BHARATIYA VIDYA BHAVAN'S
SARDAR PATEL INSTITUTE OF TECHNOLOGY
MUNSHI NAGAR, ANDHERI (WEST), MUMBAI – 400 058.
(Autonomous Institute Affiliated to University of Mumbai)
MCA Department

Academic Year: 2023-24 Semester: II Class: FYMCA
Course Code: MC508 Course Name: Process Automation

PROCESS AUTOMATION PROJECT

PRICE COMPARATOR

Group Members

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PROBLEM DEFINITION

The objective of this project is to develop a Robotic Process Automation (RPA) bot capable of automatically comparing prices of a specified product across multiple e-commerce platforms including Amazon, Flipkart, and others. The bot will scrape the prices of the product from each platform, compare them to identify the lowest available price and display the corresponding links to the websites. This automation will streamline the price comparison process for consumers, enabling them to make informed purchasing decisions efficiently.

INTRODUCTION

In the ever-evolving landscape of e-commerce, consumers are faced with an overwhelming array of options when it comes to purchasing products online. However, amidst this abundance, ensuring that one is obtaining the best value for their money remains a significant challenge. The manual process of comparing prices across multiple e-commerce platforms can be laborious, time-consuming, and prone to inaccuracies. Recognizing this inefficiency, the development of a Robotic Process Automation (RPA) bot emerges as a compelling solution.

The purpose of this project is to introduce an RPA bot designed to streamline the process of price comparison across popular e-commerce platforms such as Amazon, Flipkart, and others. By harnessing the power of automation, this bot aims to alleviate the burden placed on consumers by automating the tedious task of manually scouring through multiple websites to find the best deals.

Through the automation of price comparison, consumers will benefit from swift and accurate insights into the pricing landscape of a specific product. The RPA bot will scrape prices from designated e-commerce websites, analyze the data, and present users with a comprehensive overview of available options. By presenting the lowest prices alongside direct links to the respective websites, the bot empowers consumers to make informed purchasing decisions with confidence and efficiency. This project not only enhances the user experience but also underscores the transformative potential of RPA technology in optimizing e-commerce processes.

LITERATURE SURVEY

Introduction to RPA

Robotic Process Automation (RPA) has emerged as a transformative technology in recent years, offering businesses the ability to automate repetitive tasks and streamline processes. In the context of e-commerce, RPA has been increasingly utilized to enhance operational efficiency and improve customer experiences.

RPA in E-commerce

Several studies have highlighted the benefits of implementing RPA in e-commerce operations. Manually scouring through multiple e-commerce platforms to compare prices can be a laborious and time-consuming process, often leading to suboptimal purchasing decisions. This report presents the development of a Robotic Process Automation (RPA) bot designed to streamline the price comparison process across popular e-commerce platforms, such as Amazon and Flipkart.

Web Scraping Techniques

Web scraping is a fundamental component of RPA in e-commerce, enabling bots to extract relevant information from websites. Various techniques such as HTML parsing, API integration, and headless browsing are commonly used to scrape data from e-commerce platforms. It enables the collection and analysis of large datasets that would be impractical to gather manually.

Price Comparison in E-commerce

Price comparison is a crucial aspect of online shopping, influencing purchasing decisions and customer loyalty. Several studies have explored different methods for comparing prices across e-commerce platforms. The bot is designed to accept user input for a specific product, navigate to the respective e-commerce websites, scrape the product prices, compare them, and present the user with the lowest available price along with the corresponding website link.

Automation Tools

A variety of RPA tools and software are available to automate tasks in e-commerce. Automation Anywhere, UiPath and Blue Prism are among the most widely used platforms for developing RPA bots. These tools offer a range of features such as visual process design, workflow automation, and integration with third-party applications, making them ideal for automating complex e-commerce processes.

