

# **AUTOMATED TRADING BOT**

## **A PROJECT REPORT**

*Submitted by*

**NANDAKUMARAN M(211701035)**

*in partial fulfillment for the course*

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**RAJALAKSHMI NAGAR**

**THANDALAM**

**CHENNAI – 602 105**

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# **RAJALAKSHMI ENGINEERING COLLEGE**

**CHENNAI - 602105**

## **BONAFIDE CERTIFICATE**

Certified that this project report “**AUTOMATED TRADING BOT**” is the bonafide work of “**NANDAKUMARAN M (211701035)**” who carried out the project work for the subject OAI1903- Introduction to Robotic Process Automation under my supervision.

**Dr. P.Revathy ,M.E., Ph.D.,**  
**HEAD OF THE DEPARTMENT**  
Professor and Head  
Department of  
Computer Science and Design  
Rajalakshmi Engineering College  
Rajalakshmi Nagar  
Thandalam  
Chennai - 602105

**Ms. Roxanna Samuel, M.E.,**  
**SUPERVISOR**  
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

## ABSTRACT

This comprehensive project focuses on developing an automated trading bot using UiPath, specifically tailored for the Kite website, a prominent online trading platform. The bot's core functionalities include employing UiPath's "Type Into" and "Click" activities for seamless interaction with the website, encompassing login procedures, navigation through the platform, and the extraction of relevant market data. A pivotal aspect of the project involves implementing trading strategies by utilizing the extracted data to facilitate informed decision-making processes for placing orders. The bot will also incorporate features for monitoring trading positions, ensuring that the user has real-time visibility into their portfolio. Given the dynamic nature of financial markets and web interfaces, the project addresses the challenge of handling dynamic elements through UiPath's capabilities, offering a solution that can adapt to changes in the website structure. Additionally, the bot incorporates robust error-handling mechanisms to gracefully manage unexpected scenarios, such as network disruptions or alterations in the web interface. To enhance the project's reliability, data validation processes will be implemented to verify the accuracy and consistency of the extracted information. The bot will leverage UiPath's logging capabilities, generating detailed logs of key events and data points during its execution. This logging mechanism aids in debugging, tracking the bot's performance, and providing insights into its decision-making process. Security measures are paramount, with the project emphasizing secure handling of sensitive information, particularly login credentials, to safeguard against potential threats. The testing phase of the project will involve rigorous evaluation in a controlled, simulated environment to ensure the bot's effectiveness and stability before any deployment in live trading scenarios.

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**NANDAKUMARAN M (211701035)**

## TABLE OF CONTENTS

CHAPTER NO.	TITLE	PAGE NO.
	<b>ABSTRACT</b>	<b>iii</b>
	<b>LIST OF FIGURES</b>	<b>vi</b>
	<b>LIST OF ABBREVIATIONS</b>	<b>vii</b>
<b>1.</b>	<b>INTRODUCTION</b>	<b>1</b>
	1.1 INTRODUCTION	1
	1.2 OBJECTIVE	2
	1.3 EXISTING SYSTEM	3
	1.4 PROPOSED SYSTEM	3
<b>2.</b>	<b>LITERATURE REVIEW</b>	<b>4</b>
<b>3.</b>	<b>SYSTEM DESIGN</b>	<b>5</b>
	3.1 SYSTEM FLOW DIAGRAM	5
	3.2 ARCHITECTURE DIAGRAM	6
	3.3 SEQUENCE DIAGRAM	7
<b>4.</b>	<b>PROJECT DESCRIPTION</b>	<b>8</b>
	4.1 MODULES	8
	4.1.1 USER AUTHENTICATION MODULE	8
	4.1.2 NAVIGATION MODULE	8
	4.1.3 DATA EXTRACTION MODULE	9
	4.1.2 DATA SCRAPING	9
<b>5.</b>	<b>OUTPUT SCREENSHOTS</b>	<b>10</b>
<b>6.</b>	<b>CONCLUSION</b>	<b>13</b>
	<b>APPENDIX</b>	<b>15</b>
	<b>REFERENCES</b>	<b>22</b>

## LIST OF FIGURES

Figure No	Figure Name	Page No.
3.1	SYSTEMFLOW DIAGRAM	5
3.2	ARCHITECTURE DIAGRAM	6
3.3	SEQUENCE DIAGRAM	7
5.2	Enter the time period	10
5.3	Enter The Stock Name	11

## LIST OF ABBREVIATIONS

ABBREVIATION	ACCRONYM
RPA	Robotic Process Automation
UIPATH	User Interface Path
HTTP	Hypertext Transfer Protocol
AI	Artificial Intelligence
API	Application programming interface
UX	User experience
FAQ	Frequently Asked Questions

# CHAPTER 1

## INTRODUCTION

### 1.1 INTRODUCTION

In the fast-paced realm of financial markets, the demand for sophisticated tools that can swiftly process vast amounts of data and execute trading strategies with precision has never been higher. This project embarks on the creation of an automated trading bot using UiPath, specifically designed to navigate and interact with the Kite website—a dynamic platform known for its comprehensive features in online trading. In an era where technological advancements are reshaping traditional finance, the integration of UiPath's automation capabilities opens up new possibilities for traders seeking efficiency and accuracy in their operations. The heart of this project lies in the strategic use of UiPath's "Type Into" and "Click" activities, enabling the bot to seamlessly emulate human-like interactions with the Kite interface. From logging in, navigating market data, to executing trades, every step is meticulously orchestrated to create a robust, adaptable, and user-friendly trading bot.

Beyond the technical intricacies, the project underscores the importance of risk management and compliance with financial regulations. The bot is not merely a tool for executing trades; it's a dynamic system designed to handle unforeseen challenges and mitigate risks effectively. The automated trading bot's ability to adjust to changes in the website's structure, coupled with stringent error-handling mechanisms, ensures resilience in the face of evolving market conditions. Moreover, the project places a strong emphasis on data validation, ensuring the accuracy and reliability of the information processed by the bot.

As the project unfolds, it aims to not only showcase the technical prowess of UiPath in the realm of financial automation but also to provide a scalable and secure solution for traders and investors alike. By streamlining trading processes, minimizing manual intervention, and adhering to the highest standards of security and compliance, the automated trading bot emerges as a valuable asset in the toolkit of modern financial professionals navigating the complexities of algorithmic trading.



## **1.2 OBJECTIVE**

The objective of this project is to develop a highly efficient automated trading bot using UiPath for the Kite website, a prominent online trading platform. The primary goals encompass the seamless automation of trading processes, including login, navigation, and order placement, leveraging UiPath's capabilities. The project aims to implement robust strategies for data extraction, addressing the challenge of dynamic elements on the website. Key objectives also include the integration of predefined trading strategies, meticulous risk management, and the establishment of stringent data validation practices to ensure the accuracy and reliability of extracted information. By implementing comprehensive logging and monitoring mechanisms, the project seeks to enhance transparency and accountability in the bot's decision-making process. Additionally, a focus on security measures and compliance with financial regulations underscores the commitment to safeguarding sensitive information and maintaining ethical trading practices. The ultimate objective is to deliver a proficient and resilient trading bot that contributes to operational efficiency in financial markets while adhering to the highest standards of security and compliance.

### **1.3 EXISTING SYSTEM**

Manual trading remains the predominant method in the existing system, requiring traders to execute transactions on the Kite platform manually. While the platform provides essential tools and real-time market data, it lacks the automation necessary for swift and strategic decision-making. Traders must continuously monitor market conditions, place orders, and manage positions manually, making it challenging to keep pace with rapidly changing financial markets. The absence of an automated system limits efficiency and potentially overlooks valuable trading opportunities. The proposed automated trading bot using UiPath aims to address these limitations by introducing an intelligent and automated approach to trading on the Kite website.

