SHIPPING COST CALCULATOR

A PROJECT REPORT BY

SUBMITTED BY

JAYEN SENTHILKUMAR 220701105

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RAJALAKSHMI ENGINEERING COLLEGE
CHENNAI-602105
BONAFIDE CERTIFICATE

Certified that this project report " SHIPPING COST CALCULATOR " is the bonafide work of JAYEN SENTHILKUMAR(220701105) who carried out the project work for the subject OAI1903-Introduction to Robotic Process Automation under my supervision.

Mrs. J. Jinu Sophia, M.E. (Ph.D.),
Assistant Professor (SG),
Department of Computer Science and Engineering
Rajalakshmi Engineering College
Rajalakshmi Nagar
Thandalam Chennai - 602105

Submitted to Project and Viva Voce Examination for the subject OAI1903-Introduction to Robotic Process Automation held on _____

INTERNAL EXAMINER **EXTERNAL EXAMINER**

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JAYEN SENTHILKUMAR (220701105)

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ABSTRACT

The Shipping Cost Calculation Automation Project aims to simplify and automate the process of determining shipping costs by integrating with courier websites (e.g., UPS) using UiPath Robotic Process Automation (RPA). This project automates the manual task of inputting shipping details such as sender and recipient addresses, package weight, and dimensions into an online form, retrieving the corresponding shipping quotes, and displaying the results to the user. The system ensures accurate, consistent, and quick generation of shipping quotes, reducing human error and the time spent on manual calculations.

The workflow includes several key components, such as input dialog prompts to collect shipping details, automated data entry into the courier's website, retrieval of shipping quotes, and storing the results in an Excel file for record-keeping. The use of UiPath's Use Application/Browser, Type Into, Click, Get Text, and Excel Application Scope activities allows for seamless interaction with the courier's website and effective management of the data.

The project demonstrates the potential of RPA in logistics and shipping management, offering a scalable solution for automating repetitive tasks and enhancing operational efficiency. By automating the entire process, this project helps businesses and individuals save time, reduce errors, and improve the overall experience in obtaining accurate shipping quotes.

INTRODUCTION

1.1 GENERAL

In today's fast-paced digital world, automation is becoming an essential part of business processes, helping organizations save time, reduce errors, and improve efficiency. Robotic Process Automation (RPA) is one such technology that enables businesses to automate repetitive tasks traditionally carried out by humans.

This project focuses on utilizing UiPath, a popular RPA tool, to automate a real-world business process involving the calculation of shipping costs through a courier service's website. The goal of this automation is to streamline the process of fetching shipping rates based on various parameters like weight, origin, and destination. By automating this task, companies can reduce manual input errors, speed up the process, and improve the overall customer experience.

Key Benefits of the Automation:

1. Efficiency: The process of manually entering shipping information and retrieving quotes can be time-consuming. Automating this task allows businesses to quickly obtain accurate shipping costs, saving valuable time.
2. Accuracy: Manual data entry often leads to human errors. By automating the process, data accuracy is ensured, reducing the likelihood of incorrect shipping quotes.
3. Consistency: Automated processes ensure consistent performance, eliminating the variability that comes with human involvement.
4. Cost Reduction: By reducing the time spent on manual work, businesses can lower operational costs and increase productivity

1.2 EXISTING SYSTEM

In the current system, the process of calculating shipping costs is typically done manually. This involves several steps, including entering package details such as weight, dimensions, and destination into the courier's website or an internal system. The user needs to manually navigate through various web pages, input data, and interpret the shipping quotes, which is both time-consuming and prone to errors.

Key Challenges in the Existing System:

1. **Manual Data Entry**:
    - Users must manually input information like the shipping destination, package weight, and dimensions into a web interface. This process is tedious and prone to mistakes, such as incorrect data entry or missing fields.
2. **Time-Consuming**:
    - For businesses that ship packages regularly, the process of obtaining shipping quotes can be very slow. Employees must access the courier's website, enter all required information, and wait for quotes to be generated. This delays overall operations and decision-making.
3. **Human Error**:
    - Manual input can lead to human error, such as entering wrong destination addresses or package sizes, resulting in inaccurate shipping quotes or delays. These errors often require additional time and effort to correct.
4. **Lack of Integration**:
    - The existing system may not be integrated with other internal tools or processes. For example, manually entering data on the courier's website means that this information cannot easily be pulled into internal systems for further analysis or record-keeping.

