

ATME COLLEGE OF ENGINEERING

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A T M E

College of Engineering

DEPARTMENT OF COMPUTER SCIENCE AND DESIGN



LECTURE NOTES

**COURSE: ROBOTIC PROCESS AUTOMATION DESIGN &
DEVELOPMENT (UiPath)**

COURSE CODE: BCG701

SEMESTER: VII

COURSE COORDINATOR: Mr. YOGESH N

(ACADEMIC YEAR 2026-27)

INSTITUTIONAL MISSION AND VISION

Objectives

- To provide quality education and groom top-notch professionals, entrepreneurs and leaders for different fields of engineering, technology and management.
- To open a Training-R & D-Design-Consultancy cell in each department, gradually introduce doctoral and postdoctoral programs, encourage basic & applied research in areas of social relevance, and develop the institute as a center of excellence.
- To develop academic, professional and financial alliances with the industry as well as the academia at national and transnational levels.
- To develop academic, professional and financial alliances with the industry as well as the academia at national and transnational levels.
- To cultivate strong community relationships and involve the students and the staff in local community service.
- To constantly enhance the value of the educational inputs with the participation of students, faculty, parents and industry.

Vision

Development of academically excellent, culturally vibrant, socially responsible and globally competent human resources.

Mission

- To keep pace with advancements in knowledge and make the students competitive and capable at the global level.
- To create an environment for the students to acquire the right physical, intellectual, emotional and moral foundations and shine as torch bearers of tomorrow's society.
- To strive to attain ever-higher benchmarks of educational excellence.

Department of Computer Science & Design

Vision of the Department

- To develop highly talented individuals in Computer Science and Engineering to deal with real world challenges in industry, education, research and society.

Mission of the Department

- To inculcate professional behaviour, strong ethical values, innovative research capabilities and leadership abilities in the young minds & to provide a teaching environment that emphasizes depth, originality and critical thinking.
- Motivate students to put their thoughts and ideas adoptable by industry or to pursue higher studies leading to research

PROGRAM EDUCATIONAL OBJECTIVES (PEO'S):

1. Empower students with a strong basis in the mathematical, scientific and engineering fundamentals to solve computational problems and to prepare them for employment, higher learning and R&D.
2. Gain technical knowledge, skills and awareness of current technologies of computer science engineering and to develop an ability to design and provide novel engineering solutions for software/hardware problems through entrepreneurial skills.
3. Exposure to emerging technologies and work in teams on interdisciplinary projects with effective communication skills and leadership qualities.
4. Ability to function ethically and responsibly in a rapidly changing environment by applying innovative ideas in the latest technology, to become effective professionals in Computer Science to bear a life-long career in related areas.

Program Specific Outcomes (PSOs)

PSO1: Ability to apply skills in the field of algorithms, database design, web design, cloud computing and data analytics.

PSO2: Apply knowledge in the field of computer networks for building network and internet based applications.

Module 3: Mail & Word Automation

This module focus is on automating email activities using UiPath tools for desktop-based and cloud-based email services, primarily Microsoft Outlook, Outlook 365, and Gmail. The module covers setting up the environment, understanding folder and file system structures necessary for automation, and configuring essential UiPath activities.

Core Concepts and Overview

Mail Automation involves the use of UiPath activities to manage, read, send, and modify email messages programmatically.

Two main email platforms are targeted:

- Desktop Outlook Application
- Cloud-based services: Outlook 365 and Gmail

The automation workflow demonstrates configuring UiPath activities for:

- Reading emails
- Sending emails and calendar invites
- Manipulating email status (read/unread)
- Handling email attachments
- Archiving, replying, forwarding, deleting emails

Word Automation is also briefly introduced, focusing on processing Word documents for templates, updating bookmarks, inserting tables and images, and saving documents in different formats including PDF.

File System Structure

- The automation relies on a specific folder and file system setup on the local drive to manage source code, resources, and outputs:
- The BookSamples directory should be placed at C:\BookSamples\Chapter_05 to maintain consistency with automation examples.
- An Excel file named Job_Posting_Details.xlsx contains hiring position data used to personalise email communications.

Email Automation Activities: Detailed Descriptions

Use Desktop Outlook App

- Enables UiPath to connect and automate operations in the Microsoft Outlook desktop application.
- All email-related actions (e.g., send, receive, move) are nested within this activity.

Configurations:

- Account: Select the Outlook account by email address; defaults to the primary account.
- Reference as: Provide an identifier name for this account to be referenced by other activities.

Use Outlook 365

- Designed to automate Exchange accounts via Outlook 365.
- Similar nesting model to Use Desktop Outlook App.

Configurations:

- Account: Specify the Outlook 365 email; IT support often provides Exchange information.
- Reference as: Supply a reference name for later use in the workflow.

Use Gmail

- Integrates UiPath with Google Gmail and Google Calendar for automating Gmail actions.
- Supports nesting all Gmail actions inside this activity.