### **1.4 PROPOSED SYSTEM**

The proposed system involves the development of an advanced automated trading bot using UiPath for the Kite website. This innovative solution seeks to revolutionize the traditional manual trading approach by introducing seamless automation to key processes. Leveraging UiPath's capabilities, the bot will perform tasks such as login, navigation, data extraction, and order placement with precision and speed. The proposed system aims to enhance operational efficiency, mitigate risks through intelligent decision-making, and provide traders with the ability to execute predefined strategies seamlessly. By automating these processes, the proposed system promises to offer a more streamlined and effective approach to trading on the Kite platform, allowing traders to focus on strategy refinement and decision analysis rather than manual execution.

## **CHAPTER 2**

### **LITERATURE REVIEW**

[1] The literature highlights the rise of algorithmic trading as a dominant force in financial markets. Algorithmic trading systems leverage advanced mathematical models and computational power to analyze market data and execute trades at speeds unattainable by human traders (Lehalle & Laruelle, 2013). The automation of trading processes, as proposed in this project, aligns with the broader paradigm shift towards algorithmic strategies.

[2] While UiPath is widely recognized for its application in general business process automation, its potential in financial automation is gaining traction. The literature discusses the benefits of using UiPath for tasks such as data extraction, report generation, and process optimization in financial institutions (Dinesh, 2019). This project extends this application to the domain of automated trading.

[3] The use of web scraping in financial automation, particularly in the context of online trading platforms, has been explored in the literature. Web scraping allows for the extraction of real-time market data, enabling traders to make informed decisions (Bunawan et al., 2020). The "Type Into" and "Click" activities proposed in this project align with the web scraping strategies discussed in the literature.

[4] The literature emphasizes the significance of robust risk management strategies in automated trading systems. Automated trading, while offering efficiency, introduces new challenges related to algorithmic errors and market volatility (Hasbrouck & Saar, 2013). This project acknowledges these challenges and aims to incorporate effective risk management mechanisms.

## SYSTEM DESIGN

### 3.1 SYSTEM FLOW DIAGRAM

A flowchart is a type of diagram that represents an algorithm, workflow or process. The flowchart shows the steps as boxes of various kinds, and their order by connecting the boxes with arrows. This diagrammatic representation illustrates a solution model to a given problem.

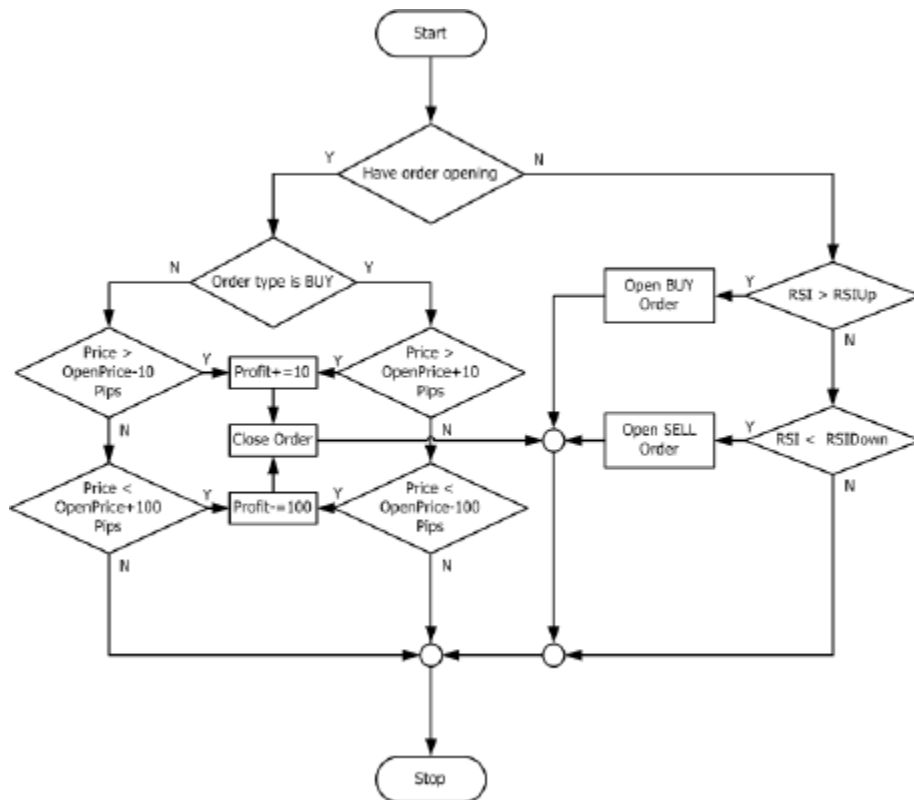


Fig 3.1 System Flow Diagram

### 3.2 ARCHITECTURE DIAGRAM

An architecture diagram is a graphical representation of a set of concepts, that are part of an architecture, including their principles, elements and components.

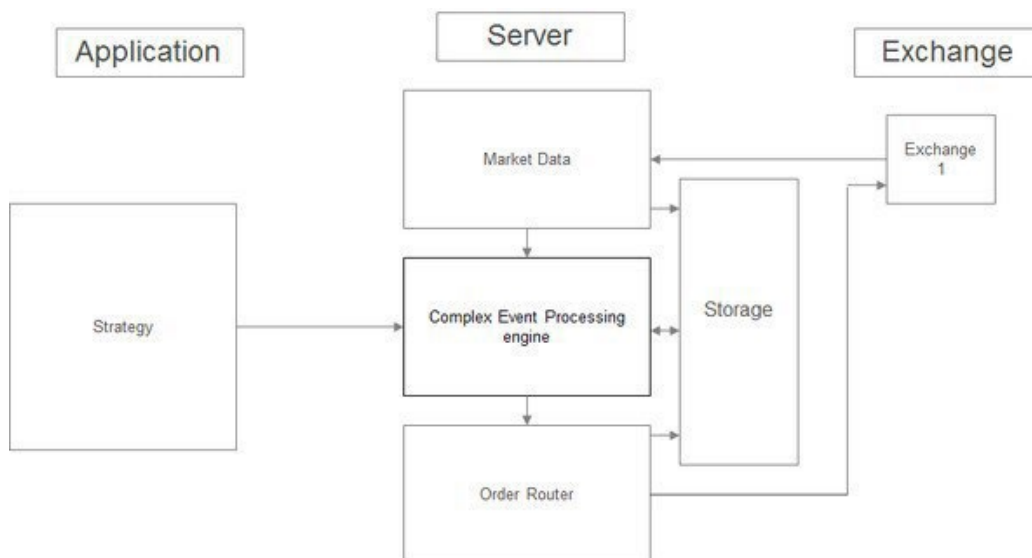


Fig 3.2 Architecture Diagram

### 3.3 SEQUENCE DIAGRAM

A sequence diagram is a type of interaction diagram because it describes how—and in what order—a group of objects works together.

