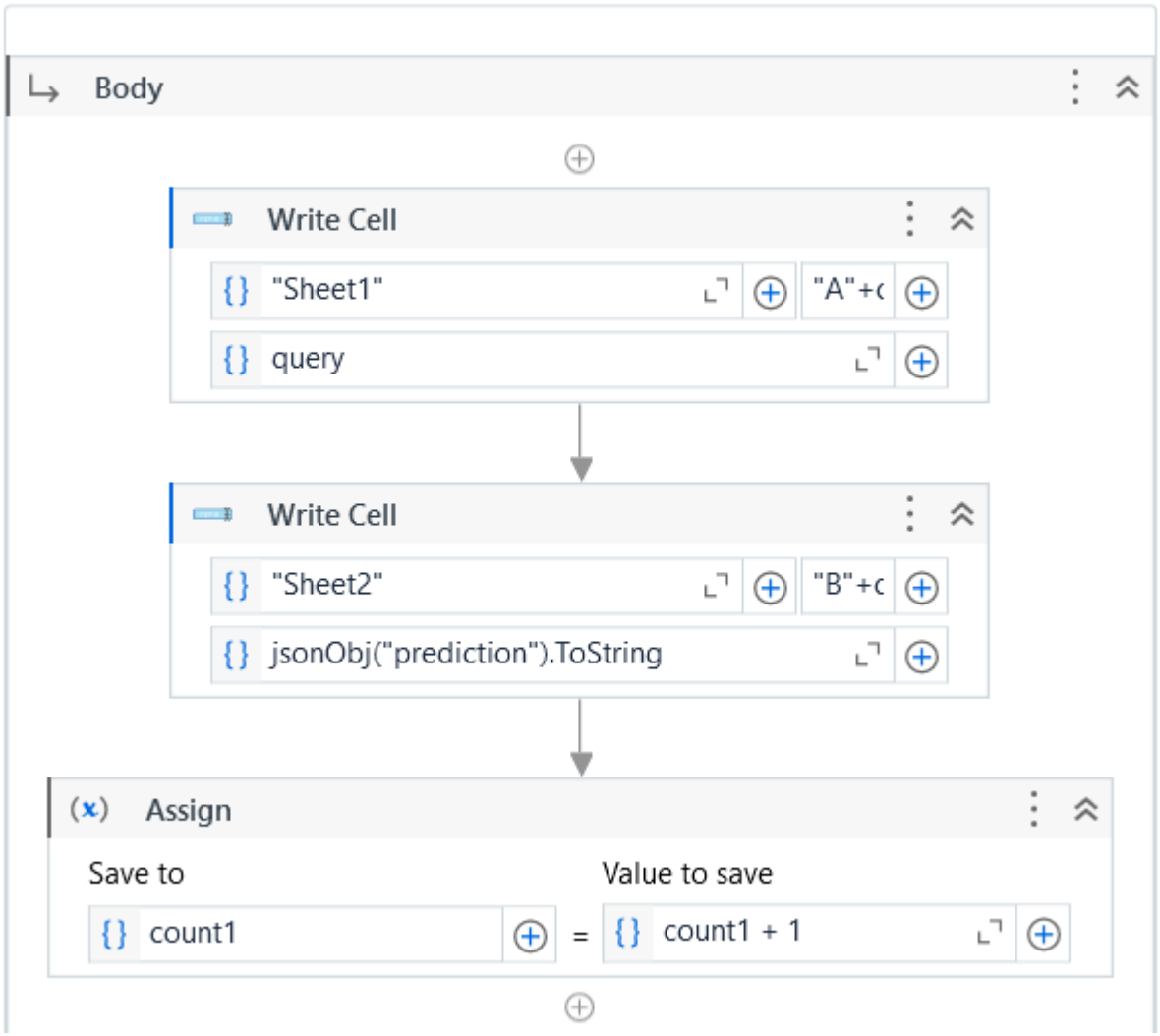

Input Dialog
Dialog Title
"QUERY"
Input Label
"ENTER YOUR ISSUE / QUERY : "
Input Type
Text Box
Value entered
query

