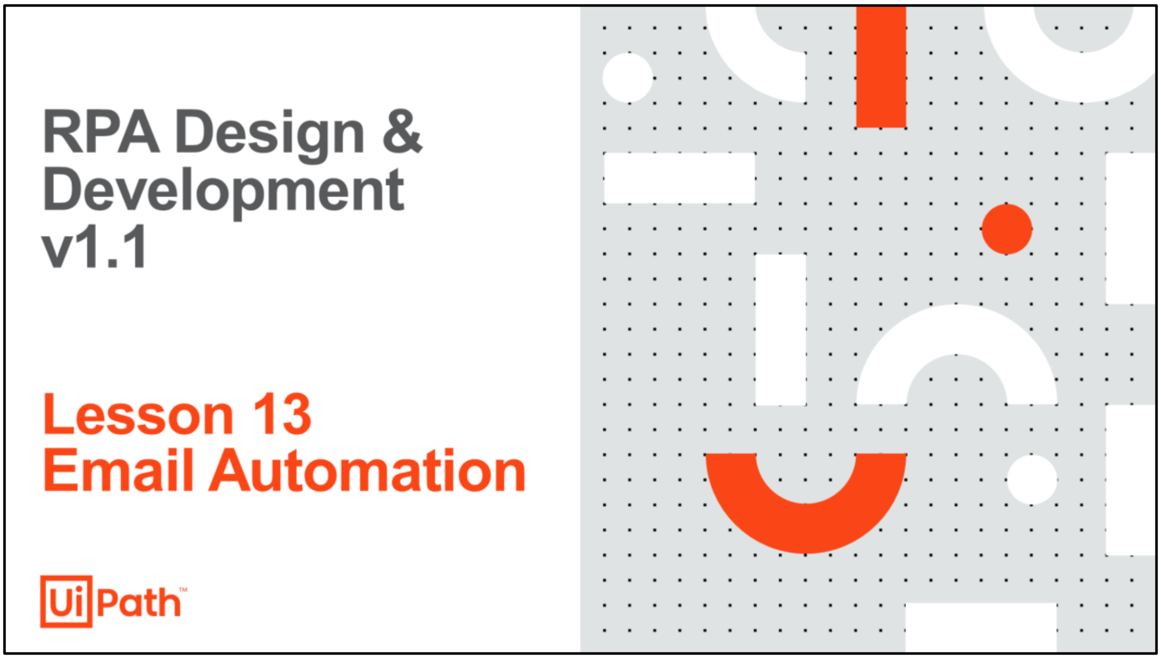


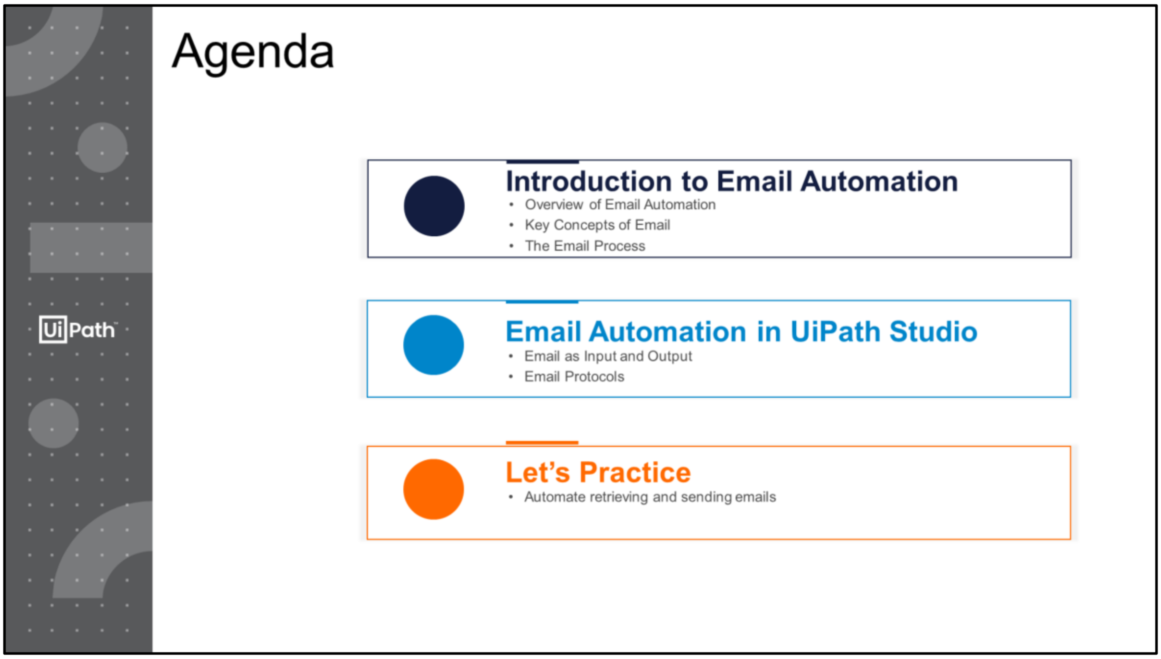
RPA Design & Development v1.1

Lesson 13
Email Automation

UiPath™

Module Objectives:
After completing this module, students should be able to:

- Understand the basics of email automation



Agenda

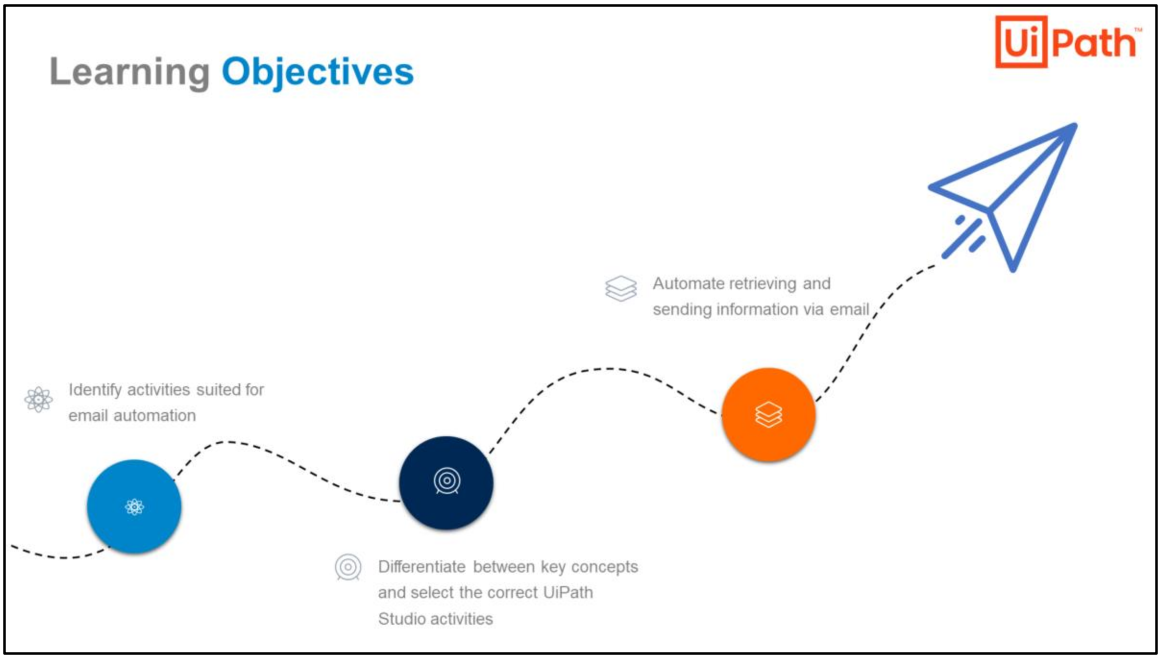
Introduction to Email Automation
- Overview of Email Automation
- Key Concepts of Email
- The Email Process

Email Automation in UiPath Studio
- Email as Input and Output
- Email Protocols

Let's Practice
- Automate retrieving and sending emails

In this lesson, we will cover the following topics:

- Introduction to Email Automation
  - Overview to Email Automation
  - Key Concepts of Email
  - Email Process
- Email Automation in UiPath Studio
  - Email as Input and Output
  - Email Protocols
- Practice retrieving and sending emails
  - Automate retrieving and sending emails



Learning Objectives

UiPath

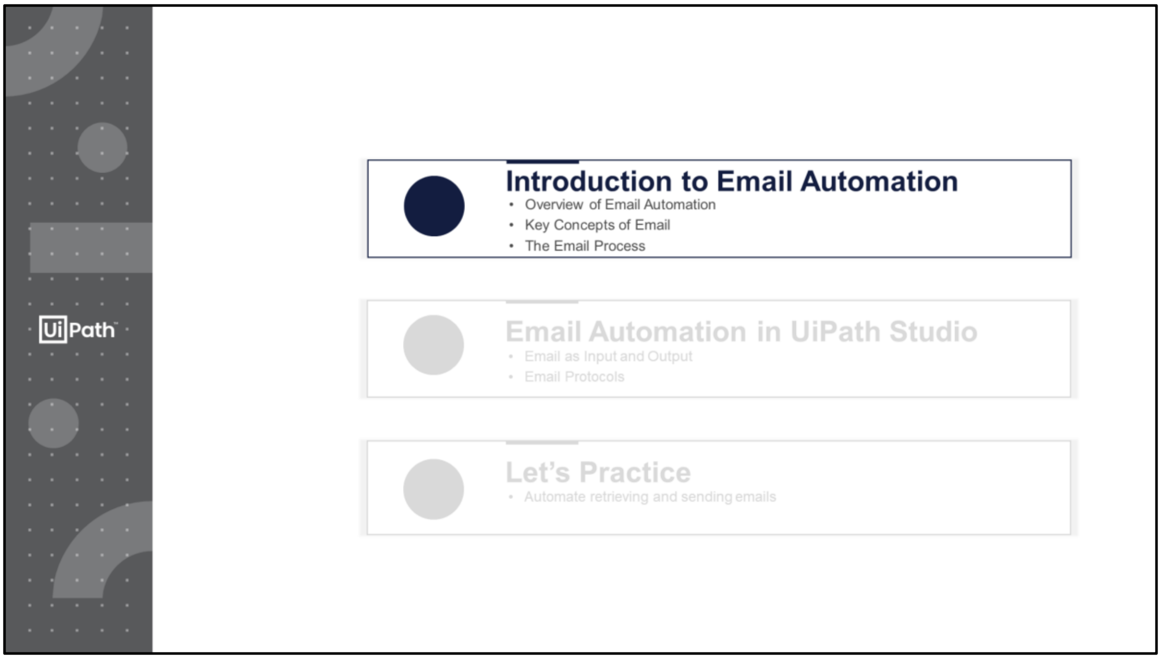
Identify activities suited for email automation

Differentiate between key concepts and select the correct UiPath Studio activities

Automate retrieving and sending information via email

At the end of this lesson, you will be able to:

- Identify activities suited for email automation.
- Differentiate between key concepts (SMTP, POP3, IMAP, Exchange, Outlook)and select the correct UiPath Studio activities.
- Automate retrieving and sending information via email.