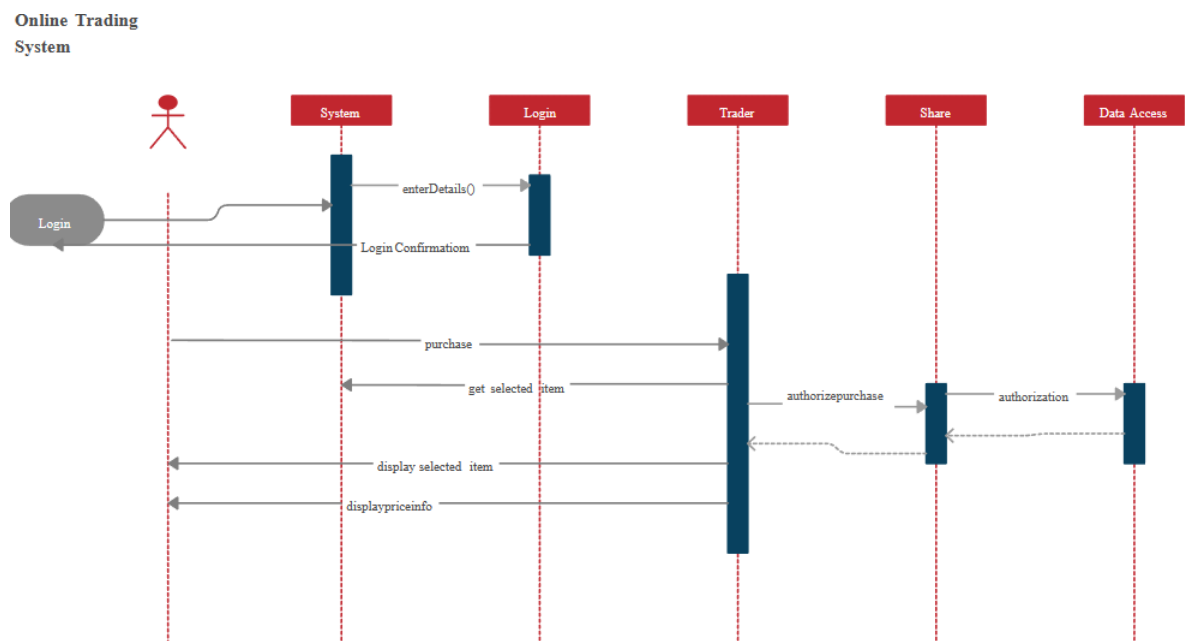


Fig 3.3 Sequence Diagram

## **CHAPTER 4**

### **PROJECT DESCRIPTION**

#### **4.1 MODULES**

The modules in this project are mention below

4.1.1) USER AUTHENTICATION MODULE

4.1.2) NAVIGATION MODULE

4.1.3) DATA EXTRACTION MODULE

4.1.4) ORDER PLACEMENT MODULE

##### **4.1.1 USER AUTHENTICATION MODULE**

This module encompasses the activities related to user authentication, where the trading bot logs into the Kite website securely. It involves utilizing the "Type Into" activity to input the user's credentials and the "Click" activity to submit the login form. Security measures, such as the encryption of login credentials, are implemented to ensure secure access to the trading account.

##### **4.1.2 NAVIGATION MODULE**

The Navigation Module involves using UiPath's "Click" activities to navigate through the Kite website's user interface. This includes accessing the trading dashboard, market data sections, and other relevant pages. Dynamic element handling is crucial in this module to adapt to changes in the website's structure.

#### **4.1.3 DATA EXTRACTION MODULE**

Focused on extracting relevant market data, this module utilizes "Click" activities to select trading instruments and "Get Text" activities for retrieving real-time market information. It ensures the accurate extraction of data for subsequent analysis and decision-making within the trading bot.

#### **4.1.4 ORDER PLACEMENT MODULE**

The Order Placement Module involves utilizing the "Type Into" activity to input order details such as quantity, price, and order type. The "Click" activity is then employed to submit the order. This module ensures the seamless execution of trading strategies and proper communication with the Kite platform's order placement features.