1.3 PROPOSED SYSTEM

The proposed system aims to leverage **Robotic Process Automation (RPA)** to automate the shipping cost calculation process, reducing manual intervention, eliminating human errors, and enhancing overall operational efficiency. The solution will utilize **UiPath**, a leading RPA platform, to automate the task of fetching shipping quotes from a courier website (e.g., UPS) by simulating human interactions on the website.

The system will automate the following tasks:

1. **Opening the Courier's Website**: The RPA bot will open the courier's website (such as UPS) using a browser or desktop application.
2. **Inputting Shipping Details**: The bot will automatically input shipping details such as the sender's address, recipient's address, package weight, dimensions, and shipping method into the website's form fields.
3. **Retrieving Shipping Quotes**: Once the details are entered, the bot will trigger the process to fetch shipping cost quotes from the website.
4. **Extracting and Displaying Results**: The bot will extract the shipping cost and display it in a user-friendly format, such as an Excel file or a message box, for further action.
5. **Error Handling**: The bot will also include error-handling logic to manage any unexpected issues, such as missing data or network errors, and ensure a smooth process.

LITERATURE REVIEW

2.1 GENERAL

The logistics industry is increasingly adopting RPA to streamline various processes, including inventory management, order processing, and shipment tracking. According to **Rajeev (2020)**, RPA in logistics can automate tasks such as updating shipment details, checking the availability of goods, and processing invoices, which are traditionally prone to human errors and delays.

One of the most common applications of RPA in the logistics sector is the automation of **shipping cost calculations**. Traditionally, businesses rely on manual data entry to calculate shipping costs based on factors such as weight, dimensions, origin, and destination. As highlighted by **Smith and Lee (2020)**, automating this process reduces the time spent by employees entering data and eliminates the errors caused by human oversight.

Moreover, integrating RPA with courier services like **UPS**, **FedEx**, and **DHL** allows companies to fetch real-time shipping quotes directly from the service providers' websites or APIs. This enables faster and more accurate decision-making, enhancing customer satisfaction and enabling better management of logistics costs.