Introduction to Email Automation

- Overview of Email Automation
- Key Concepts of Email
- The Email Process

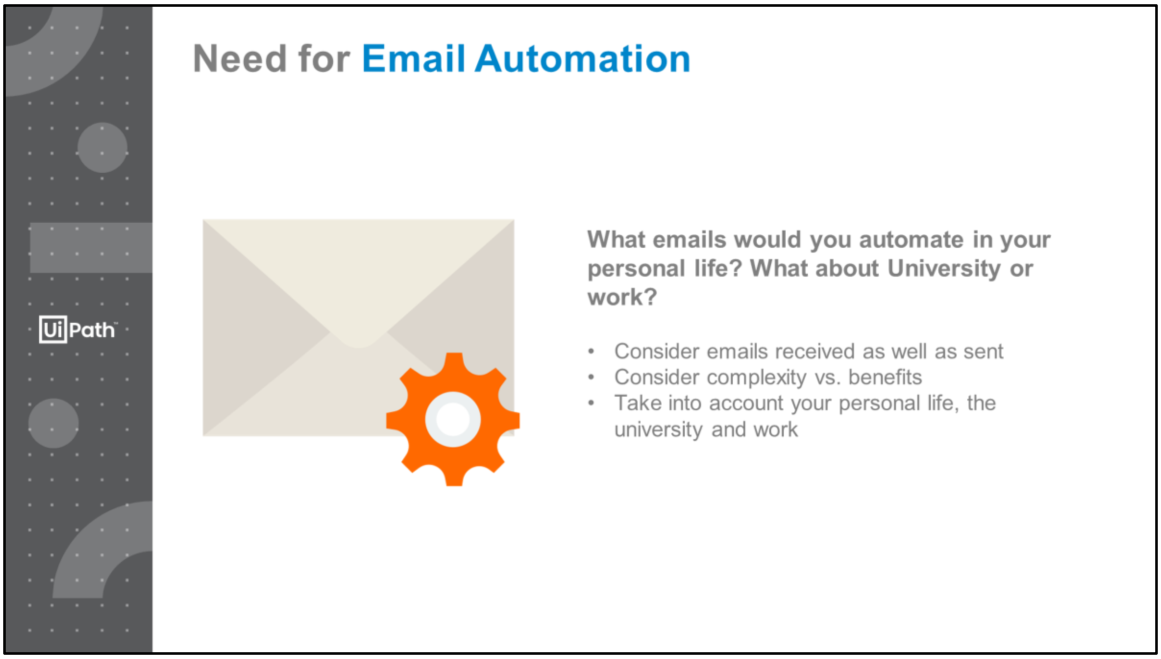
Email Automation in UiPath Studio

- Email as Input and Output
- Email Protocols

Let’s Practice

- Automate retrieving and sending emails

In this topic, we will learn about the key concepts of email automation.



Need for Email Automation

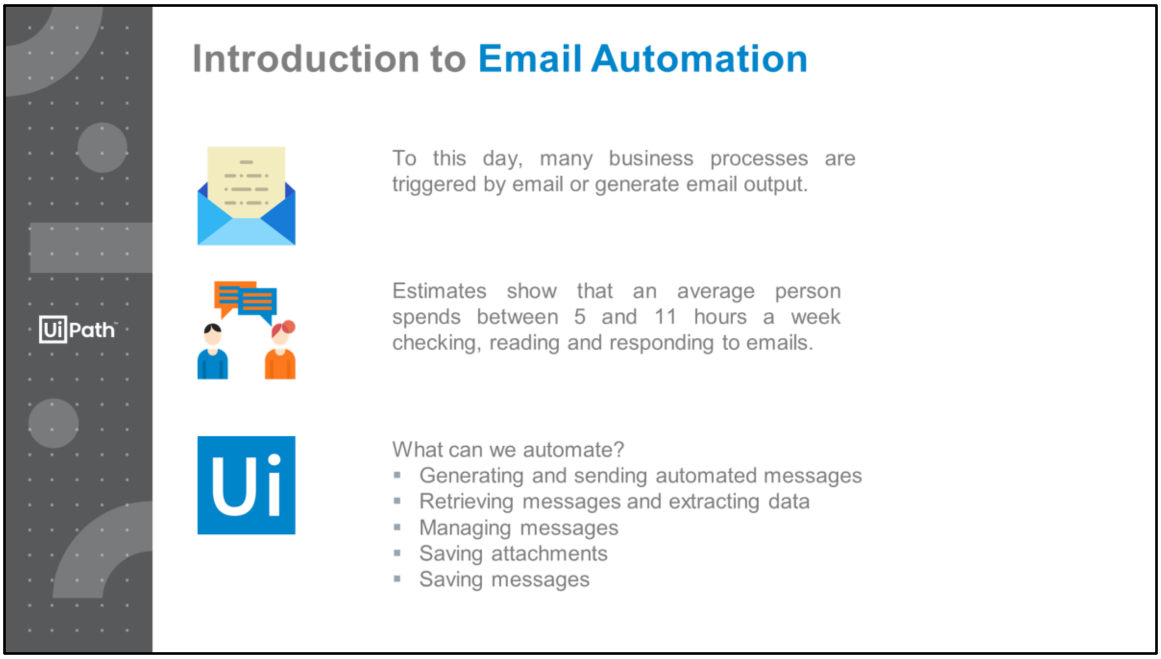
What emails would you automate in your personal life? What about University or work?

- Consider emails received as well as sent
- Consider complexity vs. benefits
- Take into account your personal life, the university and work

When deciding on activities that you would select for automation, consider the complexity vs. benefits analysis

- Complexity (number of steps, application types involved other than email, number of possible scenarios (if/else), input and output types (standard, structured or unstructured).
- Benefit for this scenario (time savings, quality improvement/error reduction)

As a group, select two processes you find best suited for automation. These should include at least one with email as input and one with email as output and are ideally low effort/high benefits (Quick Wins). Towards the end of the course, you will find out how UiPath Studio activities could be used to automate these processes.



Introduction to Email Automation

To this day, many business processes are triggered by email or generate email output.

Estimates show that an average person spends between 5 and 11 hours a week checking, reading and responding to emails.

What can we automate?

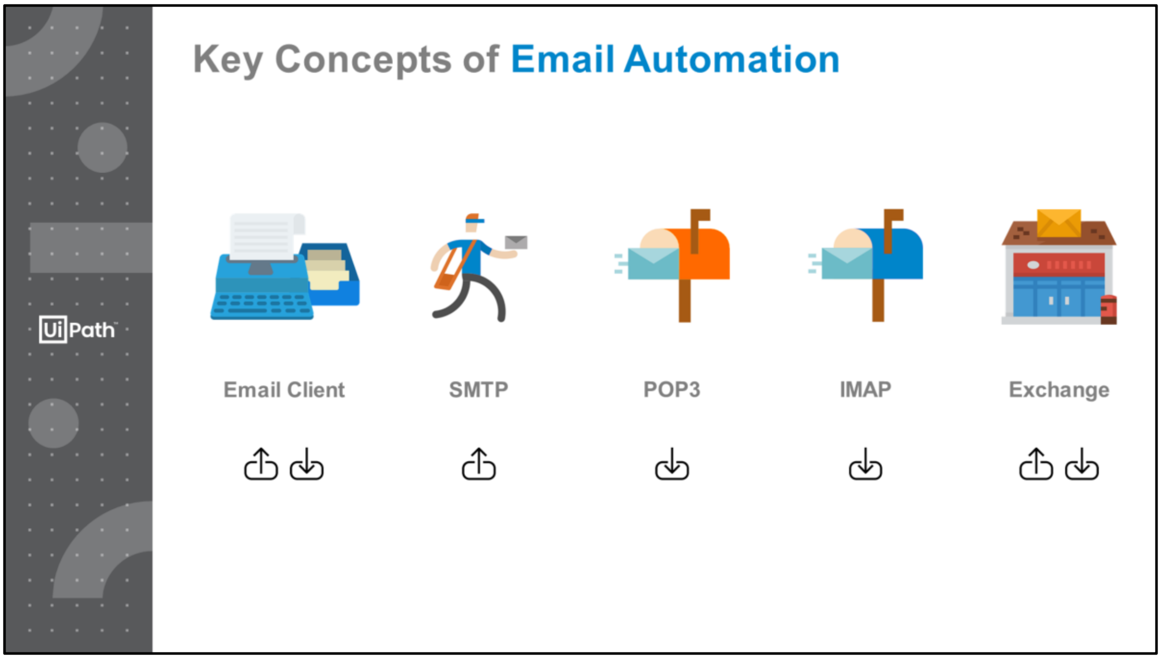
- Generating and sending automated messages
- Retrieving messages and extracting data
- Managing messages
- Saving attachments
- Saving messages

With our examples in mind, let’s start looking at the key concepts of email automation.

Email is the oldest and most wide-spread form of business communication. A research by the Radicati Group, Inc. (https://www.radicati.com/wp/wp-content/uploads/2015/02/Email-Statistics-Report-2015-2019-Executive-Summary.pdf) shows that in 2018 the average number of business emails sent per day was 124.5 billion and the average number of consumer emails was 111.1 billion. Considering the 235.6 billion emails sent per day, we get an idea of the huge automation opportunity.

In a business context, many processes are triggered by email or generate some form of email output. Many of these processes could easily be automated.

On an individual level, consider how much time you spend reading and responding to emails. Could some of them be automated?

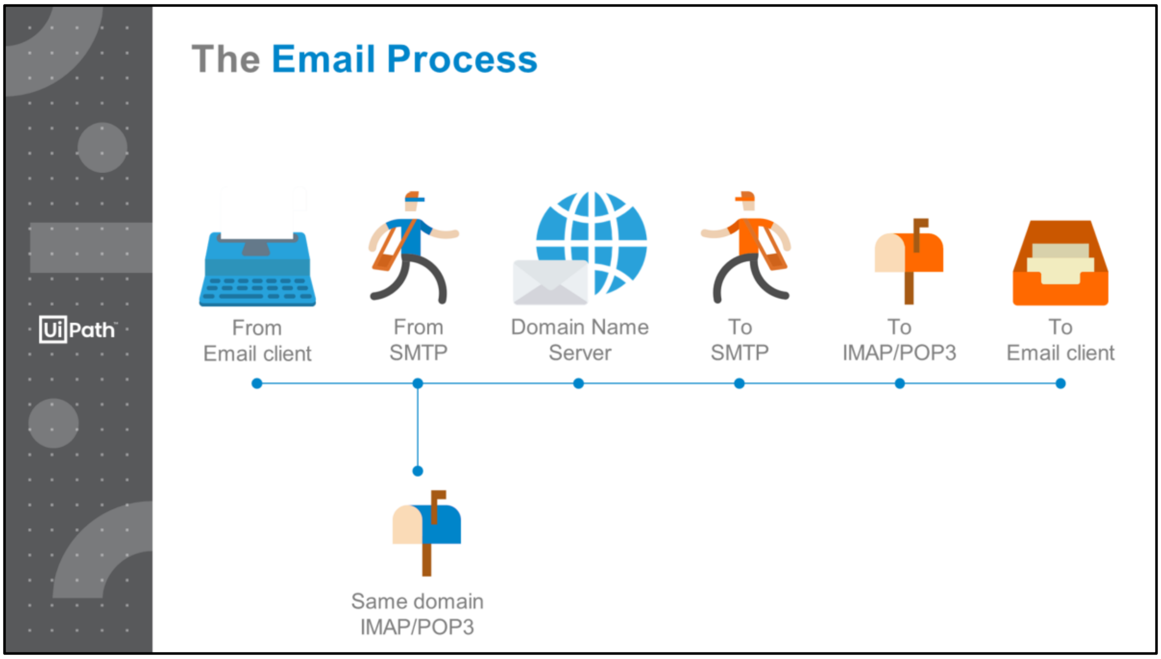


Key Concepts of Email Automation

Email Client SMTP POP3 IMAP Exchange

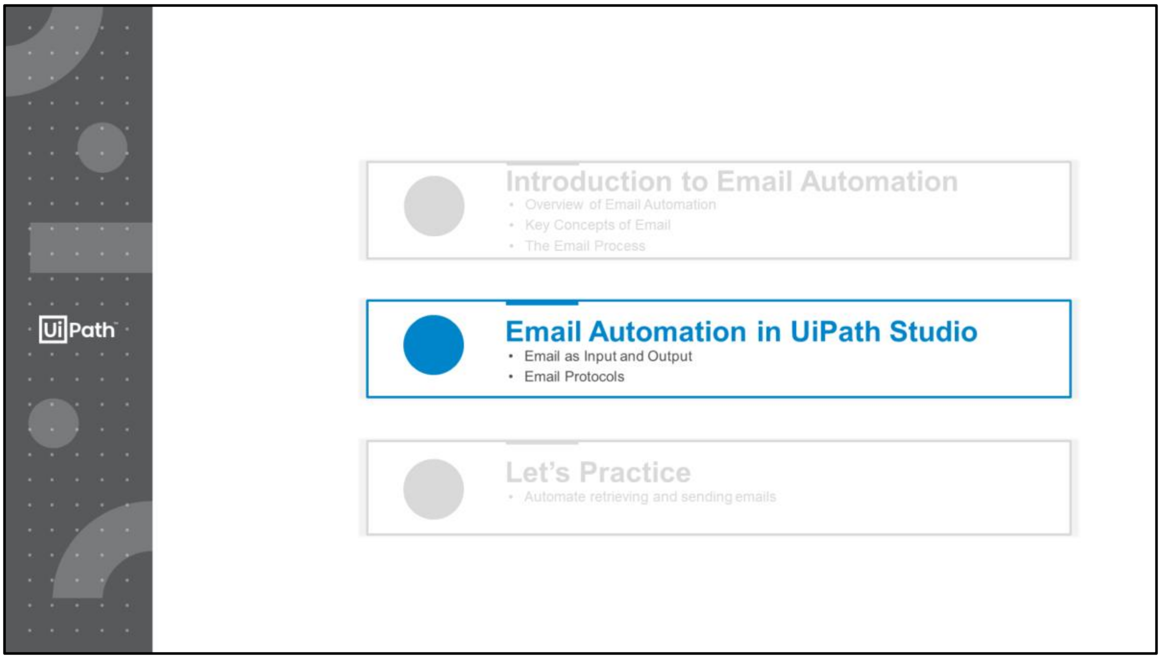
Before we go into details, let’s get an overview of the key concepts when dealing with email automation. This will come in handy later on when we will review the UiPath Studio email activities.