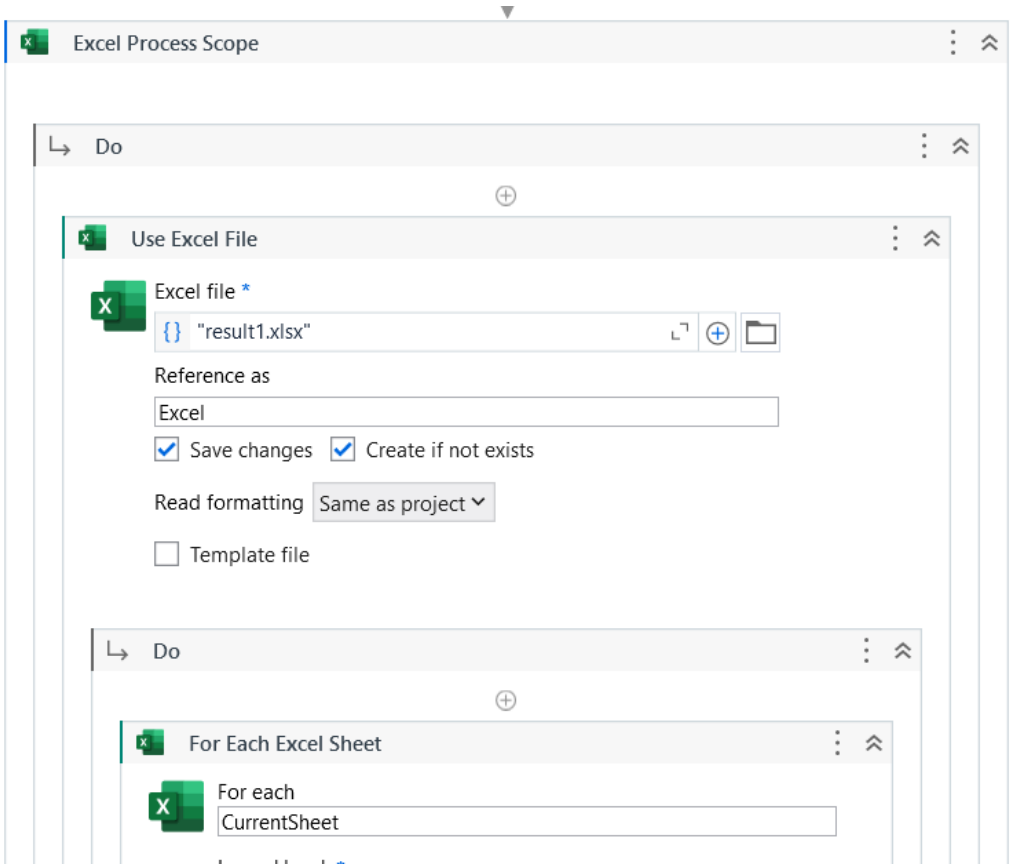

If
Condition *
query.Equals("quit")
Then
Break

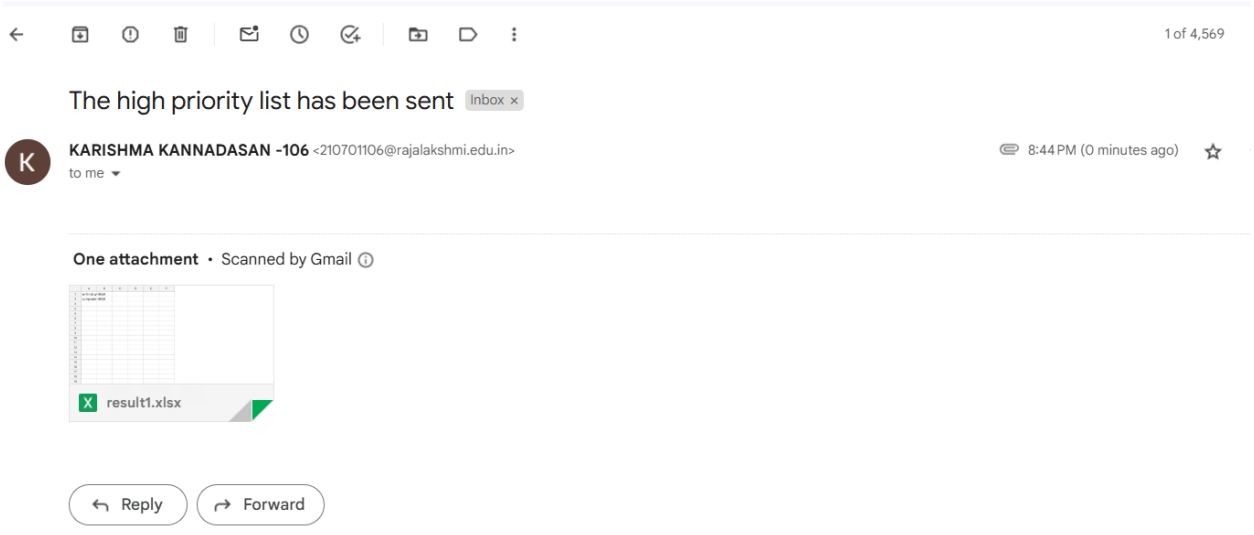

MLSkill
Connection Mode
Endpoint
ML Skill URL
"https://ai-uipath-we-b.deskover.com/public
API Key
"4d9815a8-3260-48a7-91a1-a8d9d45280f3"
Test Skill
Input Type
JSON
Item
query
JSONResponse
jsonResponse
Deserialize JSON
JSON string *
jsonResponse


Excel Application Scope
"result1.xlsx"
Do
Else If
Condition
jsonObj("prediction").ToString = "HIGH"
Then
Body
Write Cell
"Sheet1"
"A"+c
query
Write Cell
"Sheet1"
"B"+c
jsonObj("prediction").ToString
Assign
Save to
Value to save
count
=
count + 1

Then


Body
Write Cell
"Sheet1"
"A"+c
query
Write Cell
"Sheet2"
"B"+c
jsonObj("prediction").ToString
Assign
Save to
Value to save
count1
=
count1 + 1


Excel Process Scope
Do
Use Excel File
Excel file *
"result1.xlsx"
Reference as
Excel
Save changes
Create if not exists
Read formatting
Same as project
Template file
Do
For Each Excel Sheet
For each
CurrentSheet


1 of 4,569
The high priority list has been sent
Inbox ×
KARISHMA KANNADASAN -106 <210701106@rajalakshmi.edu.in>
to me
8:44 PM (0 minutes ago)
One attachment • Scanned by Gmail
result1.xlsx
Reply
Forward