

Ramaiah Institute of Technology

(Autonomous Institute, Affiliated to VTU)

Department of Computer Science & Engineering**Robotic Process Automation Design and Development (CSE552)**

Title of the Project : SIS Bot	
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Abstract:

SIS Bot is a software program which logs into the student SIS portal and scraps the necessary data. These bots can be used to get details regarding the students Attendance, CIE marks, Fee payments, Students general details, Proctorship details, Exam history, Events and many more. Generally to get any of the above details of a student a human is required to login to the students SIS portal and get the necessary. But our SIS Bot can do the same without any human interference with a good speed and high accuracy with least errors.

The most common uses of our bot are:

- Help a student to get his attendance status without internet connection.
- Send weekly alerts to parents about the student's attendance status.
- Send warning message to the students if the attendance percentage drops below 85.

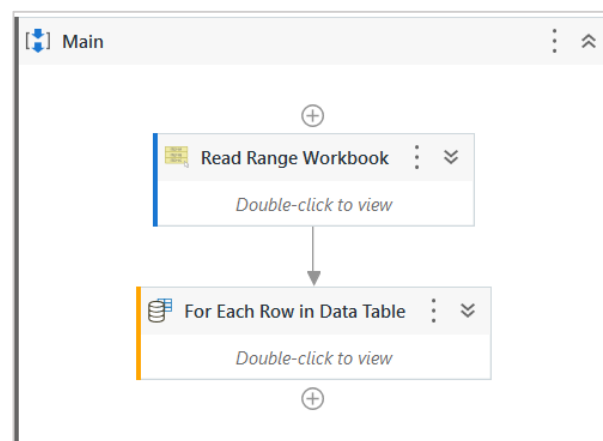
Introduction:

We have developed SIS Bot which tracks attendance of students. Purpose of our bot is to send the students their attendance percentage via text messages. This helps students and parents to track the attendance. The project we have undertaken will help the students to access their attendance and marks without proper internet connection. The bot is triggered automatically on a weekly basis without any human interference.

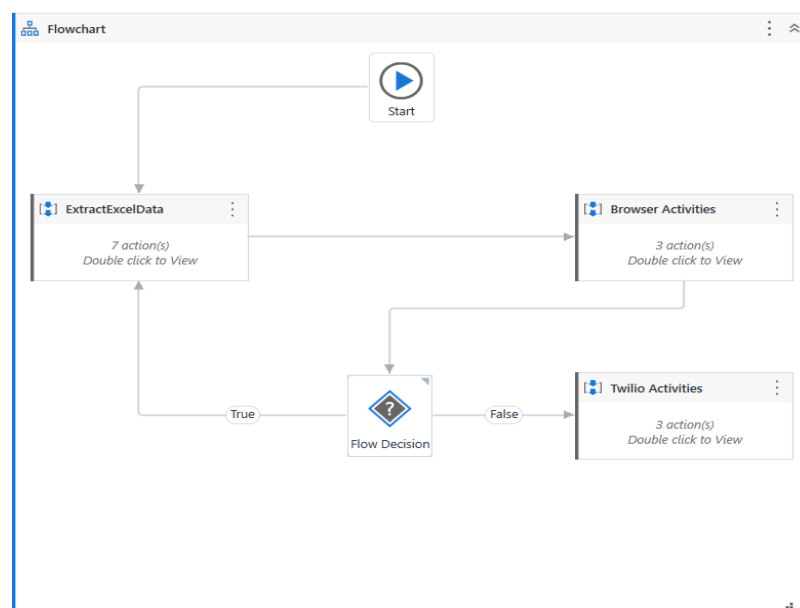
The student details are stored in a excel sheet. The bot reads the student details and uses it to login to the [SIS](#) ,scrap the data related to attendance and sends it to the student.

WorkFlows Used:

1. Sequence:



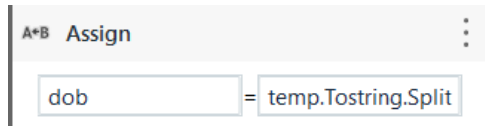
2) FlowChart:



Activities Used:

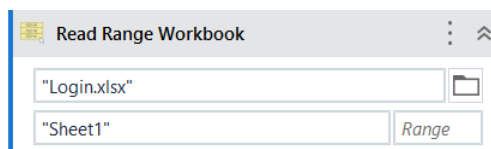
1) Assign Activity:

-This activity is used to assign values to the variables.



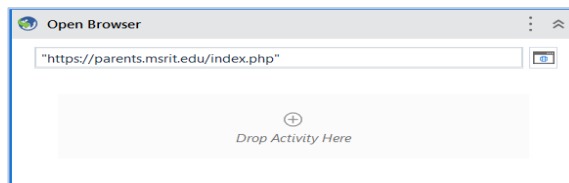
2) Read Range Workbook:

-This activity is used to read the excel sheet.



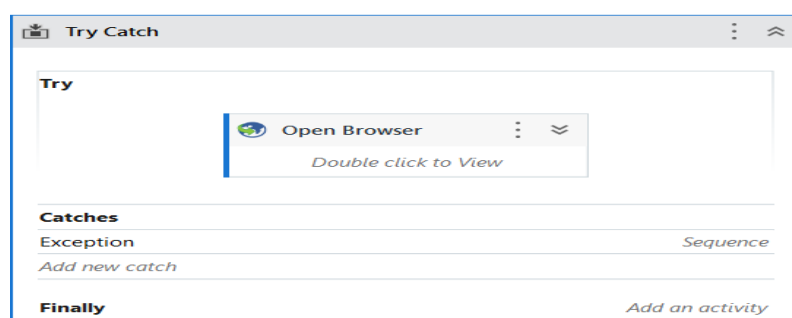
3) Open Browser Activity:

-This activity is used to open the browser.



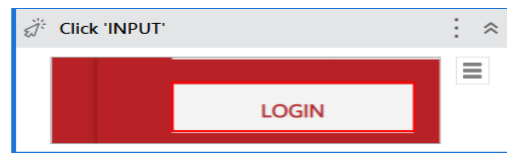
4) Try catch Activity:

-This activity is used to handle exceptions while conducting browser activities.



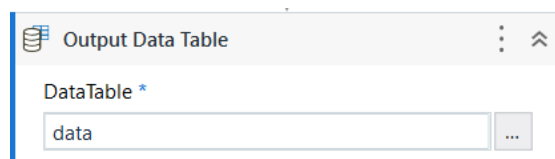
5) Click activity:

-This activity is used to click the buttons which causes appropriate actions.



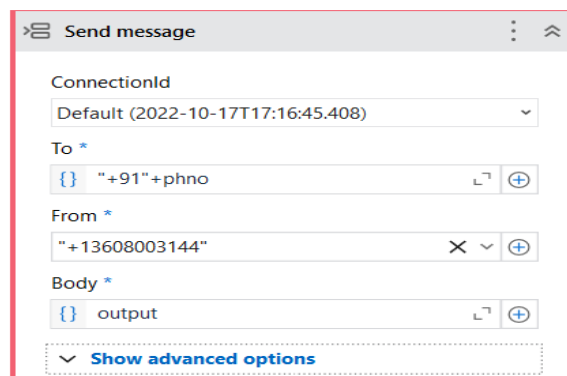
6) Output Data Table:

-This activity is used to convert the variable type from System.Data.DataTable to String.



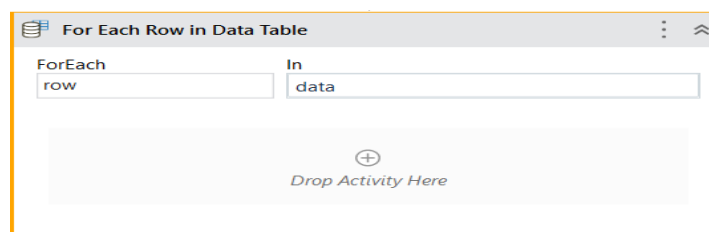
7) Send Message (Twilio):

-This activity is used to send message to a phone number.



8) For Each Row in DataTable:

-This activity is used to iterate into each row of the DataTable.



10)Type into Activity:

-This activity helps to type into a browser or application in a specified location.

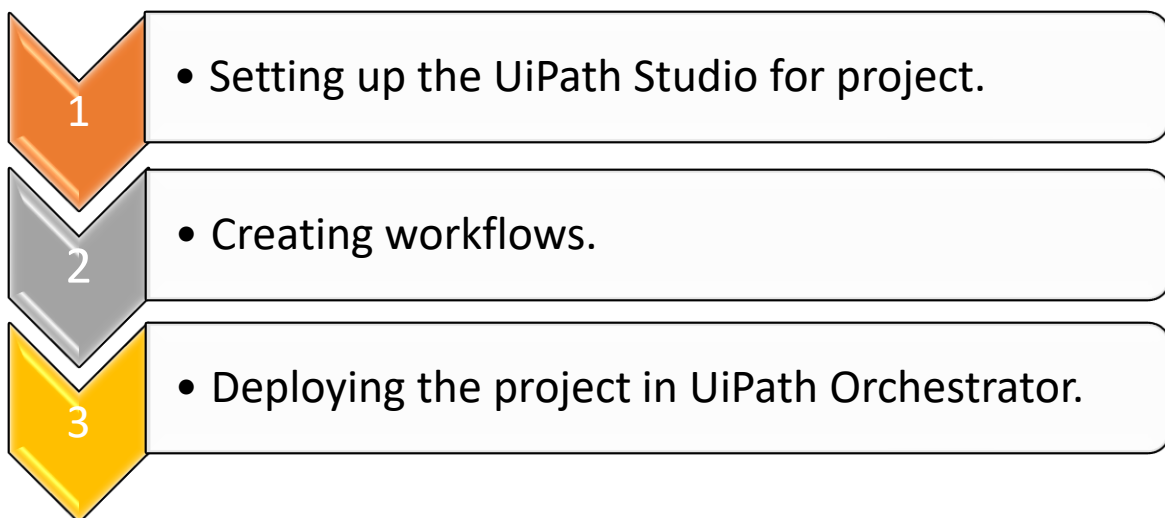


Problem Statement/Use case Identification:

Develop a SIS Bot which can login to student's SIS portal scrap attendance data and send a text message to the student.