Email Client: An email client, (MUA), is a desktop or browser-based application used to access and manage a user's email. For example, Microsoft Outlook is an email client. Email clients are used to send and retrieve emails.
SMTP: Simple Mail Transfer Protocol (SMTP) is a basic protocol used only for sending messages.
POP3: Post Office Protocol (POP3) is an old and almost obsolete protocol for reading messages, but most email servers support it.
IMAP: Internet Message Access Protocol (IMAP) is only used for receiving messages but offers features to mark messages as read or move them between folders.
Microsoft Exchange: Exchange is Microsoft’s enterprise email solution that UiPath integrates perfectly.



The Email process works as follows:

1. The sender writes the message on the email client (app or browser based) and presses send.
2. The email client sends the address of the sender, the address of the recipient and the body of the message to the SMTP server on that domain.
3. The "From" SMTP server checks if the "to" and "from" addresses are on the same domain. If yes, it hands the message to the IMAP or POP3 server.
4. If the recipient is at another domain, SMTP needs to communicate with that domain. The "From" SMTP server asks a DNS (Domain Name Server) for the IP address of the SMTP server for the "To" domain. The DNS replies with one or more IP addresses for the SMTP server(s).
5. The "From" SMTP server connects with the "To" SMTP server and gives the message.
6. The "To" server recognizes the domain name and hands the message to its POP3 or IMAP server.
7. The POP3/IMAP server puts the message in the "To" mailbox.



Introduction to Email Automation

- Overview of Email Automation
- Key Concepts of Email
- The Email Process

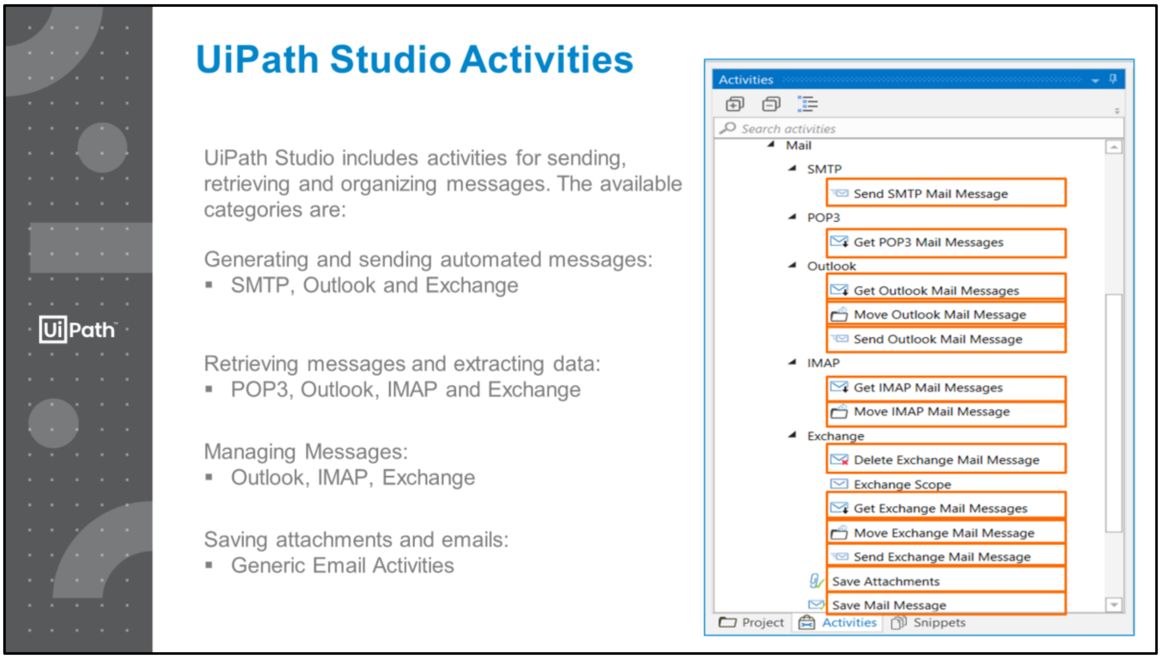
Email Automation in UiPath Studio

- Email as Input and Output
- Email Protocols

Let's Practice

- Automate retrieving and sending emails

In this topic, we will learn about how the UiPath Studio activities work with these key concepts.



UiPath Studio Activities

UiPath Studio includes activities for sending, retrieving and organizing messages. The available categories are:

Generating and sending automated messages:
- SMTP, Outlook and Exchange

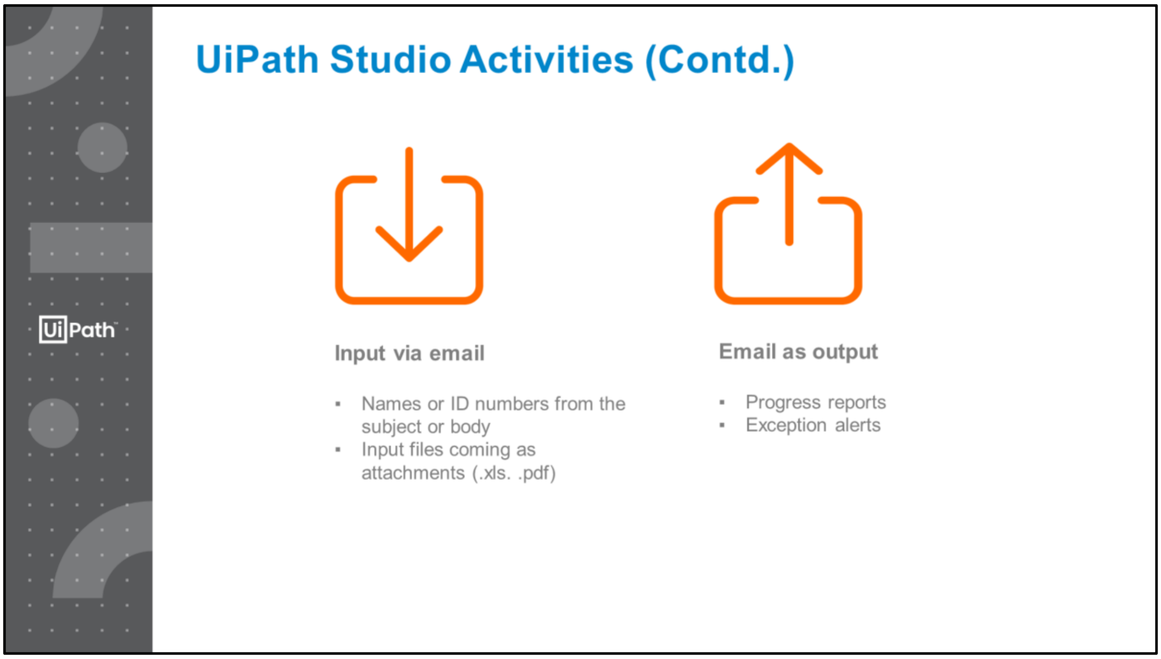
Retrieving messages and extracting data:
- POP3, Outlook, IMAP and Exchange

Managing Messages:
- Outlook, IMAP, Exchange

Saving attachments and emails:
- Generic Email Activities

Let’s get better acquainted with how UiPath Studio helps you automate email messages.
The types of automation that can be applied to emails are:

- Generating and sending automated messages
- Retrieving messages and extracting data
- Managing messages
- Saving attachments and emails



UiPath Studio Activities (Contd.)

Input via email

- Names or ID numbers from the subject or body
- Input files coming as attachments (.xls. .pdf)

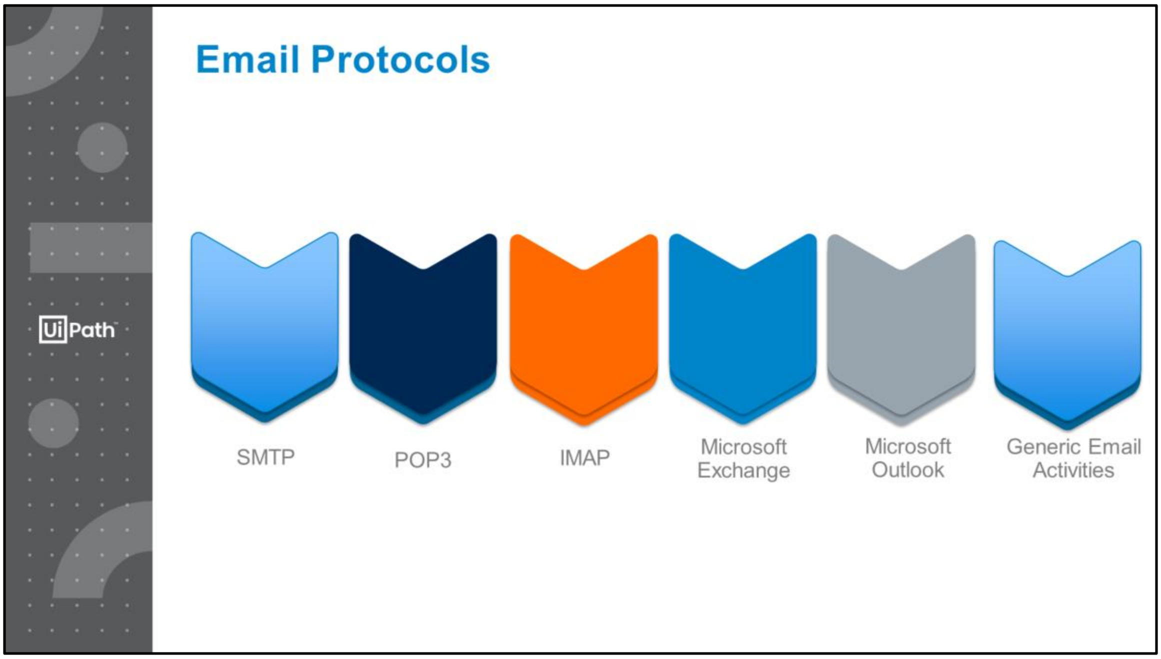
Email as output

- Progress reports
- Exception alerts

Before we start automating emails, we need to find out whether the email is an input or output for the activity, or it is both.

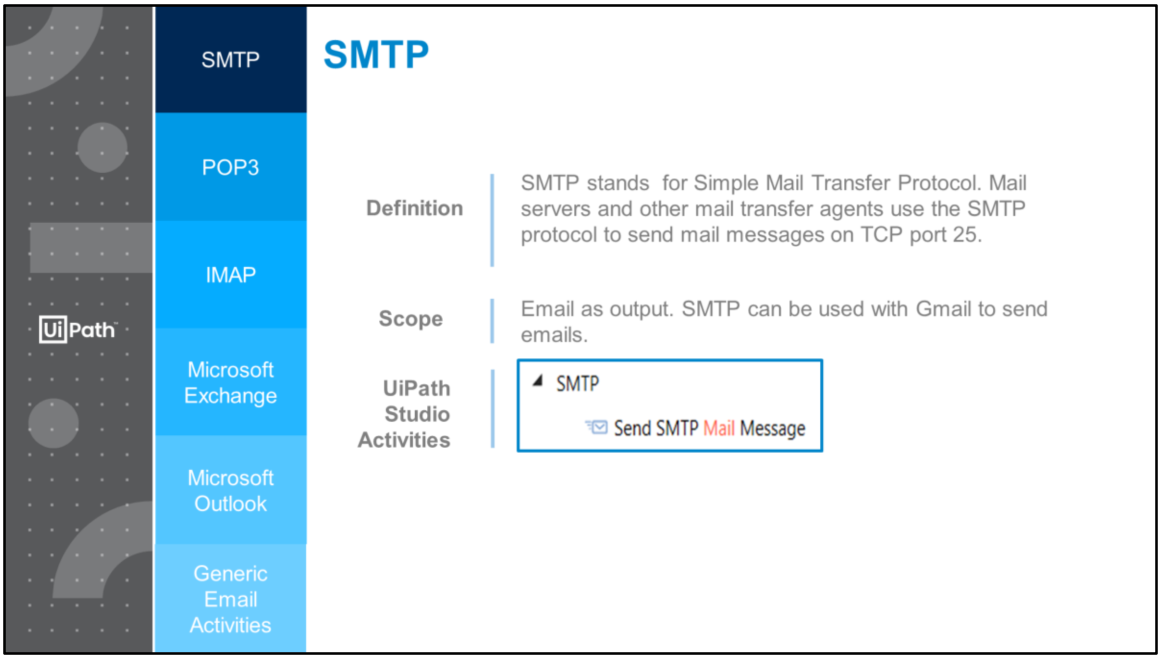
Input via email means the automation uses information from an incoming email. A few examples are grabbing the sender name from the “from” field, grabbing an ID number from the subject or body, counting the number of emails that meet the set criteria, downloading an attachment, and so on.