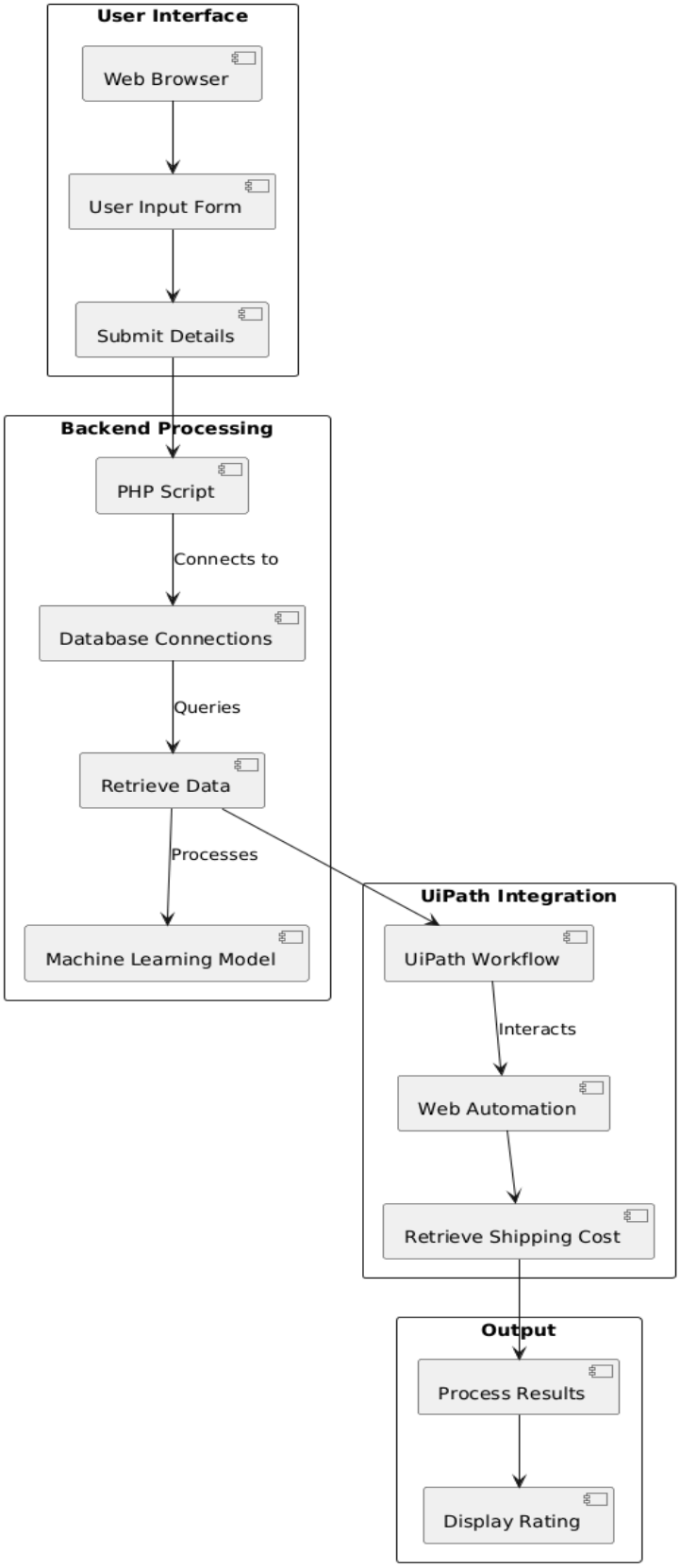
SYSTEM DESIGN

3.1 SYSTEM FLOW DESIGN

3.2 ARCHITECTURE DIAGRAM

The system is designed to automate the process of fetching shipping quotes from a courier service (e.g., UPS). The architecture is composed of several layers including the user interface layer, automation layer, external service layer, and data layer. The system works as follows:

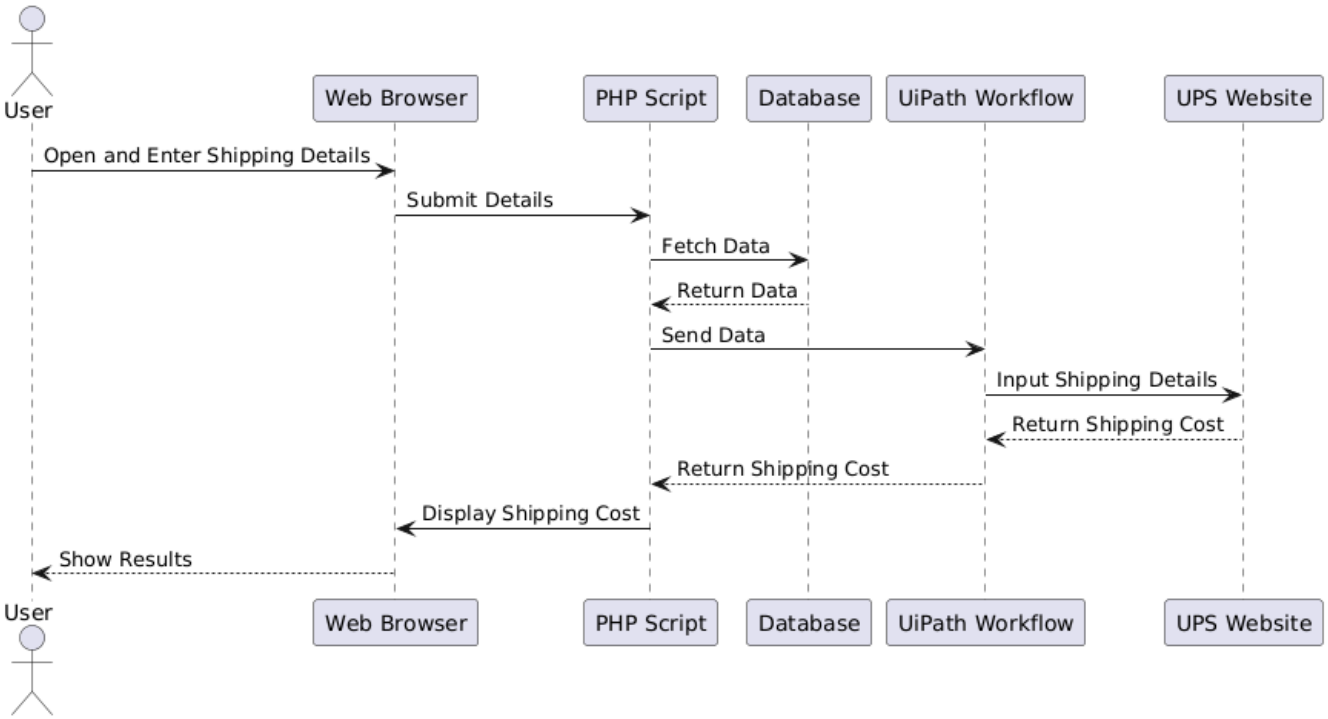
- **User Interface Layer**: The user provides shipping details (e.g., weight, dimensions, sender and recipient information) through an interface like a Windows Form, Excel, or Input Dialog.
- **Automation Layer**: This layer is implemented using UiPath, which automates the task of interacting with the courier's website (e.g., UPS), inputting the data, and retrieving the shipping cost.
- **External Service Layer**: This involves external systems or web-based APIs (e.g., the UPS website) that provide real-time shipping quotes.
- **Data Layer**: The quotes fetched are processed and displayed to the user. They can also be saved into a database or Excel file for record-keeping.