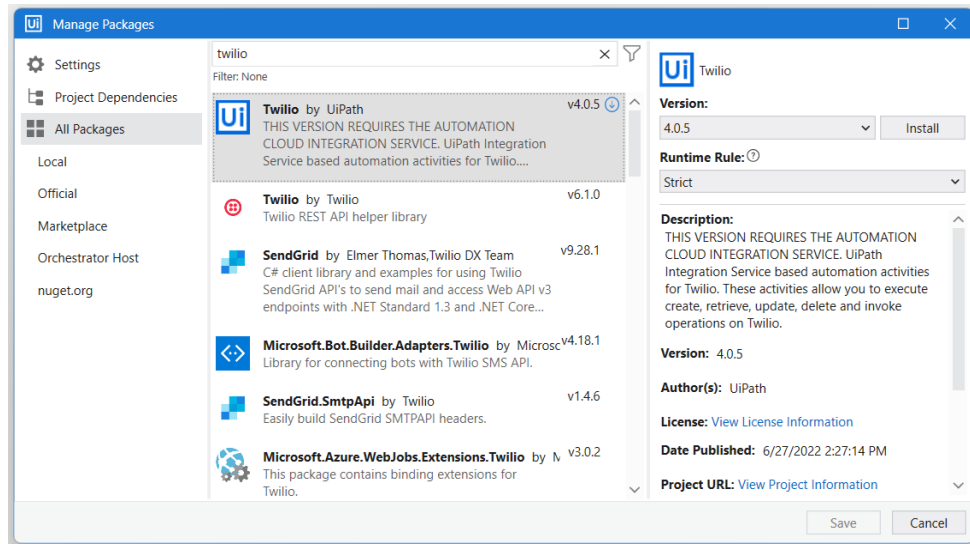
Designing the RPA Bot:

The steps for designing the bot are:



1) Setting up the UiPath Studio for Project:

- Download the UiPath community edition available for free from the official [UiPath](https://www.uipath.com/) website.
- Open the UiPath studio and create a blank process with name SISBot.
- Open settings in the project and disable Modern Design Experience.
- Enable the show modern activities from the filters.
- Click on manage packages and install the twilio package.

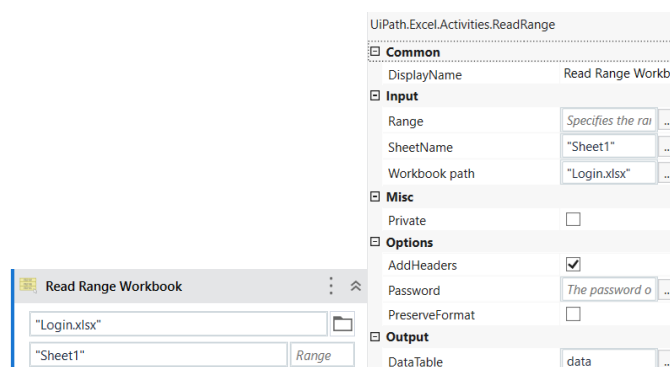


2) Creating WorkFlows:

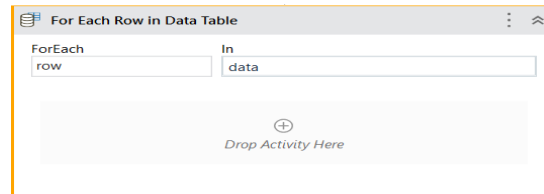
- Create a excel file which contains the details of students. Here we have filled the details of our team.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Name	USN	DOB	Ph No									
2	Bhargava M	1ms20cs030	apr-03-2002	7892646548									
3	Swapna	1ms20cs089	dec-07-2002	8618256864									
4	Kaushiki	1ms20cs059	oct-10-2001	9831038921									
5	Vaiebhav	1ms20cs134	jul-26-2001	7864875039									

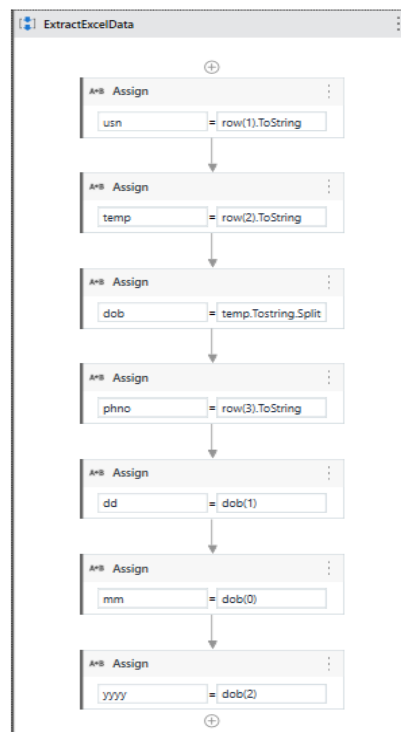
- Use a *Read range Workbook* activity to read the details in the excel sheet and store it in the variable type `System.Data.DataTable`.



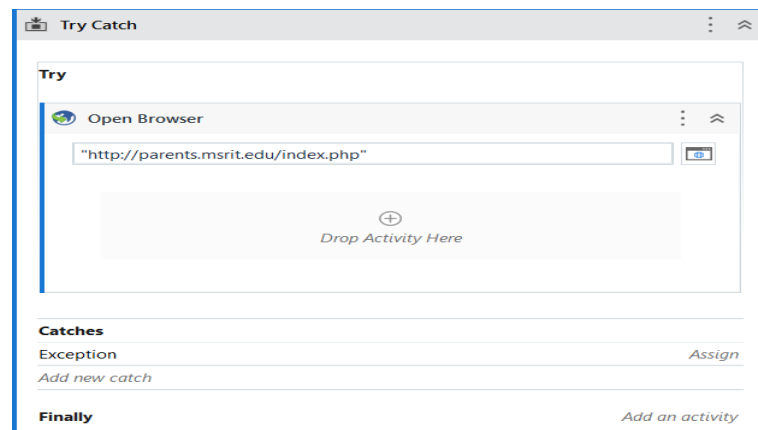
- Use a *For each row in DataTable* activity to iterate through each row in the DataTable and perform each students activity.



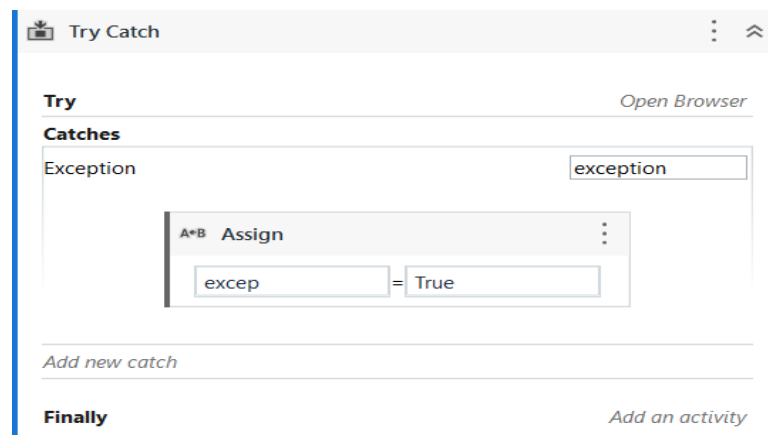
- For our next processes we will be using FlowChart.
- Lets add a new sequence in our flow chart and name it as *ExtractExcelData*.
- This sequence splits the rows in DataTable and stored them in separate variables.
- Complete workflow of *ExtractExcelData*:



