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: Supermarket Aid bot using RPA	
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Abstract:

Robotic process automation is a type of business process automation technology based on metaphorical software robots that is simple to design, deploy, and administer for simulating human actions for interfacing with digital systems. Let us consider the example of Mercadinhos São Luiz, a family-owned business that has 22 retail outlets and annual revenue of around $1 billion.

They have been using this technology to manage various business processes, continually identifying repetitive processes that can be automated such as manual ordering, which is complex and laborious. Company's CIO adds that the real benefits from this type of automation aren't just in hours and dollars saved. Improving operational efficiency frees employees for more important tasks and automation makes dynamic processes like ordering fruits and vegetables safer and less prone to human error.

Introduction:

Manually recording store stock is a time-consuming and labor-intensive operation that involves clicking, copying, and pasting. By deploying robots to do the same, an organization might save thousands of hours of work each month. Thus, we would be developing a bot application which would manage Laborious tasks such as reordering, intelligently based on the requirements, the selling speed and various other factors to make the more efficient business choices. This technology might also be used to automate communications with suppliers.

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We have used various activities which fall under the categories of:

- CSV File Manipulation by UiPath.
- Excel App Integration by UiPath.
- Outlook App Integration by UiPath.
- Data Table related activities by UiPath.

Problem Statement/Use case Identification:

Using the RPA technology to manage various business processes, continually identifying repetitive processes that can be automated. Much of the ordering and resupply process is challenging to automate because of exceptions and dynamic ordering of goods such as produce. Manual ordering is complex and laborious, but an analysis showed that much of the process could be automated. Hence here we will be Automating the process of Inventory Management and Reordering using UiPath.

Designing the RPA Bot:

The design of the RPA Bot includes the following:

- The GUI of the billing software.
- Python Script to maintain the records of the inventory.
- UI Path sequences to check for reordering conditions, and mail a purchase order to the respective dealer.

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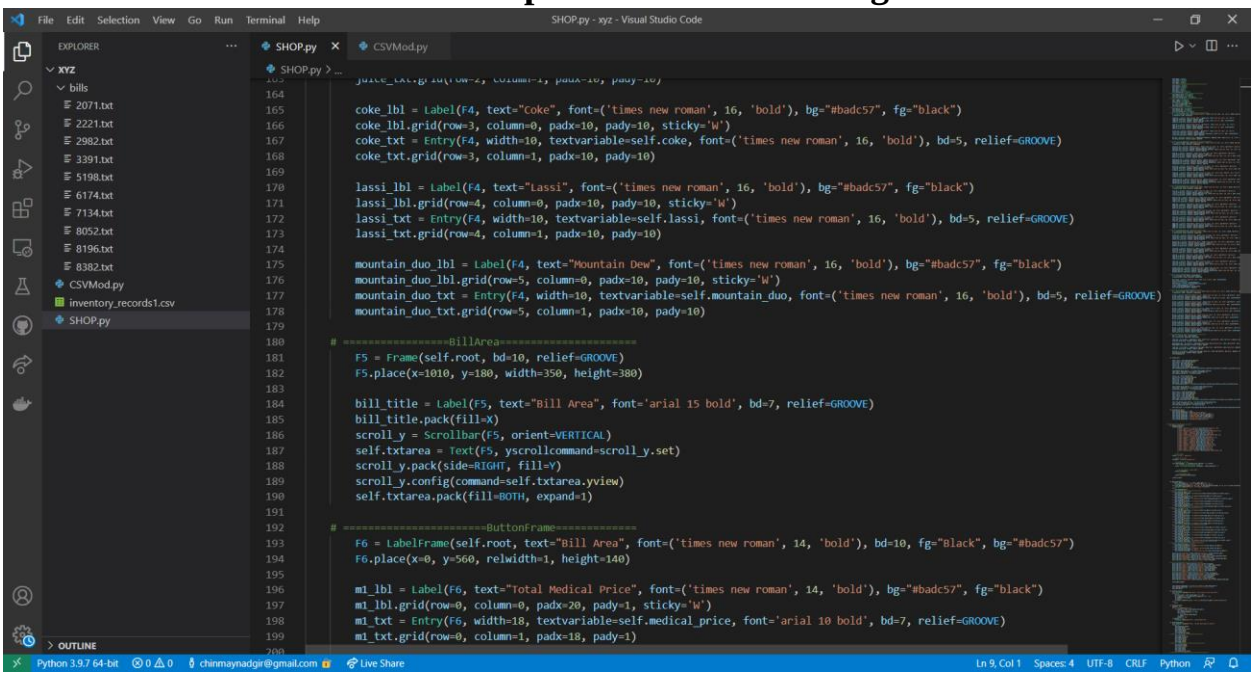
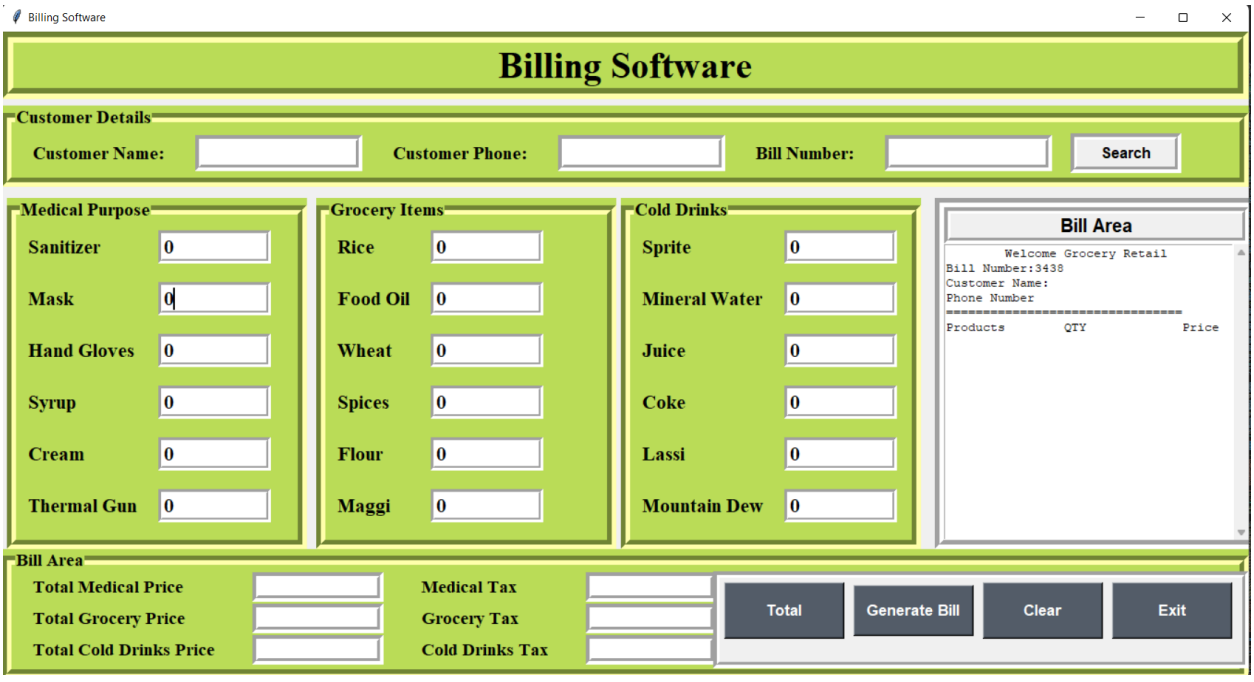
Tkinter Implementation of Billing Software:



The GUI of the Billing Software:



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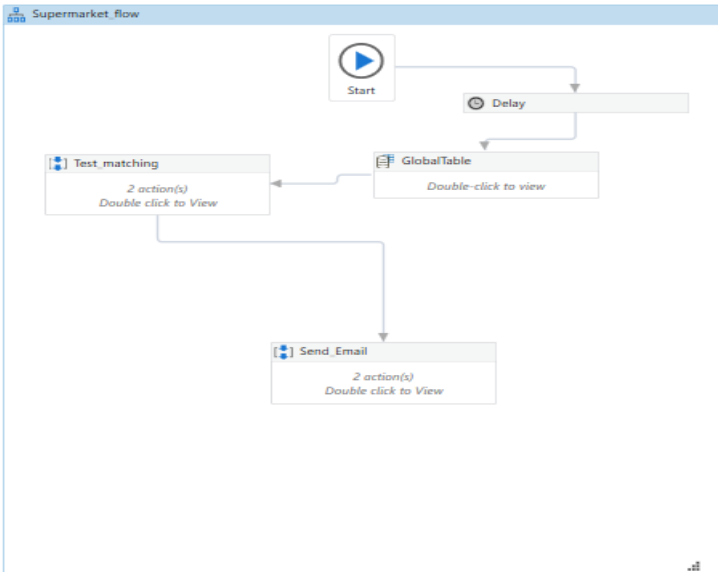
Flowchart of the UiPath Integration for our Billing Software:



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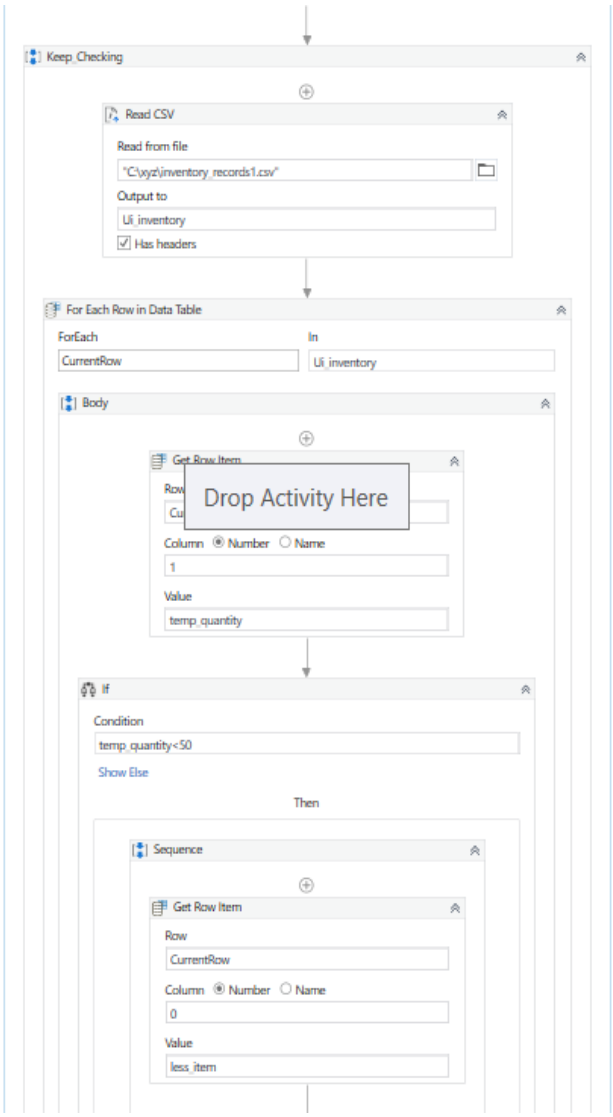
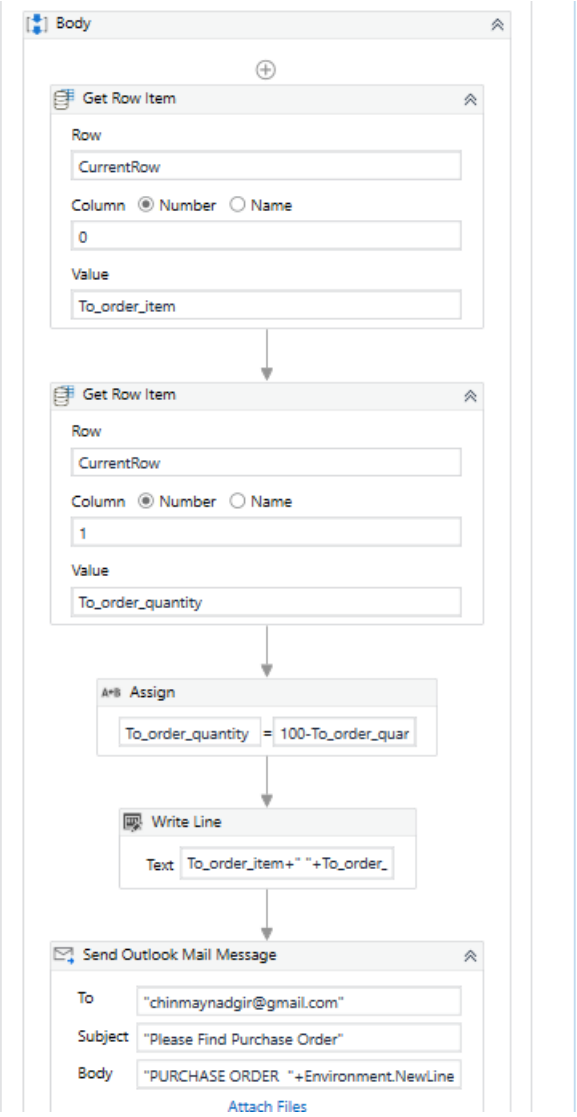
Sequences for Implementing the Python Script and Send E-mail of Purchase order:





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Applications /Usage of RPA Bot:

Supply chain disruptions, changes in order volumes, and transportation issues have made it extremely difficult for businesses to operate. The organization can easily manage their stock, predict demand, and plan for force majeure situations with an automated inventory system. This guarantees that the company runs smoothly.

Product inventory management is a time-consuming and mundane activity that can be automated. We can assign a bot to keep track of products and place orders as stock runs out instead of having employees do it manually. The application is built in such a manner that the bot initializes the quantity of each available product to 100 and maintains the tally in an excel spreadsheet. The values are deducted from their respective totals as the products are purchased and bills are generated. Upon reaching a threshold value, the bot sends an email to the concerned manufacturer and places an order to replenish the stock. As a result, the organization avoids a scarcity situation.

There are numerous advantages to automating inventory management:

- It is effective and efficient while also saving time and money.
- It reduces the likelihood of human error and involvement.
- Prevents overstocking and outages by providing real-time data access.

The breadth of this automation goes far beyond a supermarket's inventory. It can even be used in pharmaceuticals and other types of warehouses.

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Conclusion:

With the help of UiPath to implement an RPA solution, we were able to automate the process of alerting the vendor via email when an item's stock falls beyond a particular limit, thereby improving efficiency as manually keeping track is time consuming.

Supermarkets are an excellent example of businesses that have benefited from automation. Manually recording store stock was cumbersome, time-consuming, and repetitive. Robotic deployment makes this task faster, less error-prone, and saves the company hundreds of hours of manual labor. The bot is designed to reduce number of items from the totals of their respective inventory after being purchased and is required to send an email to the concerned manufactures placing orders for the same.