Email as output means the automation generates and sends an email according to the set rules. A few examples are sending a progress report at a set time based on an Excel file, sending an email notification when a process comes across an exception, responding to an email, and so on.



Email Protocols

Depending on the scope of automation, we will use different sets of activities and protocols. For using email as input, depending on the client's setup, we have the options to use: POP3, IMAP, Outlook or Exchange. For using email as output: SMTP, Outlook, or Exchange.



SMTP

Definition: SMTP stands for Simple Mail Transfer Protocol. Mail servers and other mail transfer agents use the SMTP protocol to send mail messages on TCP port 25.

Scope: Email as output. SMTP can be used with Gmail to send emails.

UiPath Studio Activities

Let’s have a more in depth look at each of the protocols and what activities tie into them.

Definition: You can use SMTP to send emails with Google. Although proprietary systems such as Microsoft Exchange, IBM Notes and webmail systems such as Outlook.com, Gmail and Yahoo! Mail may use their own non-standard protocols internally, all use SMTP when sending or receiving email from outside their own systems. (https://en.wikipedia.org/wiki/Simple_Mail_Transfer_Protocol)

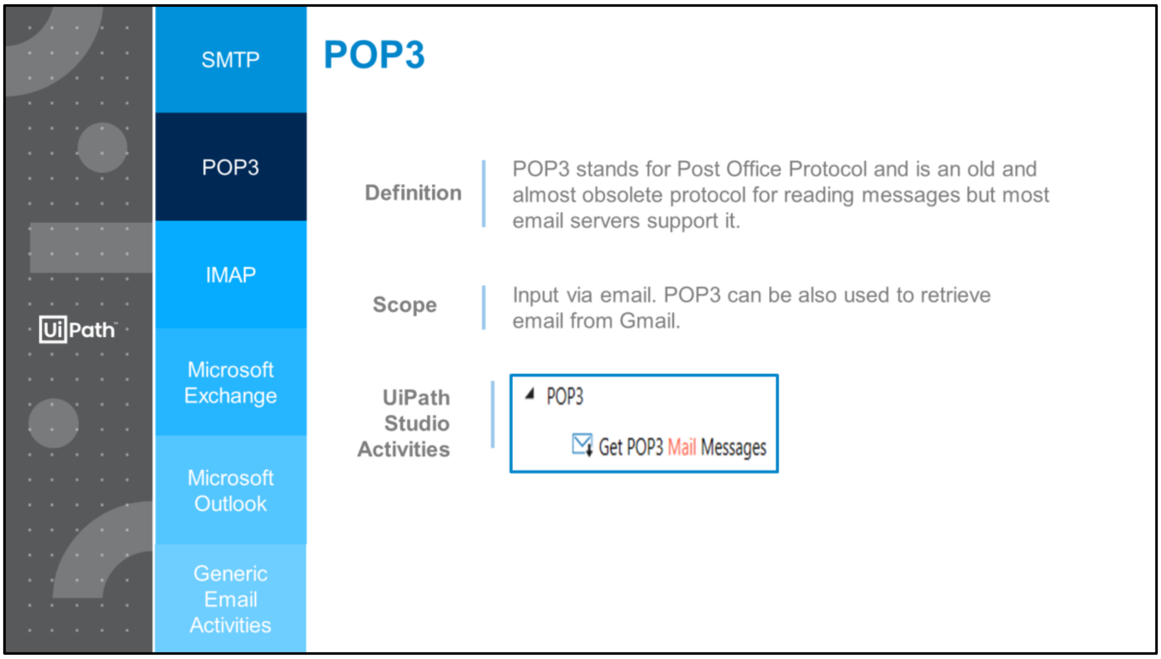
SMTP listens to the TCP port 25.

Scope: SMTP is only used to send emails.

UiPath Studio Activities: Depending on how an organization has their email processing set up, there is a chance that you use the SMTP activity to send an email.

Minimum Requirements:

- To
- Subject
- Body
- Port
- Server
- Email
- Password



POP3

Definition | POP3 stands for Post Office Protocol and is an old and almost obsolete protocol for reading messages but most email servers support it.

Scope | Input via email. POP3 can be also used to retrieve email from Gmail.

UiPath Studio Activities

If SMTP is used for sending messages, let’s have a look at the receiving side.

Definition: You can use it to retrieve emails from Google. POP3 supports download-and-delete from a remote mailbox ("maildrop" in POP3 terminology). Although most POP3 clients have an option to leave mail on server after download, they generally connect, retrieve all messages, store them on the client system, and delete them from the server. By contrast, the Internet Message Access Protocol (IMAP) normally leaves all messages on the server.

A POP3 server listens on well-known port number 110 for service requests.

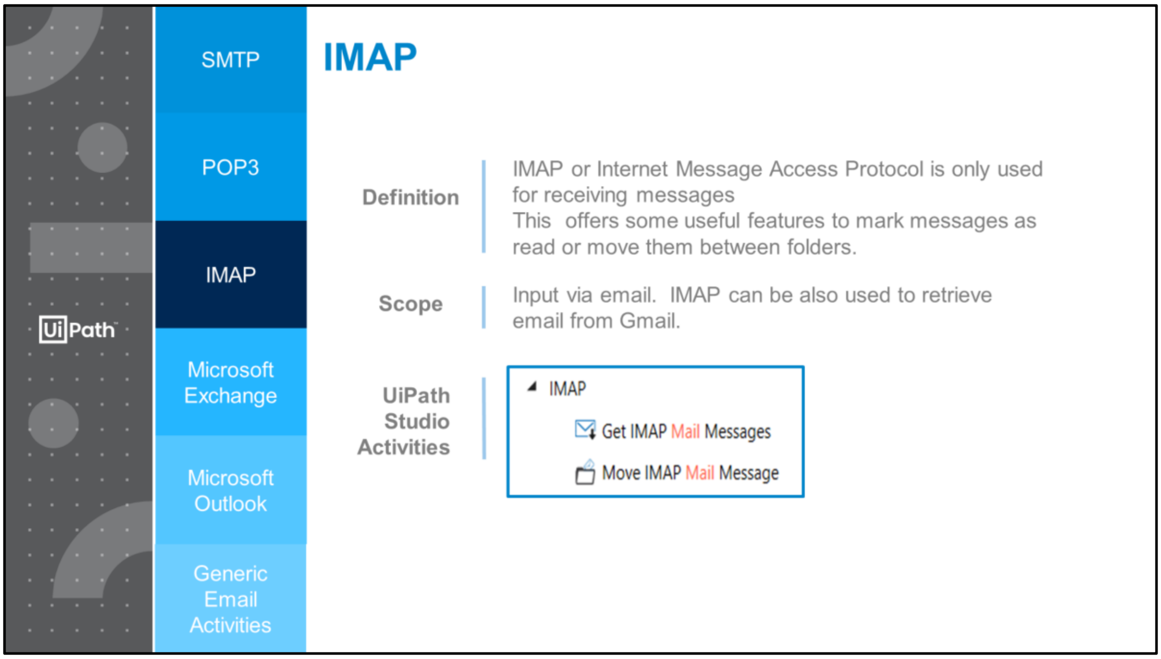
Scope: POP3 is only used to retrieve emails.

UiPath Studio Activities: As it is commonly spread, this activity allows you to easily retrieve emails.
The most commonly used variable type to store emails in is *List of*

mail messages.

Minimum Requirements:

- Port
- Server
- Email
- Password
- Top: The number of messages to be retrieved starting from the top of the list.
- Output > Messages: The name of the List of Mail Messages variable used to store the messages.


SMTP
POP3
IMAP
Microsoft Exchange
Microsoft Outlook
Generic Email Activities
UiPath

IMAP

Definition

IMAP or Internet Message Access Protocol is only used for receiving messages
This offers some useful features to mark messages as read or move them between folders.

Scope

Input via email. IMAP can be also used to retrieve email from Gmail.

UiPath Studio Activities

- IMAP
  - Get IMAP Mail Messages
  - Move IMAP Mail Message

Unlike with POP3, with IMAP, emails stay on the email server. It offers the added functionality of organizing the emails on folders and the folders are on the server as well.

Definition: Can be used with Google as well. IMAP was designed with the goal of permitting complete management of an email box by multiple email clients, therefore clients generally leave messages on the server until the user explicitly deletes them. Virtually all modern e-mail clients and servers support IMAP, which along with the earlier POP3 (Post Office Protocol) are the two most prevalent standard protocols for email retrieval.

An IMAP server typically listens on port number 143. IMAP over SSL (IMAPS) is assigned the port number 993.

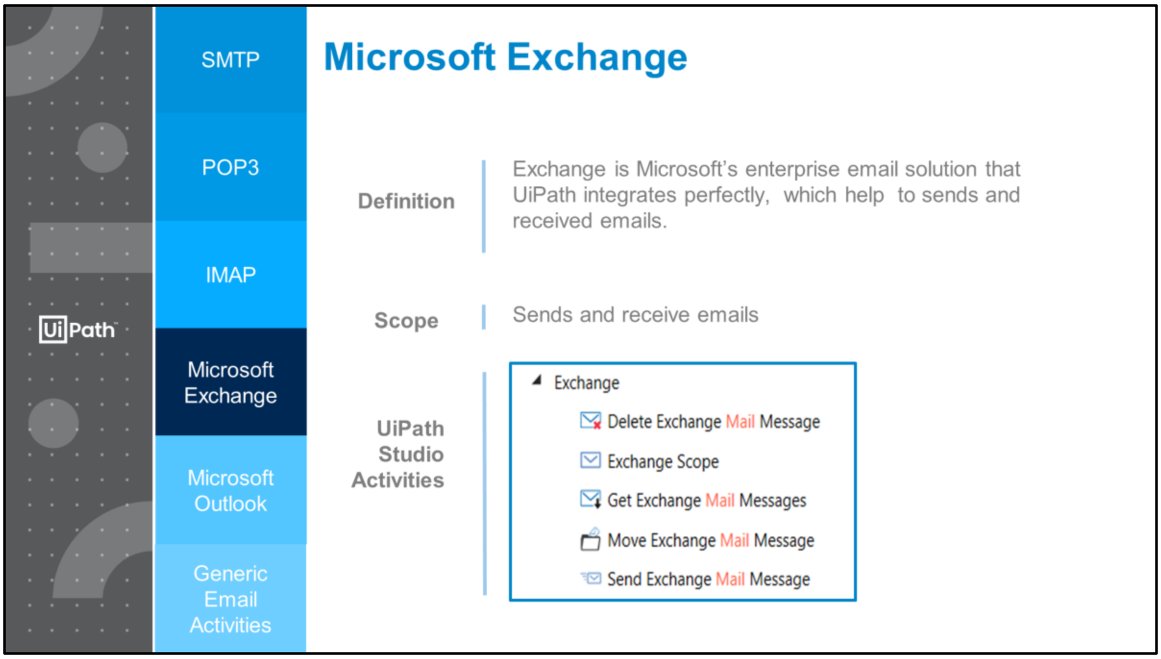
Note that for retrieving messages, IMAP and POP3 are standard, but proprietary servers also often prefer their own protocols, such as Exchange ActiveSync.

Scope: IMAP is only used to retrieve emails.

UiPath Studio Activities: The practical use is to retrieve emails and also the possibility to move the email to different inbox folders.