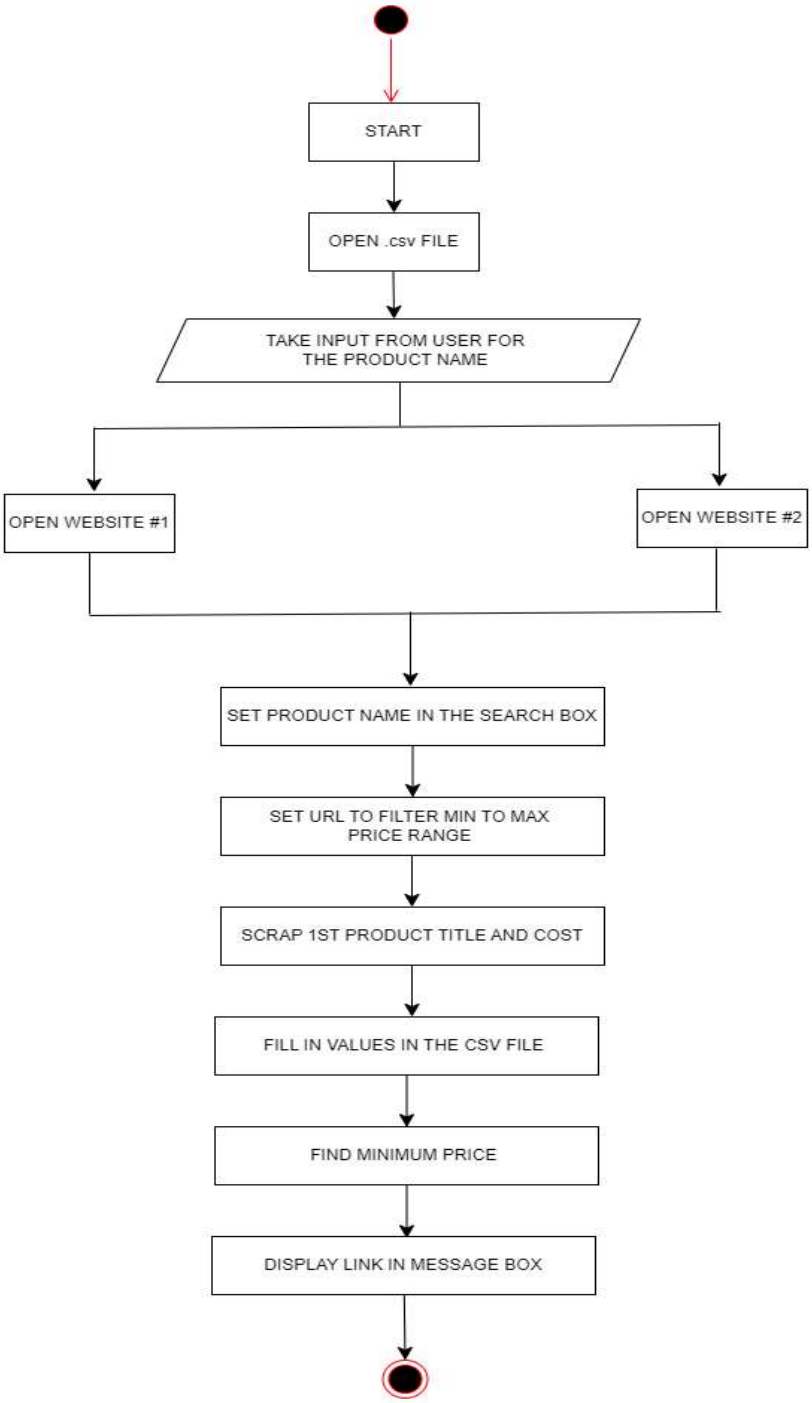
Challenges and Solutions

Despite its numerous benefits, implementing RPA in e-commerce comes with its own set of challenges. These include data security concerns, integration issues with existing systems, and resistance from employees. However, researchers have proposed several solutions to address these challenges, such as implementing robust security measures, conducting thorough training programs, and fostering a culture of automation within organizations.

Future Directions

The future of RPA in e-commerce looks promising, with advancements in AI-driven automation, advanced analytics, and personalized shopping experiences on the horizon. Researchers are exploring ways to leverage machine learning and natural language processing to further enhance the capabilities of RPA bots in e-commerce, paving the way for more intelligent and efficient online shopping experiences.

PROPOSED METHODOLOGY



PROCESS

The envisioned Robotic Process Automation (RPA) bot aims to streamline the price comparison process across various e-commerce platforms, notably Amazon and Flipkart.

