DEPARTMENT OF COMPUTER & INFORMATION SYSTEMS ENGINEERING
BACHELORS IN COMPUTER SYSTEMS ENGINEERING
Course Code: CS-115
Course Title: Computer Programming
Complex Engineering Problem
FE Batch 2023, Fall Semester 2023
Grading Rubric
TERM PROJECT

Group Members:

Student No.	Name	Roll No.
S1	**Muhammad Arham Khan**	**CS-23047**
S2	**Faizan Ahmed**	**CS-23052**
S3	**Abdul Salam Mangi**	**CS-23147**

CRITERIA AND SCALES				**Marks Obtained**		
				S1	**S2**	**S3**
Criterion 1: Does the application meet the desired specifications and produce the desired outputs? (CPA-1, CPA-3) **[8 marks]**						
1	2	3	4			
The application does not meet the desired specifications and is producing incorrect outputs.	The application partially meets the desired specifications and is producing incorrect or partially correct outputs.	The application meets the desired specifications but is producing incorrect or partially correct outputs.	The application meets all the desired specifications and is producing correct outputs.			
Criterion 2: How well is the code organization? **[2 marks]**						
1	2	3	4			
The code is poorly organized and very difficult to read.	The code is readable only to someone who knows what it is supposed to be doing.	Some part of the code is well organized, while some part is difficult to follow.	The code is well organized and very easy to follow.			
Criterion 3: How friendly is the application interface? (CPA-1, CPA-3) **[2 marks]**						
1	2	3	4			
The application interface is difficult to understand and use.	The application interface is easy to understand and but not that comfortable to use.	The application interface is very easy to understand and use.	The application interface is very interesting/ innovative and easy to understand and use.			
Criterion 4: How does the student performed individually and as a team member? (CPA-2, CPA-3) **[4 marks]**						
1	2	3	4			
The student did not work on the assigned task.	The student worked on the assigned task, and accomplished goals partially.	The student worked on the assigned task, and accomplished goals satisfactorily.	The student worked on the assigned task, and accomplished goals beyond expectations.			
Criterion 5: Does the report adhere to the given format and requirements? **[4 marks]**						
1	2	3	4			
The report does not contain the required information and is formatted poorly.	The report contains the required information only partially but is formatted well.	The report contains all the required information but is formatted poorly.	The report contains all the required information and completely adheres to the given format.			
			Total Marks:			

Teacher's Signature

- ## Problem Description:

The aim of this project is to create an online shopping cart application, providing users with the ability to browse, select, and purchase products virtually. The application must also include user account management, cart functionalities, a shopping history feature, and purchasing system.

The advent of online shopping carts has revolutionized consumer habits. Formerly reliant on offline markets, people now overwhelmingly opt for the convenience of online orders. This shift is driven by the time-saving and accessible nature of virtual shopping. With the ability to browse products, compare prices, and complete transactions from any location, online shopping carts have become the preferred choice. The ease of adding or removing items, along with detailed product information and timely notifications, contributes to an enhanced shopping experience. This trend underscores a societal embrace of digital solutions, with online shopping carts offering a streamlined and efficient way to meet consumer needs.

- ## Distinguishing features of your project:

1) Text-animation:
Project showcases uniqueness through engaging text animations for enhanced user experience.

2) Clear Screen:
Implemented clear screen feature for better readability as content accumulates.

3) f-string formatting:
Integrated F-string formatting for efficient and readable code representation in the project.

4) Implementing SHA-256 for secure the password:
Implemented secure password handling by hashing and storing user inputs in the database for enhanced data security in the project.

5) Dividing common task into functions:
Structured the project with modular design, creating separate functions for common tasks to facilitate easy and efficient code management and invocation.

6) Useful Comments:
Enhanced code readability by including comments on nearly every line in the project, ensuring a user-friendly understanding of the codebase.

7) Unique Usernames:
Ensures each user has a distinctive username by default.

8) User Interface Design:
Designed an intuitive user interface with colored prompts and feedback for enhanced usability and user guidance

9) Using .bat files for custom installation:
Making two separate files for installation to execute the application in windows and MacOS/Linux

10) Error Handling: Implemented robust error handling with color-coded messages to guide users through potential issues and improve user experience.

- **Most challenging part for you while working on the project:**

The most challenging aspects of the project encompassed the creation of an engaging user interface, efficient file handling, and the implementation of functions tailored for specific tasks.

Creating and managing Database:
Crafting a visually appealing and intuitive user interface posed a significant challenge. Balancing aesthetics with functionality to engage users effectively required careful consideration of design principles.

Reading and writing data from/into file:
Developing robust file handling mechanisms demanded meticulous attention. Creating, managing, and ensuring the secure reading and writing of data from files posed challenges in terms of data integrity and security.

Code Integration: Adopted modular development approach with version control (e.g., Git), conducting frequent code reviews and tests to mitigate integration issues early in the development cycle

- **Any new thing learnt in Python while working on the project:**

1. **Utilizing the os Module:**
   Explored the os module for effective interaction with the operating system, enhancing file management and system-level operations.

2. **Strategies for Large-Scale Projects:**
   Discovered effective strategies for collaborative large-scale project management, emphasizing communication and coordinated task allocation.

3. **F-String Formatting:**
   Implemented F-string formatting for clearer and more concise representation of dynamic data within the project.

4. **Hashlib with SHA-256:**
   Employed hashlib to implement SHA-256 hashing for secure storage and handling of sensitive user information.

5. **Comprehensive Use of Time Module:**
   Explored various methods within the time module for efficient time-related operations and scheduling.

6. **Text Animation Using Loops and Time:**
   Developed skills to animate text dynamically using only for loops and the time module, enhancing user interface engagement.

7. **Effective Team Coordination:**
   Learned how to coordinate effectively with team members, ensuring seamless collaboration and successful project execution.

8. **File Handling and Database Creation:**
   Acquired expertise in file handling and database creation, crucial for efficient data storage and retrieval within the project.

9. **Exploring Different IDEs:**
   Explored various Integrated Development Environments (IDEs) to identify and leverage tools that enhance the development process.

10. **Interaction with AI Tools:**
    Discovered how to give prompts to AI Tools, utilizing its capabilities to enhance project functionalities.

11. **Reading Python Documentation:**
    Learned the skill of effectively reading and implementing Python documentation based on project requirements.

12. **Object-Oriented Design**
    Implemented Object and Class based approach throughout the project, thereby streamlining it and gaining all the advantages of OOP such as polymorphism, encapsulation etc.

13. **Varied Methods for Data Structures:**
    Explored diverse methods of using dictionaries, lists, and tuples, optimizing data structures for different project functionalities.

14. **Aggregation Composition and Association:**
    Understand the difference between each of them, mastering the concepts of cardinality and have been able to recognize which one of them have to use according to the situation.