# CHAPTER 5

## OUTPUT SCREENSHOTS

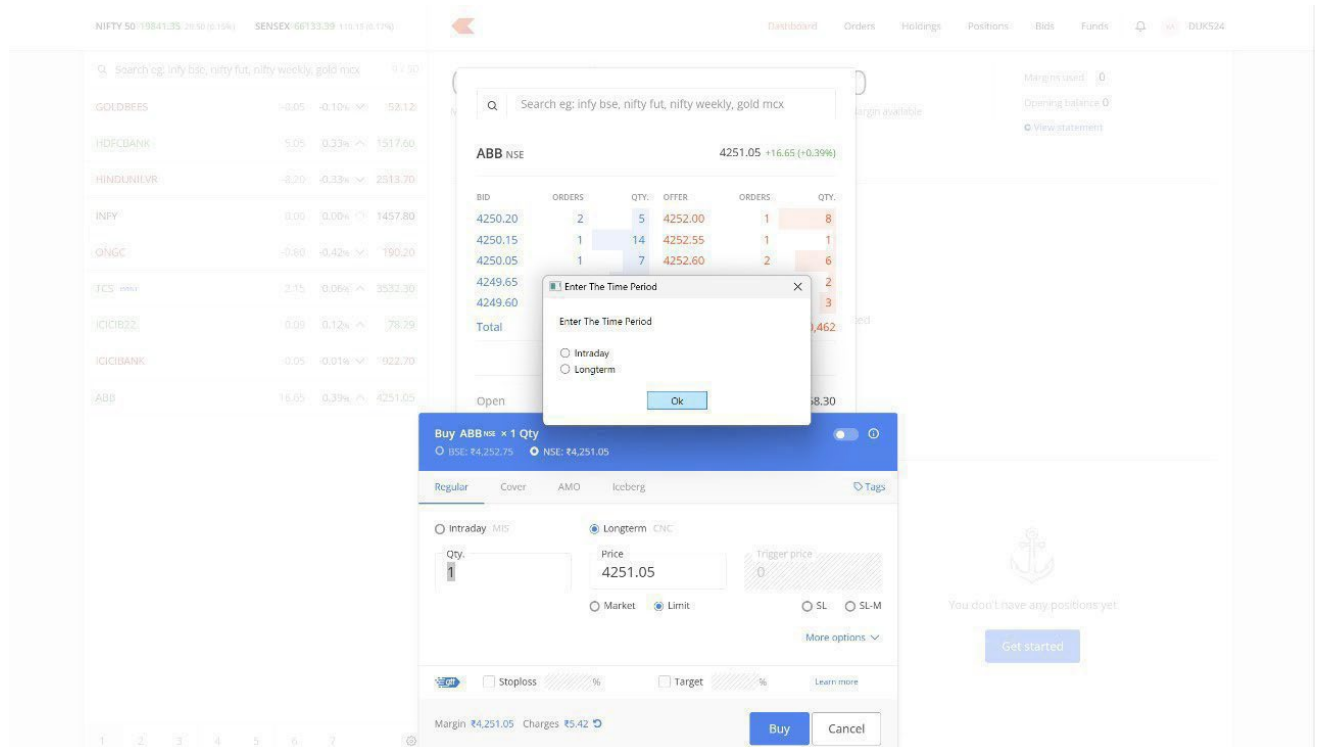


Fig 5.1:Enter the time period

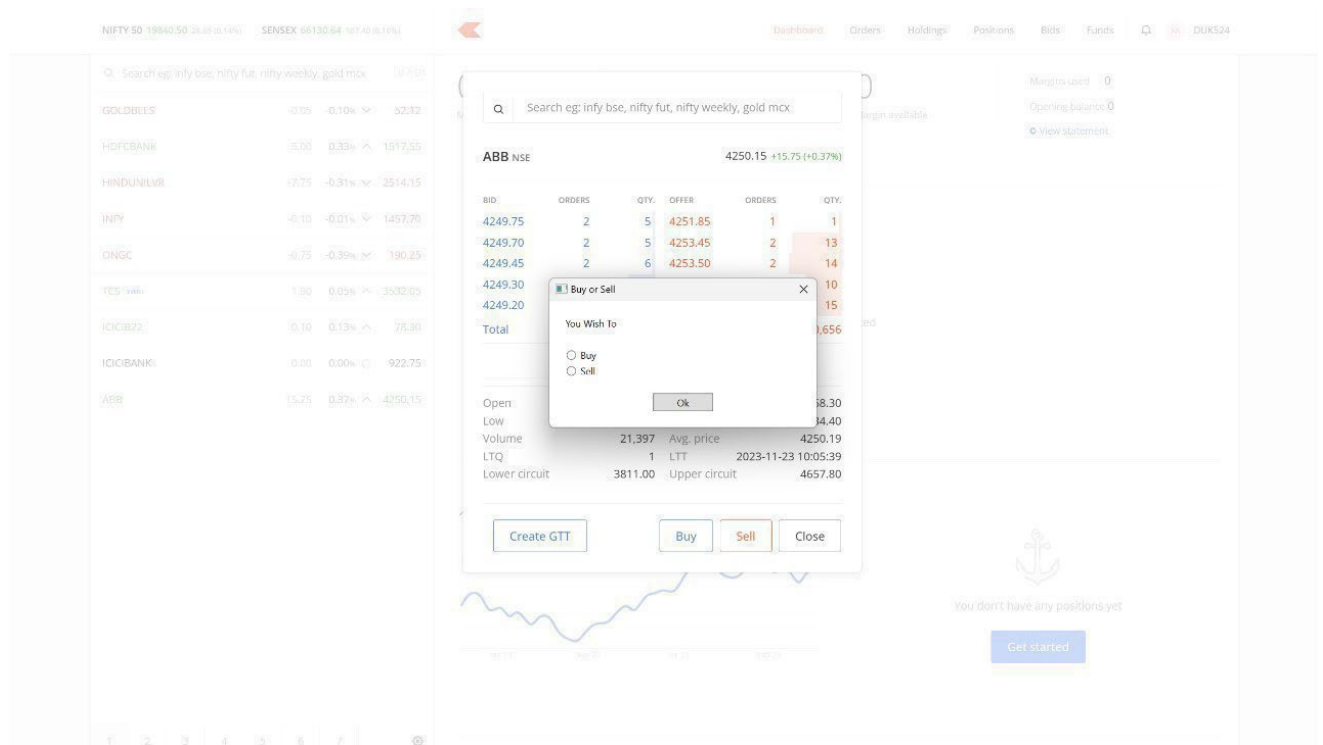


Fig 5.2: Buy Or Sell

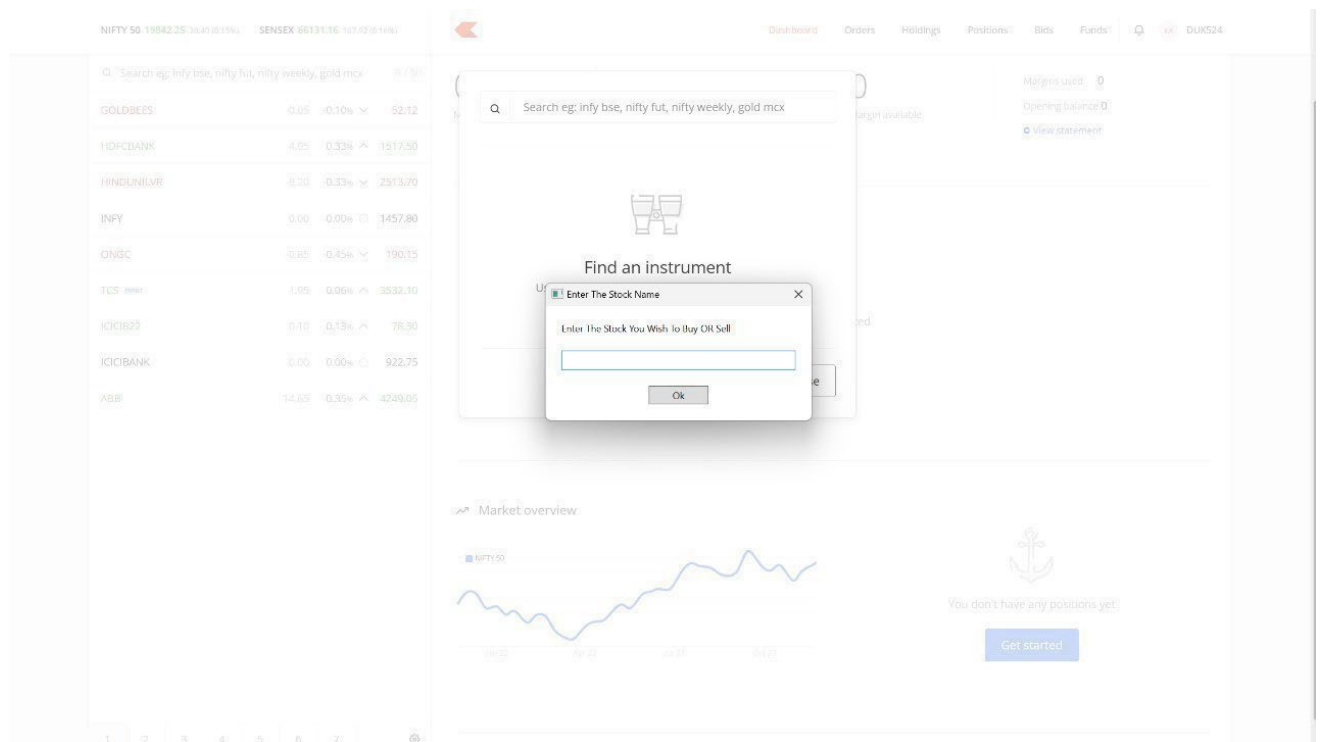


Fig 5.3: Enter the Stock name

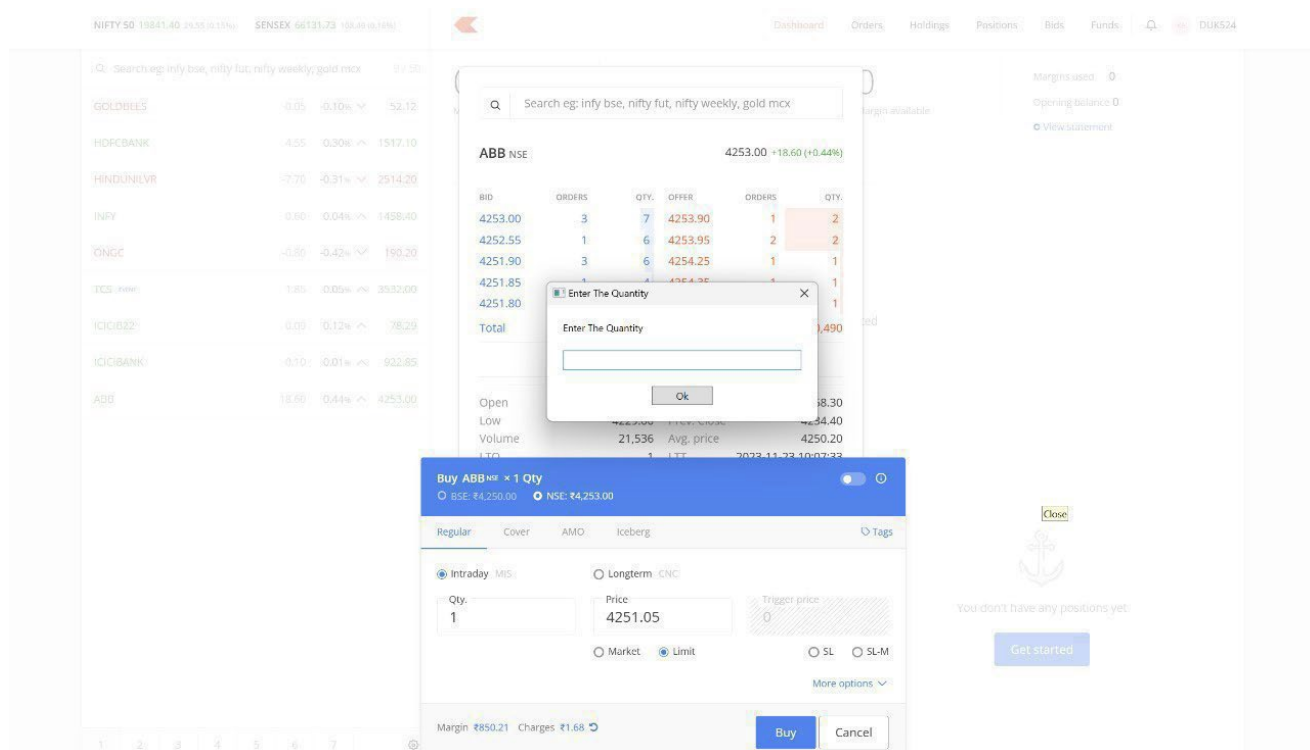


Fig 5.4: Enter the Quality

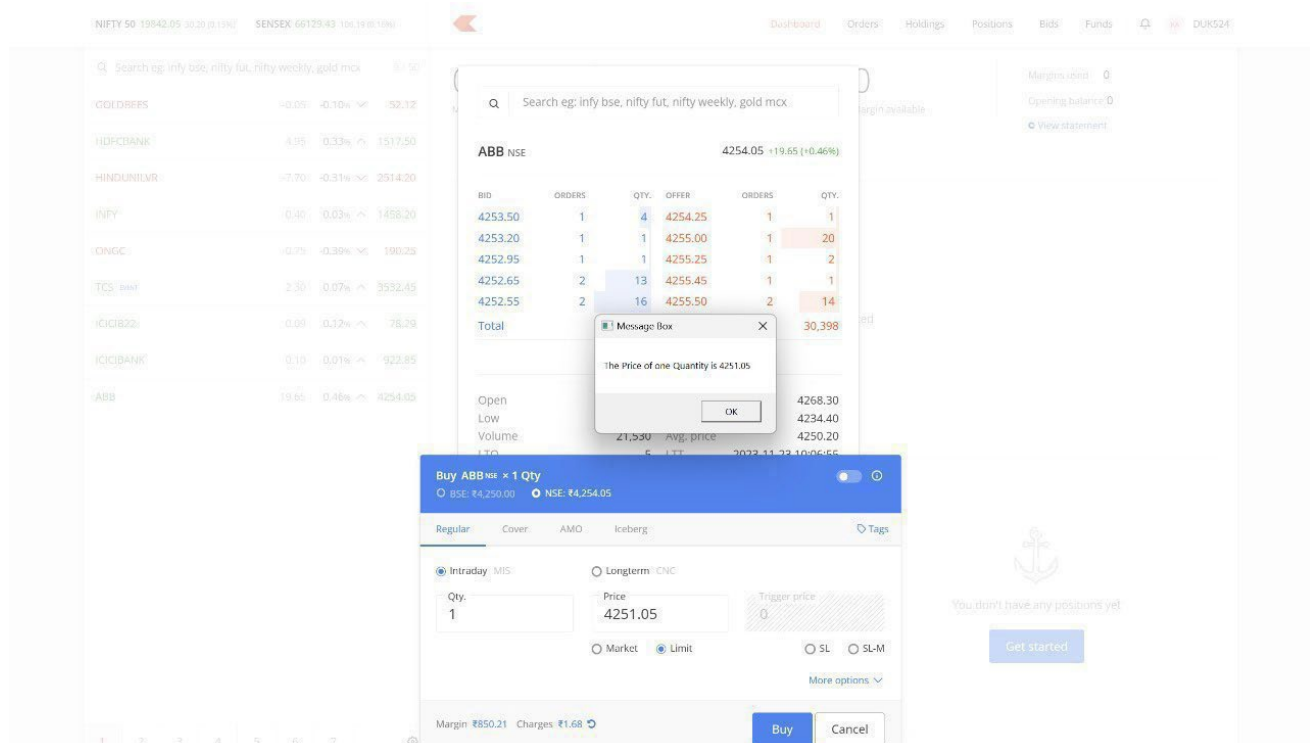


Fig 5.5: Price Of The Stock

## **CHAPTER 6**

### **CONCLUSION**

In conclusion, the development of an automated trading bot using UiPath for the Kite website represents a significant advancement in the realm of algorithmic trading. Throughout the course of this project, key objectives were systematically addressed, leading to the creation of a sophisticated solution that combines the power of UiPath's automation capabilities with strategic decision-making in financial markets. The automated bot successfully navigates the complexities of the Kite website, extracting real-time market data, placing orders, and monitoring positions, all with a focus on adaptability to dynamic elements and robust error-handling mechanisms. By incorporating risk management strategies and stringent data validation practices, the bot enhances the reliability and accuracy of its trading decisions.

The proposed system not only automates mundane tasks but also introduces efficiency, speed, and systematic execution of trading strategies. It caters to the need for a more intelligent and responsive approach to trading, freeing traders from manual interventions and allowing them to concentrate on strategy development and analysis. The simulated testing environment ensures that the bot undergoes rigorous evaluation before any live deployment, instilling confidence in its reliability and resilience.

