CREDENTIAL BUILDER

A PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

Certified that this project report **"CREDENTIAL BUILDER"** is the Bonafide work of **"SANCHITHA GR(220701243)"** who carried out the project work for the subject OAI1903-Introduction to Robotic Process Automation under my supervision.

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ABSTRACT:

The **Credential Builder in UiPath** is an innovative solution designed to streamline the process of creating, managing, and securely storing digital credentials for individuals or organizations. Built on the robust UiPath platform, this automation project aims to eliminate manual inefficiencies in credential generation, reduce errors, and enhance security in credential handling.

The system automates the creation of customizable certificates or credentials by integrating with data sources like Excel, databases, or APIs. It incorporates pre-designed templates for formatting and personalizing credentials, ensuring consistent branding and professional appearance. Additionally, the generator leverages UiPath's Orchestrator for secure storage and retrieval, safeguarding sensitive information.

Key features include automated data input, dynamic credential generation, export to various formats (PDF, image), and delivery through email or other communication channels. This project is particularly beneficial for organizations issuing large volumes of credentials, such as educational institutions, certification bodies, and businesses recognizing employee achievements.

By using UiPath's capabilities, the Credential Generator reduces time and effort while ensuring high-quality, error-free output, making it a reliable tool for modern credentialing needs.

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LIST OF ABBREVIATIONS:

Abbreviation	Full Form
SMTP	Simple Mail Transfer Protocol
ERD	Entity Relationship Diagram
DFD	Data Flow Diagram
HR	Human Resources
API	Application Programming Interface
RE	Robotic Enterprise
RPA	Robotics Process Automation

CHAPTER-1

INTRODUCTION

UiPath's Credential Builder is a powerful tool that automates the creation of personalized certificates. By utilizing pre-designed templates and integrating data from various sources, the tool efficiently generates certificates for various occasions, such as training completions, event participation, or academic achievements. This automation eliminates manual effort, reduces human error, and ensures consistent, professional-looking certificates. Key features include template customization, data integration, batch processing, PDF generation, and email integration, significantly improving efficiency and reducing turnaround time.

1. 1 GENERAL

A **Credential Builder** is a software-based system designed to automate the creation, management, and distribution of certificates. It simplifies the process by integrating with data sources to dynamically populate certificate templates with recipient details. The tool allows customization of templates, supports bulk certificate generation, and provides outputs in formats like PDF or image. It enhances efficiency, reduces errors, and ensures secure and professional distribution, making it ideal for educational institutions, organizations, and certification bodies.

1.2 OBJECTIVE

The objective of the **Credential Builder** is to create an automated system that streamlines the process of designing, generating, and distributing personalized certificates. The tool aims to reduce manual effort and minimize errors by integrating with data sources such as Excel, databases, or APIs for seamless data handling. It provides customization options, allowing users to include dynamic fields, logos, and branding elements for professional and consistent certificate design. Additionally, the system ensures efficiency by supporting bulk certificate generation, output flexibility in formats like PDF or image, and secure distribution through email or other platforms. This project is designed to be scalable, making it suitable for organizations and institutions requiring large-scale certificate issuance while maintaining accuracy and quality.

1.3 EXISTING SYSTEM

The existing systems for certificate generation often rely on manual processes or limited software tools that require significant time and effort. In traditional methods, certificates are created individually using design software like Microsoft Word, PowerPoint, or graphic design tools such as Photoshop. Some organizations use basic mail merge functionality to automate data entry, but this approach still requires manual intervention for design, formatting, and distribution. Additionally, existing systems may not offer seamless integration with databases or APIs, limiting their ability to dynamically generate certificates in bulk. Security and consistency in certificate issuance are also common challenges in these systems, as they often lack features for secure storage, verification, or automated delivery. Overall, these limitations highlight the need for a more robust, automated, and scalable solution.

1.4 PROPOSED SYSTEM

The proposed **Credential Builder** is an automated system designed to efficiently create and distribute certificates. It integrates with data sources like Excel or databases to dynamically populate customizable templates, ensuring professional and consistent outputs. The system supports bulk certificate generation in multiple formats (e.g., PDF, image) and facilitates secure distribution via email or other platforms. By automating repetitive tasks, reducing errors, and enhancing scalability, it offers a modern and efficient solution for organizations needing streamlined certificate management.

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LITERATURE REVIEW

The literature review for a **Credential Builder** highlights the evolution of tools and methods used for certificate creation. Traditional approaches relied heavily on manual design using software like Microsoft Word, PowerPoint, or graphic design tools, which were time-consuming and error-prone. Over time, automated solutions such as mail merge in Microsoft Office and online platforms like Canva or Certifier emerged, offering limited automation for template-based certificate creation.

2.1 GENERAL

A **Credential Builder** is a tool or system designed to automate the creation of certificates, such as diplomas, awards, or professional certifications. It allows users to

design customizable certificate templates and automatically populate them with recipient-specific data, like names, dates, and achievements. The generator typically supports bulk certificate creation, making it ideal for institutions or organizations that issue a large number of certificates regularly.