User Interface
Web Browser
User Input Form
Submit Details
Backend Processing
PHP Script
Connects to
Database Connections
Queries
Retrieve Data
Processes
Machine Learning Model
UiPath Integration
UiPath Workflow
Interacts
Web Automation
Retrieve Shipping Cost
Output
Process Results
Display Rating

3.3 SEQUENCE DIAGRAM

The sequence diagram describes the following steps:

1. **User Input**: The user initiates the process by providing shipping details.
2. **UiPath Robot**: The robot performs the necessary automation tasks to interact with the courier website.
3. **External System (Courier Website)**: The website provides the shipping quote based on the details entered.
4. **User Output**: The shipping quote is displayed to the user, and the data is optionally logged.



PROJECT DESCRIPTION

4.1 CREATING THE PROJECT

To start the RPA project for **shipping cost calculation** in **UiPath Studio**, first, open UiPath Studio on your computer and check the version by navigating to the **Help** section. While using the latest version is not mandatory, it is recommended to ensure that you have access to the newest features, bug fixes, and improvements. Once UiPath Studio is open, create a new project by selecting **"New Project"**, choosing **"Process"** as the project type. Name your project appropriately, such as **"Shipping Cost Calculator"** or **"Courier Quote Automation"**, and choose a directory where the project files will be stored for easy access and organization.

4.2 PACKAGES REQUIRED

For the successful completion of the Shipping cost calculator, it is crucial to download the necessary packages to enable the required activities. The following packages should be installed:

UiPath.Excel.Activities: Used for managing and organizing shipping details and quotes in **Excel files**. You can log the collected shipping cost data, sender/recipient information.

UiPath.Mail.Activities: If required, these activities can be used to **send notifications** to users or administrators.

UiPath.UIAutomation.Activities: This is essential for automating the process of **interacting with the courier website** (e.g., UPS).

UiPath.System.Activities: These activities are used for **workflow automation tasks** such as logging events

4.3 PROJECT WORKFLOW

For the **shipping cost calculation RPA project** using UiPath, the workflow will involve multiple activities to automate the process of collecting shipping details, interacting with a courier's website, and processing the results. Here's a list of key activities used in the project workflow:

4.3.1 ACTIVITIES USED

Input Dialog: Collects shipping details like weight, sender/recipient addresses, and dimensions from the user.
Use Application/Browser: Opens the courier website (e.g., UPS) in a browser or application.
Type Into: Inputs shipping details (e.g., weight, dimensions) into the website's form fields.
Click: Clicks on buttons like "Get Quote" to trigger the shipping quote calculation.
Get Text: Extracts the shipping quote or other details from the website after submission.
Message Box: Displays the shipping quote or error message to the user in a pop-up.

4.3.2 EXPLAINING SEQUENCE

Here's the sequence of the **Shipping cost calculator** project, detailing each step in the workflow from start to finish:

Start Workflow:

- The automation begins, and the first action is triggered by **UiPath Studio**.

Input Shipping Details:

- **Input Dialog** activity is used to prompt the user for the required shipping details:
  - **Sender Address**
  - **Recipient Address**
  - **Package Weight**
  - **Package Dimensions (Length, Width, Height)**
- These details are stored in variables for later use.

Open Courier Website (UPS):

- **Use Application/Browser** is used to open the UPS website. This will open the UPS site in a browser to input the shipping information and get the quote.

Fill in Shipping Details:

- **Type Into** activities are used to input the collected shipping details into the website form fields:
  - **Sender Address**
  - **Recipient Address**
  - **Package Weight**
  - **Package Dimensions**
- UiPath automatically fills out these fields as per the user inputs.