Configurations:

- Account: Define the Gmail account to automate.
- Reference as: Alias for the Gmail account for workflow reference.

For Each Email Activity

- Loops through a collection of emails in a specified folder, executing a provided sequence of actions on each email.
- Supports filters to control which emails are processed:
 - Number of emails to process
 - Unread emails only
 - Emails with attachments only
 - Advanced conditional filters (based on email attributes)

Key Configurations:

Mail Automation Workflow and Setup

- Initial preparation involves creating an Initial Screen folder inside the Inbox of the Outlook account to be used in automation.
- UiPath workflows interact with the mail system by working inside custom folder structures which align with project-specific data such as job posting details and candidate communication.
- The BookSamples folder contains UiPath source code and supporting files that drive the automation exercises and examples.

Mark Email As Read/Unread

Purpose: To update the status of emails programmatically within workflows.

Email Selection: Options to specify which email to act upon include choosing the currently selected email in the Outlook desktop app or iterating over emails in a loop.

State Options: Default marking is 'Read', but marking as 'Unread' is supported.

Forward Email

Purpose: Automate forwarding emails with flexible recipient management and customizable message content.

Recipients: Can include primary recipients (To), carbon copy (Cc), and blind carbon copy (Bcc).

Subject and Body: Ability to change subject and to insert message content either directly as text or by referencing a Word document.

Attachments and Drafts: Support to attach files/folders and save as drafts during development.

Additional Properties: Support for sending on behalf of another email address and limits on body document file size to prevent errors.

Save Email Attachments

Purpose: Extract and save attachments from emails based on filtering criteria.

Filter Capabilities: Supports exact or wildcard pattern matching for file extensions or names (e.g., *.pdf).

Folder Management: Automatically creates target folders if they do not exist.

Attachment Reference: Provides option to hold references to saved attachments for subsequent workflow use.

Save Email

Purpose: Save complete emails locally in appropriate file formats for Outlook and Gmail.

Flexible Naming: File names can be customised or automatically set as the email subject.

Folder Management: Similar folder creation and default location handling as in attachment saving.

Send Email Activity

The **Send Email** activity enables sending an email message by specifying several configurations:

It is encouraged to use the **Save as draft** option during development for testing before actual sending.

The body can be customised either through direct text or by linking a Word document, offering flexibility in email formatting.

Send Calendar Invite Activity

This activity automates creating and sending calendar meeting invitations with multiple configurable parameters:

Setting **Save without sending** during development is encouraged to avoid accidental calendar invites.

Users have control over meeting visibility/status and reminders.

Move Email Activity

This activity facilitates moving specific emails to desired folders, aiding in effective inbox management.

Supports dynamic handling by selecting the current email in Outlook or using the email from a For Each Email loop.

Crucial for automating email organisation.

Reply to Email Activity

Purpose: To send a reply to a specified email message within an automated workflow.

Key Configurations:

- Usage Context: Reply to Email can be used standalone or in a loop (e.g., For Each Email).

- Benefits: Enables tailored automated email responses with flexible recipient management and message content control.

Archive Email Activity

Purpose: To move specified emails to the archive folder automatically.

Configuration Details:

- Primarily used in bulk email processing scenarios to organise or clean inbox automatically.

Delete Email Activity

Purpose: To delete designated email messages via automation.

Configuration Details:

- Used for inbox management and removal of unwanted or obsolete email messages.

Key Insights

- UiPath provides comprehensive activity cards with mandatory and optional configurations allowing detailed and flexible automation of email-related tasks in Outlook and Gmail environments.
- Integration with desktop applications (e.g., Desktop Outlook App) enables selection of current emails dynamically within automation loops.
- Mail Automation activities promote improved efficiency in email handling, including reading status updates, forwarding with customised messaging, selective saving of attachments, and email archiving.
- Mail and calendar automation enable critical productivity enhancements by automating routine communication tasks.
- The Reply to Email activity is highly configurable, allowing for:
 - Recipient management across To, Cc, and Bcc fields
 - Optional subject changes and body content customisation, including integration of Word documents as email bodies
 - Attachment inclusion for comprehensive email replies
 - Draft saving feature enabling review before sending
- Archive and Delete Email activities streamline inbox management by automating routine tasks, reducing manual effort.
- Use of loop variables like CurrentMail in iteration structures enables batch processing of multiple emails.
- UiPath provides robust activities with multiple configurable options to tailor email and calendar interactions.

- Draft saving and attachment filtering options enhance development safety and selective processing capabilities.
- The systematic breakdown of activities, supported by exercises, underlines the importance of practical experience for mastery in RPA mail automation.

Word Automation Overview

This section covers how to automate Microsoft Word document processing, including setup, file management, text manipulation, and saving/exporting documents.

Word Setup

Contains instructions on enabling bookmarks and adding alternate text (Alt Text) to images, which facilitates automation tasks.