These systems can produce certificates in various formats, such as PDF or images, and may include features for secure distribution, such as email delivery or digital signatures. By automating the certificate creation process, a certificate generator saves time, reduces errors, ensures consistency, and enhances the efficiency of certificate issuance across different industries, including education, corporate training, and event management.

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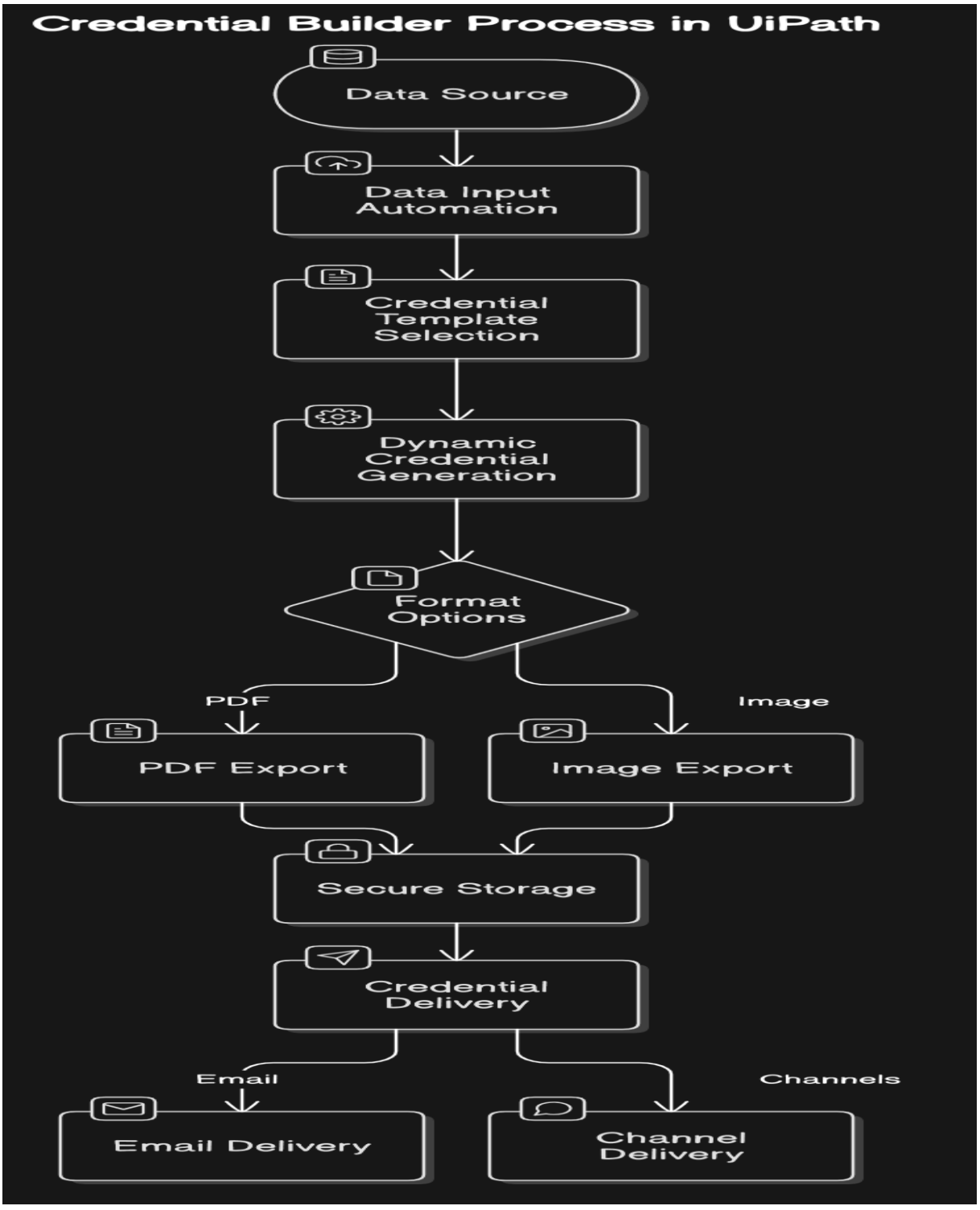
SYSTEM DESIGN

3.1.1 SYSTEM FLOW DIAGRAM

The **System Flow Diagram** outlines the overall flow of data and processes in the system. It demonstrates how user inputs, system processing, and outputs interact.

Description:

1. **Input**: Candidate data from an Excel sheet, including their hiring status.
2. **Process**:
    - Read the Excel sheet.
    - Identify candidates marked as "hired.".
    - Send letters via email.
3. **Output** Confirmation of email sent and logs for error handling.