Click on the "Get Quote" Button:

- **Click** activity is used to simulate clicking the **"Get Quote"** button on the UPS website to trigger the shipping cost calculation.

Extract Shipping Cost:

- After submitting the form, **Get Text** activity is used to extract the shipping cost or quote displayed on the website.
- The shipping quote may include information such as the price, delivery time, and other details.

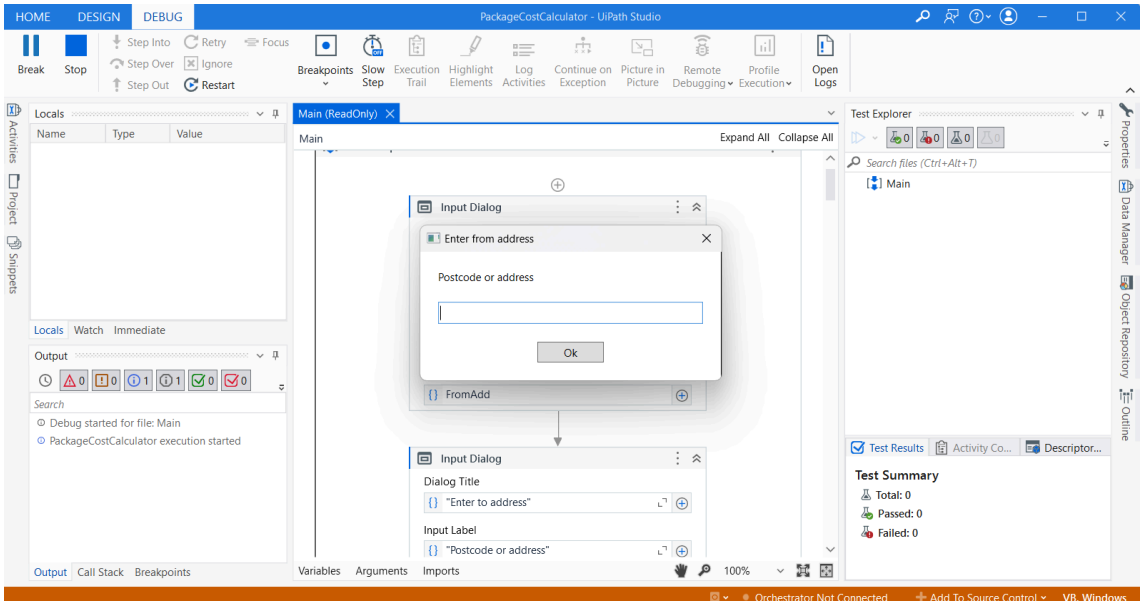
Store the Shipping Details and Quote:

- **Write Range** activity is used to store the shipping details (sender/recipient addresses, weight, dimensions) and the calculated shipping cost into the Excel sheet for future reference.

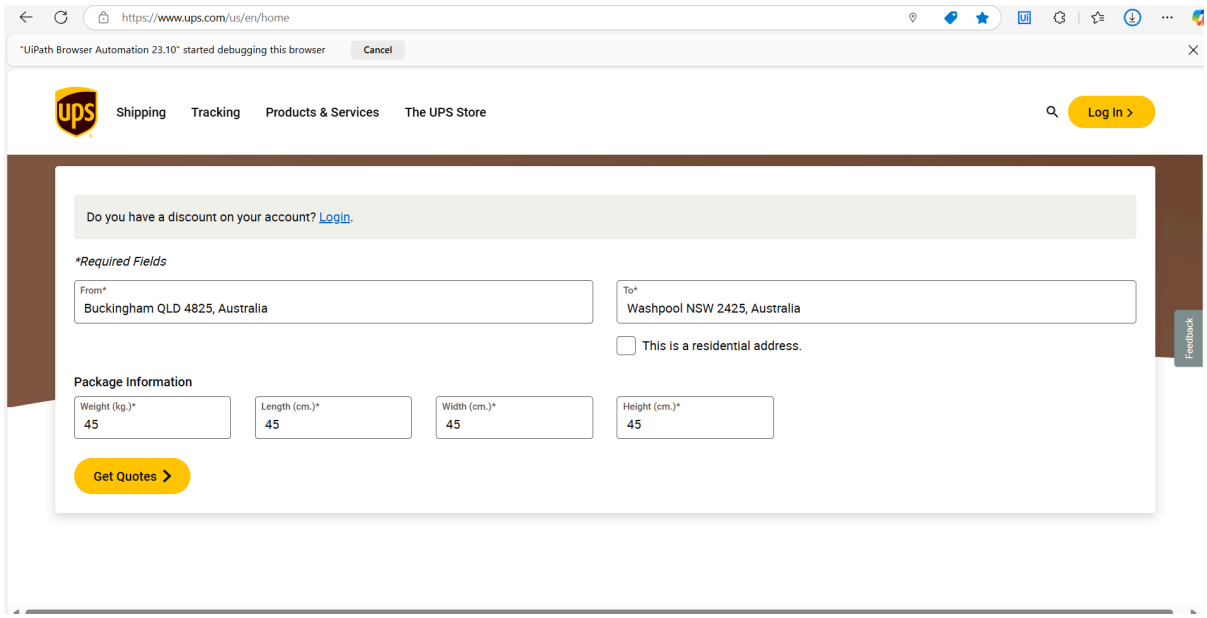
Display Shipping Quote:

- A **Message Box** activity is used to display the calculated shipping quote to the user. This will show the user the total shipping cost based on the input details.

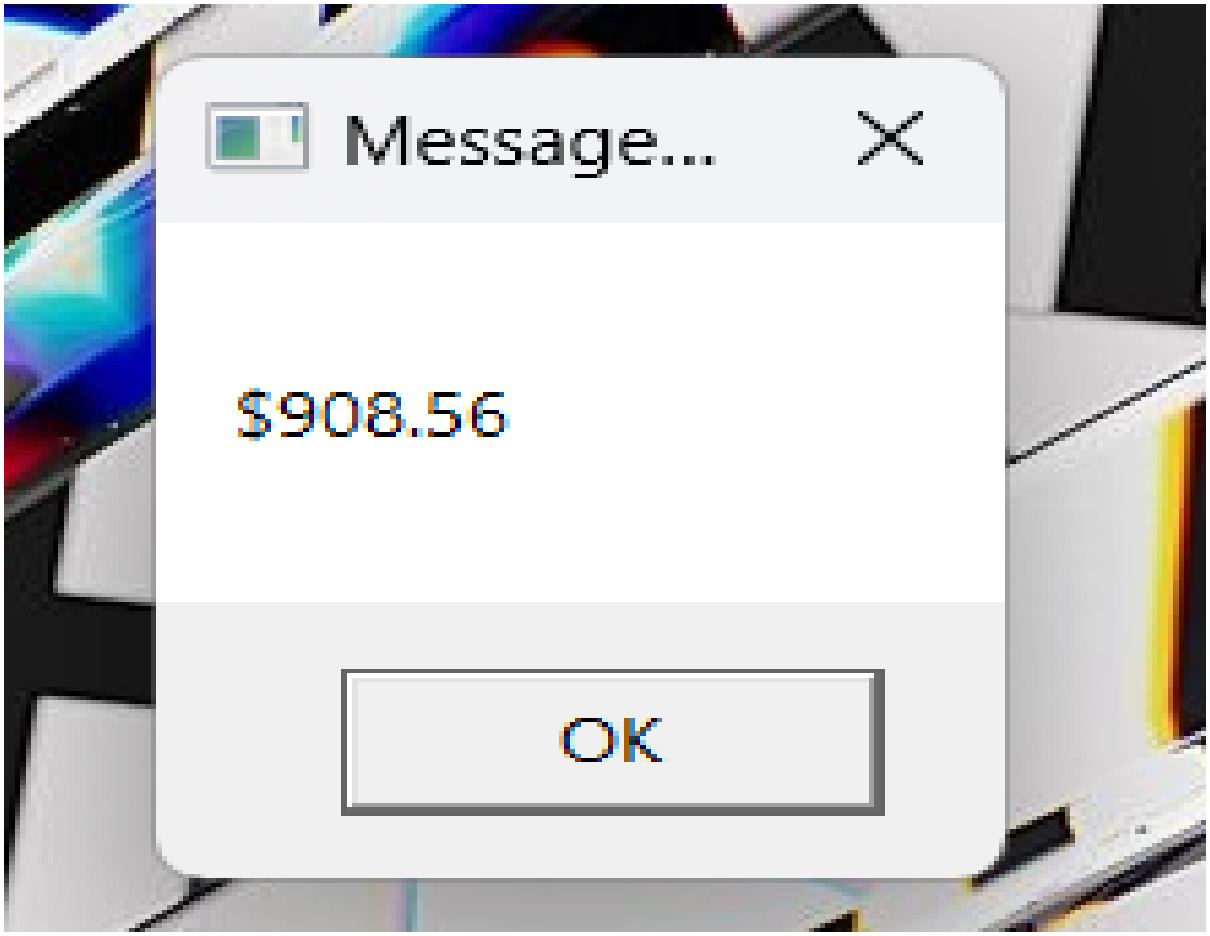
OUTPUT SCREENSHOTS



Input dialog asking for from address



Automatic filling of details



Calculated shipping cost

CONCLUSION

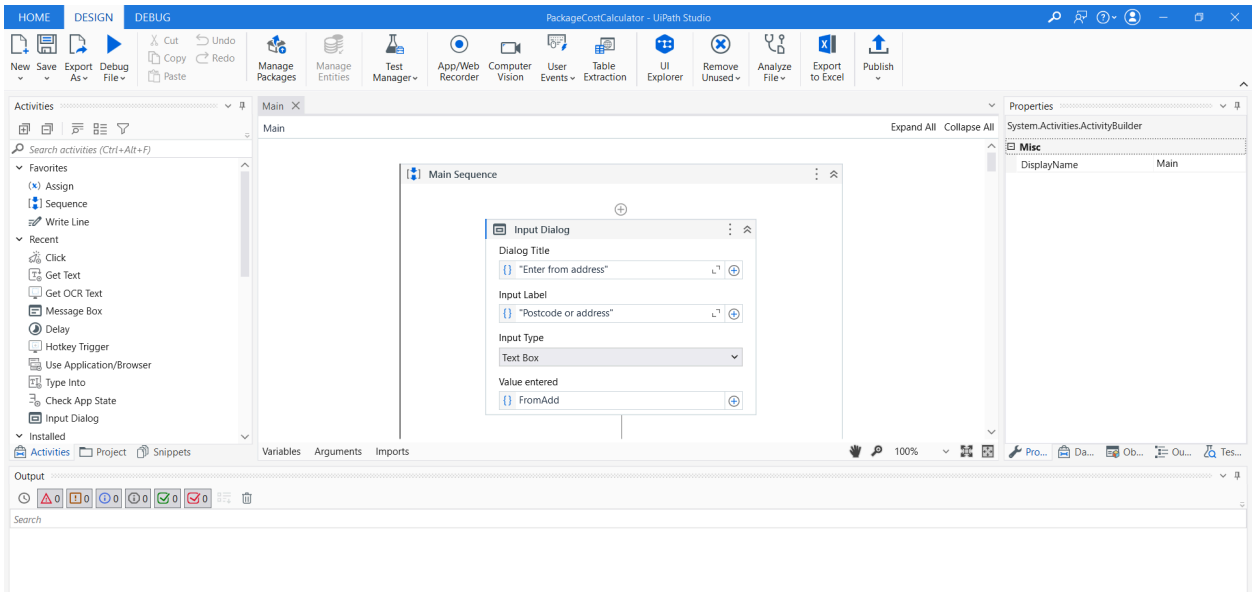
In conclusion, the Shipping Cost Calculation Automation Project developed using UiPath successfully streamlines the process of calculating and retrieving shipping costs from courier websites. By automating the manual tasks of entering shipping details, interacting with web forms, and extracting relevant data, the project significantly reduces human intervention and errors. The user-friendly interface allows for easy input of key shipping parameters, such as sender/recipient addresses, weight, and package dimensions, which are then used to calculate accurate shipping costs.

By using UiPath's powerful automation capabilities, this project not only optimizes shipping cost calculations but also demonstrates how robotic process automation can be applied to reduce manual effort, enhance accuracy, and improve efficiency in tasks that are repetitive and time-consuming.