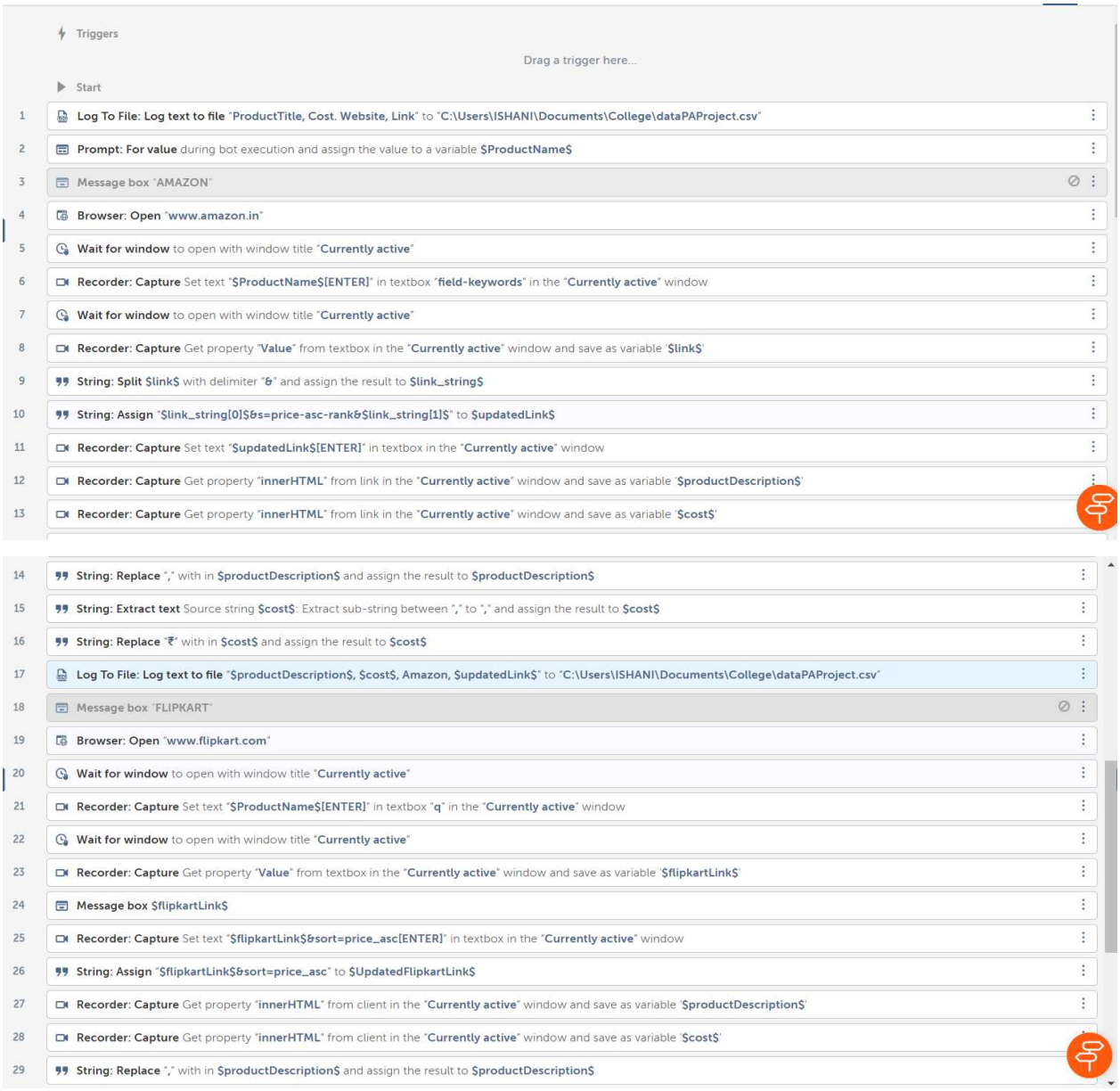
Beginning with a user prompt to input the desired product name, the bot initiates its operation. Leveraging the browsing capabilities, it opens respective web browsers and navigates to the designated platforms i.e. Amazon and Flipkart shopping websites. Employing meticulous waiting protocols to ensure complete page loading, the bot then deploys recording functionalities to capture user input and scrape product titles and prices from search results. Utilizing string manipulation techniques, it parses and compares the extracted prices, identifying the lowest among them. Through a sequence of message box displays, the bot communicates its findings, presenting both individual prices and the ultimate lowest price discovered.
Further employing recording tools, it extracts and refines the URL of the platform offering the lowest price, preparing it for user presentation.