Bookmarks:

- Enabled via File → Options → Advanced.
- Confirm that Show bookmarks is checked under 'Show document content'.
- Alternate Text (Alt Text) for Images:
- Used by UiPath StudioX to identify and replace pictures.
- Accessible via right-clicking the image and selecting Edit Alt Text.

Note: Bookmarks and Alt Text are essential for dynamic document editing and content replacement in automation workflows.

File System Structure for Automation Samples

- The automation exercises require a specific folder layout on the local drive:
- A root folder named BookSamples must be copied to C:\.
- Inside BookSamples, chapter-specific folders exist, e.g., Chapter_06 for Word automation.
- Two main subfolders within the chapter folder:
 - Input: Contains invoice templates, images, and Excel input data files.
 - Output: Initially empty, it is where the modified documents and generated PDFs will be saved.

UiPath Word Automation Activities

All Word automation activities are categorised as Word activities in UiPath Studio.

Use Word File Activity

- Defines the scope of Word document automation.
- Opens the Word document at the start of the process and closes it at the end.
- All other Word activities must be nested inside this container activity.

- Requires the Microsoft Word desktop app to be signed in.

Key configurations:

- Word File: Filepath of the target document (mandatory).
- Create if not exists: Creates a new file if the specified document does not exist (optional, enabled by default).
- Auto save: Saves changes automatically when the process completes (optional, enabled by default).

Save Document As Activity

- Saves the Word document as a new file or replaces an existing file.
- Best practice: Run this activity early in the workflow to avoid unintentional changes to the original document.

Key configurations:

- Save as type: File format to save as (mandatory). Various file extensions are supported (detailed list provided in UiPath).
- Save as file: Path or filename for the new file (mandatory).
- Replace existing: If checked, replaces an existing file with the same name; otherwise, throws an error if the file exists. Enabled by default.

Read Text Activity

Purpose: To read and extract all the text from a Word document, which can then be stored in the Project Notebook or clipboard.

Configuration Details:

- Save to: Specifies the destination for the extracted text; this setting is mandatory.
- Usage: Enables referencing document content inside other automation workflows.

Replace Text in Document Activity

Purpose: Replace occurrences of specific text within a document, useful for templated documents such as forms or letters where placeholders are replaced.

Typical Use Case: Replace placeholders like <Company Name> or {Invoice_No}.

Configuration Details:

- Exercises: Multiple exercises reinforce configuring and using this activity effectively.

Append Text Activity

Purpose: Appends text at the current caret position within a Word document.

Use Case: Adding additional information to the end or middle of documents.

Configuration Details:

- Exercises: Practical use cases provide hands-on experience.

Save Document as PDF Activity

Purpose: Export the manipulated Word document as a PDF file, often to preserve formatting and prevent further editing.

Configuration Details:

- Use Cases: Securely sharing documents by preventing modifications.
- Exercises: Applied tasks to consolidate knowledge.

Set Bookmark Content

- Enables setting or replacing the text of a bookmark within a Word document.
- This is critical for adapting template-based documents dynamically, such as removing sections or inserting custom content.

Insert Data Table in Document

- Allows insertion of a data table (e.g., from Excel or website data) into specific points in a Word document, with flexible positioning relative to bookmarks or specific text.

Replace Picture

- Facilitates replacing pictures in Word documents based on Alt Text, useful for tasks such as updating logos or employee photos dynamically in standardised documents.

Add Picture

- Enables appending an image at the end of a Word document, which can be effectively utilised for adding email signatures or branding material within documents

Configuration Highlights

Set Bookmark Content:

Configuration critically requires the exact bookmark name to locate the text placeholder and the text value to set or replace the existing bookmark content.

Insert DataTable in Document:

Key configurations include specifying the data table variable, defining the insertion's position relative to part of the document (e.g., start, end, or specific bookmark), and setting insertion position (before or after the reference point).

Replace Picture:

Requires specifying the Alt Text of the picture to be replaced and the file path of the new picture.

Add Picture:

Simplified configuration specifying the image file path to append at the end of the document.

Key Insights

- Proper setup of bookmarks and Alt Text in Word documents is fundamental for successful image and text automation in UiPath.
- Maintaining a strict file system structure ensures sample codes function correctly without path errors.
- The Use Word File activity centralises document processing, controlling open and close operations.
- Early use of Save Document As protects original documents by working on copies.
- Configuration options such as Create if not exists and Auto save give flexibility and automation control for dynamic document management.
- UiPath enables seamless automation of desktop Outlook and Word applications, increasing productivity by automating repetitive and manual tasks.
- Word Automation activities like Set Bookmark Content and Insert DataTables provide powerful tools to generate templated documents dynamically.
- Image handling activities (Replace Picture, Add Picture) allow dynamic visual content management without manual intervention.
- The module provides a structured progression from basic to advanced document automation, preparing learners for real-world automation challenges.