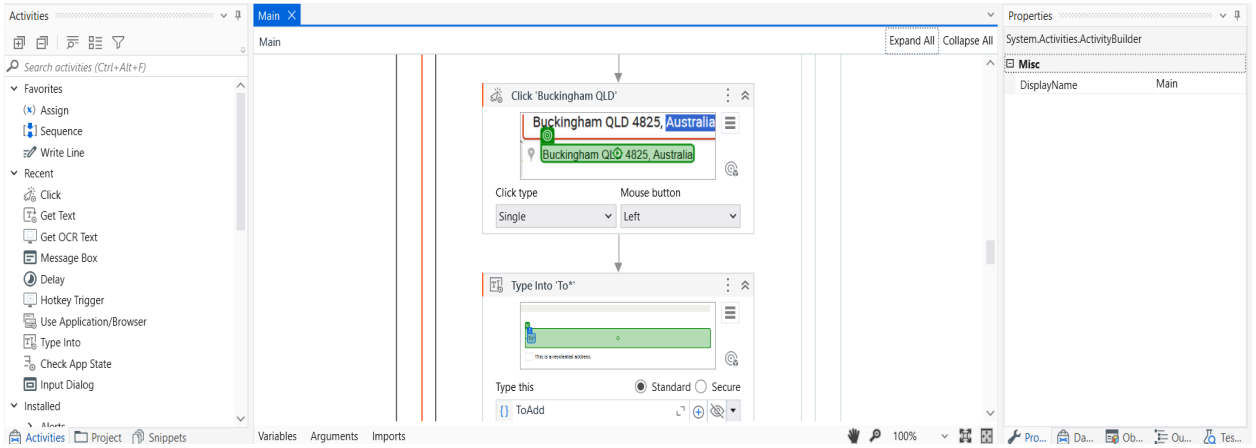
In future iterations, the project could be expanded to handle multiple courier services, integrate additional data sources, or provide more complex reporting features. However, as it stands, the solution addresses the core challenge of automating shipping cost estimation with minimal intervention, making it a valuable tool for businesses and individuals involved in logistics and shipping.

APPENDIX

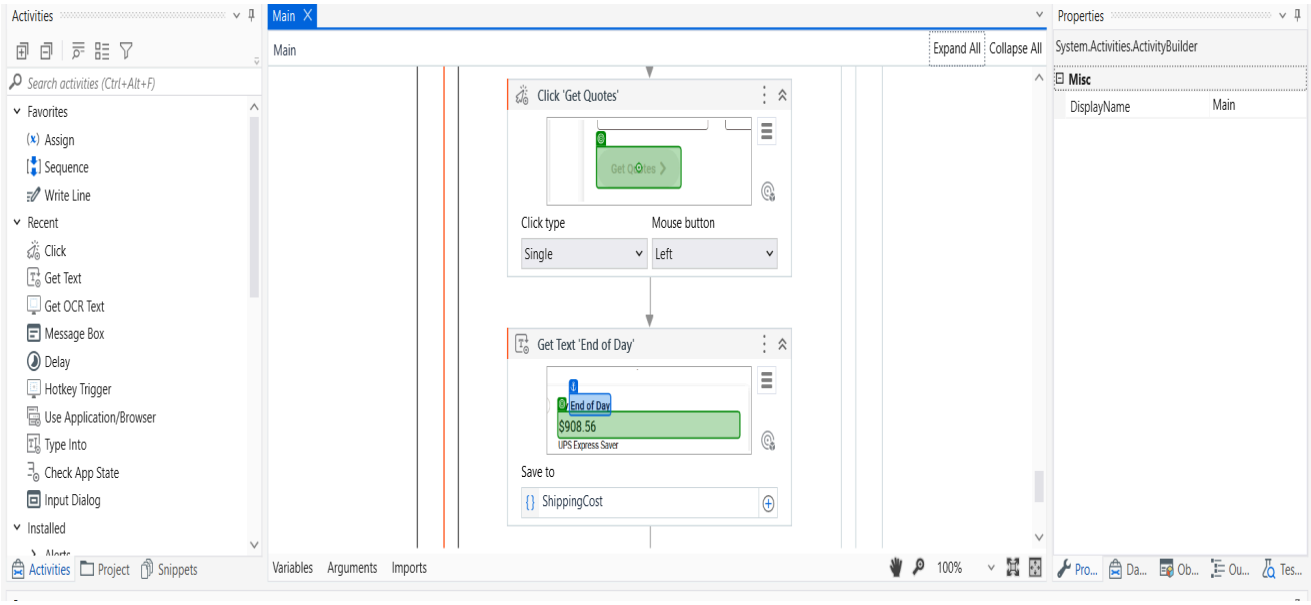
SAMPLE PROCESS



Input dialog for from address



Filling details in website



Gets the shipping cost from the website

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2. UiPath Documentation: The official documentation of UiPath features and functionalities https://docs.uipath.com/