This theoretical framework encapsulates the systematic approach of the RPA bot in executing the price comparison task, emphasizing the integration of automated browsing, data manipulation, and user communication elements to enhance efficiency and facilitate informed consumer decision-making.

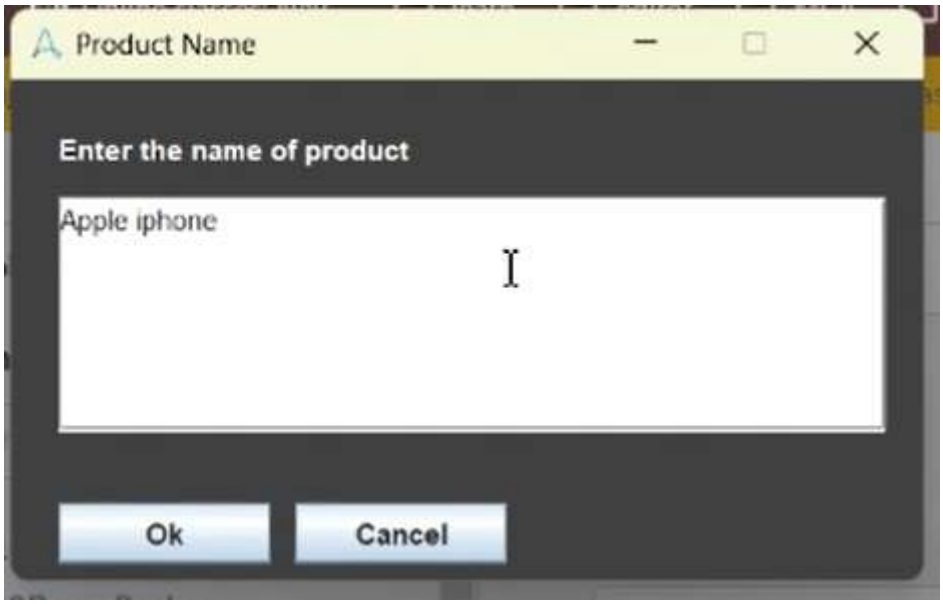
ACTIONS

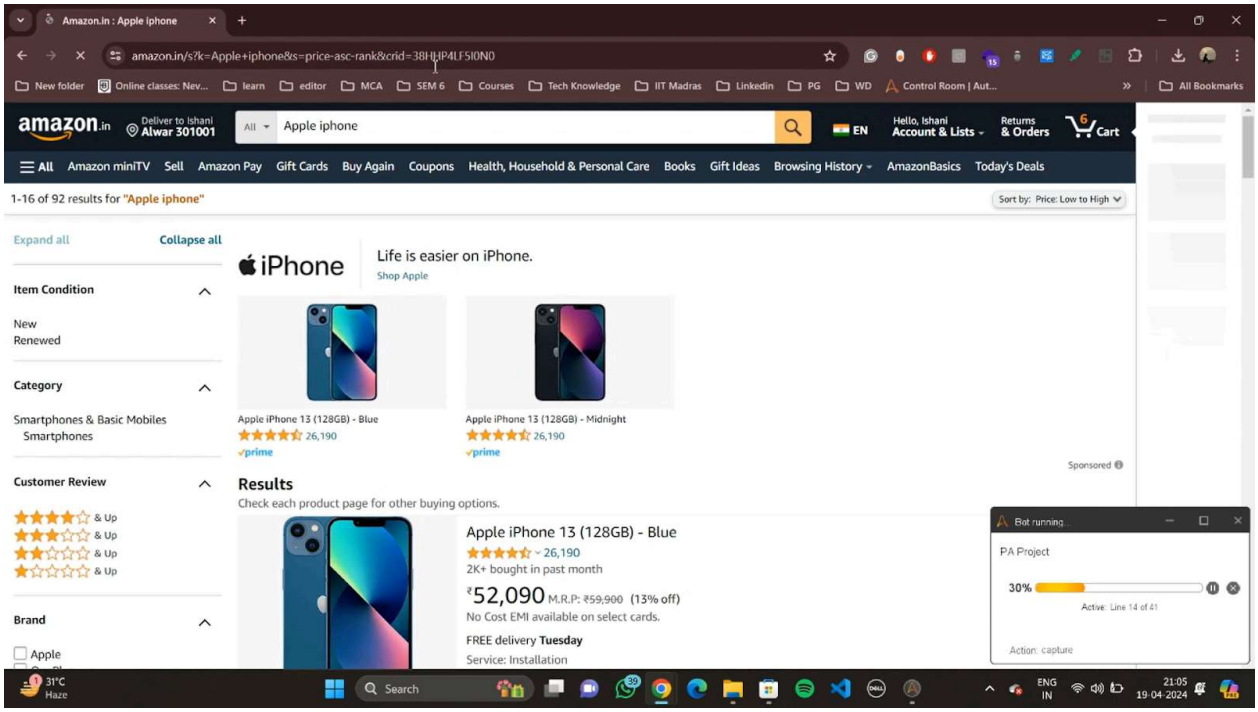
1. **Log To File**
   Starting by logging into a file to keep track of the bot's activities and any errors encountered during the process.
2. **Prompt: For Value**
   The bot prompts the user to enter a certain value.
3. **Browse : Open**
   The bot opens a web browser..
4. **Wait for Window**
   The bot waits for the window to change before proceeding with further actions.
5. **Recorder : Capture**
   Using the recorder tool, the bot captures the action.
6. **Message Box**
   Display a message box.
7. **String: Split**
   Split the text to obtain a specific value
8. **String: Assign**
   Assigns or concatenates strings.
9. **Recorder Capture : set text**
   Set the text to a recorded input field.
10. **Recorder Capture : get Property**
    Get a certain property from the recorder element.
11. **String : replace**
    Replace a certain character with another character in a string.
12. **String: Extract text**
    Extracts a range of text using logical operators from the source string.