3.1.2 ARCHITECTURE DIAGRAM

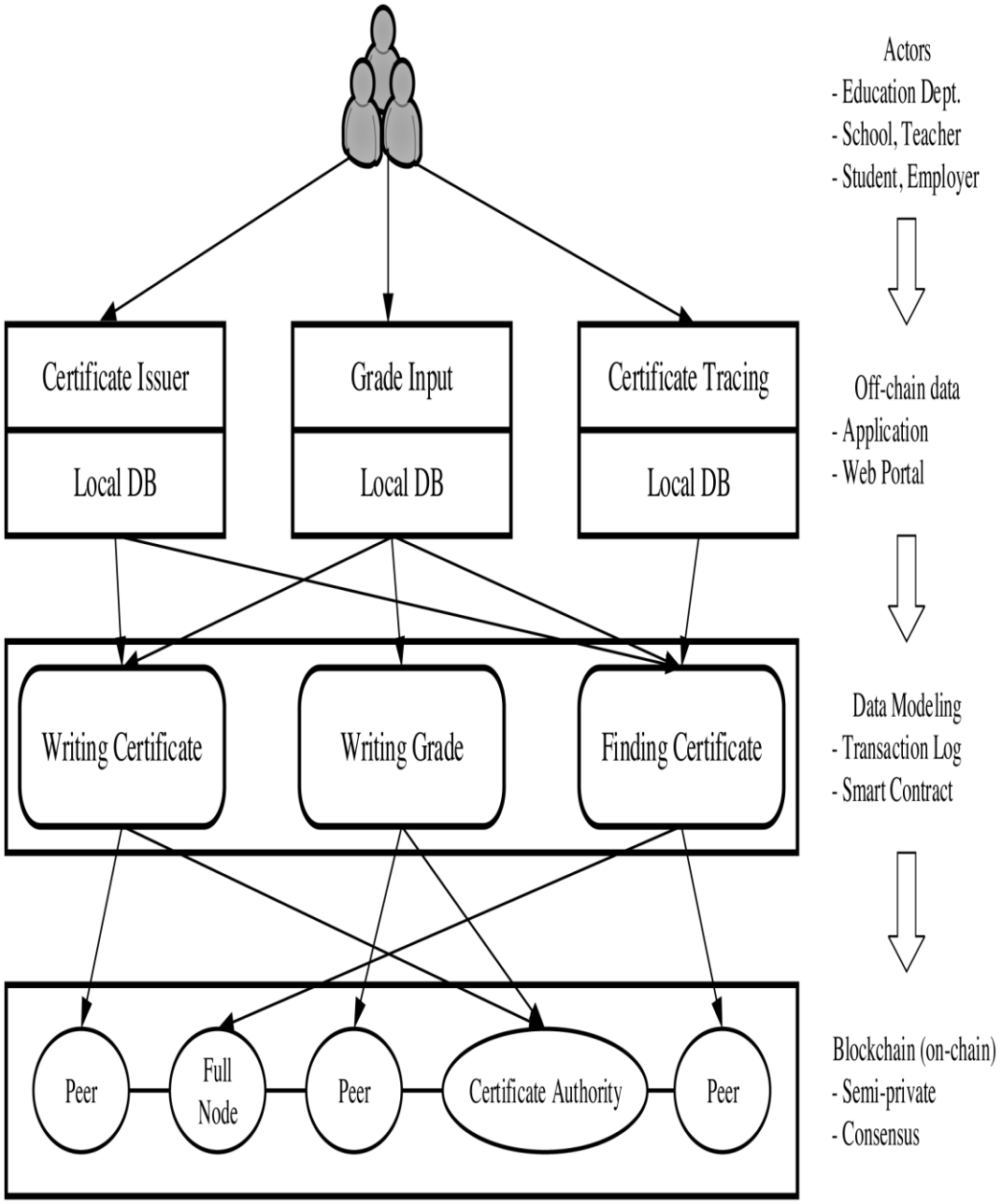
The **Architecture Diagram** provides a high-level view of the system's structure and its components.

Components:

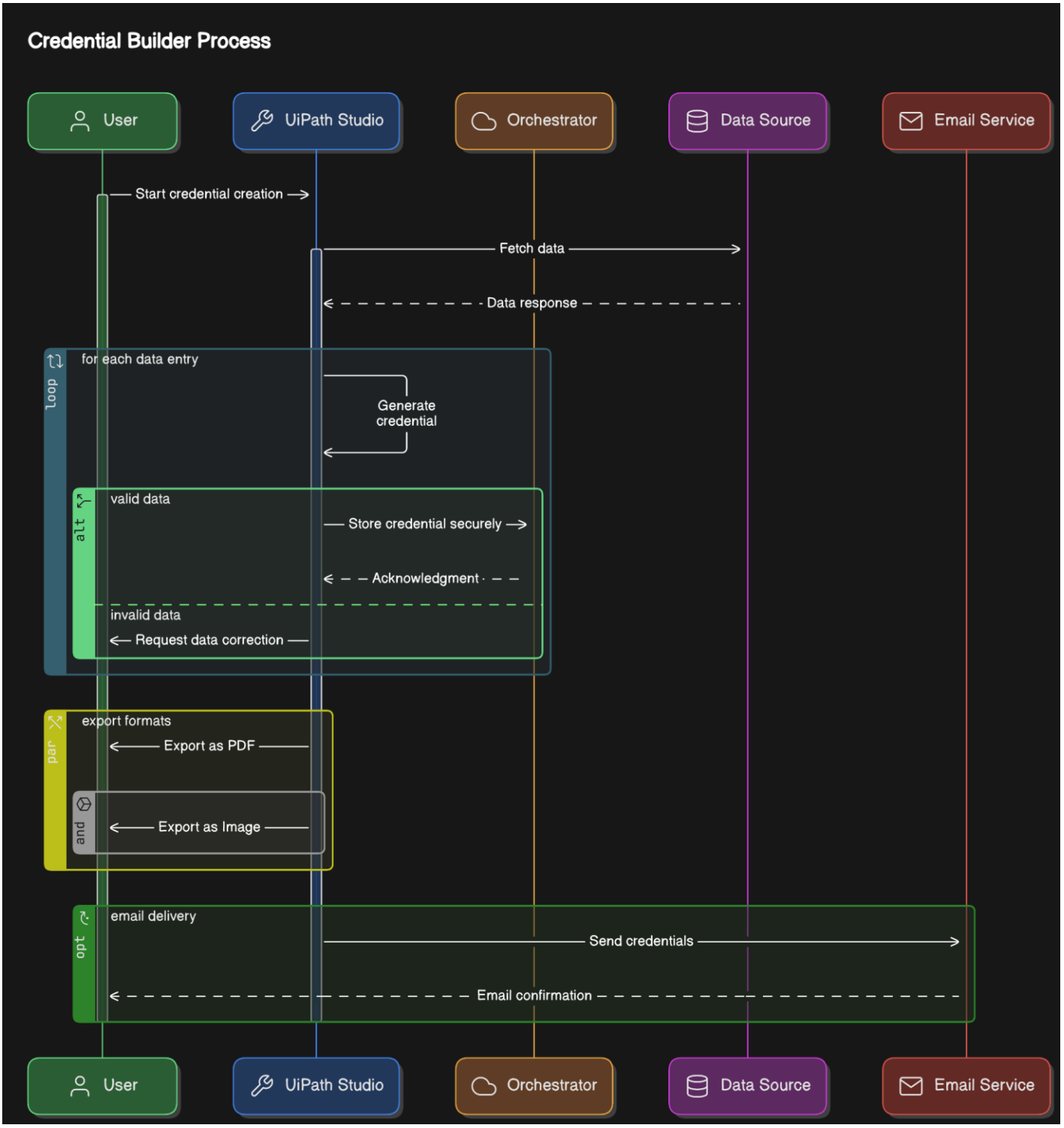
1. **Frontend**: User interface for HR personnel (e.g., UiPath Forms or a dashboard).
2. **Backend**: Core logic, including: ○ Excel processing to read candidate data. ○ Recruitment letter generation.

- Email module for sending letters.

3. **Database/Storage**: To log sent emails and errors.
4. **External Services**: Email server (SMTP) for dispatching letters.



3.1.3 SEQUENCE DIAGRAM



The **Sequence Diagram** shows the interaction between actors (HR personnel) and the system components in a sequential manner.

1. HR personnel trigger the process.
2. The system reads the Excel sheet for candidate data.
3. For each candidate marked as "hired":
   - Generate a recruitment letter.
   - Send the letter via email.
   - Log success or failure.
4. Notify HR personnel of the completion or any errors.

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PROJECT DESCRIPTION

The **Credential Builder** is an automated system designed to streamline the process of creating, managing, and distributing certificates in various formats, such as PDF or image. This tool is particularly useful for organizations that issue large volumes of certificates,

including educational institutions, training providers, and businesses recognizing achievements or certifications.

The system integrates seamlessly with data sources such as Excel, databases, or APIs, allowing automatic population of certificate templates with recipient-specific information. By leveraging UiPath's automation capabilities, it eliminates the need for manual data entry, reduces errors, and enhances the efficiency of the certificate issuance process.

4.1 METHODOLOGY

This project utilizes UiPath RPA to automate accident reporting tasks. It begins by gathering user input about the accident, such as location, date, and description, via a dialog box. The system extracts relevant data concurrently using parallel activities and stores the information in a structured report. Finally, the data is converted to a PDF and sent to the user via email using SMTP, ensuring an efficient and automated reporting process.

1. Requirements Gathering:

The initial phase focuses on understanding the user's needs, including input format for accident details, required information (e.g., summaries, affected areas, recommendations), and the desired output format (PDF). Interaction with the user occurs via dialog boxes, while the output is delivered via email. Technical requirements like web scraping, parallel processing, document generation, and email automation are defined.