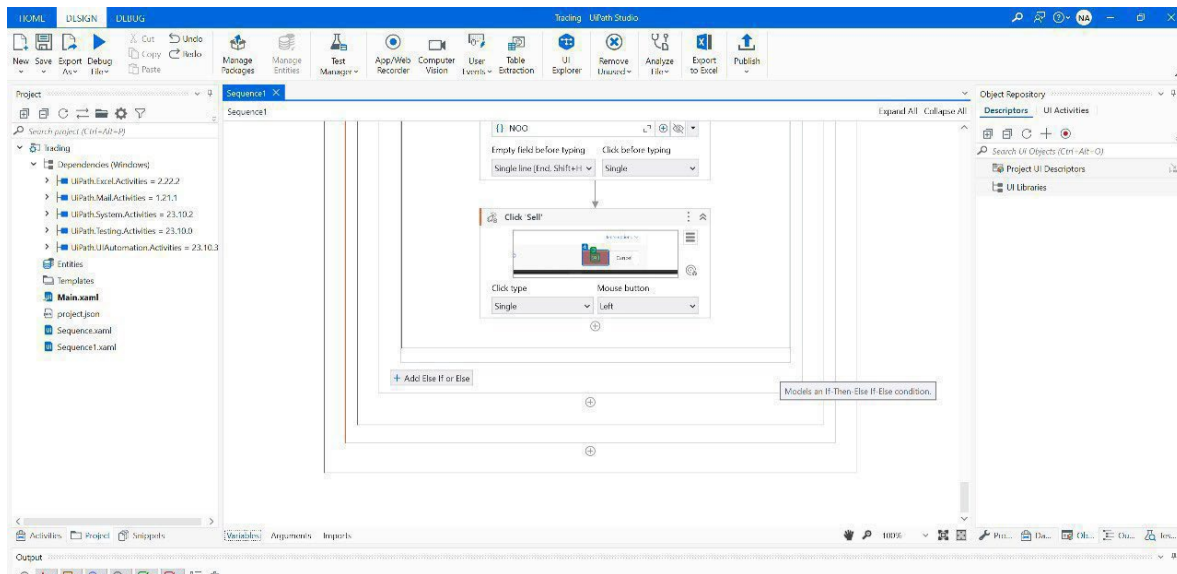
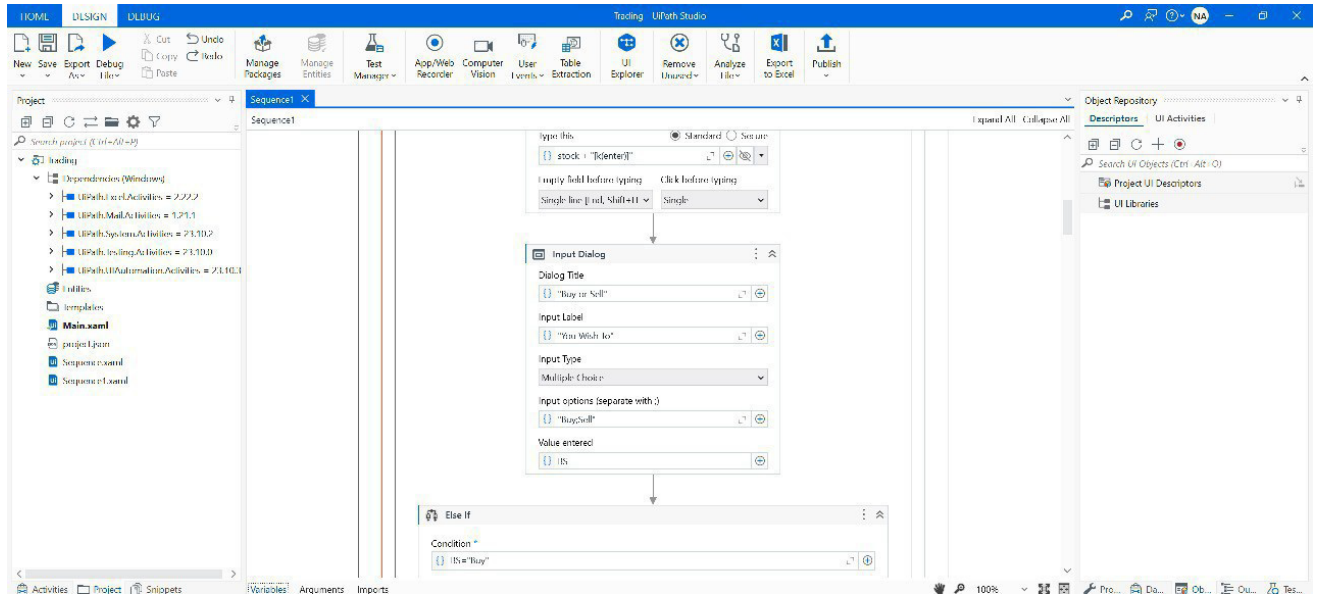
Furthermore, the security measures implemented in handling sensitive information, along with a commitment to compliance with financial regulations, underscore the ethical and responsible development of the trading bot. The proposed system, therefore, aligns with the contemporary trends in financial automation, contributing to a more efficient and secure landscape for algorithmic trading.

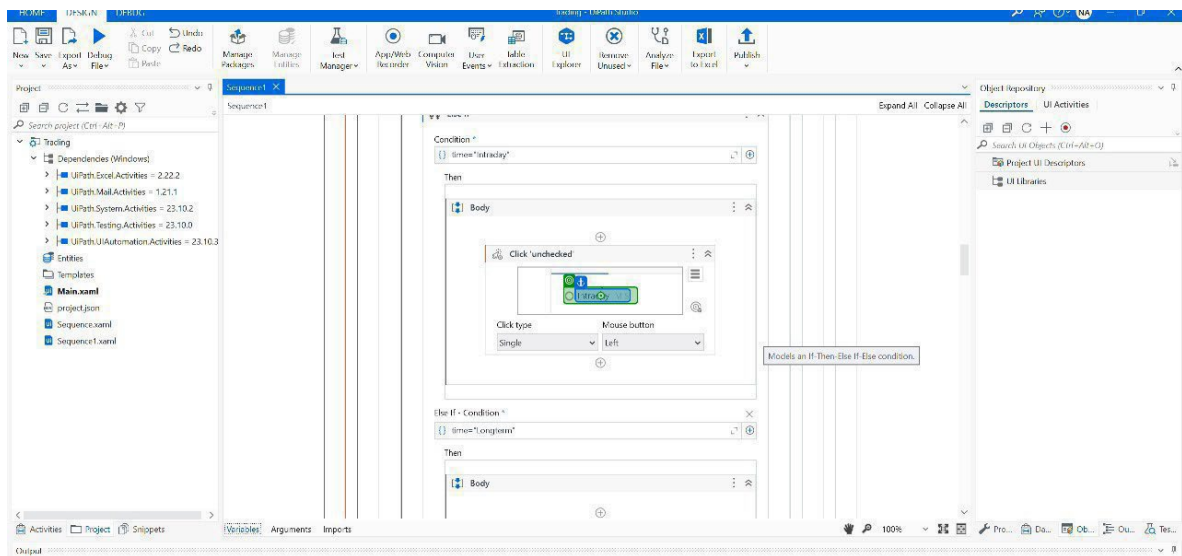
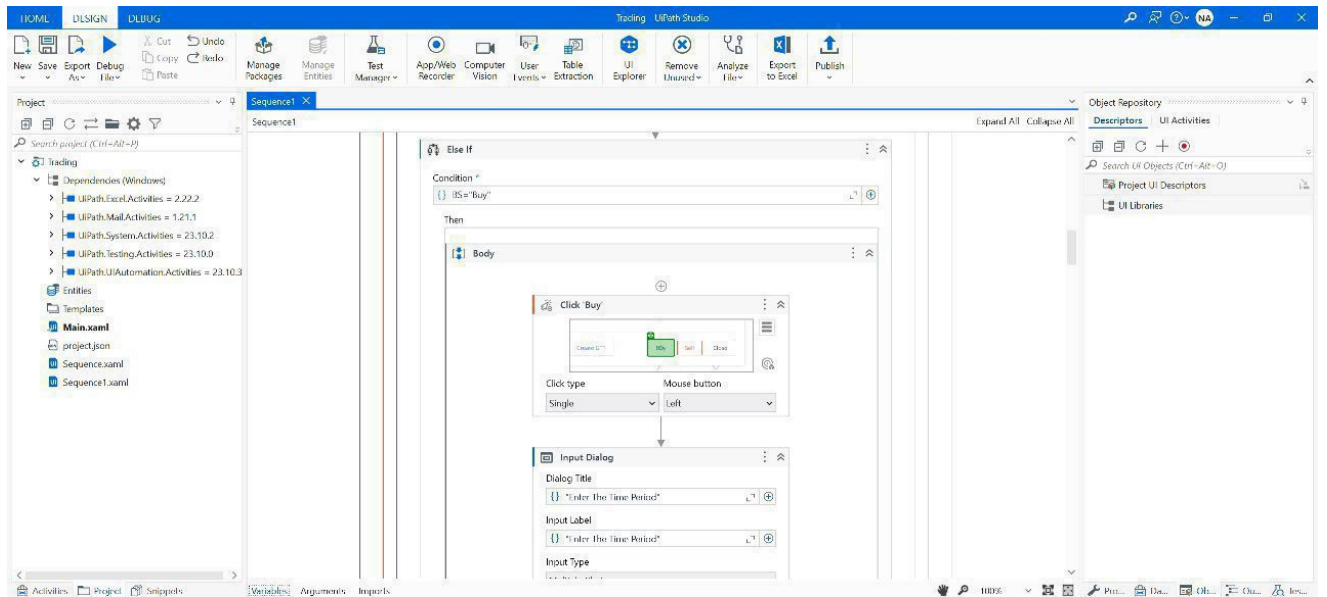
## **Future Considerations:**