13. **Excel advanced: Open**
    Opens a Microsoft Excel spreadsheet or a CSV file. You can open the spreadsheet in read-only or read-write mode, with a password, and so on.
14. **Excel advanced: Sort**
    Sorts the data in the column of a table or a worksheet.
15. **Excel advanced: Read row**
    Extracts data from a row and stores it in a list variable of string data type.
16. **Excel advanced: Save as**
    Saves a copy of your workbook in the specified location

SCREENSHOTS



```
30  String: Extract text Source string $cost$: Extract sub-string between "," to "," and assign the result to $cost$
31  String: Replace "₹" with in $cost$ and assign the result to $cost$
32  Log To File: Log text to file "$productDescription$, $cost$, Flipkart, $UpdatedFlipkartLink$" to "C:\Users\ISHANI\Documents\College\dataPAProject.csv"
33  Message box "Excel Functions"
34  Excel advanced: Open "C:\Users\ISHANI\Documents\College\dataPAProject.csv"
35  Excel advanced: Read row From active cell and store values to $Row1$
36  Excel advanced: Sort "dataPAProject" for column "B" with sort order Smallest to largest
37  Excel advanced: Read row From specific cell "A2" and store values to $dataRow$
38  Message box "You have got a good deal at $dataRow[2]$ Product Name: $dataRow[0]$ Cost: Rs. $dataRow[1]$"
    End
```