2. System Design:

The system design involves creating a workflow that automates the accident reporting process. It incorporates data extraction from static sources using UiPath activities such as "Anchor," "Find Element," and "Get Text." Parallel activities are utilized to retrieve multiple data points (e.g., causes and recommendations) simultaneously. The system design also includes generating a detailed report, converting it into a PDF, and automating the email delivery process.

3. Implementation:

During implementation, UiPath is used to develop the RPA workflow. The user provides accident details, and the automation script extracts relevant data from predefined sources. Parallel processing is implemented to enable simultaneous data retrieval, enhancing efficiency. The system generates a comprehensive report, converts it to PDF format, and sends it via email using the SMTP Mail Message activity.

4. Testing:

Testing ensures the system's accuracy and efficiency. Unit testing is performed for each activity (e.g., data extraction, PDF conversion, email sending). Integration testing ensures seamless interaction between components. The system is tested for edge cases, such as incomplete inputs or connectivity issues, and for the quality of the output report. User acceptance testing confirms that the solution meets user requirements and expectations.

5. Deployment:

After testing, the system is deployed in a live environment. Users interact with the tool to generate reports based on real-world scenarios. Documentation is provided for maintenance and troubleshooting. The system is monitored post-deployment to ensure smooth operation, with any issues addressed in subsequent updates.

4.1.1 MODULES:

1. User Input Module:

Handles user interaction, prompting for accident details like location, date, and description.

Requirements: Input validation to ensure completeness and accuracy.

2. Web Data Extraction Module:

Automates data retrieval from static sources using UiPath activities like "Anchor," "Find Element," and "Get Text." Collects information such as summaries, causes, and recommendations.

Requirements: Integration with static data sources, handling data variations, and accurate extraction.

3. Parallel Data Extraction Module:

Manages concurrent retrieval of multiple data points (e.g., summaries, causes, recommendations) using UiPath's "Parallel" activity.

Requirements: Effective synchronization to avoid conflicts and ensure efficient execution.

4. Report Generation and Storage Module:

Compiles retrieved data into a structured report using UiPath's "Append Text" activity. The report is organized for clarity and readability.

Requirements: Document formatting and proper organization of extracted data.

5. PDF Conversion Module:

Converts the report into a PDF format to ensure professionalism and easy distribution.

Requirements: Reliable conversion tools and preservation of layout and formatting.

6. Email Notification Module:

Sends the finalized PDF report to the user via email using the "SMTP Mail Message" activity.

Requirements: SMTP configuration, customized email content, and error handling for failed deliveries.

7. Error Handling and Logging Module:

Tracks errors during the process, logs them for troubleshooting, and notifies the user of issues.

Requirements: Comprehensive logging and user-friendly notifications.

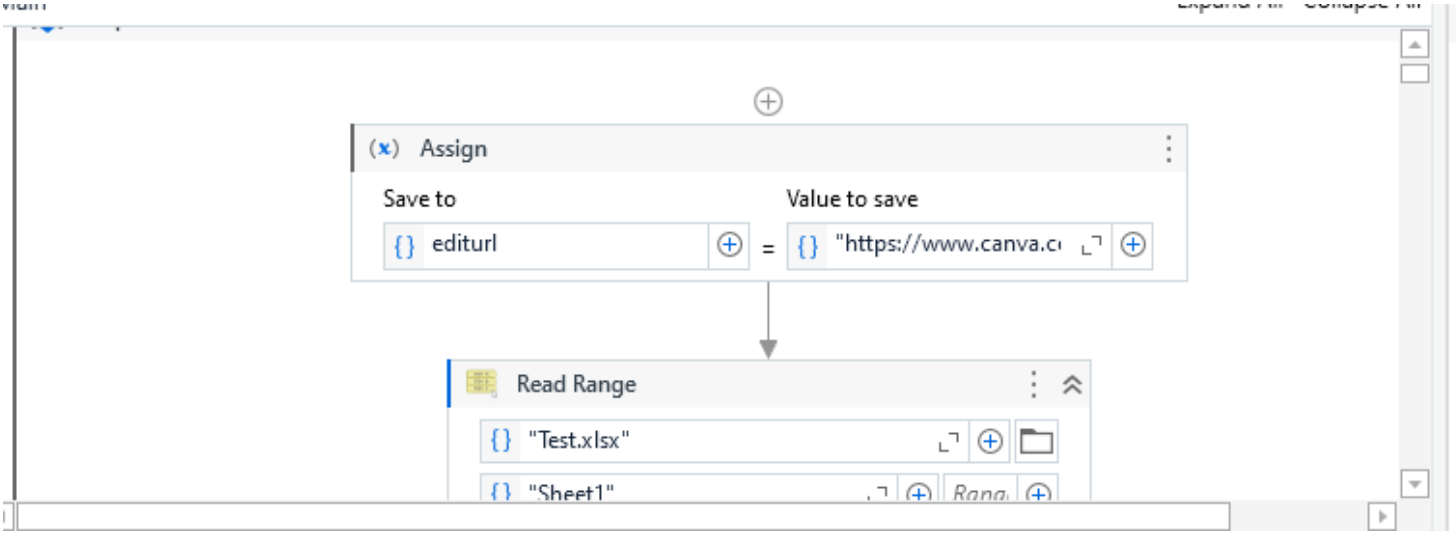
8. System Monitoring and Maintenance Module:

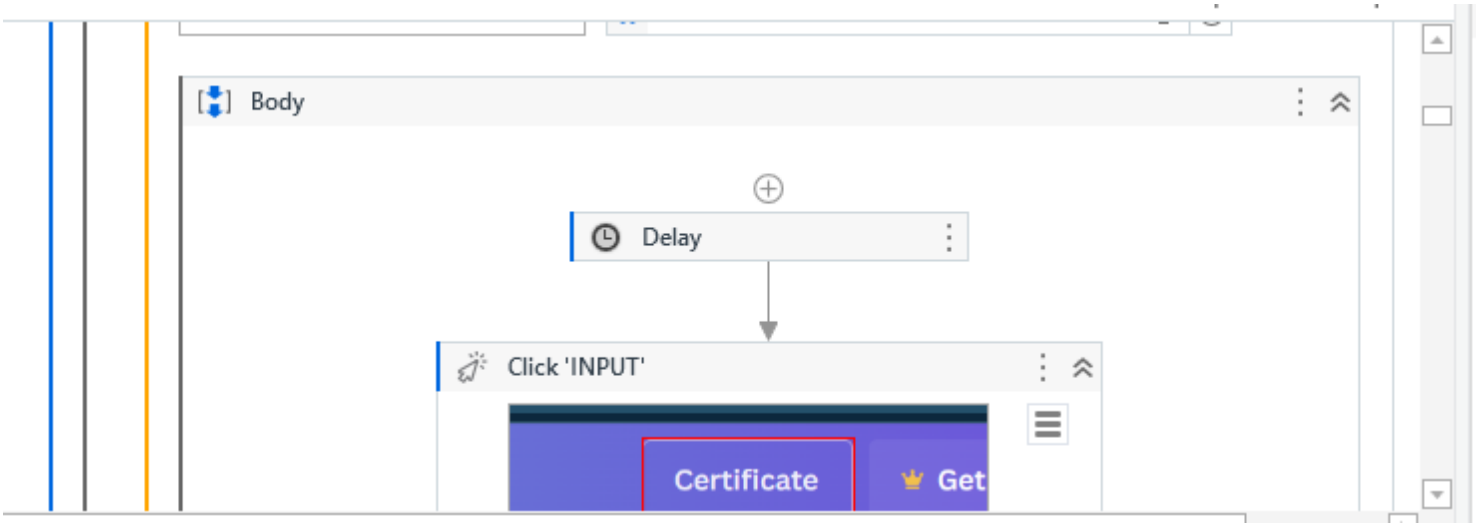
Monitors the system after deployment to ensure smooth operation. Includes health checks, updates, and troubleshooting scripts.