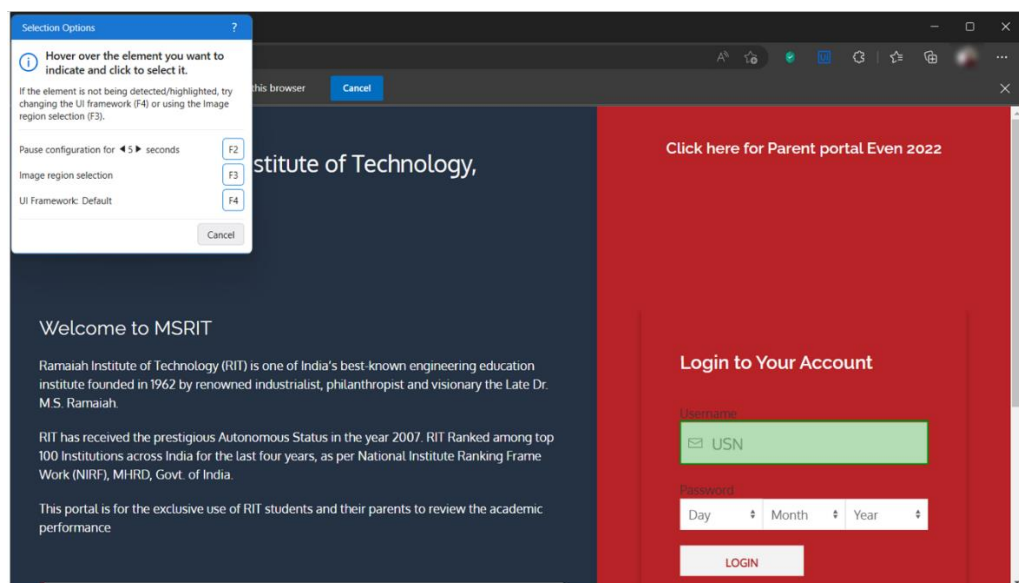
- By this we have completed the activities related to the sequence *ExtractExcelData*.
- Lets add a new sequence into our work flow and name it as *BrowserActivities*.
- All activities related to opening browser, logging into SIS portal, scraping data are completed here.
- Here we use a try/catch activity for the browser activities to handle exceptions and to ensure that an exception doesn't interrupt the normal flow of the activity.
- An *Open Browser* activity is added into the try activity, url of SIS portal ("<http://parents.msrit.edu/index.php>") is inserted.



- If an exception occurs, a Boolean variable *excep* initialized to false is set true.



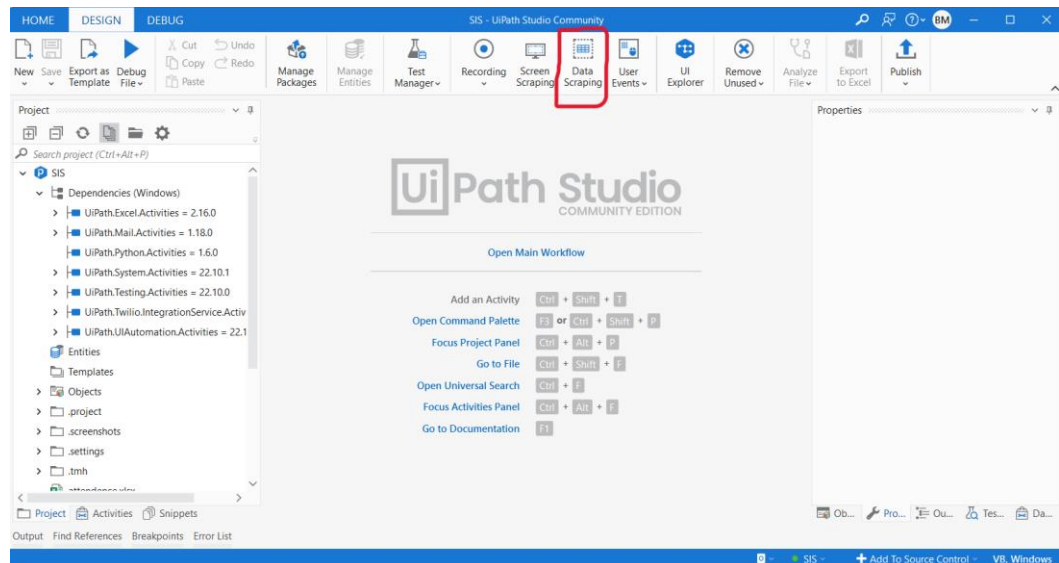
- In the *Open Browser* activity use a *Type Into* activity and configure the typing location on the screen.



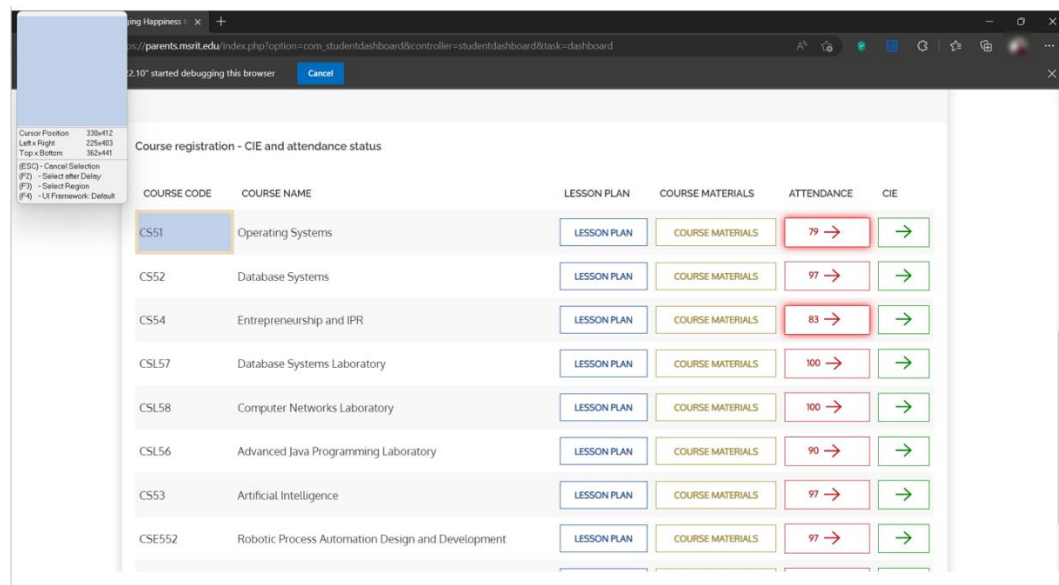
- In the similar way all the fields are entered with the respective details from the data extracted from the excel sheet.
- Complete workflow of *Open Browser*.



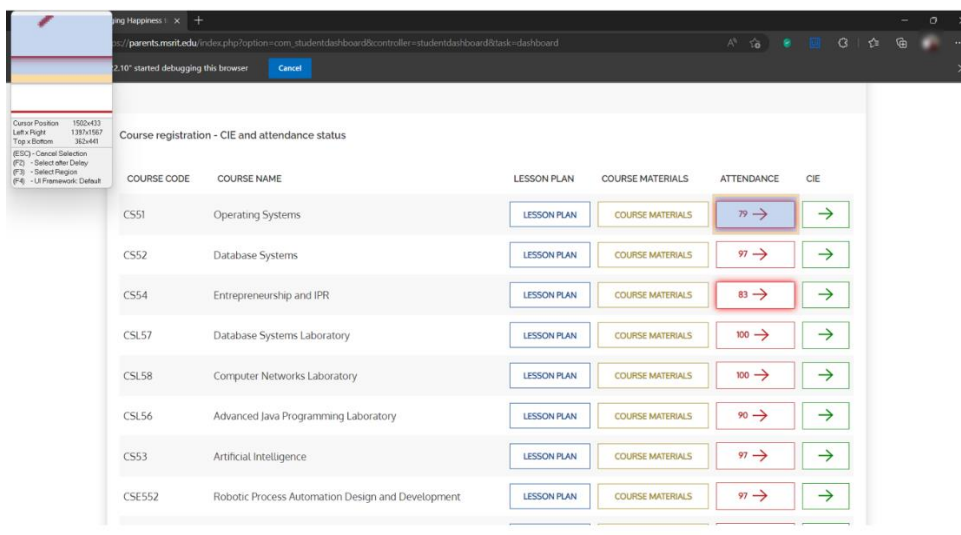
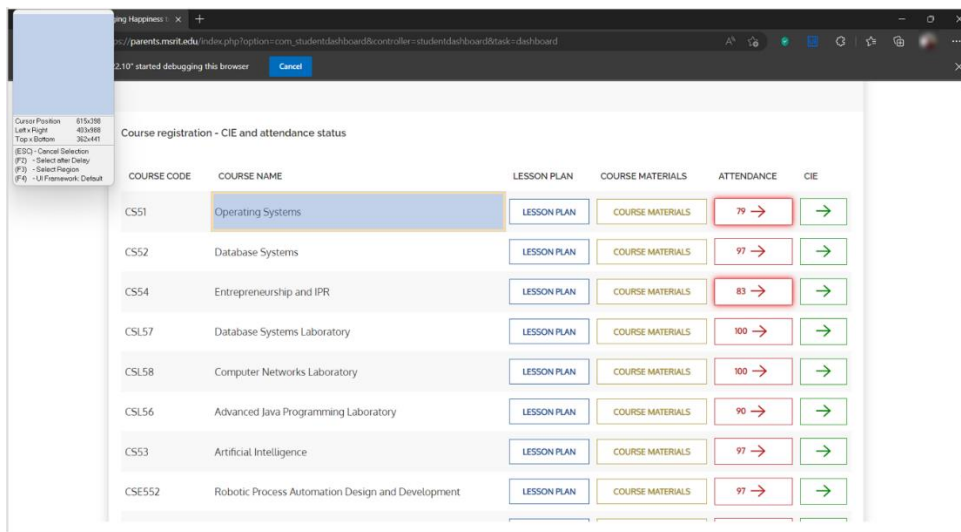
- The most important part is the data scraping. For this we use the *Data Scraping* activity present in the design panel.