Amazon.in : Apple iphone
amazon.in/s?k=Apple+iphone&s=price-asc-rank&crid=38HJP4LF5I0N0
amazon.in
Deliver to Ishani
Alwar 301001
Apple iphone
Hello, Ishani
Account & Lists
Returns
& Orders
Cart
All
Amazon miniTV
Sell
Amazon Pay
Gift Cards
Buy Again
Coupons
Health, Household & Personal Care
Books
Gift Ideas
Browsing History
AmazonBasics
Today's Deals
1-16 of 92 results for "Apple iphone"
Sort by: Price: Low to High
Expand all
Collapse all
Item Condition
New
Renewed
Category
Smartphones & Basic Mobiles
Smartphones
Customer Review
Brand
Apple
iPhone
Life is easier on iPhone.
Shop Apple
Apple iPhone 13 (128GB) - Blue
26,190
prime
Apple iPhone 13 (128GB) - Midnight
26,190
prime
Sponsored
Results
Check each product page for other buying options.
Apple iPhone 13 (128GB) - Blue
26,190
2K+ bought in past month
₹52,090 M.R.P: ₹59,900 (13% off)
No Cost EMI available on select cards.
FREE delivery Tuesday
Service: Installation
Bot running...
PA Project
30%
Active: Line 14 of 41
Action: capture
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Haze
Search
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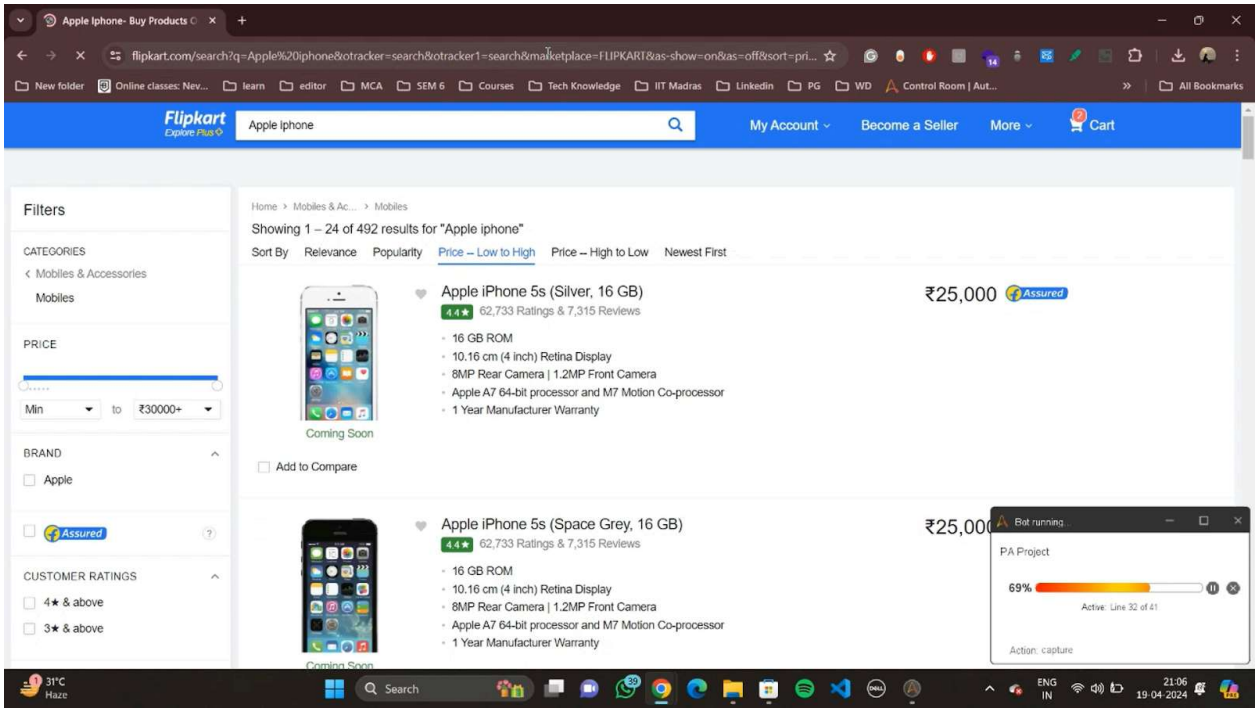
21:05