Minimum Requirements:

- Port
- Server
- Email
- Password
- Top: (The number of messages to be retrieved starting from the top of the list)
- Output > Messages: The List of Mail Messages variable used to store the messages.



SMTP

POP3

IMAP

Microsoft Exchange

Microsoft Outlook

Generic Email Activities

Microsoft Exchange

Definition | Exchange is Microsoft's enterprise email solution that UiPath integrates perfectly, which help to sends and received emails.

Scope | Sends and receive emails

UiPath Studio Activities |

- Exchange
  - Delete Exchange Mail Message
  - Exchange Scope
  - Get Exchange Mail Messages
  - Move Exchange Mail Message
  - Send Exchange Mail Message

Now let's have a look at Microsoft Exchange Server, an enterprise email solution.

Definition: Microsoft Exchange Server is a mail and calendaring server developed by Microsoft. It runs exclusively on Windows Server operating systems. Exchange Server primarily uses a proprietary protocol called MAPI to talk to email clients, but subsequently added support for POP3, IMAP, and EAS. The standard SMTP protocol is used to communicate to other Internet mail servers. (https://en.wikipedia.org/wiki/Microsoft_Exchange_Server)

Scope: Microsoft Exchange is used to send and receive emails.

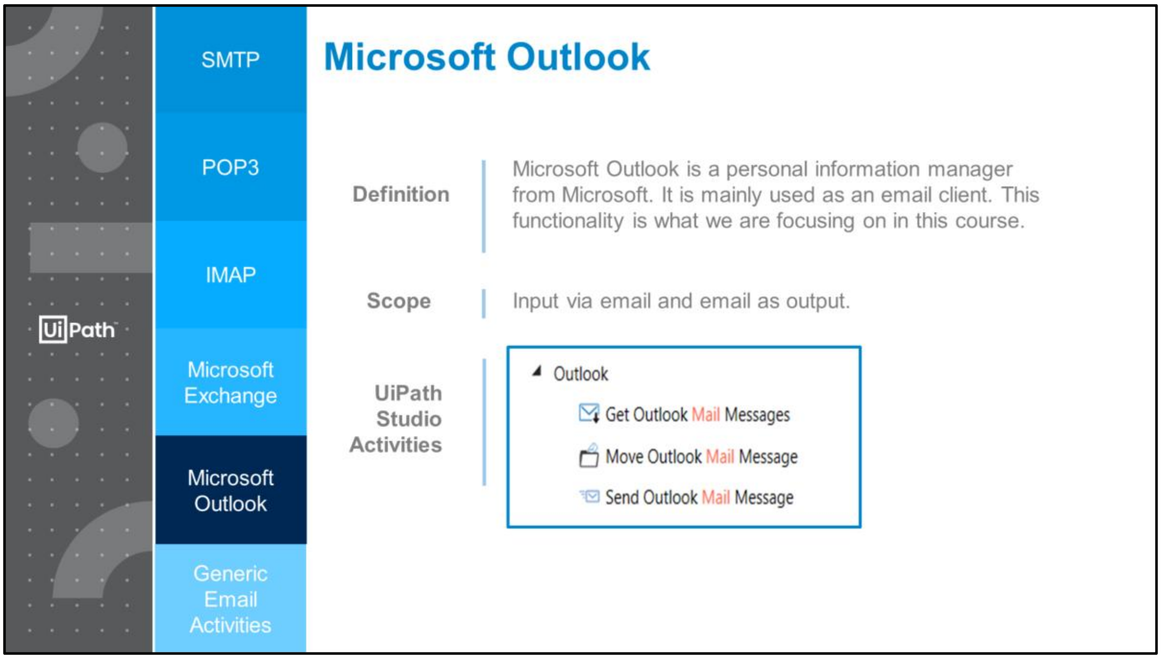
UiPath Studio Activities: Exchange automation requires less setup than SMTP, POP3 and IMAP as it can use the default and auto-discover settings in UiPath Studio.

Method:
Create and define an Exchange Scope activity. Include other email

activities in the Exchange Scope activity container.

Requirements Exchange Scope:

- **Server**: The email server host that is to be used.
- **ExchangeVersion**: Specifies the lowest version of the Exchange server that is used. The options displayed in this field range from the 2007 to the 2013 version. Please note that the version number indicates the lowest level of service you support. This means that if you have a 2016 exchange server, you can select the Exchange2013 option.
- **EmailAutodiscover**: Searches automatically for an Exchange server by using an email address from that server. This works only if the Exchange server has Autodiscover enabled.
- **ExistingExchangeService**: Allows connecting through a pre-existing ExchangeServer object from another Exchange Scope. This field supports only ExchangeServer objects.
- **User**: The username of the Exchange account to be used.
- **Password**: The password of the Exchange account to be used.
- **Domain**: The Active Directory domain to connect to.



SMTP

POP3

IMAP

Microsoft Exchange

Microsoft Outlook

Generic Email Activities

Microsoft Outlook

Definition | Microsoft Outlook is a personal information manager from Microsoft. It is mainly used as an email client. This functionality is what we are focusing on in this course.

Scope | Input via email and email as output.

UiPath Studio Activities

- Outlook
  - Get Outlook Mail Messages
  - Move Outlook Mail Message
  - Send Outlook Mail Message

UiPath Studio includes a predefined set of activities for Microsoft Outlook.

Scope: Input and output.

UiPath Studio Activities: The Outlook activities work with the API of the desktop application, so the actions already have a context. There is no need to set up servers, users, and other technical details. The activities are designed to use the already existing Outlook accounts.
Microsoft outlook is personal information sharing platform or information manager owned by Microsoft.
This is mainly utilized as email manager, but it also come with calendar ,task manager scheduling meeting request and many other facilities.

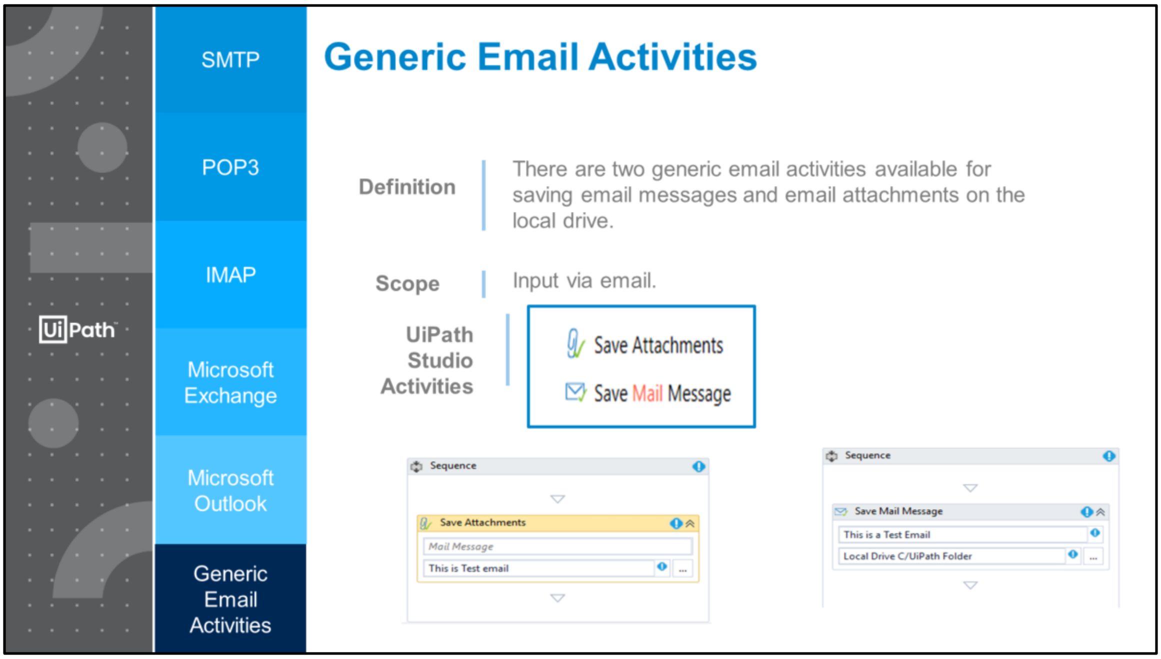
Requirements Get Outlook Mail Messages:

- Account: Insert your email address.

- MailFolder: Generally you will grab your emails from "Inbox", but you could also place there any folder from your Outlook application.
- MailMessages: The easiest way is to right click in the blank space (or Ctrl+K) to create the output variable which is a list of Mail Messages.
- MarkAsRead: If you grab some emails that were not read, these will be checked as read in Outlook.
- OnlyUnreadedMessages: Check this option to get only the emails that were not read.
- Top: Indicate the number of emails you want to extract.

Parameters Send Outlook Mail Message

- Body: Fill in the blank space with the body of the email you want to send.
- Subject: Fill in the blank space with the subject of the email you want to send.
- MailMessage: If you already have a MailMessage object, you can forward that email without completing the subject and the body.
- Account: Insert your email address. This is considered as the sender address.
- CC: Insert here the addresses that you want to include in the 'Cc.' If you have more than one address, type them separated by comma.



SMTP

POP3

IMAP

Microsoft Exchange

Microsoft Outlook

Generic Email Activities

Generic Email Activities

Definition | There are two generic email activities available for saving email messages and email attachments on the local drive.

Scope | Input via email.

UiPath Studio Activities | Save Attachments, Save Mail Message

Sequence
Save Attachments
Mail Message
This is Test email

Sequence
Save Mail Message
This is a Test Email
Local Drive C/UiPath Folder

Aside from the protocol or email client specific activity groups, we also have two generic email activities available.

UiPath Studio Activities: These two are using the System.Net.MailMessage type in order to save the email as .eml and also save the attachments.

Requirements Save Attachments:

- FolderPath: The full path of the folder where the attachments are to be saved.
- Message: The MailMessage object whose attachments are to be saved.

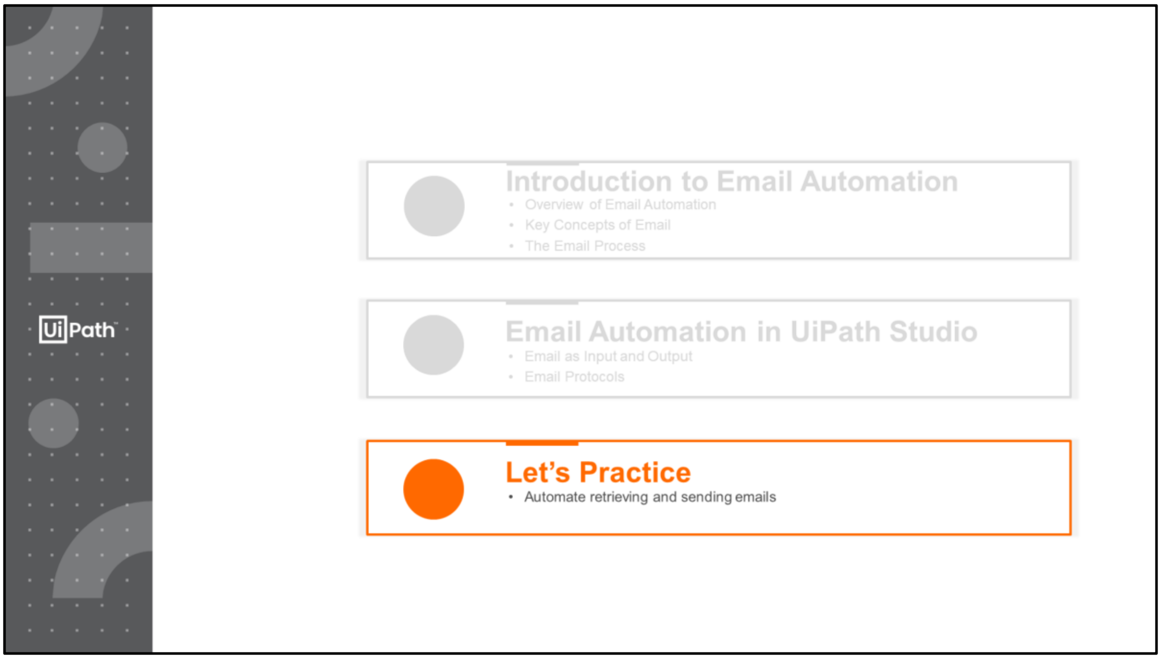
Requirements Save Mail Message:

- FilePath: The full path where the MailMessage object is to be saved.
- MailMessage: The MailMessage object to be saved.

Practice makes perfect…

What activities would you use to automate the email processes written down in the first discussion?