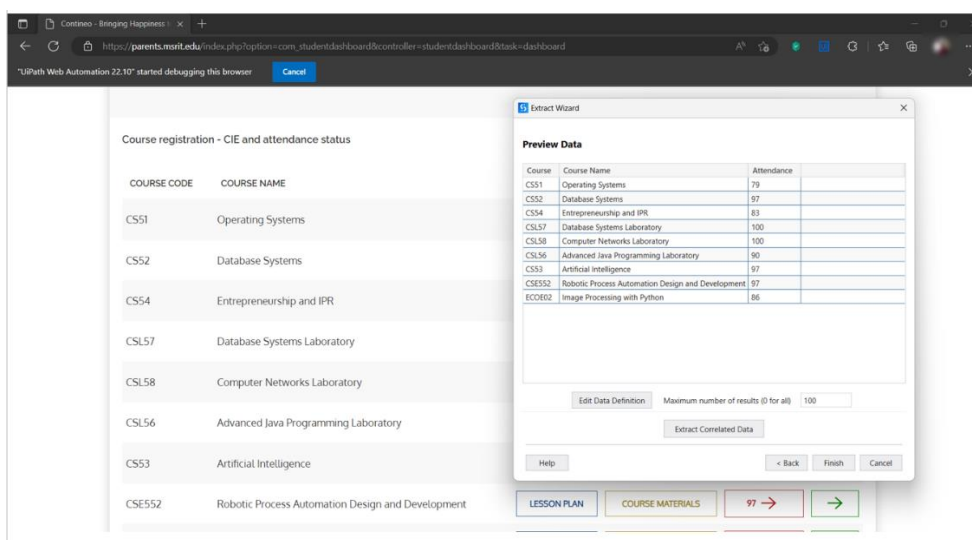
- Click on the Data Scraping activity and click next on the appeared wizard. Select the value of first course code as shown.



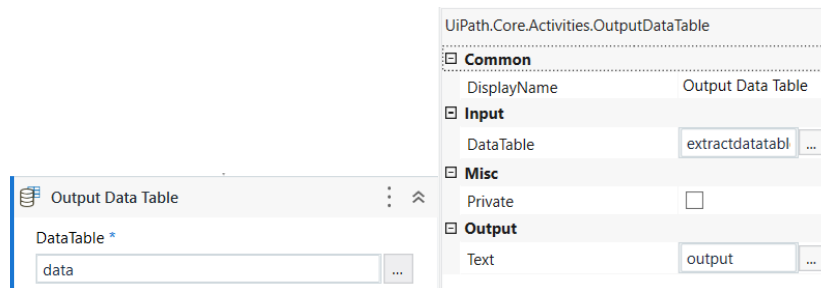
- After that select a similar field in the course code to scrap the entire column.
- Now continue the same process for Course Name and Attendance.



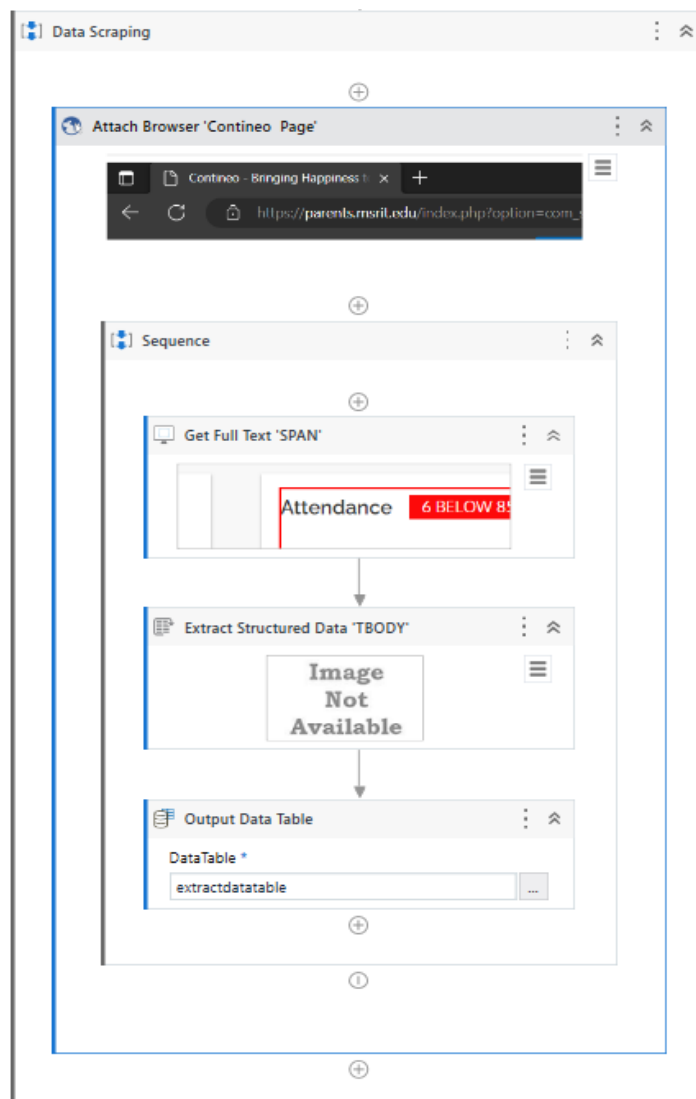
- Finally we get a table as shown in the Extract Wizard box.



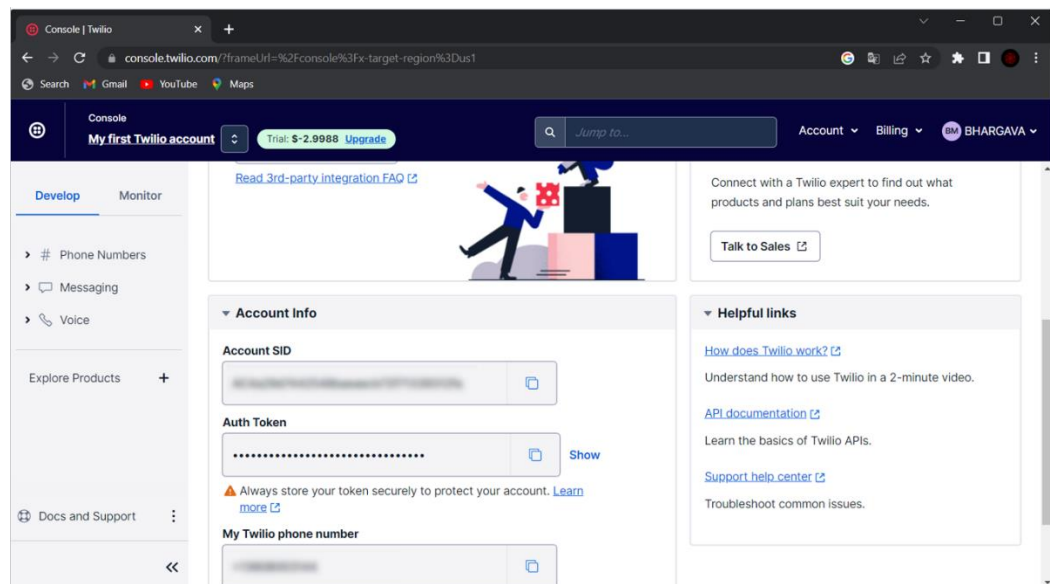
- The output from the *Data Scrap* activity is stored in a variable extractdatatable of type System.Data.DataTable.
- To convert this variable to string type we use *Output Data Table* activity.



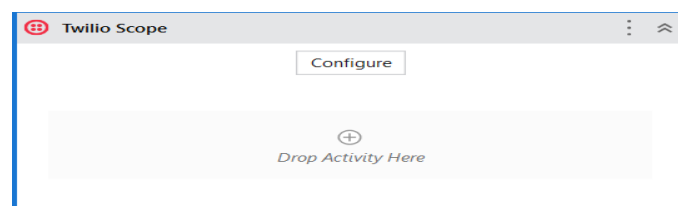
- Activity *Get Full Text* is used to scrap the data which contains the course code of courses whose attendance percentage is less than 85.
- Complete workflow of *Data Scraping*:



- By this we have completed the activities related to the sequence
- *BrowserActivities*.
- Lets add a new sequence into our work flow and name it as *TwilioActivities*.
- All activities related to sending a text message to the student are done here.
- Twilio is an American based in San Francisco, California which provides programmable communication tools for making and receiving phone calls, sending and receiving text messages and performing other communication functions using its web service APIs.
- UiPath provides integration service with Twilio.
- First we need to create a Twilio account.
- After creating a Twilio account login and open the console.



- You will be provided with a Account SID, Auth Token and a Twilio Phone number.
- Now add a *Twilio Scope* activity in the *Twilio Activities* sequence.



- Click on Configure and add a new connection.
- It directs to a web page.

- Fill in with all details and press connect.

The screenshot shows a web browser window with the URL `cloud.upath.com/msrthwaus/defaulttenant/provisioning_login?session_id=35ec2e16-84c-4177-a7af-2f7bacaf5b0&state=ymfzzVYb...`. The page is titled "Connect to Twilio" and features the Upath and Twilio logos. Below the logos, there are four input fields: "API Credentials" (a dropdown menu set to "LIVE"), "Account SID" (a text field with a masked value), "Auth Token" (a text field with a masked value), and "Phone Number" (a text field with a masked value). A blue "Connect" button is at the bottom. A small note at the bottom states: "Connecting allows Upath to read, write, modify, and delete Twilio".