- ## Individual contributions of each group member in the project:

(1) Faizan Contribution:

Faizan played a pivotal role in the inception and initial stages of our project, spearheading the creation of the account creation and login functionalities. From the project's outset, Faizan assumed responsibility for orchestrating the application's initiation, guiding users through the account creation and login processes seamlessly. His contribution extended beyond mere functionality, as he incorporated engaging text animations using f-string formatting and making the interface by adding text color, adding a dynamic and visually appealing layer to the project. Furthermore, Faizan demonstrated his analytical and organizational skills by crafting a comprehensive algorithm in the form of a class diagram, mapping out the entirety of our program. This intricate class diagram served as a roadmap, providing clarity on the program's structure and logic.

(2) Arham Contribution:

Arham assumed a key role in the project by overseeing the coding aspects related to 'Products' items. His responsibilities spanned from developing the functionality to display products to coding mechanisms for adding items to the cart, removing them, and facilitating direct purchases when users opt for immediate transactions. Arham's expertise in these critical components ensured a seamless and efficient user experience throughout the product management process. Beyond coding, Arham took on the responsibility of crafting the project's report, showcasing his aptitude for communication and documentation. He actively engaged in idea-sharing sessions with group members, contributing to a collaborative and well-rounded project development approach.

(3) Abdul Salam Contribution:

Salam played a crucial role alongside Faizan in establishing the account creation and login system class diagram, showcasing collaborative teamwork. His contribution extended beyond implementation, as Salam actively shared insightful ideas that enriched our project. He demonstrated his commitment by not only providing conceptual input but also by creating a model for the account creation and login system, contributing to the visual representation of these critical functionalities. Furthermore, Salam's influence extended to the program's interface, where he contributed ideas to enhance user interaction. His holistic approach, encompassing both technical implementation and conceptual ideation, underscores his integral role in shaping the project's trajectory.

- ## Future expansions, if any:

1. GUI Implementation for an Interactive Interface:

Explore the integration of a graphical user interface (GUI) to enhance the overall user experience and interactivity.

2. Payment Integration:

Implement secure and convenient payment methods to facilitate seamless transactions within the platform.

3. Social Media Integration for Account Management:

Enhance user convenience by allowing account creation and login through social media platforms, streamlining the onboarding process.

4. Strengthen Database Security:

Upgrade to a more robust database system to ensure heightened security for user details, including login credentials.

5. Advertisement Monetization:

Introduce advertisement modules to generate revenue, capitalizing on the platform's user engagement.

6. Wishlist Cart Feature:

Implement a wishlist cart, allowing users to save out-of-stock items for future purchase and aiding sellers in identifying product demands.

7. Stock Remaining Alerts for Sellers:

Integrate an alert system to notify sellers about low stock levels, ensuring timely restocking and minimizing product unavailability.

8. Discount Coupon System:
Develop a discount coupon system to attract and retain customers, fostering loyalty and encouraging repeat purchases.

9. CLI Design Enhancements:
Refine and enhance the Command Line Interface (CLI) design for improved aesthetics and user interaction.

10. Web Interface Integration:
Explore the integration of a web-based interface, expanding accessibility and catering to a broader user base.

11. Blockchain Concepts Integration:
Introduce and integrate blockchain concepts, such as smart contracts, to enhance security and transparency in transactions between sellers and users.

12. Suggestion System with Machine/Deep Learning:
Implement a sophisticated suggestion system leveraging machine or deep learning algorithms to provide personalized product recommendations based on user preferences.

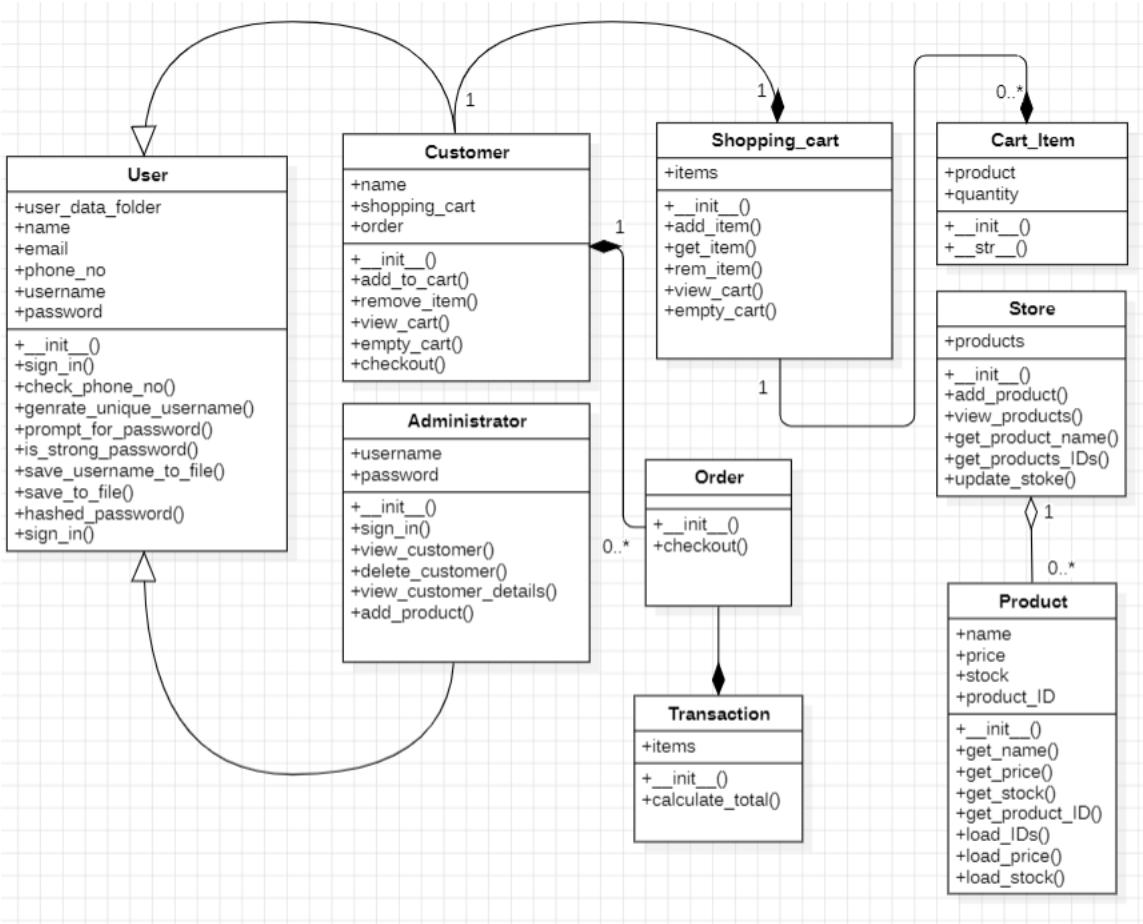
13. Wallet System Introduction:
Introduce a wallet system for users, enabling them to store credits or loyalty points for future purchases. These future expansions aim to not only improve the existing functionalities but also introduce advanced features, ensuring the Online Shopping Cart Project remains innovative, secure, and user-friendly.

14. Voice Assistant:
integrating a voice assistant feature aims to provide enhanced accessibility for users who have visual impairments. This addition will enable these users to interact with the application seamlessly through voice commands, ensuring inclusivity and improving usability for all.