Let’s go back to our first discussion. We have selected these email scenarios as fit for automation. What UiPath Studio activities would we use to automate them?



Introduction to Email Automation

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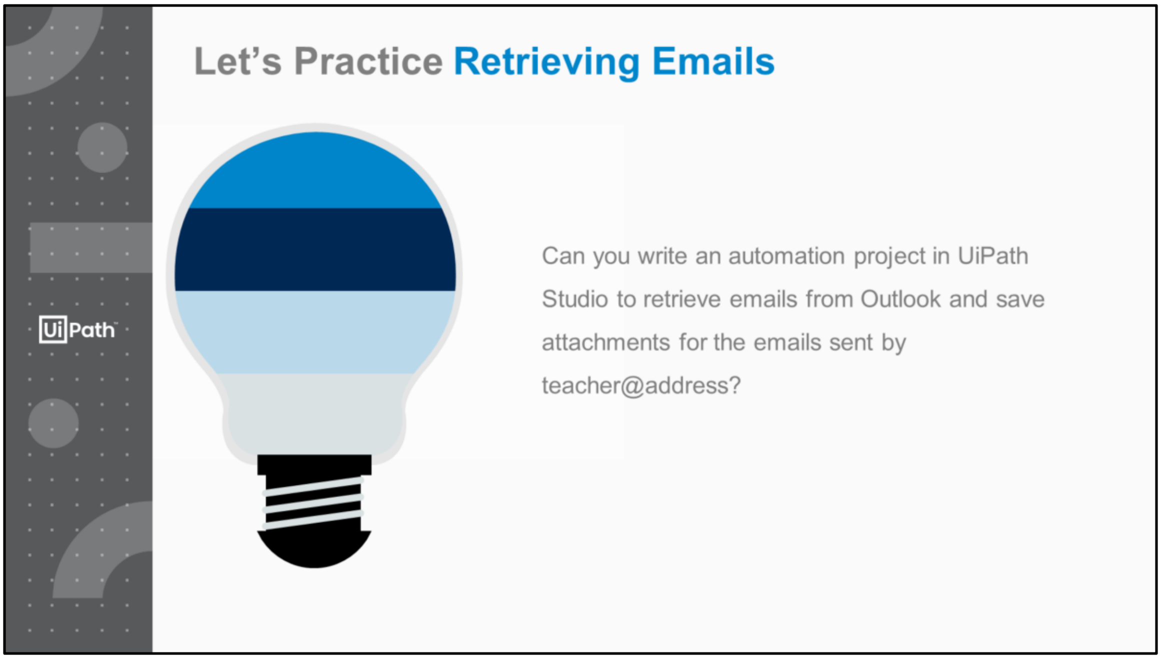
Let's Practice

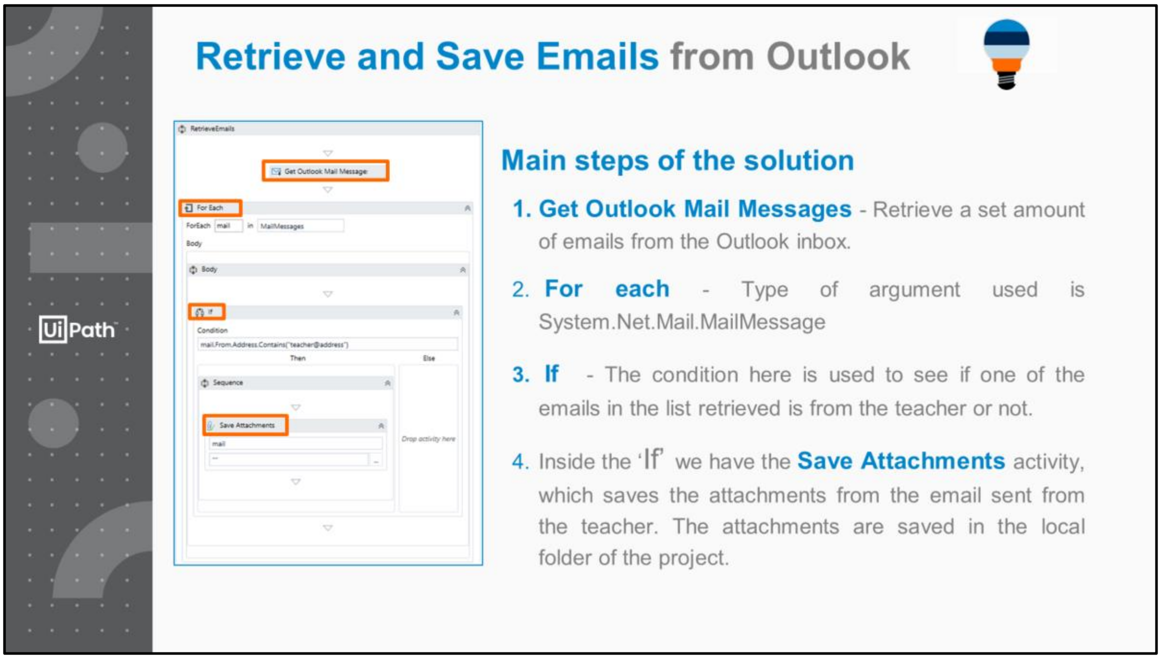
- Automate retrieving and sending emails

In this topic, we will have a look at two scenarios where email is used as input or output.



Let’s Practice Retrieving Emails

Can you write an automation project in UiPath Studio to retrieve emails from Outlook and save attachments for the emails sent by teacher@address?



ForEach mail in MailMessages

mail.From.Address.Contains("teacher@address")

mail

Retrieve and Save Emails from Outlook

Main steps of the solution

1. **Get Outlook Mail Messages** - Retrieve a set amount of emails from the Outlook inbox.
2. **For each** - Type of argument used is System.Net.Mail.MailMessage
3. **If** - The condition here is used to see if one of the emails in the list retrieved is from the teacher or not.
4. Inside the 'If' we have the **Save Attachments** activity, which saves the attachments from the email sent from the teacher. The attachments are saved in the local folder of the project.

Note, this is not the only solution for this exercise. Let's a have a look at the details for each activity.

1. Get Outlook Mail Message

a) Saves a set number of emails from Outlook in a variable.
b) Input > Mail folder: The email folder from which the messages are to be retrieved. For this example, use "Inbox".
c) Options > Top: The number of messages to be retrieved starting from the top of the list.
d) Output > Messages: The variable in which you want to store the retrieved emails. The used variable type is List <Email Messages>

2. For Each:

a) Performs an operation for each object stored in the list variable
b) Misc > Type Argument: System.Net.Mail.MailMessage
c) Misc > Values: Use the output variable from the previous activity.

3. If:

a) Checks if the email “from” address contains teacher@address. If yes, it saves the attachment.

b) Condition > mail.From.Address.Contains(“teacher@address”)

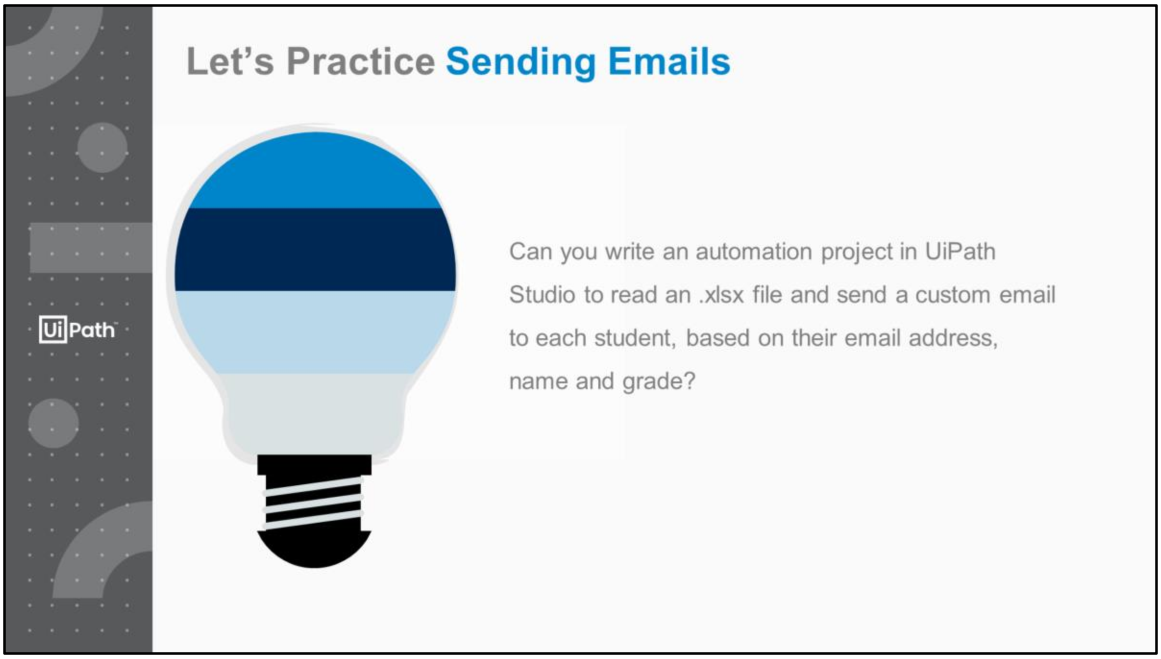
c) The condition must be changed a little as it is dependent on a real email address, as a placeholder it's the used the "teacher@address".

4. Save Attachments:

a) Saves the attachments that meet the “If” criterion to the defined path.

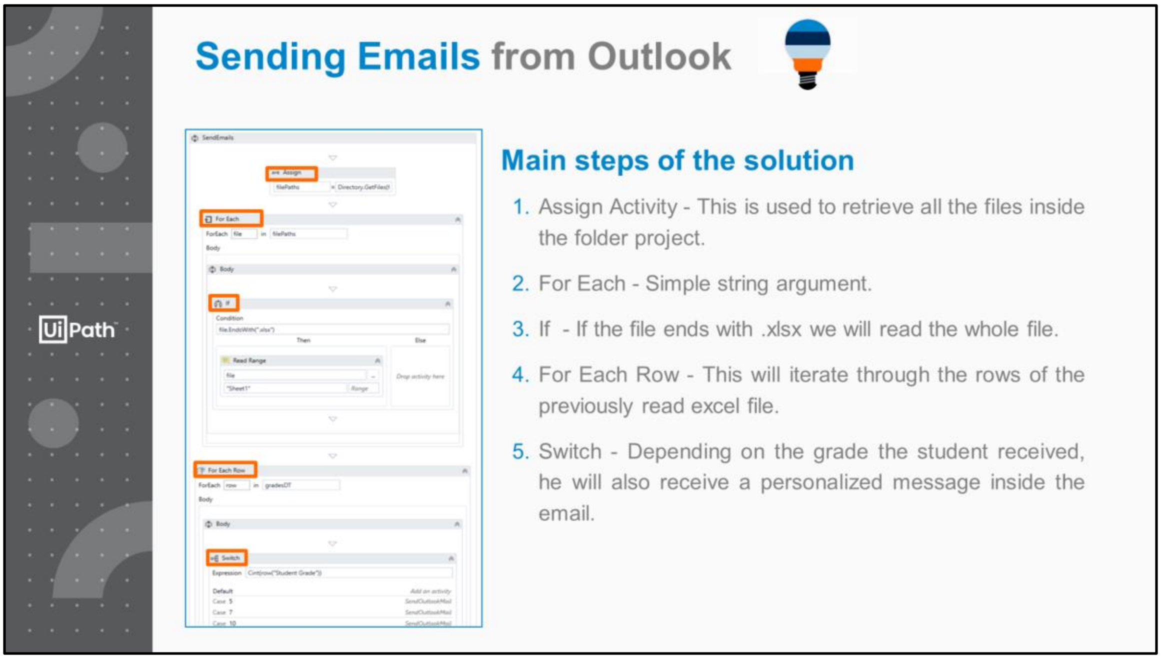
b) Input > Folder Path: The full path of the folder where the attachments are to be saved.

c) Message > The MailMessage object whose attachments are to be saved.



Let's Practice Sending Emails

Can you write an automation project in UiPath Studio to read an .xlsx file and send a custom email to each student, based on their email address, name and grade?



Sending Emails from Outlook

Main steps of the solution

1. Assign Activity - This is used to retrieve all the files inside the folder project.
2. For Each - Simple string argument.
3. If - If the file ends with .xlsx we will read the whole file.
4. For Each Row - This will iterate through the rows of the previously read excel file.
5. Switch - Depending on the grade the student received, he will also receive a personalized message inside the email.