19-04-2024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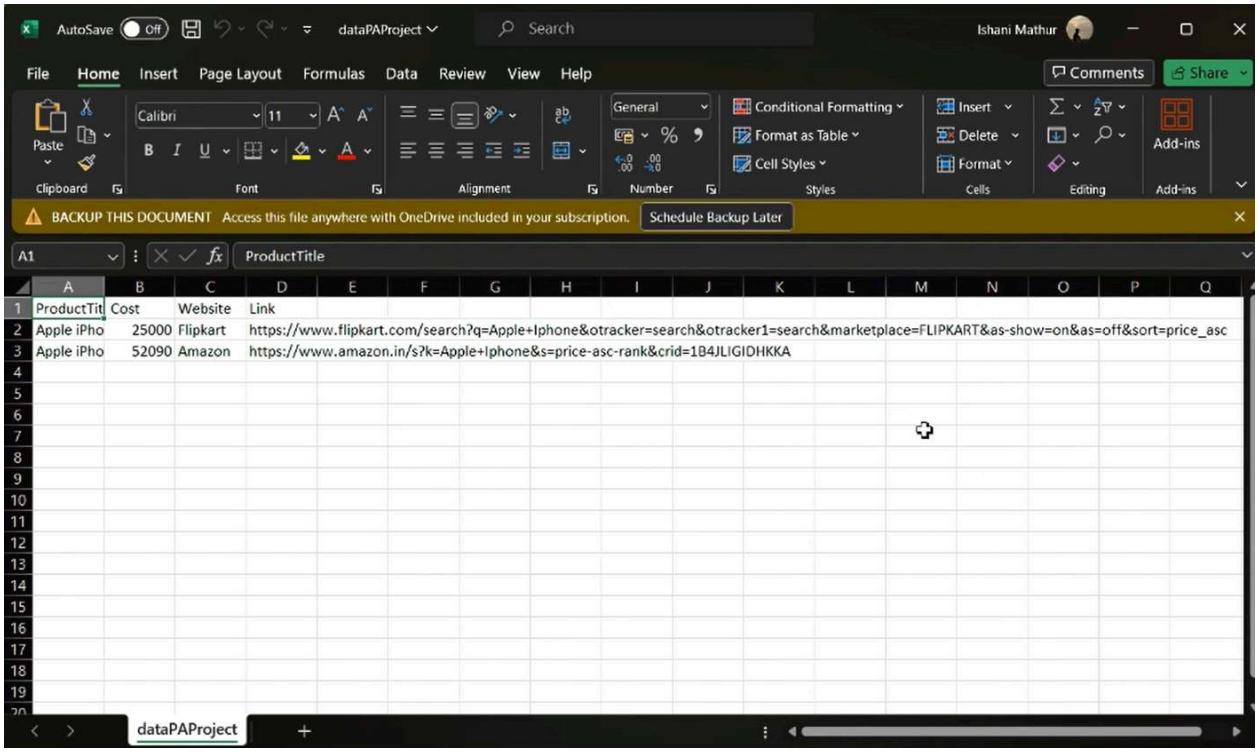
flipkart.com/search?q=Apple%20iphone&otracker=search&otracker1=search&marketplace=FLIPKART&as-show=on&as=off&sort=pri...
Flipkart
Explore Plus
Apple iphone
My Account
Become a Seller
More
Cart
Filters
CATEGORIES
Mobiles & Accessories
Mobiles
PRICE
Min
to
₹30000+
BRAND
Apple
Assured
CUSTOMER RATINGS
4★ & above
3★ & above
Home › Mobiles & Ac... › Mobiles
Showing 1 – 24 of 492 results for "Apple iphone"
Sort By
Relevance
Popularity
Price -- Low to High
Price -- High to Low
Newest First
Apple iPhone 5s (Silver, 16 GB)
4.4★ 62,733 Ratings & 7,315 Reviews
16 GB ROM
10.16 cm (4 inch) Retina Display
8MP Rear Camera | 1.2MP Front Camera
Apple A7 64-bit processor and M7 Motion Co-processor
1 Year Manufacturer Warranty
₹25,000
Assured
Coming Soon
Add to Compare
Apple iPhone 5s (Space Grey, 16 GB)
4.4★ 62,733 Ratings & 7,315 Reviews
16 GB ROM
10.16 cm (4 inch) Retina Display
8MP Rear Camera | 1.2MP Front Camera
Apple A7 64-bit processor and M7 Motion Co-processor
1 Year Manufacturer Warranty
₹25,00
Coming Soon
Bot running...
PA Project
69%
Active: Line 32 of 41
Action: capture
31°C
Haze
Search
ENG
IN
21:06
19-04-2024