- ## List of references, if any:

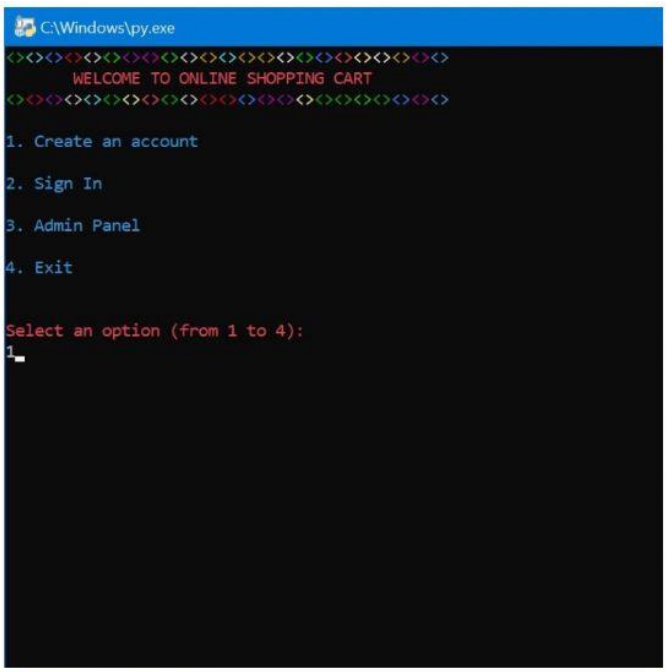
1. OpenAI - Chat GPT: https://www.openai.com/
2. W3Schools: https://www.w3schools.com/
3. Python Official Documentation: https://docs.python.org/
4. GeeksforGeeks: https://www.geeksforgeeks.org/

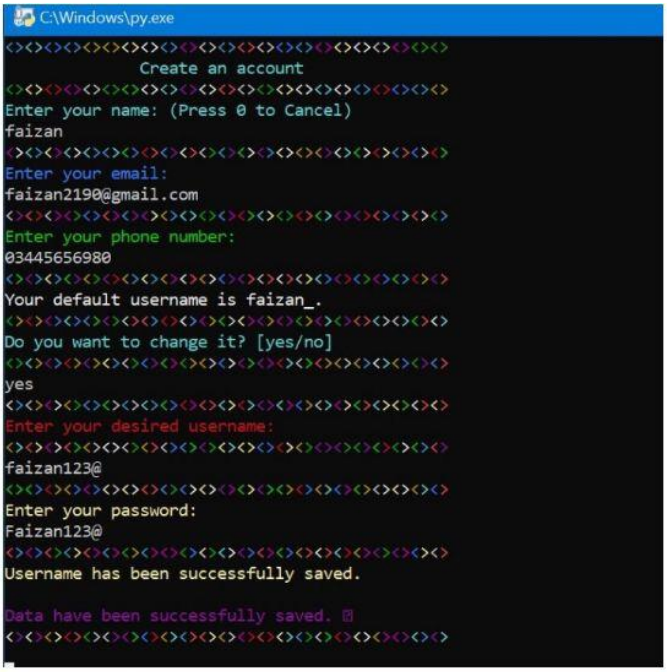
Class Diagram:

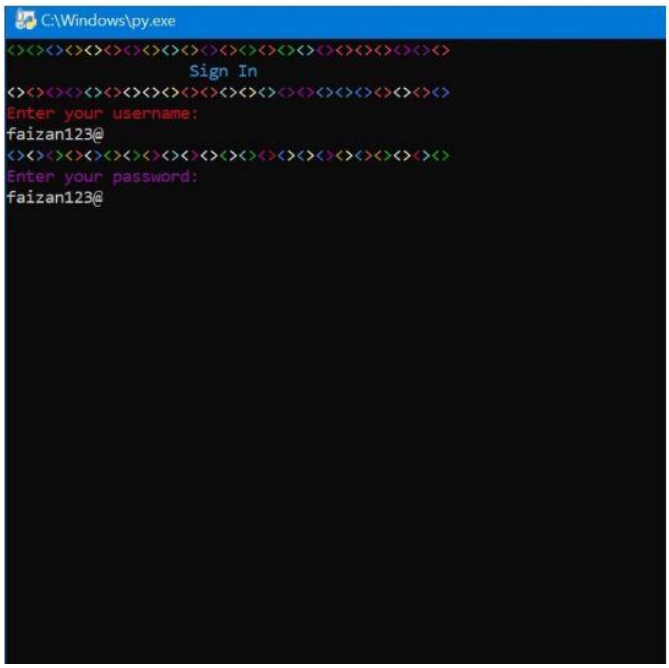


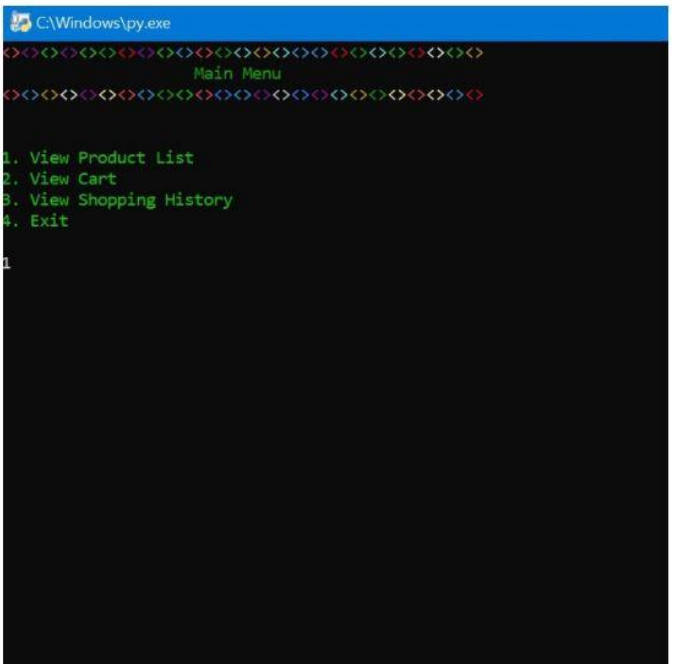
SNAPSHOTS:

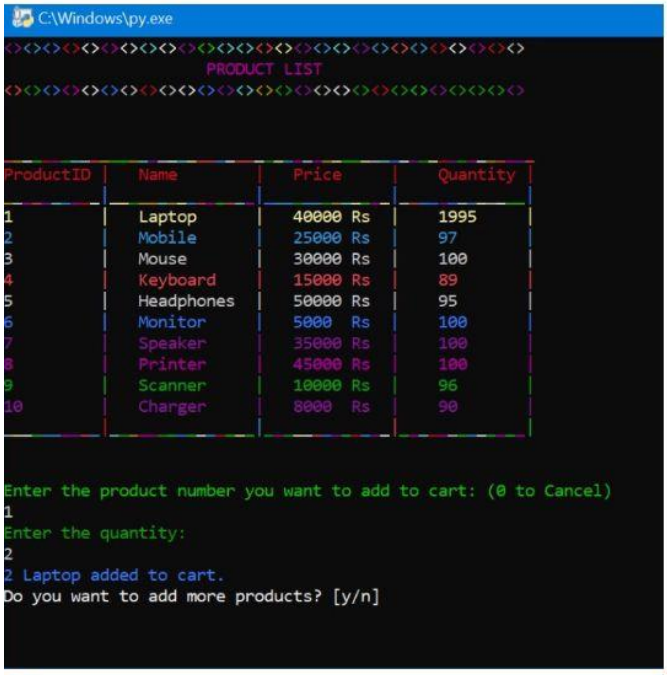
- **Test case 1:**

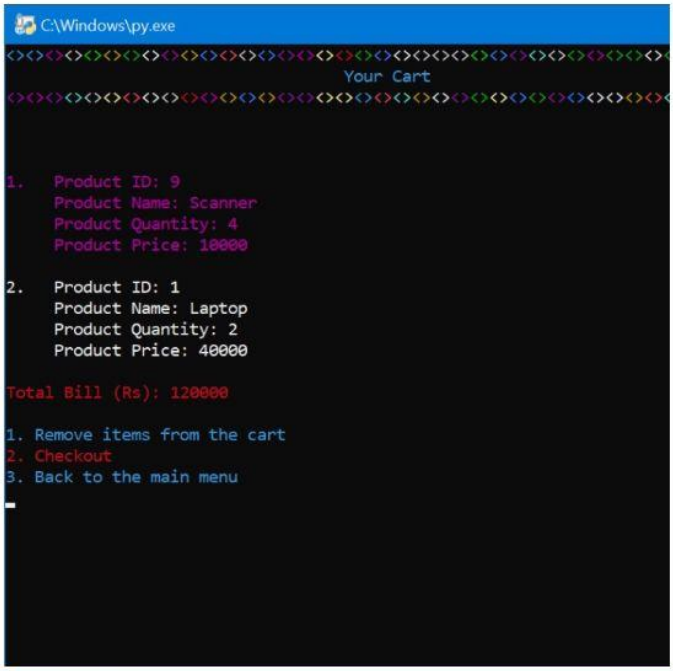


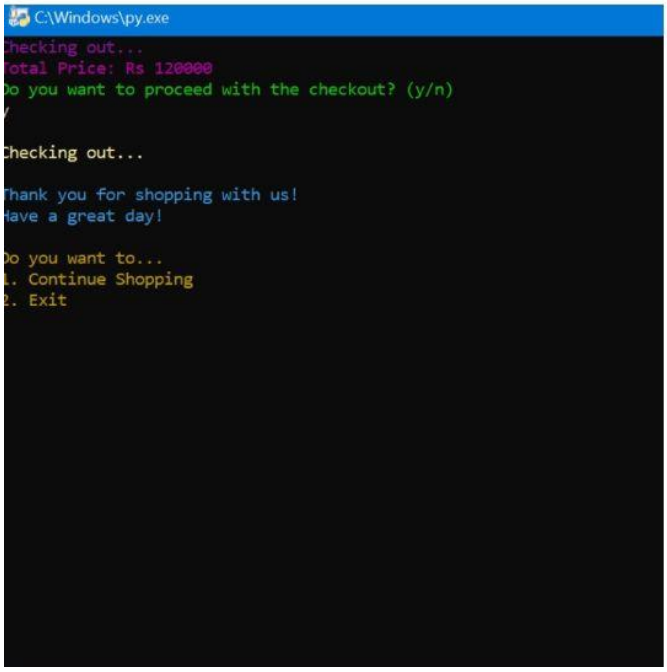


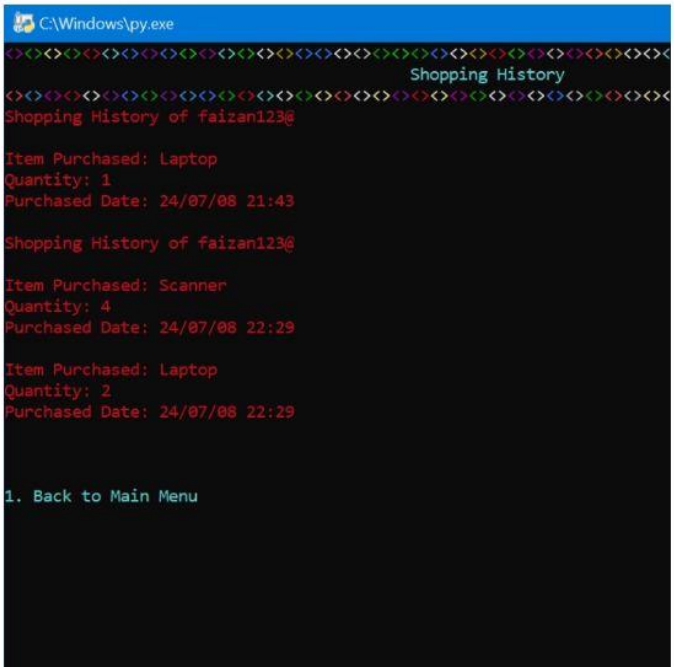




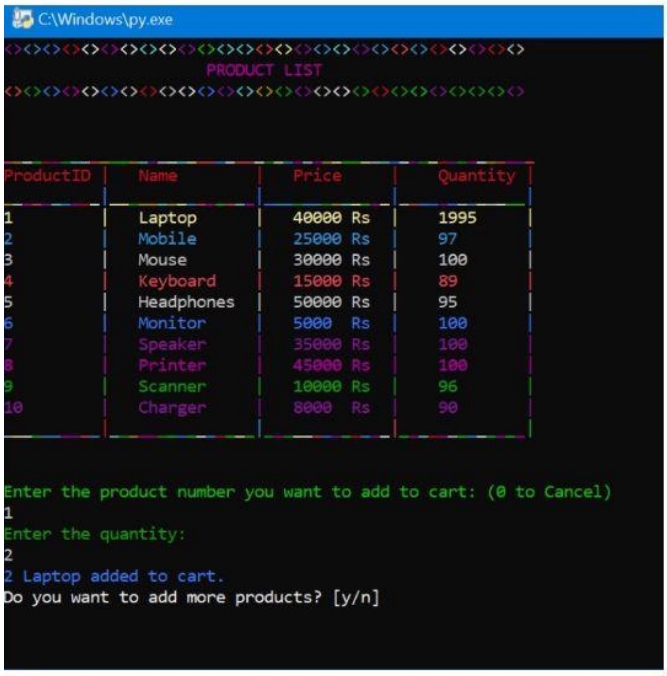

C:\Windows\py.exe
PRODUCT LIST
ProductID | Name | Price | Quantity
1 | Laptop | 40000 Rs | 1995
2 | Mobile | 25000 Rs | 97
3 | Mouse | 30000 Rs | 100
4 | Keyboard | 15000 Rs | 89
5 | Headphones | 50000 Rs | 95
6 | Monitor | 5000 Rs | 100
7 | Speaker | 35000 Rs | 100
8 | Printer | 45000 Rs | 100
9 | Scanner | 10000 Rs | 96
10 | Charger | 8000 Rs | 90
Enter the product number you want to add to cart: (0 to Cancel)
1
Enter the quantity:
2
2 Laptop added to cart.
Do you want to add more products? [y/n]