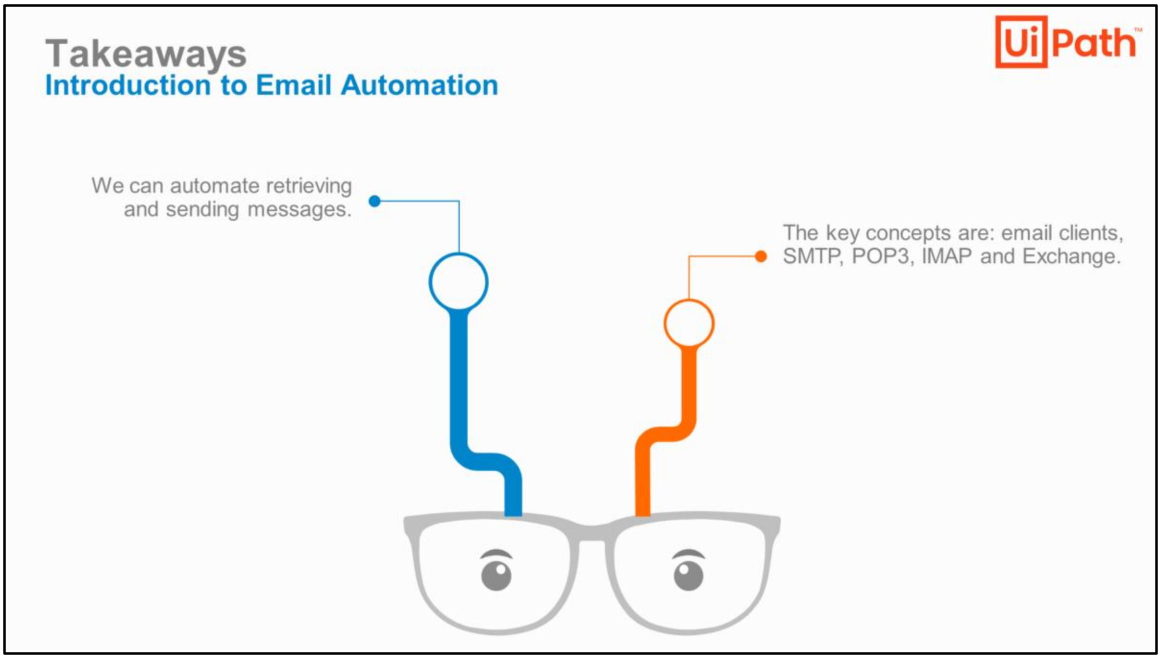
Note, this is not the only solution for this exercise.

1. Assign
   a) This is used to retrieve all the files which are inside the folder project.
   b) To: Select the desired variable. For this example, use an array of strings variable.
   c) Value: The value to assign to the to variable. For this example, use Directory.GetFiles(folderPath) to retrieve values inside the project.
2. For Each
   a) Iterates through the files in the folder
   b) Misc > TypeArgument: String
   c) Misc > Values: use the array variable in the previous exercise
   d) ForEach file in variable
3. If
   a) Reads a range for .xlsx files
   b) Condition: file.EndsWith(“.xlsx”)

c) Read Range:
   i. Input > Sheet Name: the name of the sheet from the workbook. In this example, use “Sheet1”
   ii. Input > Woorkbook Path. Use file for this example.
   iii. Output > DataTable. Output object where the data is stored. Use a DataTable variable.

1. For Each Row
   a) For each row in the DataTable variable from the previous activity. This will iterate through the rows of the previously read excel file.
2. Switch
   a) Depending on the grade the student received, they will receive a personalized message inside the email.
   b) Expression: Cint(row("Student Grade"))
   c) TypeArgument: Int32
   d) Send OutlookMail (Example for Case grade = 5)
      i. To: row(“Student Email Address”).ToString
      ii. Subject: “Exam Results”
      iii. Body: "Dear "+row("Student Name").toString+","+vbCrLf+"Your grade For the final assignment Is "+row("Student Grade").ToString+"."+vbCrLf+"Although it achieved the objectives, the project has significant gaps. I encourage you To redo it And ask For peer review, otherwise these knowledge gaps may prevent you From getting the best From future courses In this field Of study."+vbCrLf+"For a detailed feedback, please contact my assistant at +4074444444 to book a 20 minutes slot in the following week."+vbCrLf+"Best regards,"+vbCrLf+"John Connor, Ph.D.“
   e) Send OutlookMail (Example for Case grade = 10)
      i. To: row(“Student Email Address”).ToString
      ii. Subject: “Exam Results”
      iii. Body: "Dear "+row("Student Name").toString+","+vbCrLf+"Your grade For the final assignment Is "+row("Student Grade").ToString+"."+vbCrLf+"Your work was excellent and I strongly encourage you to continue on this path if it fits your interests, as you have a bright future ahead."+vbCrLf+"For a detailed feedback, please contact my assistant at

+4074444444 to book a 20 minutes slot in the following week."+vbCrLf+"Best regards,"+vbCrLf+"John Connor, Ph.D."



Takeaways

Introduction to Email Automation

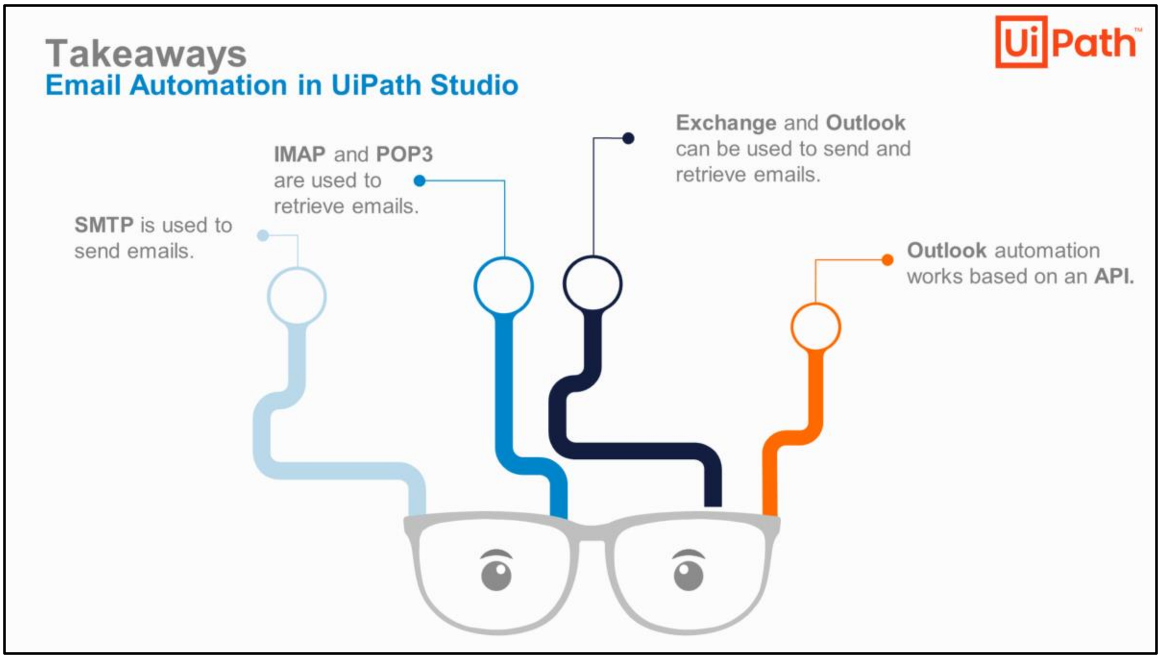
We can automate retrieving and sending messages.

The key concepts are: email clients, SMTP, POP3, IMAP and Exchange.

The point of the Recap & Summary section is to go through the most important points covered in the lesson, after the students had the chance to see them in practice and obtain a consolidated view.
The teacher should use facilitation questions to help the students map the key points and offer a safe space to get questions and comments from them.

Some examples of facilitation questions:

1. What are some key concepts of email automation?
2. How does the email process work?



Takeaways

Email Automation in UiPath Studio

SMTP is used to send emails.

IMAP and **POP3** are used to retrieve emails.

Exchange and **Outlook** can be used to send and retrieve emails.

Outlook automation works based on an **API**.

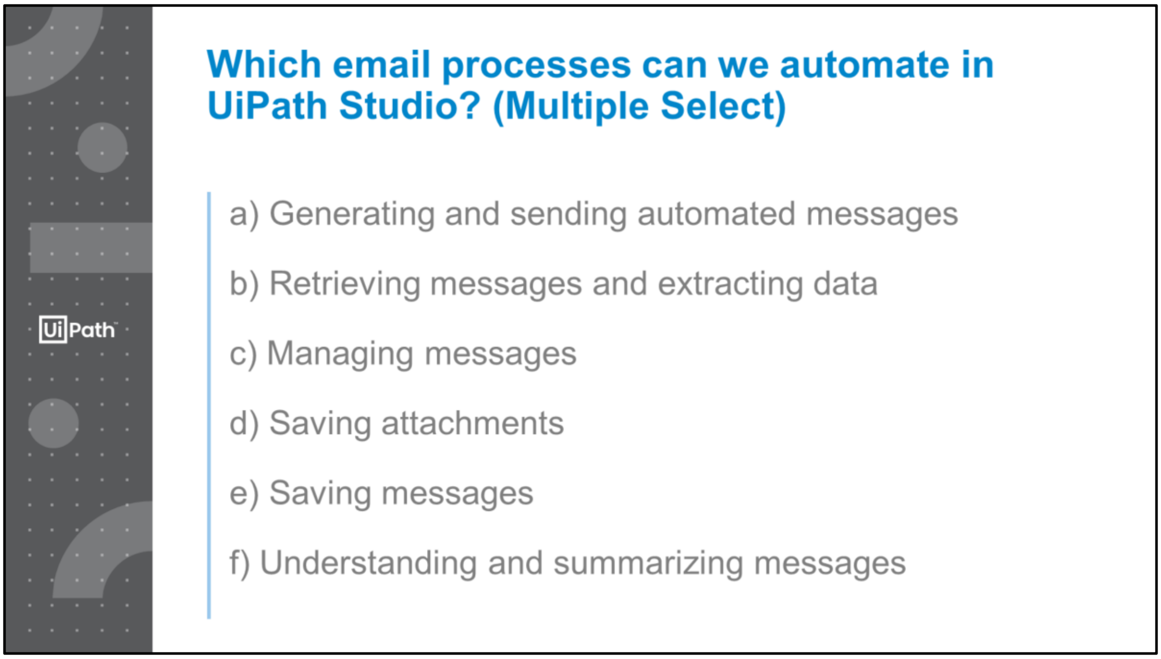
The point of the Recap & Summary section is to go through the most important points covered in the lesson, after the students had the chance to see them in practice and obtain a consolidated view.
The teacher should use facilitation questions to help the students map the key points and offer a safe space to get questions and comments from them.

Some examples of facilitation questions:

1. What is the full form of SMTP?
2. What does IMAP stand for and what is it used for?

Questions and Answers

Q&A
Now it’s your turn. What’s on your mind at the end of this?