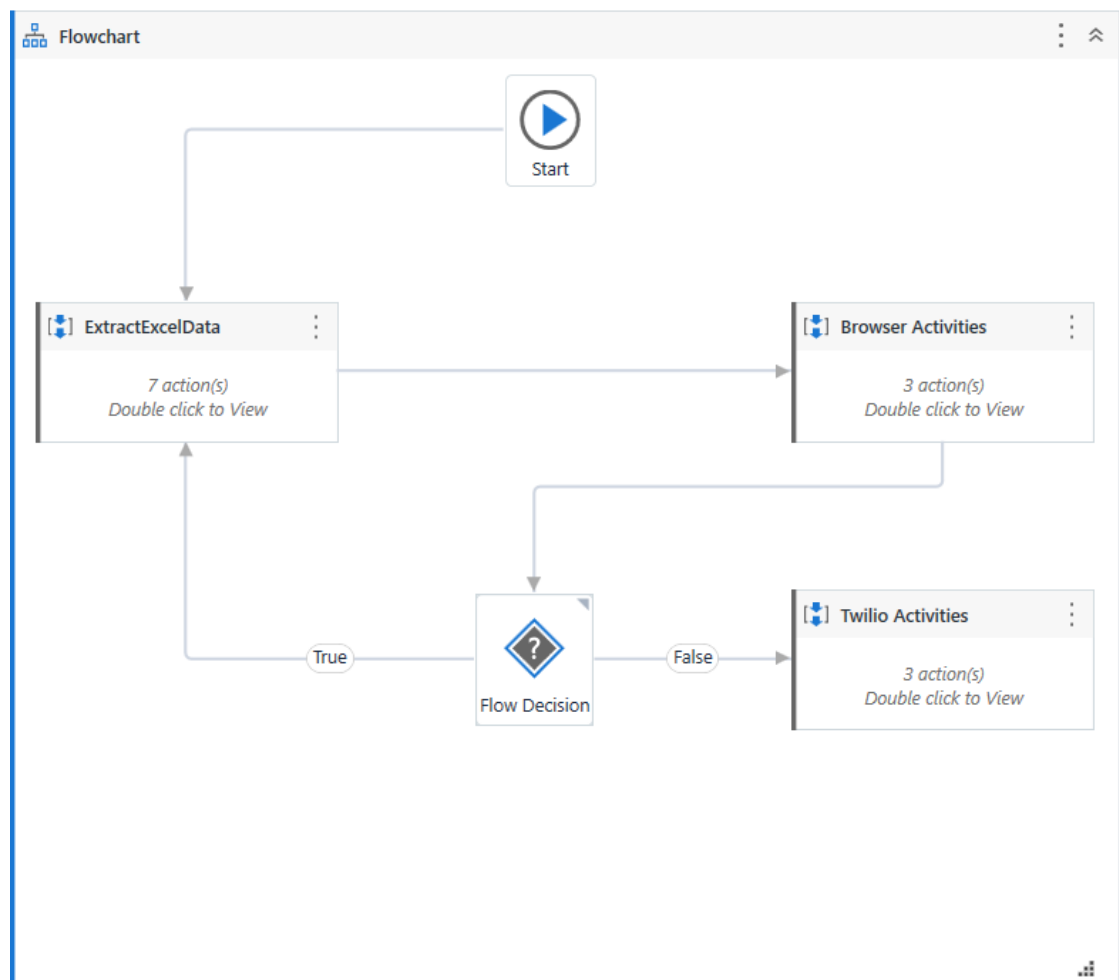
- After successful connection add *Send Message* activity to the *Twilio Scope*.
- Configure the *Send Message* activity with the required details.
- Complete workflow of *Twilio Activities*.

The screenshot shows the "Twilio Activities" workflow editor. At the top, there is a "Twilio Scope" section with a "Configure" button. Below this, there are two "Send message" activities connected by a downward arrow. The first activity has the following configuration: "Connectionid" is set to "Default (2022-10-17T17:16:45.408)", "To" is set to "+91"+phno, "From" is set to "+13608003144", and "Body" is set to "output". The second activity has the same "Connectionid" and "To" fields, but its "From" field is set to "+13608003144" and its "Body" is set to "warning". Both activities have a "Show advanced options" link at the bottom.

- By this we have completed the activities related to the sequence *TwilioActivities*.
- Add a *Flow Decision* activity with Boolean variable *excep*(used in try/catch activity in Browser Activity sequence) variable as condition.

System.Activities.Statements.FlowDecision	
Misc	
Condition	excep
DisplayName	Flow Decision
FalseLabel	False
TrueLabel	True

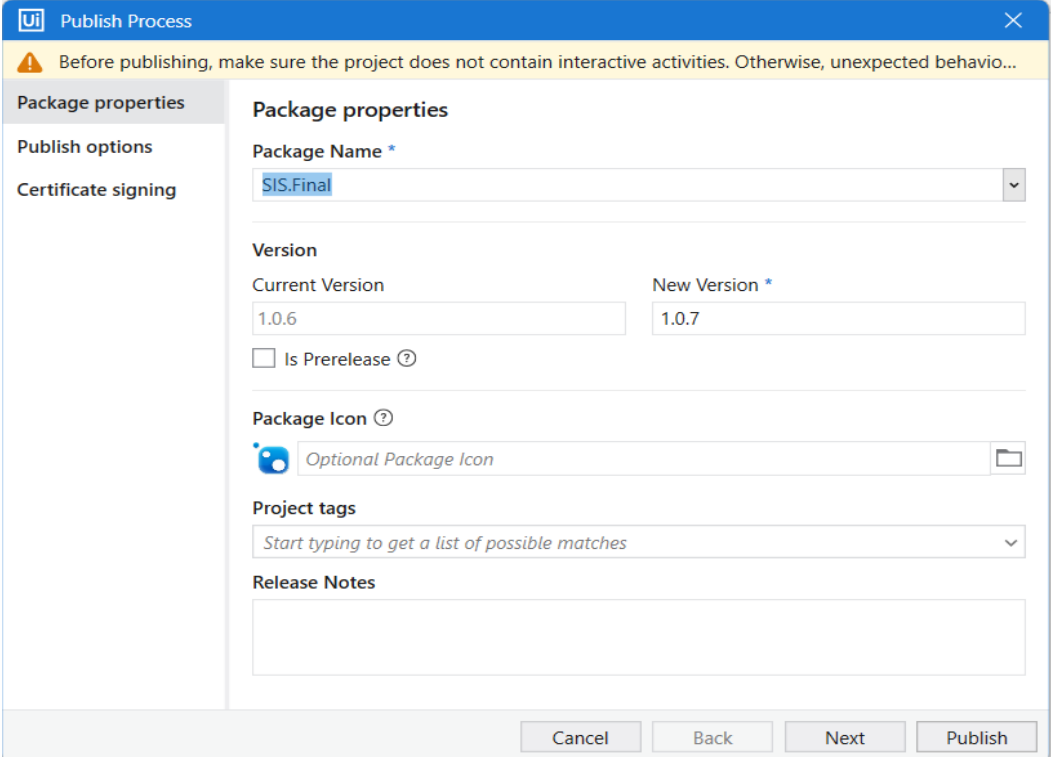
- Finally connect the sequences in the flowchart as shown.



- By this we have completed the creation of workflows.

3) Deploying the project in UiPath Orchestrator:

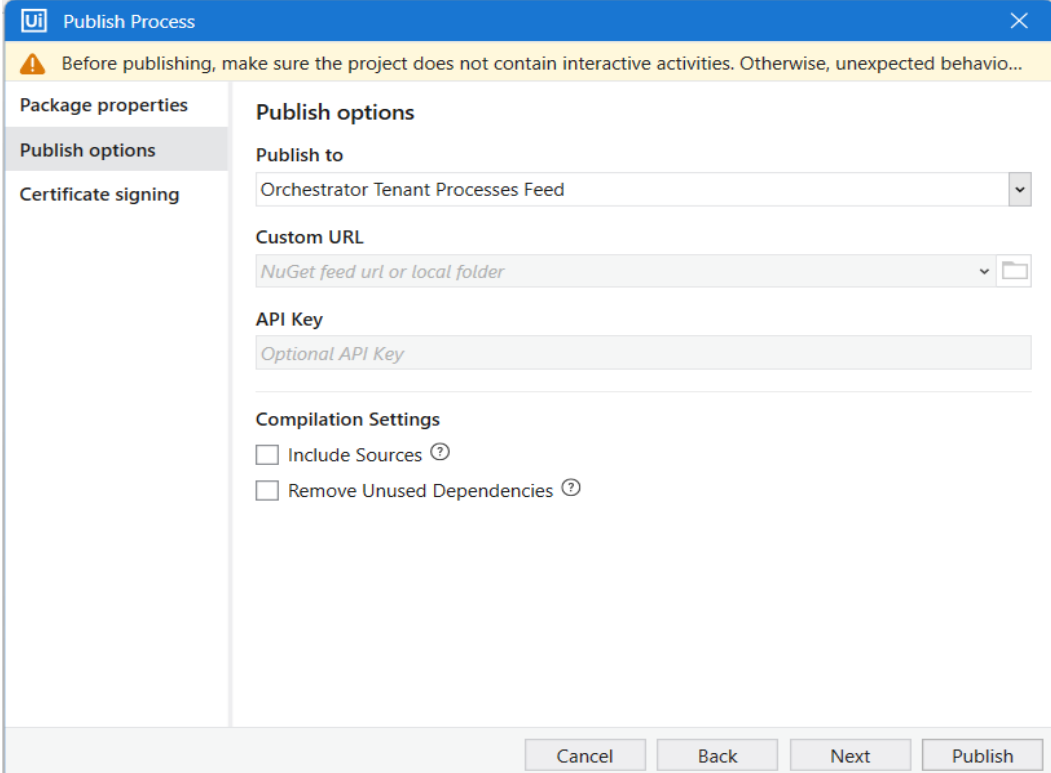
- First we need to publish our project.
- Click on the publish option present in the Design panel.
- Click next and choose publish to orchestrator tenant process feed.