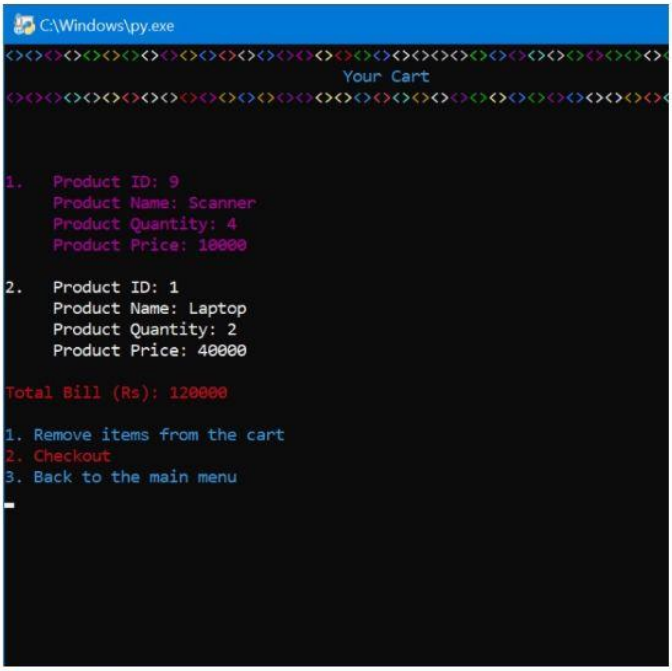

C:\Windows\py.exe
Your Cart
1. Product ID: 9
Product Name: Scanner
Product Quantity: 4
Product Price: 10000
2. Product ID: 1
Product Name: Laptop
Product Quantity: 2
Product Price: 40000
Total Bill (Rs): 120000
1. Remove items from the cart
2. Checkout
3. Back to the main menu

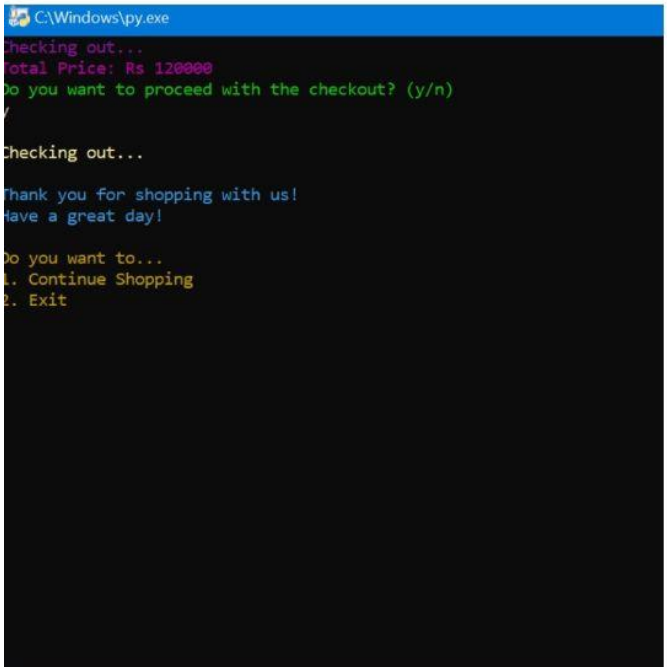

C:\Windows\py.exe
Checking out...
Total Price: Rs 120000
Do you want to proceed with the checkout? (y/n)
y
Checking out...
Thank you for shopping with us!
Have a great day!
Do you want to...
1. Continue Shopping
2. Exit

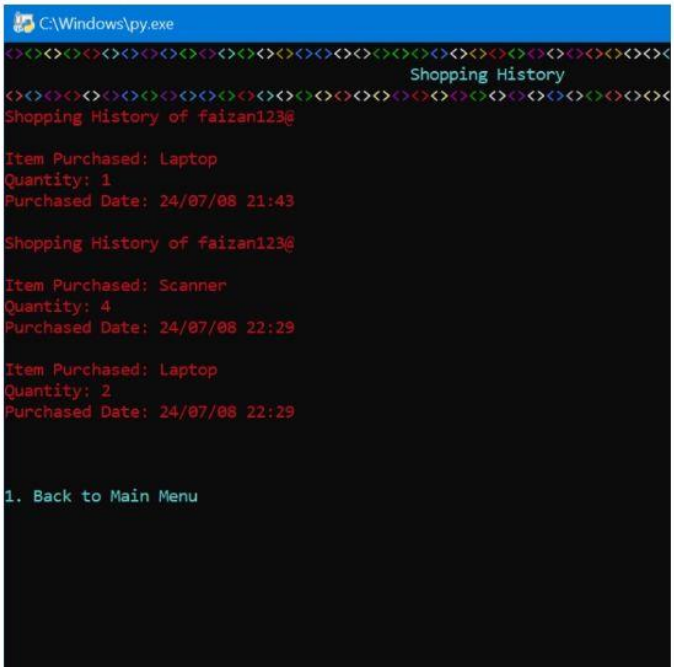

C:\Windows\py.exe
Shopping History
Shopping History of faizan123@
Item Purchased: Laptop
Quantity: 1
Purchased Date: 24/07/08 21:43
Shopping History of faizan123@
Item Purchased: Scanner
Quantity: 4
Purchased Date: 24/07/08 22:29
Item Purchased: Laptop
Quantity: 2
Purchased Date: 24/07/08 22:29
1. Back to Main Menu

- **Test case 2:**

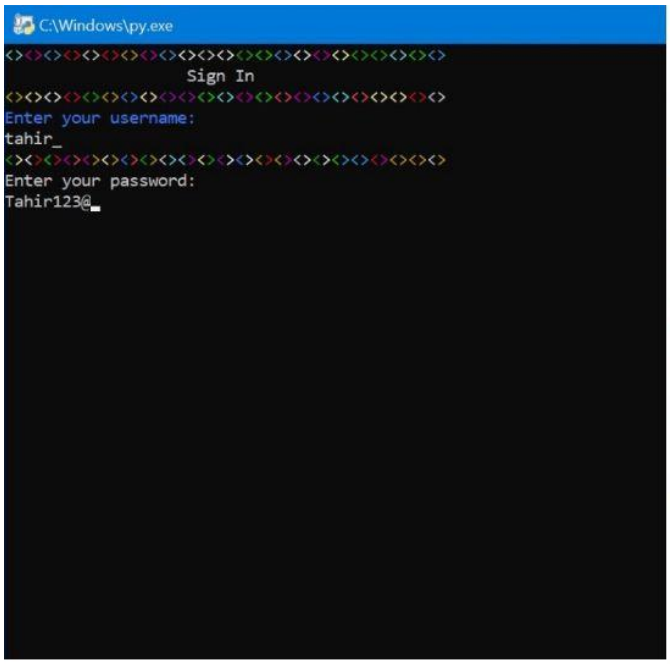

C:\Windows\py.exe
PRODUCT LIST
ProductID | Name | Price | Quantity
1 | Laptop | 40000 Rs | 1995
2 | Mobile | 25000 Rs | 97
3 | Mouse | 30000 Rs | 100
4 | Keyboard | 15000 Rs | 89
5 | Headphones | 50000 Rs | 95
6 | Monitor | 5000 Rs | 100
7 | Speaker | 35000 Rs | 100
8 | Printer | 45000 Rs | 100
9 | Scanner | 10000 Rs | 96
10 | Charger | 8000 Rs | 90
Enter the product number you want to add to cart: (0 to Cancel)
1
Enter the quantity:
2
2 Laptop added to cart.
Do you want to add more products? [y/n]