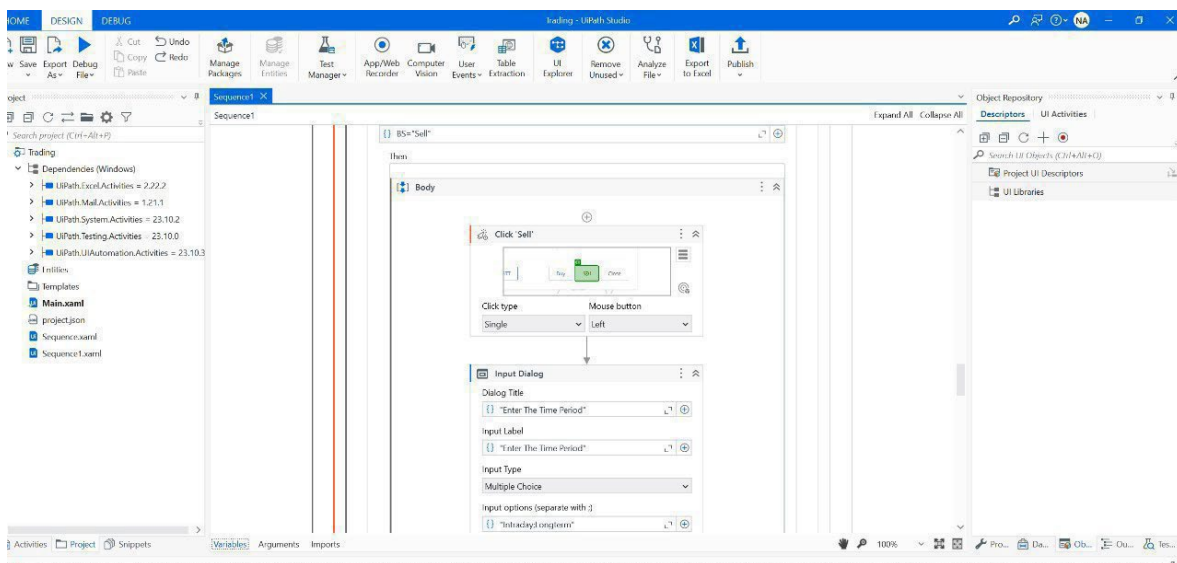
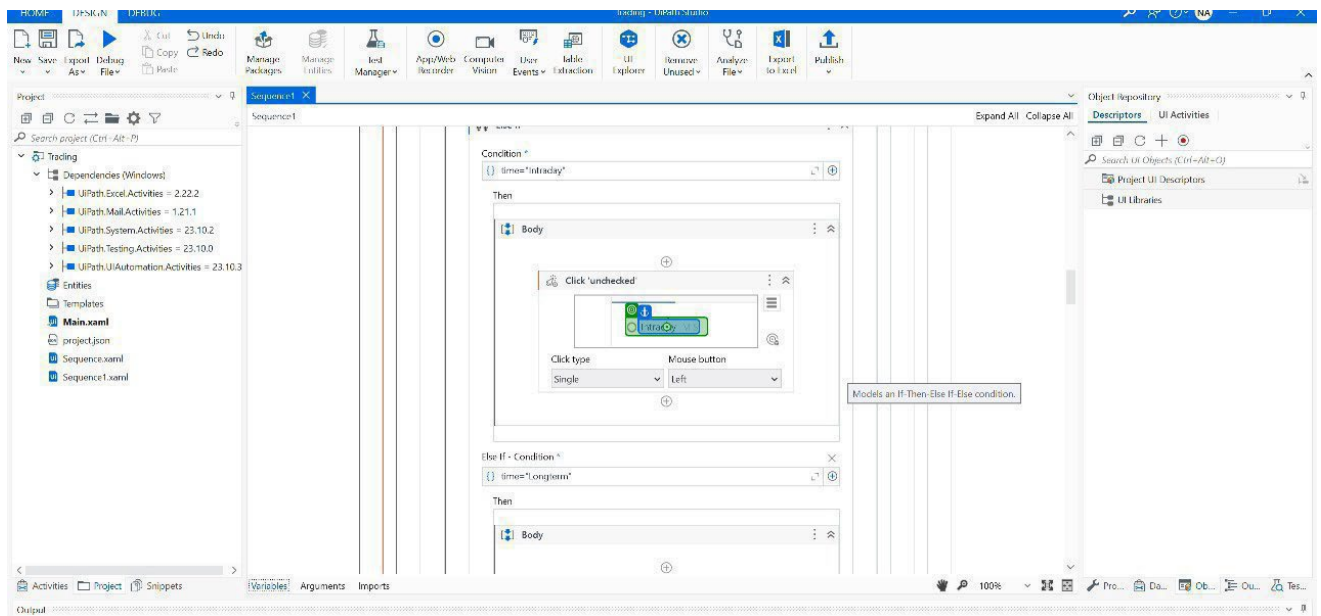
Future considerations for the automated trading bot project involve ongoing refinement and adaptation to the dynamic landscape of financial markets. Continuous monitoring and updates will be essential to address any changes in the Kite website's structure, ensuring the bot's sustained effectiveness. Further enhancements may include the integration of additional machine learning models for more sophisticated decision-making, allowing the bot to adapt to evolving market conditions. Additionally, exploring the incorporation of alternative data sources and advanced analytics could enhance the bot's predictive capabilities. Ongoing testing and validation in simulated environments will remain crucial to verify the bot's performance before any deployment in live trading scenarios. Continuous collaboration with financial experts and staying abreast of emerging technologies and market trends will be imperative to ensure that the automated trading bot remains at the forefront of innovation in algorithmic trading.