The image shows the 'Publish Process' dialog box in UiPath, specifically the 'Package properties' tab. The dialog has a blue header with the UiPath logo and a close button. Below the header is a yellow warning bar with an exclamation mark icon and the text: 'Before publishing, make sure the project does not contain interactive activities. Otherwise, unexpected behavior...'. The left sidebar contains three tabs: 'Package properties' (selected), 'Publish options', and 'Certificate signing'. The main area is titled 'Package properties' and contains the following fields:

- Package Name ***: A dropdown menu showing 'SIS.Final'.
- Version**: Two input fields. 'Current Version' is '1.0.6' and 'New Version *' is '1.0.7'.
- Is Prerelease ?**: A checkbox that is currently unchecked.
- Package Icon ?**: A field with a blue icon and the text 'Optional Package Icon', followed by a folder icon button.
- Project tags**: A dropdown menu with the placeholder text 'Start typing to get a list of possible matches'.
- Release Notes**: A large empty text area.

At the bottom of the dialog are four buttons: 'Cancel', 'Back', 'Next', and 'Publish'.

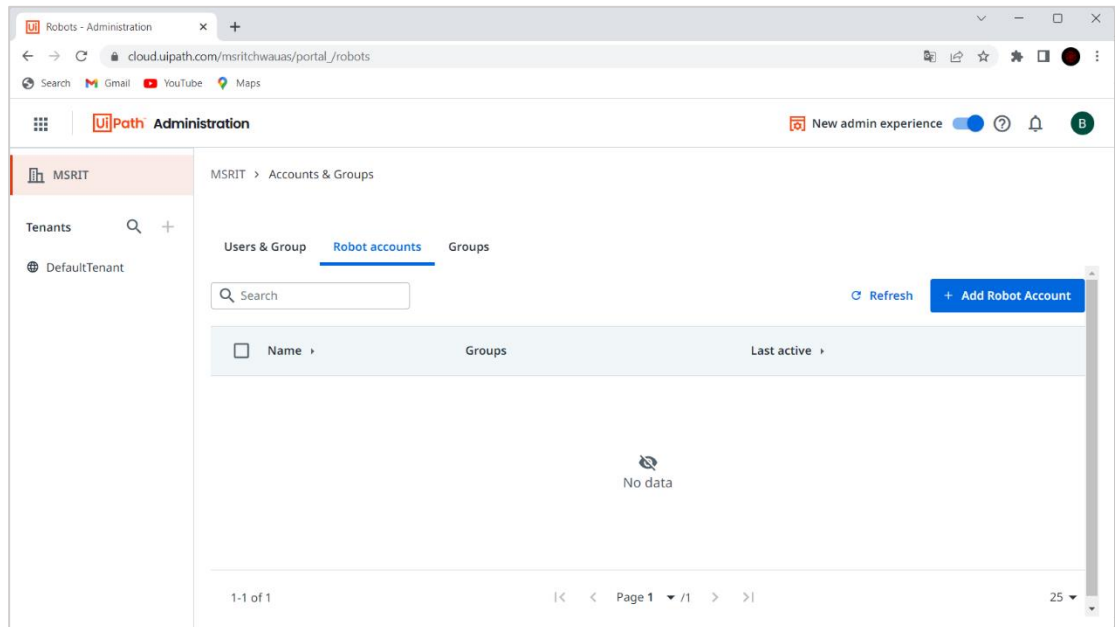


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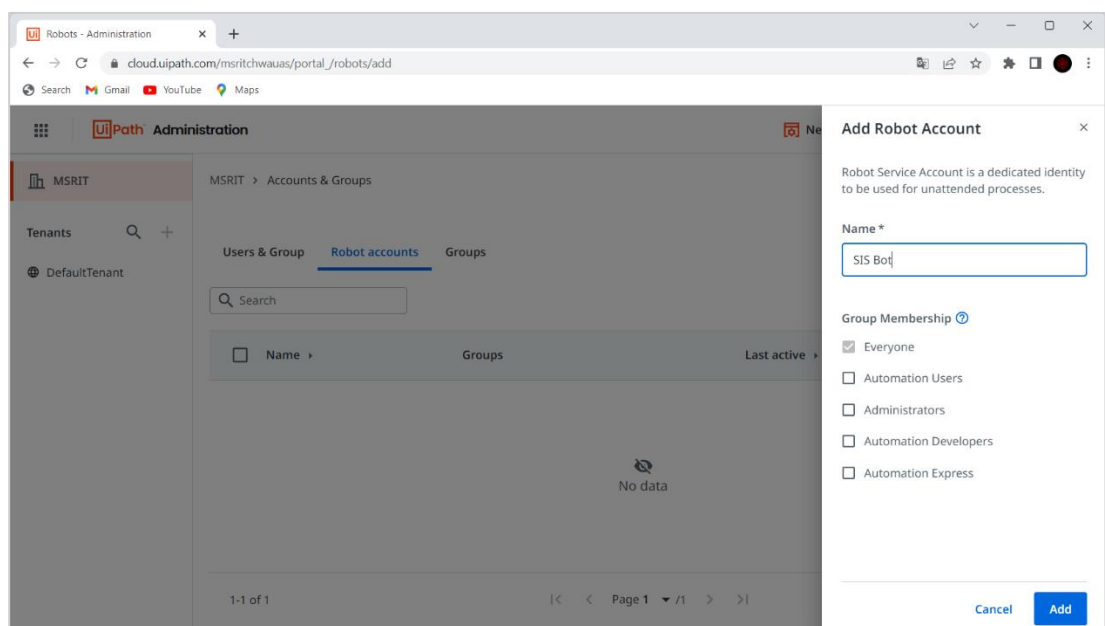
- Publish to**: A dropdown menu showing 'Orchestrator Tenant Processes Feed'.
- Custom URL**: A field with the placeholder text 'NuGet feed url or local folder', followed by a dropdown menu and a folder icon button.
- API Key**: A field with the placeholder text 'Optional API Key'.
- Compilation Settings**: Two checkboxes. 'Include Sources ?' is unchecked, and 'Remove Unused Dependencies ?' is unchecked.

At the bottom of the dialog are four buttons: 'Cancel', 'Back', 'Next', and 'Publish'.

- Open the UiPath cloud (cloud.uipath.com).
- Since we are creating a unattended robot we need to create a robot account.
- Go to the Admin section, click on Accounts and groups, select Robot Accounts and click on Add Robot Account.



- Give a name(Eg: SIS Bot) and click on Add.



- Lets assign role to the newly created robot account.

- Open the orchestrator, click on TENANT, select Manage Access and click on Assign role.
- Select Robot Account.
- Configure the General Details and unattended setup as shown:

The screenshot shows the 'Assign roles to a Robot account' page in the UiPath Orchestrator. The breadcrumb trail is: Tenant > Manage Access > Assign roles > Assign roles to a Robot account. The page has three steps: 1. General details (active), 2. Unattended setup (Optional), and 3. Robot Settings (Optional). Under 'Account & Roles', there is a search bar for a Robot account with 'SIS Bot' selected and a 'Manage Accounts' link. Below that, there is a 'Roles' section with 'Robot' selected and a '+ New role' button. At the bottom, there are buttons for 'Cancel', 'Back', 'Next', and 'Skip and assign'.

The screenshot shows the 'Unattended setup' step of the 'Assign roles to a Robot account' page. It is titled 'Foreground automations settings'. There are two radio button options: 'Use the VMs preconfigured Windows user account (for runs on UiPath Automation Cloud robots only)' and 'Use a specific Windows user account. Add credentials below'. The second option is selected. Below it, there are input fields for 'Domain\Username' (containing 'xxx\yyy'), 'Credential Store' (containing 'Orchestrator Database'), 'Password' (masked with dots), and 'Credential Type'. To the right, there are two bullet points: 'Run background unattended automations.' and 'Run foreground unattended automations under a specific Windows user account. Credentials are used by the robot to sign in to a physical or virtual machine running a Windows OS.' At the bottom, there are buttons for 'Cancel', 'Back', 'Next', and 'Skip and assign'.

- Assign the robot.
- Now to run the process a machine is required.
- To create a machine select machines under TENANT, click on Add Machine and select Machine Template.
- Configure the machine template as shown:

Machine template - UiPath Orch

cloud.uipath.com/msritchwauas/DefaultTenant/orchestrator/_machines/add/template?tid=1212967&fid=3734298

UiPath Orchestrator

1 Machine

2 Maintenance Optional

General details ⓘ

Template name *

SIS

Description

Supported usage

Process type *

All

Process Compatibility *

All

Runtime details

Runtime licenses: Production, Testing

The number of licenses specified below will be consumed by each machine connected to this template. The licenses are released as soon as the machine disconnects.