Which email processes can we automate in UiPath Studio? (Multiple Select)

a) Generating and sending automated messages

b) Retrieving messages and extracting data

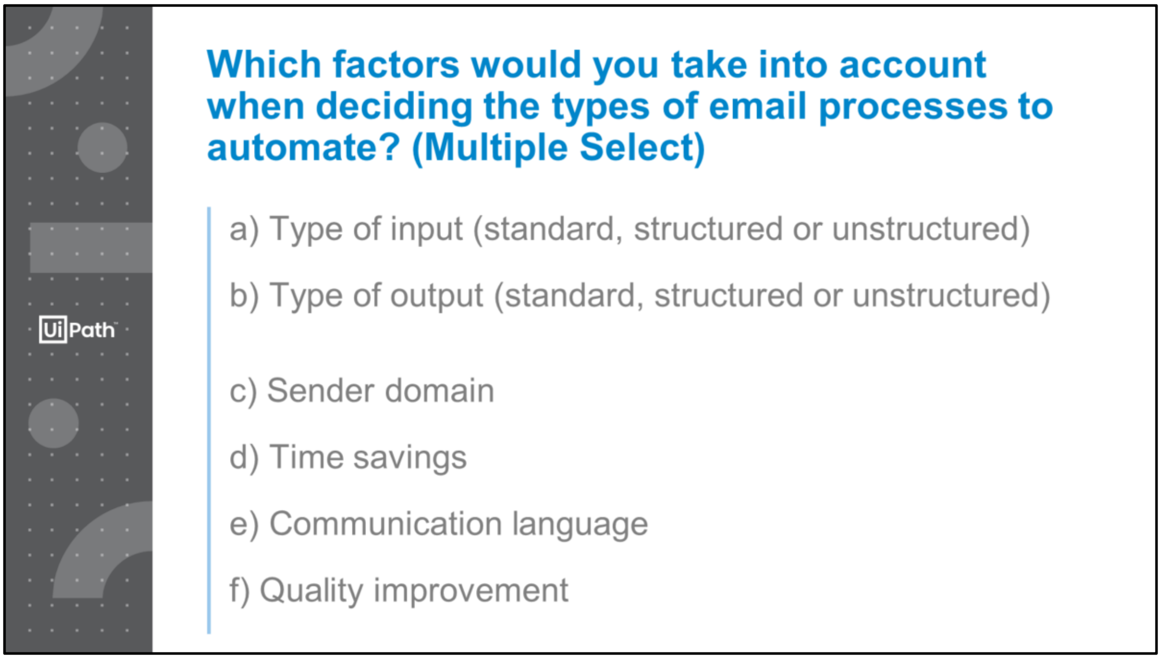
c) Managing messages

d) Saving attachments

e) Saving messages

f) Understanding and summarizing messages

Correct answers: a, b, c, d, e



Which factors would you take into account when deciding the types of email processes to automate? (Multiple Select)

a) Type of input (standard, structured or unstructured)

b) Type of output (standard, structured or unstructured)

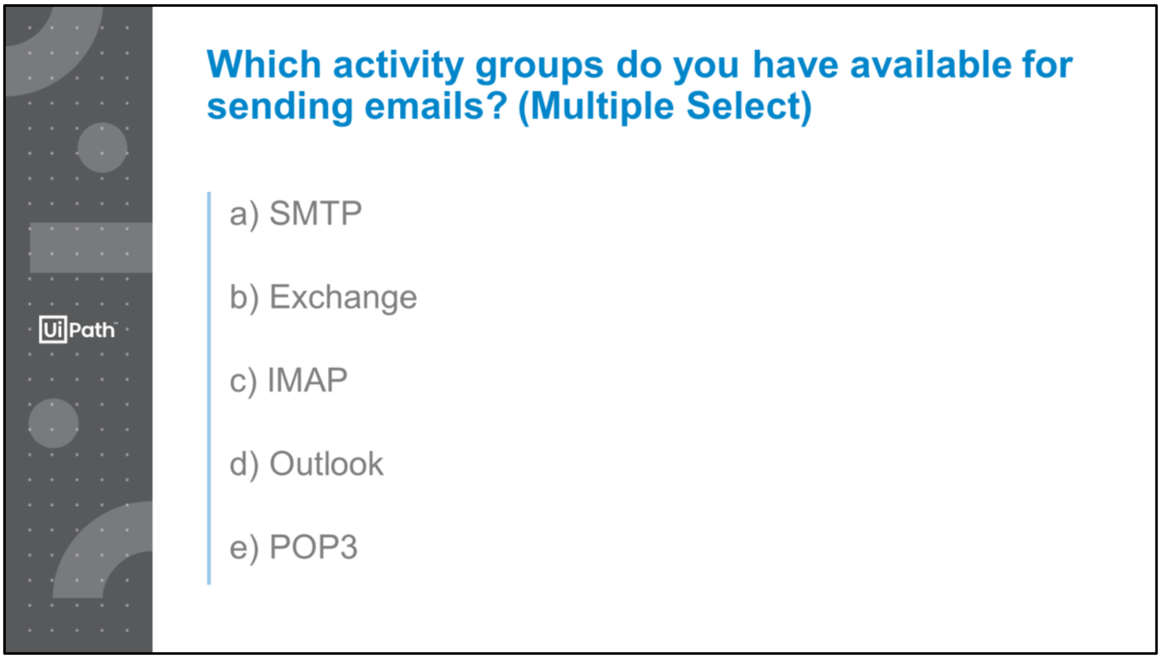
c) Sender domain

d) Time savings

e) Communication language

f) Quality improvement

Correct answers: a, b, d, f



Which activity groups do you have available for sending emails? (Multiple Select)

a) SMTP

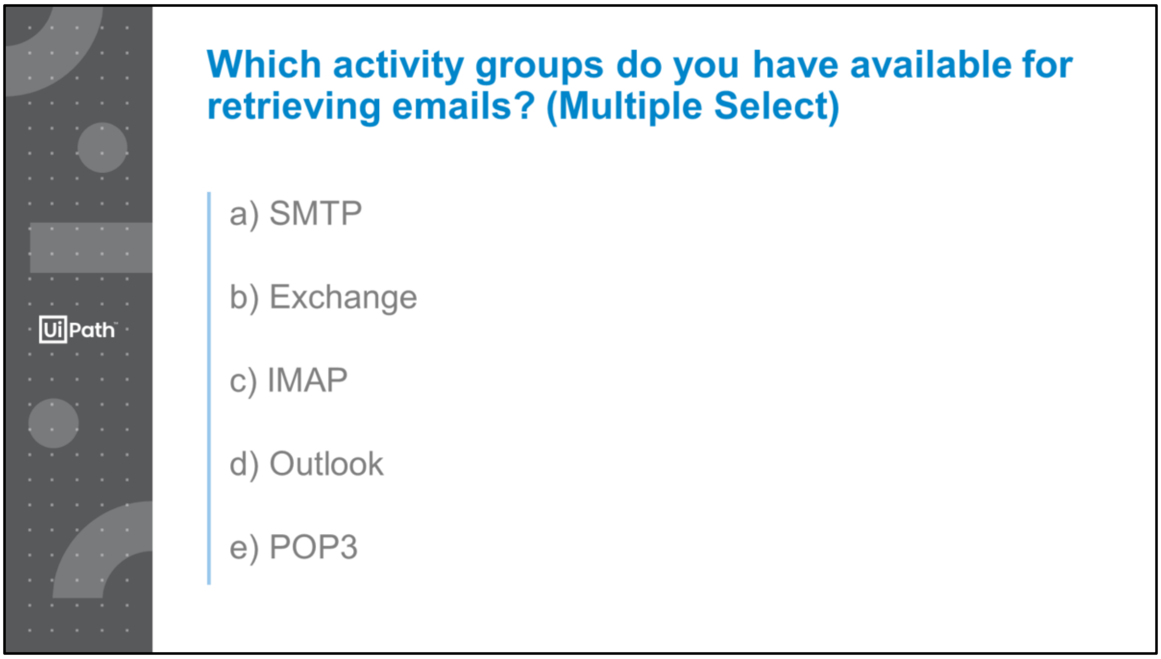
b) Exchange

c) IMAP

d) Outlook

e) POP3

Correct answers: a, b, d



Which activity groups do you have available for retrieving emails? (Multiple Select)

a) SMTP

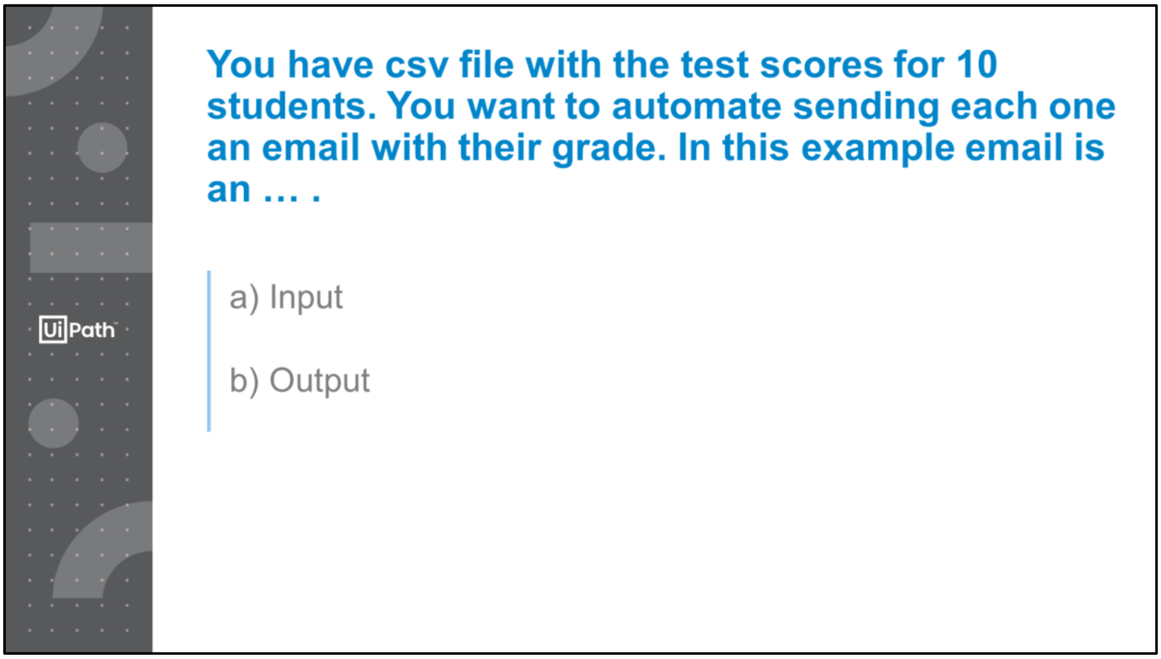
b) Exchange

c) IMAP

d) Outlook

e) POP3

Correct answers: b, c, d, e

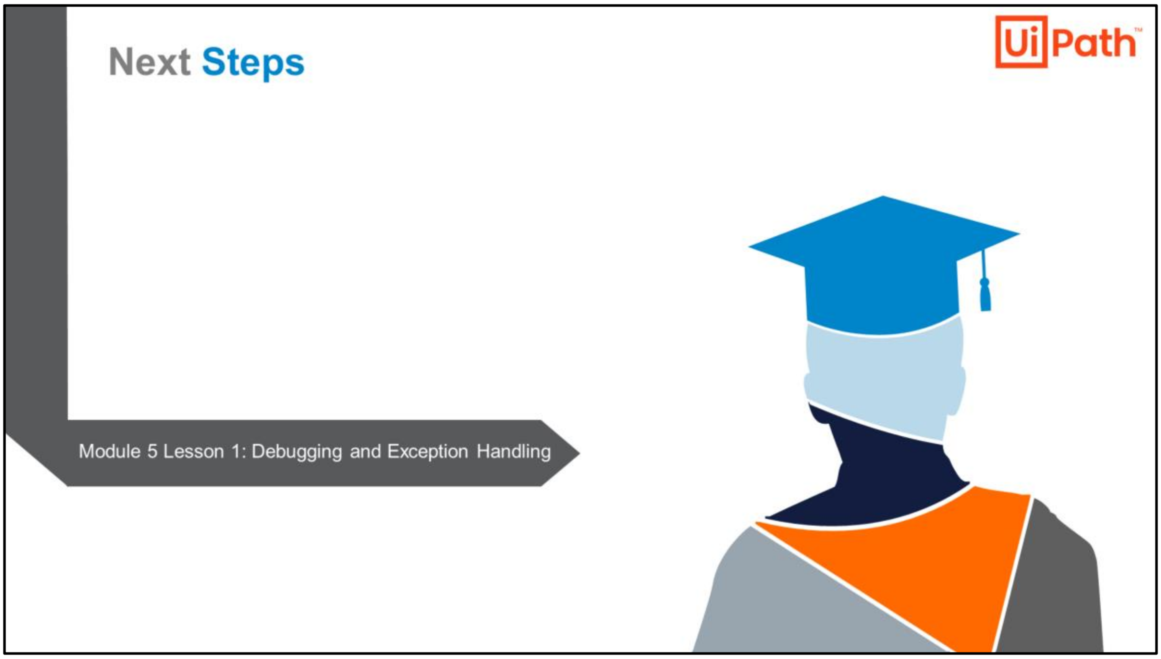


You have csv file with the test scores for 10 students. You want to automate sending each one an email with their grade. In this example email is an … .

a) Input

b) Output

Correct answer: b) In this example email is an output.



Next Steps

Module 5 Lesson 1: Debugging and Exception Handling

In the next module, we will be covering Debugging and Exception Handling.