# APPENDIX

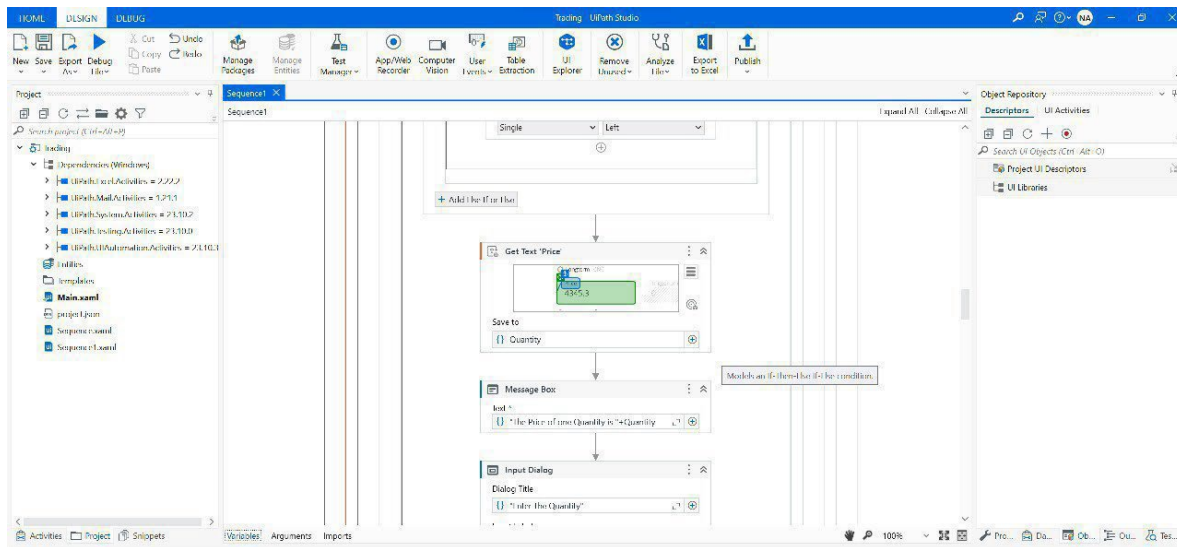
## SAMPLE PROCESS

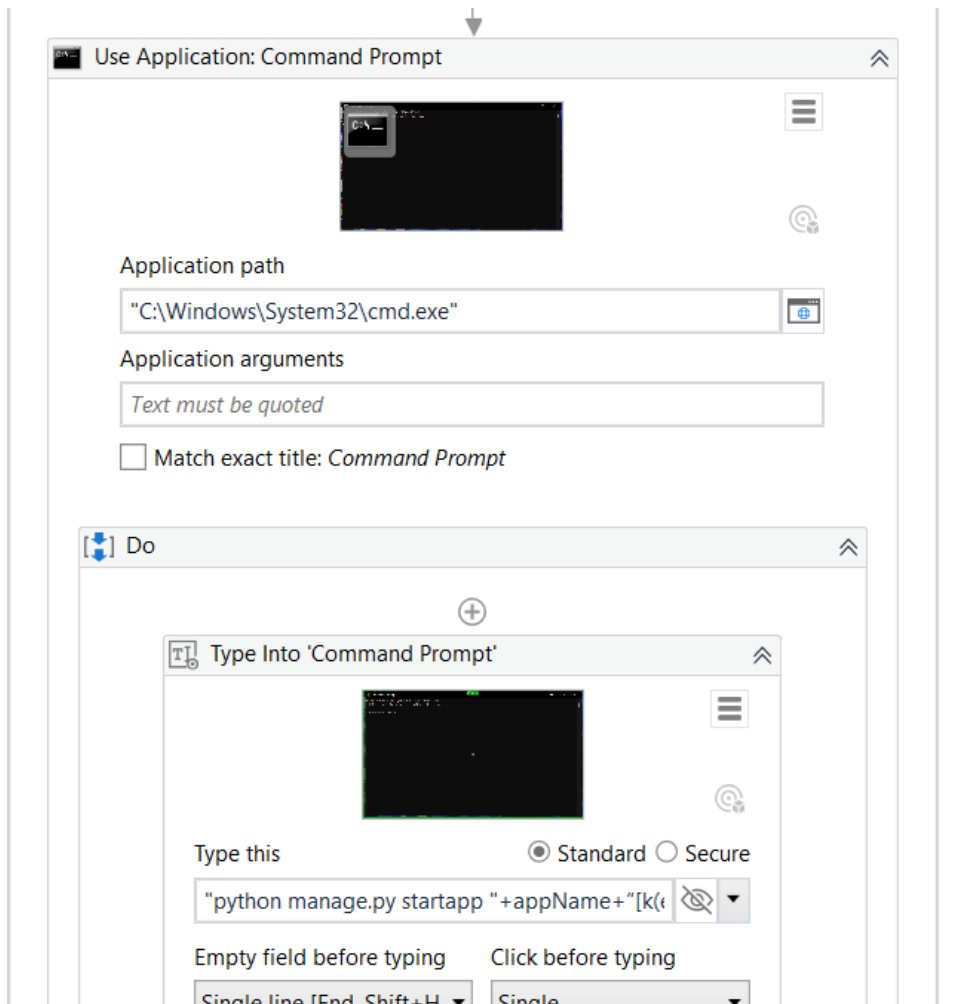


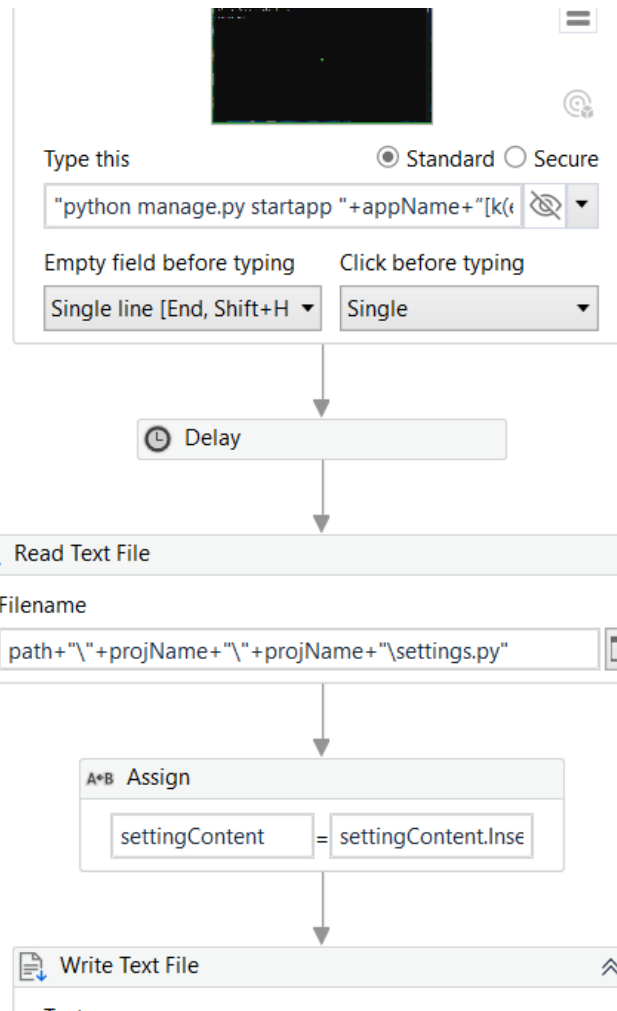


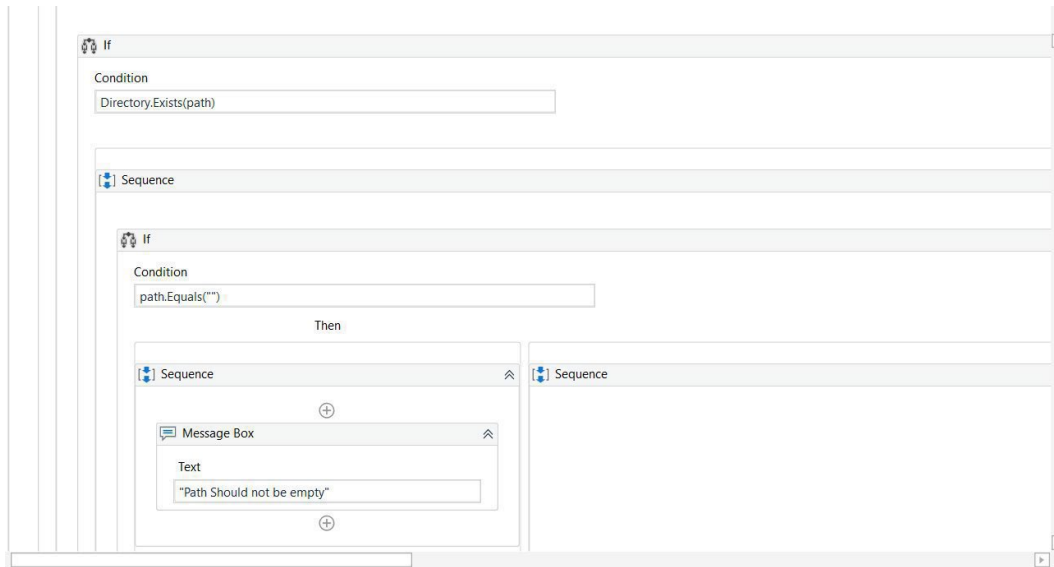












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