This configuration defines the maximum number of jobs that the machine can run at the same time.

Production (Unattended) *

1 /1

Testing *

1 /1

Cancel Provision

Machine template - UiPath Orch

cloud.uipath.com/msritchwauas/DefaultTenant/orchestrator/_machines/add/template?tid=1212967&fid=3734298

UiPath Orchestrator

Tenant > Machines > Machine template

Success! Your machine was created.

You can now authenticate this machine to your Robot in the Assistant by using the details below.

Machine Name

SIS

Client ID / Machine key

The ID is unique, generated once and used for identification purposes

Client secret

Works in combination with the ID above. You can add or delete secrets when editing the machine.

Close

- Copy the machine key.
- Now open preferences in the UiPath assistant and configure the newly created machine in the orchestrator settings.

Preferences

General

Keyboard Shortcuts

Orchestrator Settings

Launchpad

Tools

Help

Orchestrator Configuration

Connection Type

Machine Key

Machine Name

SIS

Orchestrator URL ⓘ

https://cloud.uipath.com/msritchwauas/DefaultTenant/orchestrator/_

Machine Key

Disconnect Sign out

Status: Connected, Licensed, EDR protection not detected

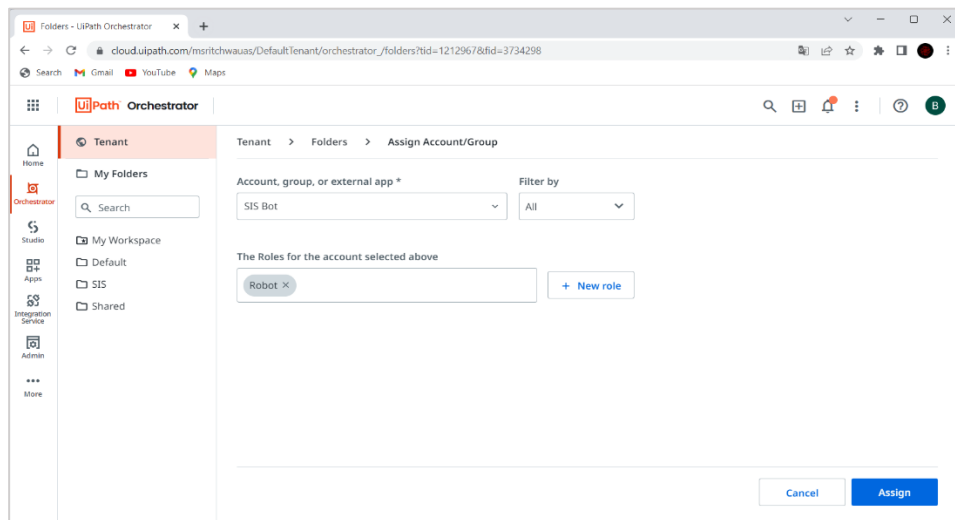
Logging

Log Level

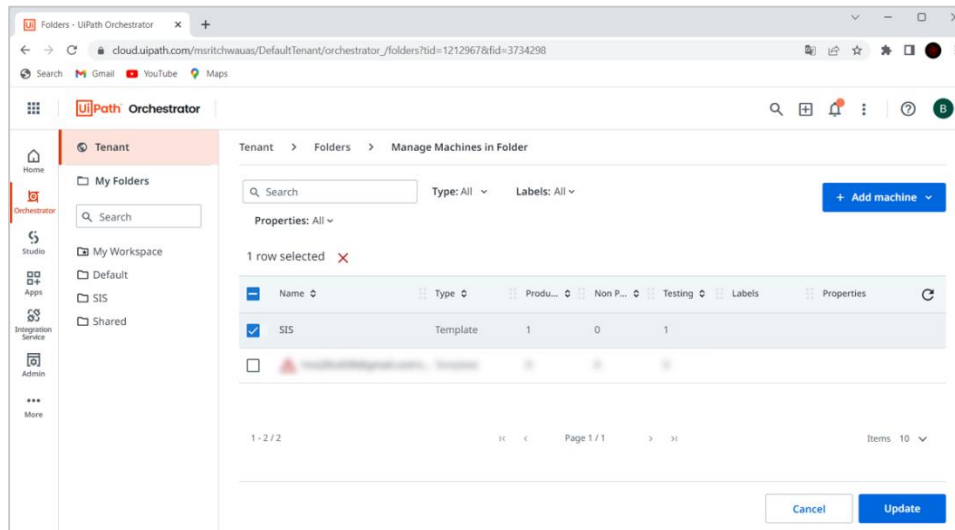
Information

During execution of your automation, information logs may contain sensitive data. More details can be found in our Assistant documentation .

- After successful connection of the assistant with the newly created machine create a new folder (Eg: SIS) under TENANT.
- Assign Account/Group to the folder as shown with the robot account.



- Assign the newly created machine to the created folder.



- Now we need to add the process to the folder created.
- Select processes and click on Add Process.
- Configure the process as shown :

cloud.uipath.com/msritchwaas/DefaultTenant/orchestrator/_processes/add?tid=1212967&fid=3902802

UiPath Orchestrator

SIS > Automations > Processes > Add Process

1 Process Configuration 2 Package Requirements 3 Additional Settings

Package Overview

Package Source Name *

SIS.Final

Click to add file or drop package file here

Package Version *

1.0.6

If your process is using UiPath.System.Activities you need version 19.9 or higher in order to execute it in a modern folder.

Runtime Arguments

Entry point

Main.xaml

The current package version has no input or output arguments.

Cancel Back Next Create

cloud.uipath.com/msritchwaas/DefaultTenant/orchestrator/_processes/add?tid=1212967&fid=3902802

UiPath Orchestrator

SIS > Automations > Processes > Add Process

1 Process Configuration 2 Package Requirements 3 Additional Settings

Process Details

Display name

SIS

Description

Final draft of SIS Automation

Describe the process in a few words. Initially inherited based on package version.

Tags

Labels

Priority & Running Options

Job priority *

Medium

Control which job has precedence over competing jobs.

☒ Process can't be stopped from UiPath Assistant
Prevent the process from being stopped or paused using the Assistant.

☐ Automatically Start Process
Launch the process automatically when the Robot agent starts. If enabled together with Process can't be stopped from UiPath Assistant, the process launches when Assistant is first started on the user machine.

Cancel Back Next Create

- Click on create and we can see our process has been created.

cloud.uipath.com/msritchwaas/DefaultTenant/orchestrator/_processes?tid=1212967&fid=3902802&index=0&size=10&state=M4ewIglgPg7gljUwD...

UiPath Orchestrator

Home Automations Monitoring Queues Assets Storage Buckets Testing Settings

Processes Jobs Triggers Logs

Search Columns Filters + Add process

	Name	Version	J...	Execut...	Comp...	Entry...	Descri...	Labels	Properties
<input type="checkbox"/>	SIS	1.0.6	M...	Unatten...	Windows...	Main.xaml	Final dra...		

1 - 1 / 1 Page 1 / 1 Items 10

- We must add a trigger to run the bot periodically without any human interference.
- Select the Triggers option and click on Add a new trigger.
- Let us run the bot on Monday 6 am of every week.
- Configure the trigger as shown:

Create Trigger - UiPath Orchestrator

Time (Selected) | Queue

Name *
SIS

Timezone *
(UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi

Process Name *
SIS

Job priority *
Inherited

Runtime type *
Production (Unavailable)

Execution Target
Allocate dynamically
Execute the process 1 times

Arguments

Frequency:
☐ Minutes
☐ Hourly
☐ Daily
☒ Weekly
☐ Monthly
☐ Advanced

Every:
☒ Monday
☐ Wednesday
☐ Friday
☐ Sunday

At 06 hour(s)
And 00 minute(s)

Cancel Add

Create Trigger - UiPath Orchestrator

Allocate dynamically
Execute the process 1 times

Account
SIS Bot (xxx\yyy)

Machine
SIS

Hostname
Any machine

Non-working days restrictions
No calendar selected.

☐ Monthly
☐ Advanced

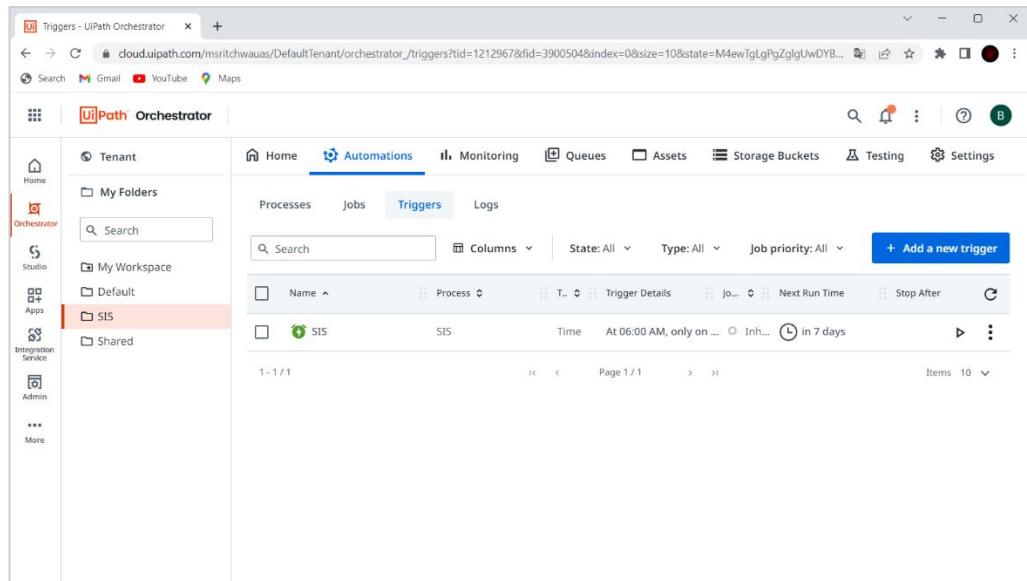
At 06 hour(s)
And 00 minute(s)

The process will be scheduled in (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi and automatically adjusted for daylight saving time.