AutoSave Off
dataPAProject
Search
Ishani Mathur
File Home Insert Page Layout Formulas Data Review View Help
Comments Share
Paste
Calibri 11
General
Conditional Formatting
Format as Table
Cell Styles
Insert
Delete
Format
Add-ins
Clipboard Font Alignment Number Styles Cells Editing Add-ins
BACKUP THIS DOCUMENT Access this file anywhere with OneDrive included in your subscription. Schedule Backup Later
A1
ProductTitle
ProductTit Cost Website Link
Apple iPho 25000 Flipkart https://www.flipkart.com/search?q=Apple+Iphone&otracker=search&otracker1=search&marketplace=FLIPKART&as-show=on&as=off&sort=price_asc
Apple iPho 52090 Amazon https://www.amazon.in/s?k=Apple+Iphone&s=price-asc-rank&crid=1B4JLIGIDHKKA
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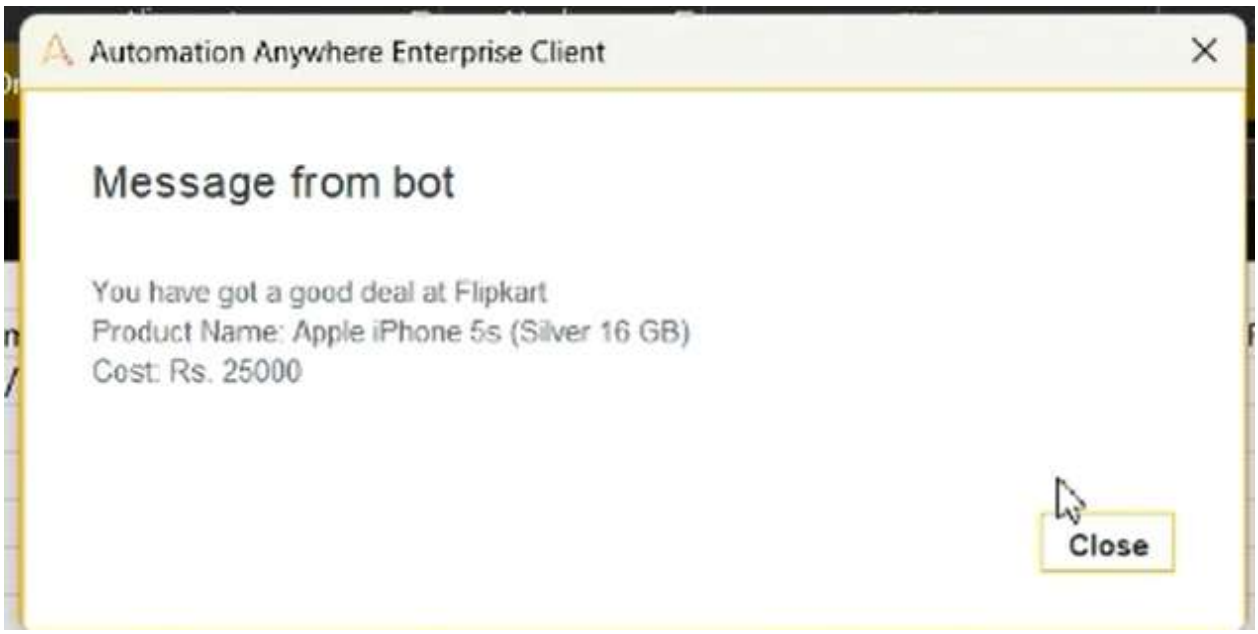
Automation Anywhere Enterprise Client
Message from bot
You have got a good deal at Flipkart
Product Name: Apple iPhone 5s (Silver 16 GB)
Cost: Rs. 25000
Close

CONCLUSION

In conclusion, the development of this Robotic Process Automation (RPA) bot signifies a significant advancement in leveraging automation for efficient web scraping and price comparison tasks. By seamlessly integrating RPA capabilities with web browsing functionalities, the bot successfully extracts product prices from leading e-commerce platforms such as Amazon and Flipkart. Through meticulous data manipulation and comparison techniques, it promptly identifies the lowest available price, empowering users with valuable insights for informed purchasing decisions.

This innovative solution not only streamlines the price comparison process but also enhances consumer convenience by eliminating the need for manual search and comparison efforts. Looking ahead, the future scope for such RPA-based applications is promising, with potential enhancements in areas such as AI-driven decision-making algorithms, expanded e-commerce platform support, and personalized user experiences. As technology continues to evolve, the intersection of RPA and web scraping holds immense potential to revolutionize various aspects of online shopping and consumer decision-making processes.

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