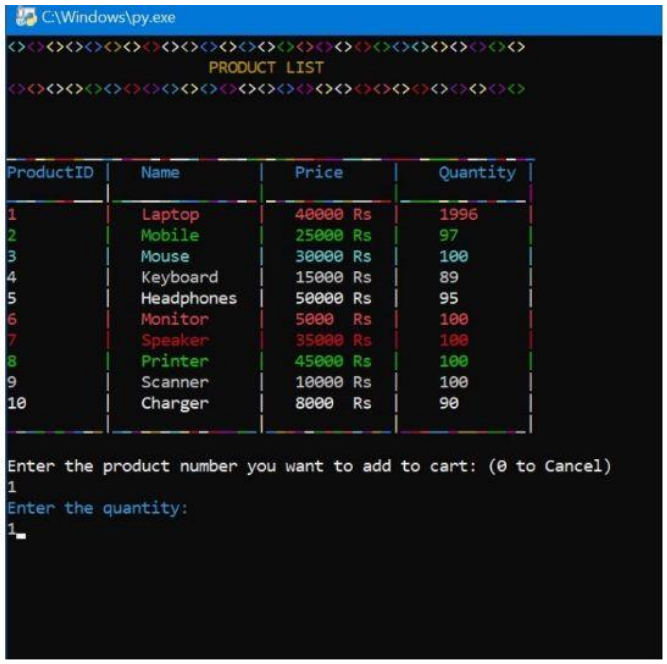

C:\Windows\py.exe
Your Cart
1. Product ID: 9
Product Name: Scanner
Product Quantity: 4
Product Price: 10000
2. Product ID: 1
Product Name: Laptop
Product Quantity: 2
Product Price: 40000
Total Bill (Rs): 120000
1. Remove items from the cart
2. Checkout
3. Back to the main menu

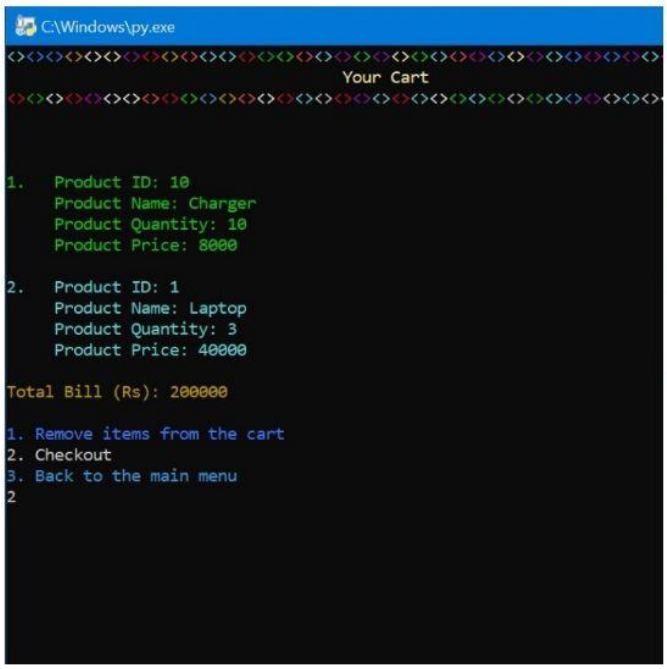

C:\Windows\py.exe
Checking out...
Total Price: Rs 120000
Do you want to proceed with the checkout? (y/n)
y
Checking out...
Thank you for shopping with us!
Have a great day!
Do you want to...
1. Continue Shopping
2. Exit

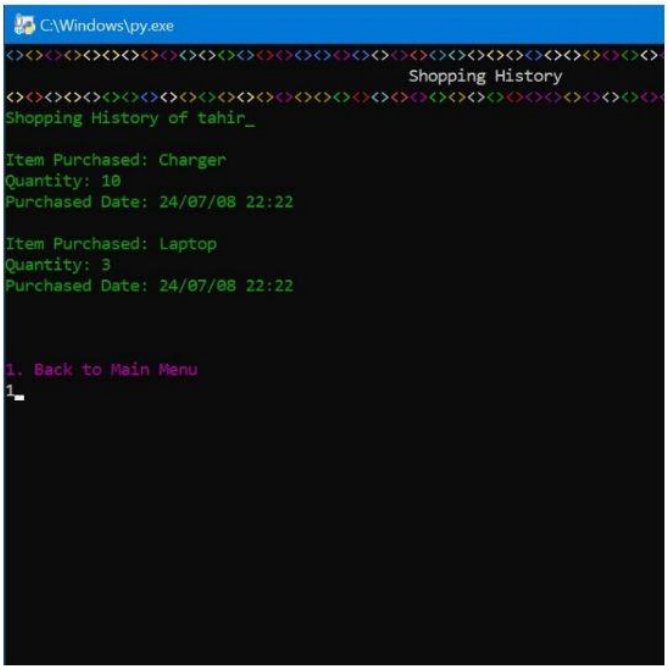

C:\Windows\py.exe
Shopping History
Shopping History of faizan123@
Item Purchased: Laptop
Quantity: 1
Purchased Date: 24/07/08 21:43
Shopping History of faizan123@
Item Purchased: Scanner
Quantity: 4
Purchased Date: 24/07/08 22:29
Item Purchased: Laptop
Quantity: 2
Purchased Date: 24/07/08 22:29
1. Back to Main Menu