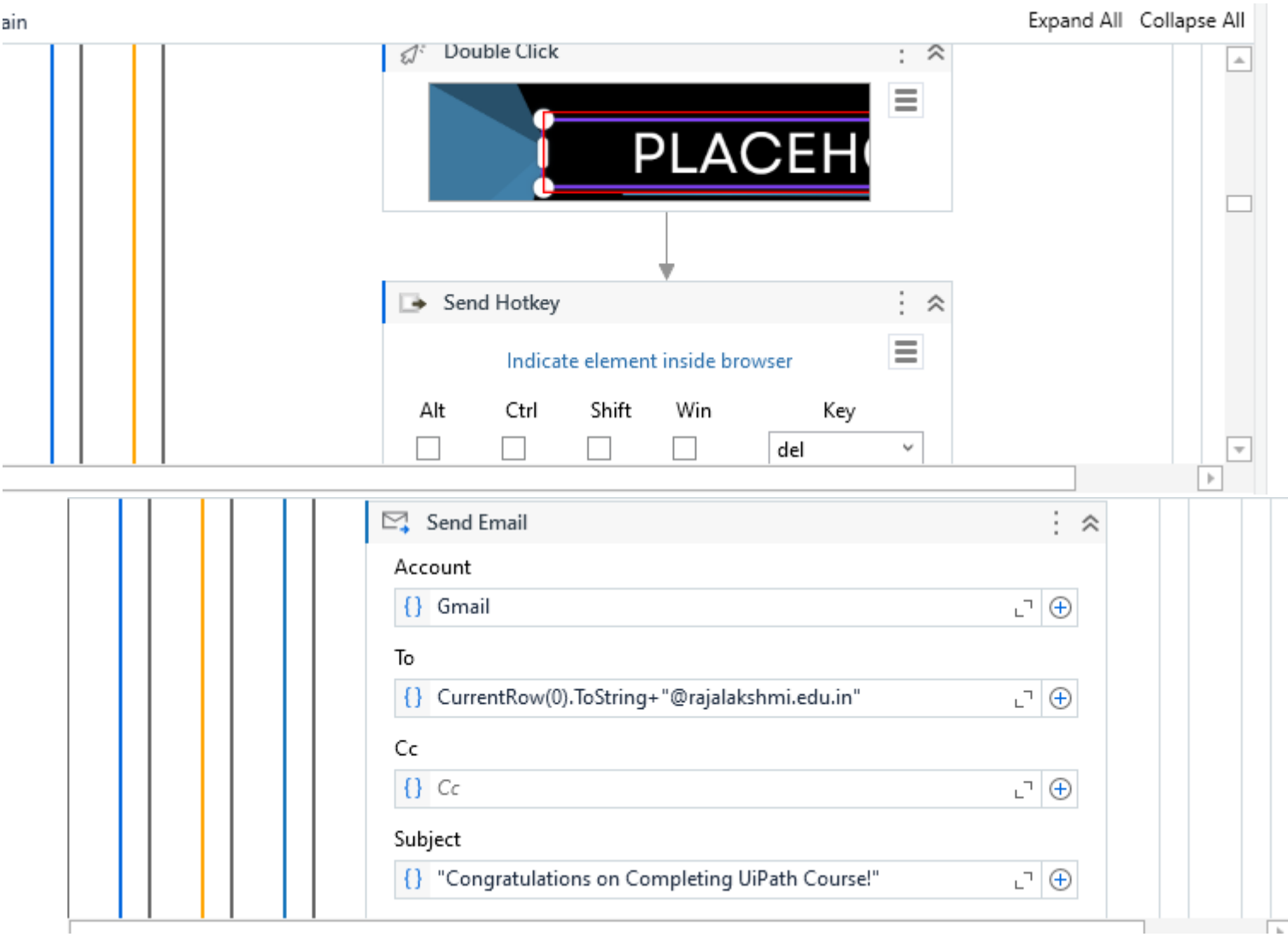
Requirements: Tools for monitoring RPA workflows and regular maintenance routines.

CHAPTER-5

OUTPUT SCREENSHOT



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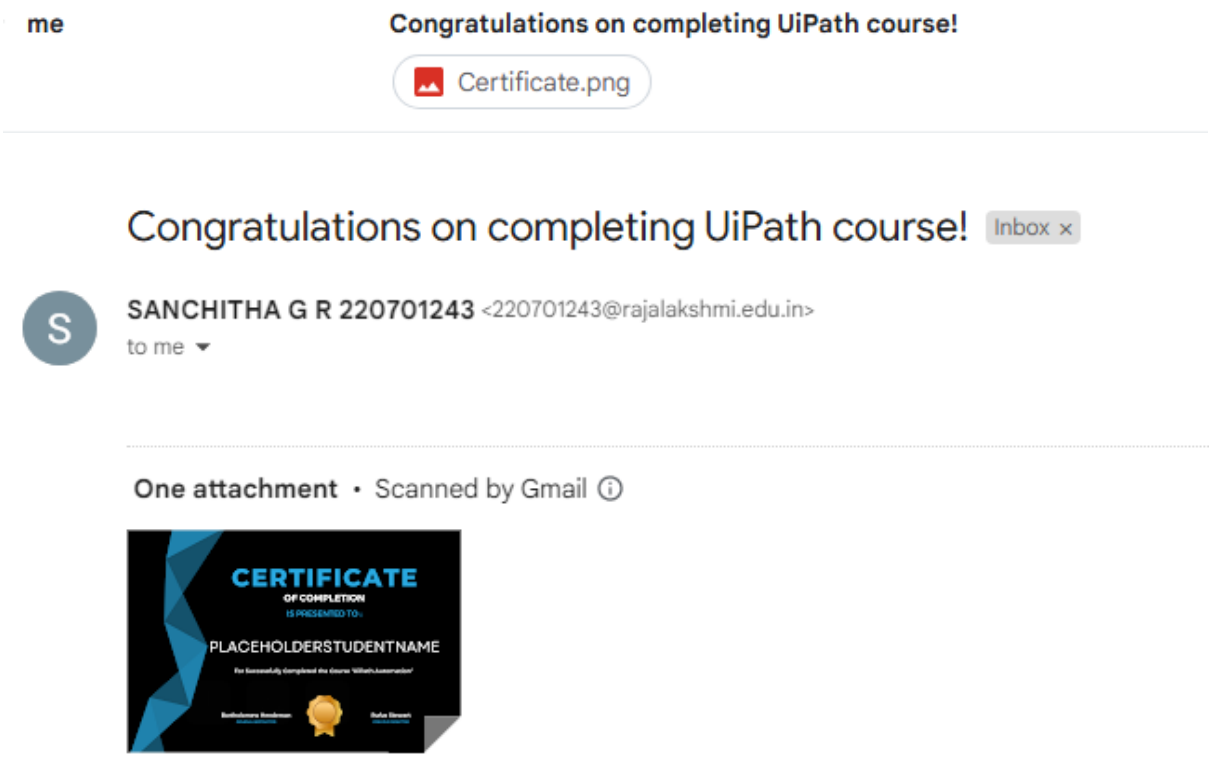