☐ Schedule ending of job execution
☐ Schedule automatic trigger disabling
☐ Generate an alert if the job is stuck in pending or resumed status
☐ Generate an alert if the job started and has not completed
☐ Keep Account/Machine allocation on job resumption

Cancel Add

- Click on Add and our trigger is created.

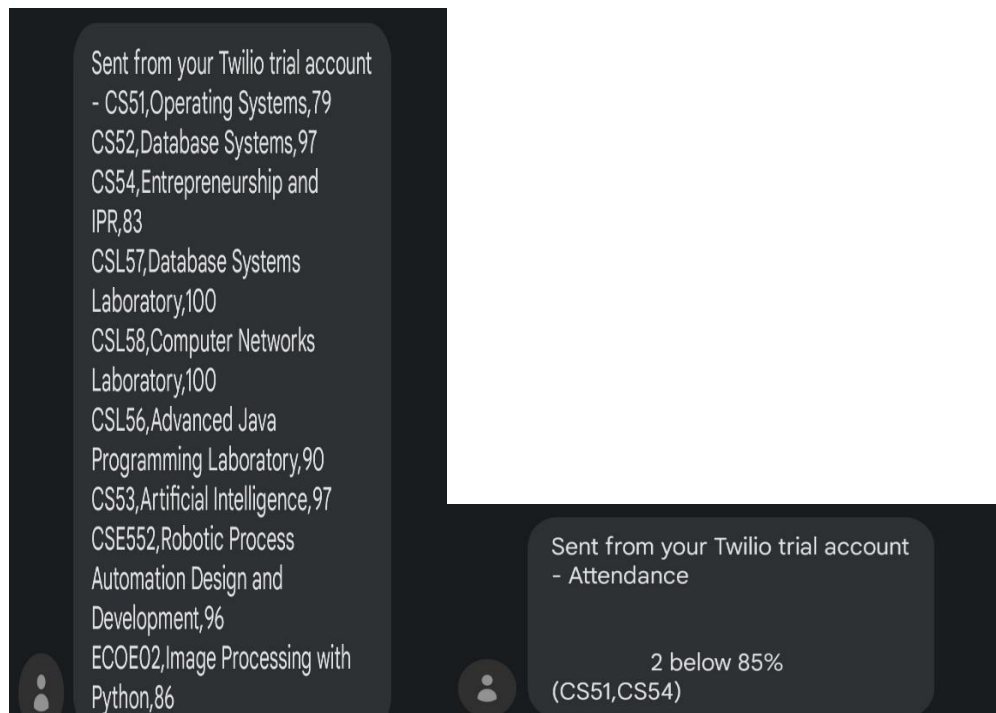


- Here we can see that our trigger is created and the next run time is scheduled.

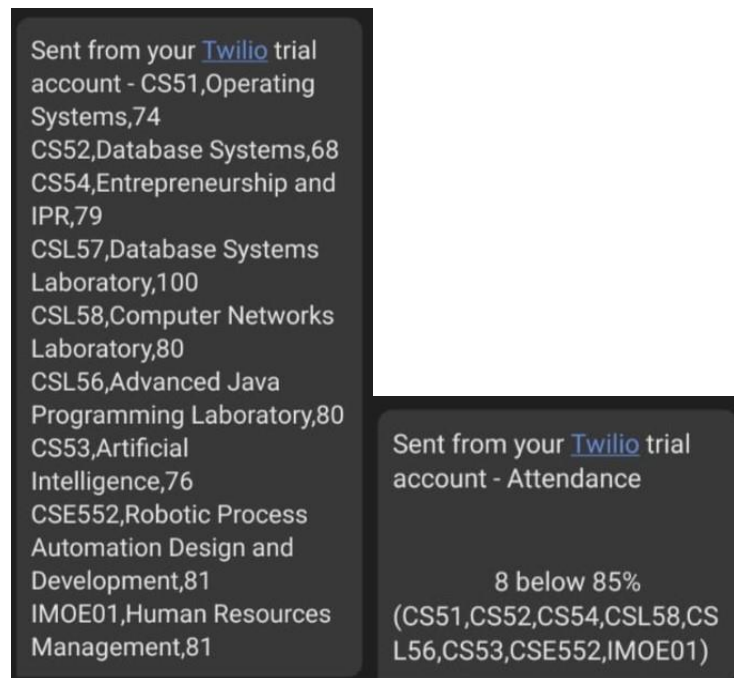
Results:

Lets see the results after the bot has successfully run.

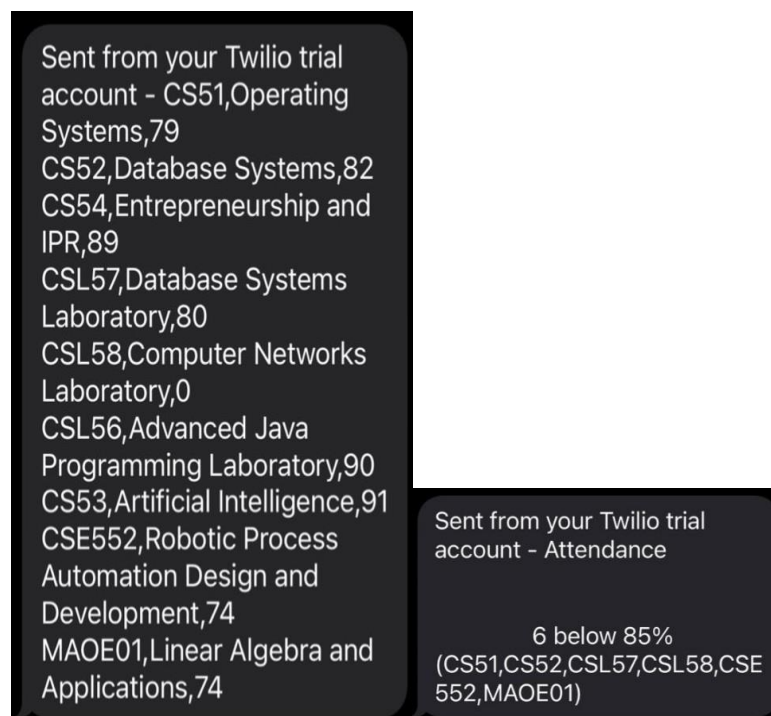
- Message received by Bhargava M.



- Message received by Kaushiki Shaha.



- Message received by Swapna Ramineni.



- Message received by Vaiebhav Chettri.

Sent from your Twilio trial account -
CS51,Operating Systems,97
CS52,Database Systems,78
CS54,Entrepreneurship and IPR,79
CSL57,Database Systems
Laboratory,100
CSL58,Computer Networks
Laboratory,100
CSL56,Advanced Java
Programming Laboratory,90
CS53,Artificial Intelligence,79
CSE552,Robotic Process
Automation Design and
Development,78
MEOE04,Traditional Indian Science
and Technology,67

Sent from your Twilio trial account -
Attendance

5 below 85%
(CS52,CS54,CS53,CSE552,MEOE04)

- We can see that our bot has successfully completed the process and the students have received the messages regarding the attendance.

Applications/Usage of RPA Bot:

- RPA Bots are commonly used to reduce the work load.
- Usage of RPA Bots reduces the occurrence errors.
- The SIS Bot developed by us helps the students to access their attendance without network.
- The students can receive weekly status of their attendance.
- The students can also receive alerts whenever the attendance percentage drops below 85.
- The message can also be sent to parents to track attendance of their child.

Conclusion:

Nowadays automations are becoming common. SIS Bot is one among them. The SIS Bot can also be used further with modifications to send the CIE marks, Fee payments, Exam history etc of the student. This helps the students to receive messages regarding their CIE marks too. There is no need of a person to individually send messages to all student. Everything can be automated.

RPA Developer Foundation Certificates:



Diploma of Completion

Proudly presented to:

Bhargava M

For successfully completing the learning plan:

**RPA Developer Foundation
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10/19/2022

Date of issue

A small, blue, round robot character with yellow antennae and red arms, positioned in the upper right corner of the diploma.

Daniel Dines

Daniel Dines
Chief Executive Officer



Diploma of Completion

Proudly presented to:

Kaushiki Shaha

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A small, blue, round robot character with yellow antennae and red arms, positioned in the upper right corner of the diploma.

Daniel Dines

Daniel Dines
Chief Executive Officer



Diploma of Completion

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Swapna Ramineni

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