- **Test case 3:**

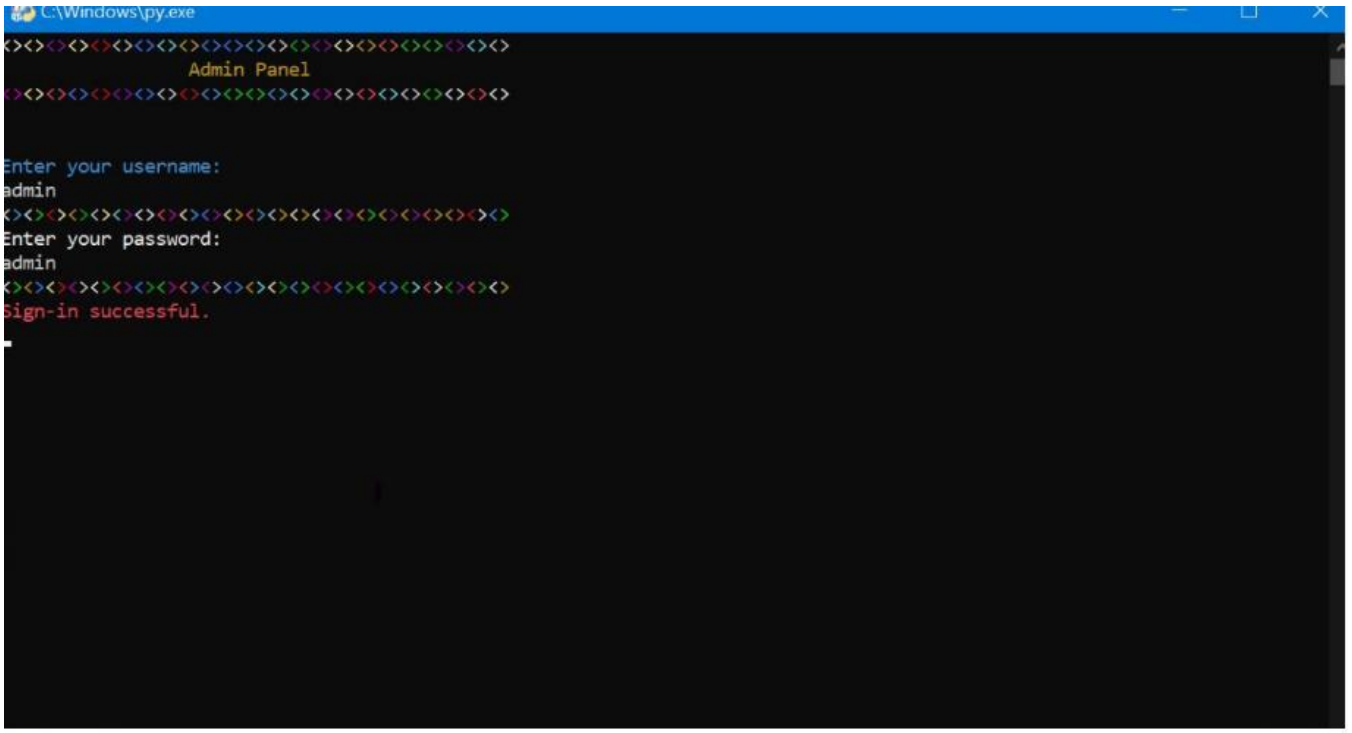

C:\Windows\py.exe
Sign In
Enter your username:
tahir_
Enter your password:
Tahir123@_

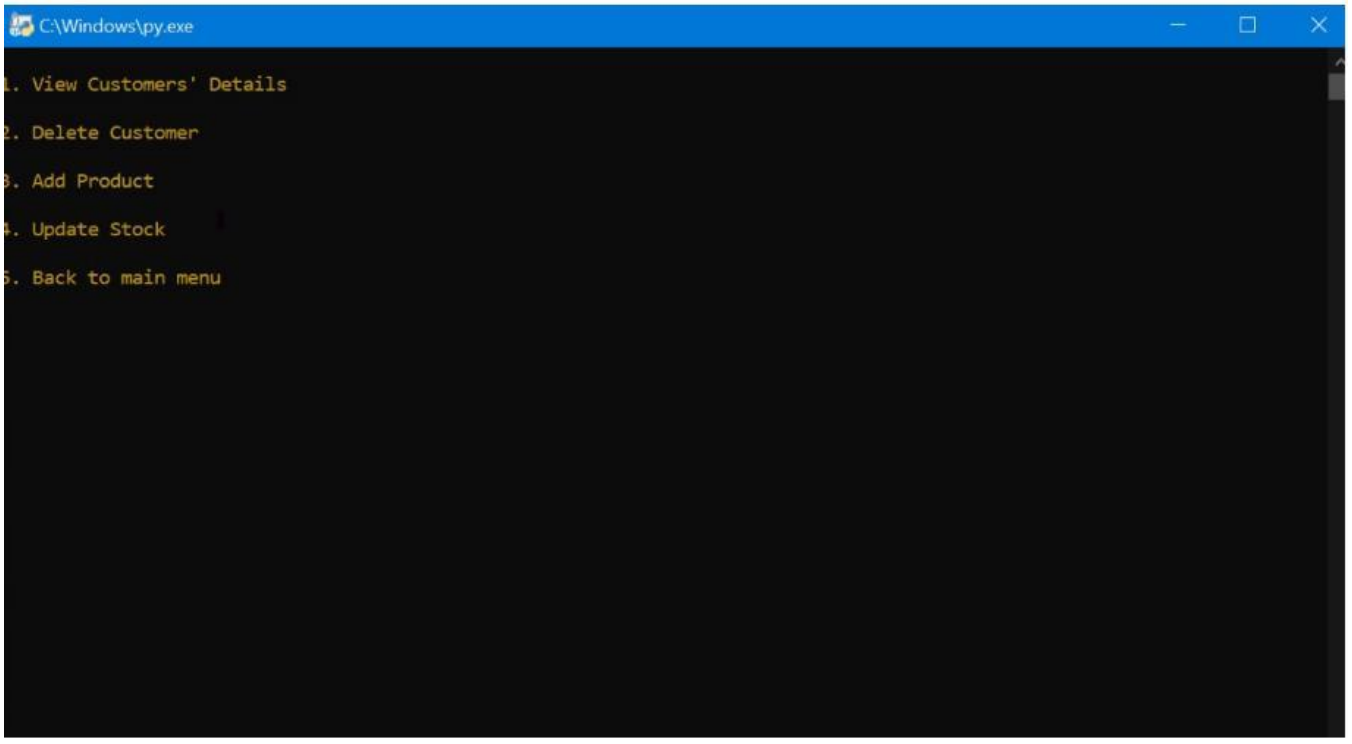

C:\Windows\py.exe
PRODUCT LIST
ProductID | Name | Price | Quantity
1 | Laptop | 40000 Rs | 1996
2 | Mobile | 25000 Rs | 97
3 | Mouse | 30000 Rs | 100
4 | Keyboard | 15000 Rs | 89
5 | Headphones | 50000 Rs | 95
6 | Monitor | 5000 Rs | 100
7 | Speaker | 35000 Rs | 100
8 | Printer | 45000 Rs | 100
9 | Scanner | 10000 Rs | 100
10 | Charger | 8000 Rs | 90
Enter the product number you want to add to cart: (0 to Cancel)
1
Enter the quantity:
1_