CHAPTER-6

CONCLUSIONS

In conclusion, the **Credential Builder in UiPath** offers a powerful solution for automating the creation, management, and distribution of certificates. By leveraging UiPath's automation capabilities, the system significantly reduces manual effort, eliminates errors, and enhances efficiency in the certificate issuance process. With features like data integration from external sources, customizable templates, bulk generation, and secure storage via UiPath Orchestrator, the system ensures a streamlined, scalable, and secure workflow. This automation

not only saves time but also guarantees consistency and professionalism in the certificates issued, making it an ideal solution for educational institutions, businesses, and organizations that require large-scale certificate management. The Credential Generator in UiPath is a valuable tool that contributes to enhanced productivity, security, and accuracy in certificate generation and distribution.

6.1 GENERAL:

The **Credential Builder in UiPath** is an automated solution designed to simplify the process of creating, managing, and distributing certificates. It integrates seamlessly with data sources like Excel, databases, or APIs to automatically populate customizable templates with recipient information. This system supports bulk certificate generation, ensuring efficiency, accuracy, and consistency. With the ability to export certificates in formats like PDF or image, and secure distribution via email or other channels, it provides a comprehensive solution for organizations that issue certificates on a large scale.

Leveraging UiPath's capabilities, the Certificate Generator reduces manual effort, eliminates errors, and enhances security, making it an ideal tool for educational institutions, businesses, and certification bodies.

APPENDICES

Appendix A: System Requirements

1. **Software Requirements**:
    a. UiPath Studio (Version: [specific version])
    b. UiPath Orchestrator (for credential storage and management)
    c. Microsoft Excel (for data input, if using Excel as a data source)
    d. Adobe Acrobat Reader (for PDF viewing)
    e. Web browser (for email or web delivery of certificates)
2. **Hardware Requirements**:
    a. Minimum 4 GB RAM
    b. Minimum 1.5 GHz Processor
    c. 500 MB free disk space for installation and operation

d. Stable internet connection (for email integration and cloud services)

Appendix B: User Guide

1. **Step 1: Input Data**
    a. Import recipient data from Excel, databases, or APIs. Ensure that data includes fields like name, certificate type, and other relevant details.
2. **Step 2: Select Template**
    a. Choose from predefined certificate templates or upload a custom design. Customize the layout to include necessary fields like the recipient's name, date, and issued credentials.
3. **Step 3: Generate Certificates**
    a. Once the data and template are ready, the system automatically generates the certificates. Bulk generation can be done for large groups.
4. **Step 4: Export and Distribution**
    a. After generation, select the output format (PDF, Image) and export the certificates.
    b. Optionally, send certificates automatically via email or through a communication channel.
5. **Step 5: Secure Storage and Retrieval**
    a. The generated certificates are stored securely in UiPath Orchestrator, ensuring proper access control and tracking.

Appendix C: Error Handling Procedures

1. **Common Issues**:
    a. **Data Mismatch**: If a field in the data source doesn't match the template, the system will prompt an error. Ensure that data fields align with template placeholders.
    b. **Missing Template**: If a template is missing or corrupted, the system will use a default template or ask for re-selection.
2. **Troubleshooting**:
    a. **Incorrect Data Format**: Ensure that data fields are formatted correctly (e.g., date formats, text fields) to prevent issues in certificate generation.
    b. **Template Alignment Issues**: Adjust template placeholders if fields are not properly aligned.

Appendix D: Sample Certificate Template

- A sample certificate template illustrating the layout, placeholders, and customization options (e.g., header, footer, recipient name, date, and certification details).

Appendix E: Security Considerations

1. **Data Security**:
    a. Ensure that sensitive data (e.g., recipient information) is handled securely by using encryption when storing or transmitting data.
2. **Credential Verification**:
    a. Implement a system for verifying the authenticity of issued certificates, such as including digital signatures or unique identifiers.
3. **Access Control**:
    a. Limit access to certificate generation and storage features to authorized personnel only, using UiPath Orchestrator's role-based access control.

Appendix F: Integration Details

- Information on integrating the certificate generator with third-party systems (e.g., Learning Management Systems, HR systems) via APIs or other interfaces.

Appendix G: Future Enhancements

- Potential enhancements for the certificate generator, such as:
    - **Blockchain Integration** for verifiable credentials
    - **Multi-language Support** for global certificate issuance
    - **Advanced Reporting** on issued certificates and statuses

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