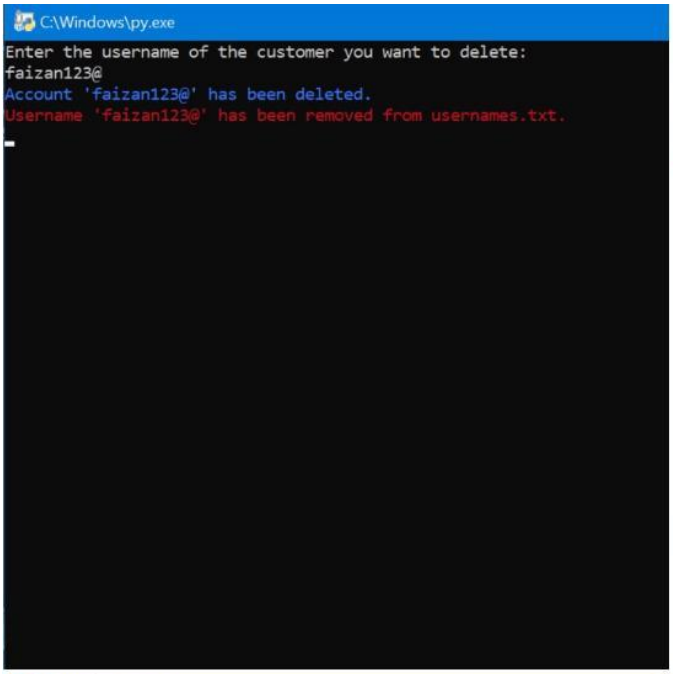

C:\Windows\py.exe
Your Cart
1. Product ID: 10
Product Name: Charger
Product Quantity: 10
Product Price: 8000
2. Product ID: 1
Product Name: Laptop
Product Quantity: 3
Product Price: 40000
Total Bill (Rs): 200000
1. Remove items from the cart
2. Checkout
3. Back to the main menu
2

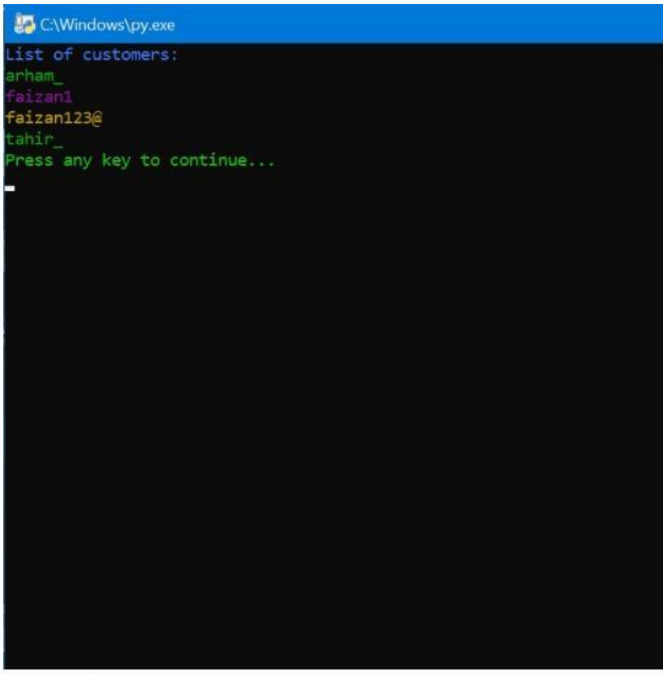

C:\Windows\py.exe
Shopping History
Shopping History of tahir_
Item Purchased: Charger
Quantity: 10
Purchased Date: 24/07/08 22:22
Item Purchased: Laptop
Quantity: 3
Purchased Date: 24/07/08 22:22
1. Back to Main Menu
1_

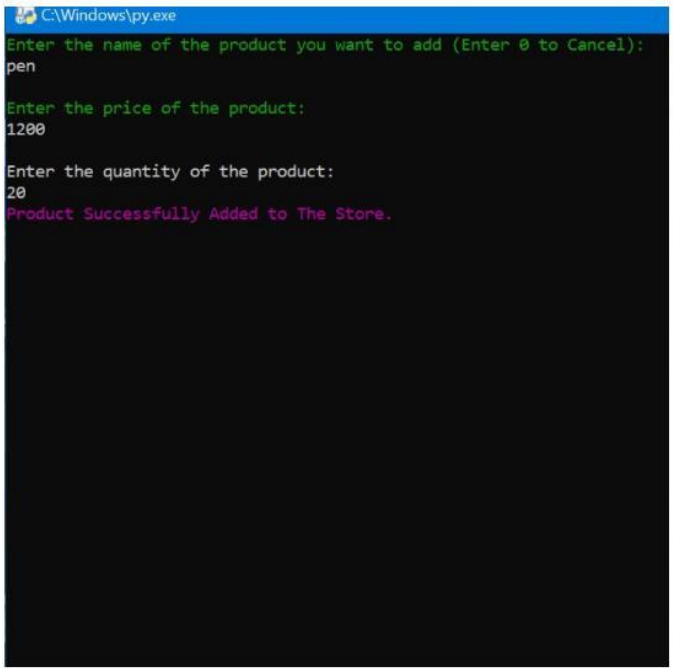
- **Admin Panel:**

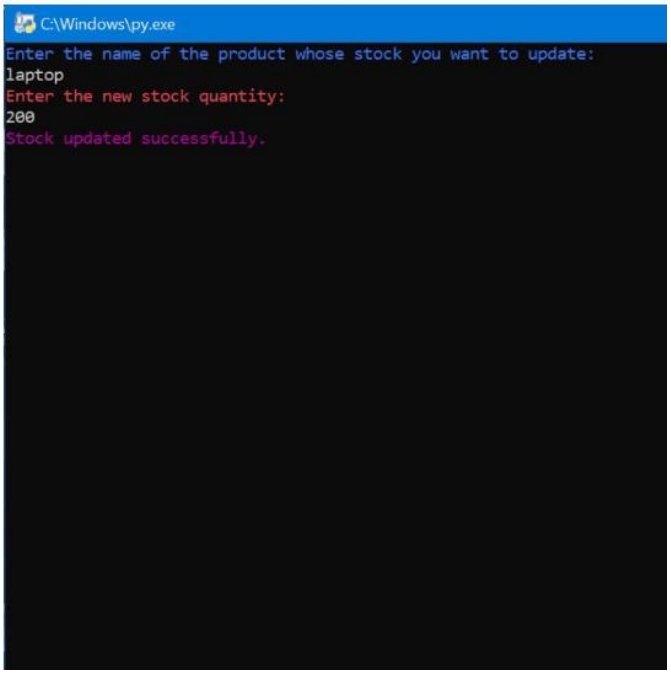

C:\Windows\py.exe
Admin Panel
Enter your username:
admin
Enter your password:
admin
Sign-in successful.


C:\Windows\py.exe
1. View Customers' Details
2. Delete Customer
3. Add Product
4. Update Stock
5. Back to main menu


C:\Windows\py.exe
Enter the username of the customer you want to delete:
faizan123@
Account 'faizan123@' has been deleted.
Username 'faizan123@' has been removed from usernames.txt.


C:\Windows\py.exe
List of customers:
arham_
faizan1
faizan123@
tahir_
Press any key to continue...


C:\Windows\py.exe
Enter the name of the product you want to add (Enter 0 to Cancel):
pen
Enter the price of the product:
1200
Enter the quantity of the product:
20
Product Successfully Added to The Store.


C:\Windows\py.exe
Enter the name of the product whose stock you want to update:
laptop
Enter the new stock quantity:
200
Stock updated successfully.