



Green University of Bangladesh

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Online PC Shop Management System

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Chapter 1

Introduction

1.1 Overview

The "Online PC Shop Management System" is a Bash-scripted command-line application designed to provide a seamless and intuitive shopping experience for users seeking computer accessories, pre-build desktops, and laptops. The system features a modular architecture, ensuring easy navigation and efficient management of shopping cart data. With a focus on user-friendliness and security, the project implements robust input validation, enabling users to add or remove items from their cart and apply special offers. The use of Bash scripting facilitates a lightweight yet powerful environment, promoting code modularity for potential future enhancements and ensuring a reliable online shopping platform for PC enthusiasts.

1.2 Motivation

Here are the motivation behind the development of the "Online PC Shop Management System":

- **Growing Demand:** Addressing the increasing demand for an efficient and user-friendly platform for purchasing computer-related products.
- **Organized Inventory Management:** Recognizing the need for an organized system to manage PC shop inventory and streamline product listings.
- **Convenience of Online Shopping:** Responding to the contemporary trend of online shopping by providing a virtual store for computer enthusiasts.
- **User-Friendly Interface:** Developing a system with a user-friendly command-line interface to cater to a diverse user base.
- **Seamless Shopping Experience:** Offering features such as adding items to the cart, deleting items, and applying special offers to ensure a seamless shopping experience.

- **Secure Transaction Processing:** Prioritizing security by implementing input validation and reliable transaction processing to enhance user trust.
- **Bash Scripting Efficiency:** Leveraging the efficiency of Bash scripting to create a lightweight and powerful application suitable for a command-line environment.
- **Meeting User Needs:** Aligning the project objectives with the evolving needs of users in the realm of online PC shopping.

1.3 Problem Definition

1.3.1 Problem Statement

Existing methods for purchasing computer-related products lack organization and user-friendly features, leading to inefficient transactions and a suboptimal online shopping experience. The absence of a dedicated system for managing PC shop inventory results in disorganized product listings, limited user interaction, and security concerns. This project addresses these challenges by developing an organized, secure, and user-friendly "Online PC Shop Management System" that streamlines inventory management, enhances the shopping experience, and ensures secure transaction processing.

1.3.2 Complex Engineering Problem

Table 1.1: Summary of the attributes touched by the mentioned projects

Name of the P Attributes	Explain how to address
P1: Depth of knowledge required	Clearly define requirements and provide comprehensive documentation while conducting training sessions for knowledge transfer.
P2: Range of conflicting requirements	—
P3: Depth of analysis required	—
P4: Familiarity of issues	Need to be familiar with common issues in online shopping systems and should continuously learn from previous experiences to address challenges efficiently.
P5: Extent of applicable codes	Shell Scripting
P6: Extent of stakeholder involvement and conflicting requirements	—
P7: Interdependence	Visualizing and managing interdependencies between different components of the script

1.4 Design Goals/Objectives

Here are the objectives of the "Online PC Shop Management System" project:

- **User-Friendly Interface:** Develop a user-friendly command-line interface that enables seamless navigation and interaction for users purchasing computer accessories, pre-built desktops, and laptops.
- **Inventory Management:** Implement a modular system for managing inventory, ensuring organized listings and easy exploration of products within different categories.
- **Transaction Processing:** Ensure accurate and efficient transaction processing, allowing users to add or remove items from their shopping cart and complete purchases without errors or delays.
- **Security and Validation:** Implement robust security measures, including input validation, to protect user information and maintain data integrity throughout the shopping experience.
- **Adaptation to Online Shopping Trends:** Align the project with modern online shopping trends, providing a virtual store experience for computer enthusiasts seeking convenience and reliability.
- **Winter Special Offer:** Implement a winter special offer feature, allowing users to apply discounts to their purchases and enhancing the overall attractiveness of the online shopping experience.
- **Usability and Feedback:** Focus on usability, providing informative feedback to users during interactions, and continuously seeking ways to improve the overall user experience within the system.

1.5 Application

Here are the applications of the "Online PC Shop Management System" project:

- **E-commerce for Computer Accessories:** Facilitates an online marketplace for computer accessories, allowing users to browse, select, and purchase items such as pendrives, wireless mice, and keyboards.
- **Customizable Pre-built Desktops:** Offers a user-friendly interface for configuring and purchasing pre-built desktops with varying specifications, including different processors and graphics cards.
- **Laptop Retail Platform:** Serves as a virtual store for laptops, providing users with options to explore and buy different models based on their preferences and requirements.
- **Winter Special Offers:** Implements a seasonal discount feature, enhancing the attractiveness of the platform during winter with special offers and reduced prices.

- **Secure Online Transactions:** Ensures secure online transactions through robust input validation, protecting user data and fostering a trustworthy environment for users to make purchases.
- **Usability and User Feedback:** Prioritizes usability, providing a user-friendly experience, and incorporates user feedback mechanisms to continuously enhance the system's features and
- **Modern Online Shopping Experience:** Adapts to modern online shopping trends, offering a virtual store experience that aligns with contemporary user expectations for convenience, efficiency, and reliability in the process of purchasing computer-related products.

Chapter 2

Design/Development/Implementation of the Project

2.1 Introduction

The "Online PC Shop Management System" serves as an innovative solution in the domain of computer retail, providing a user-friendly and efficient platform for individuals to explore, select, and purchase a diverse range of computer accessories, pre-built desktops, and laptops. With an organized inventory management system, secure online transactions, and the incorporation of modern online shopping trends, the project aims to enhance the overall user experience in the virtual realm of computer shopping. Featuring a winter special offer, the system adds a seasonal touch, making it an attractive and reliable destination for users seeking convenience and satisfaction in their computer-related purchases.

2.2 Project Details

Here are the features of the "Online PC Shop Management System":

- Offers three main product categories - Computer Accessories, Pre-built Desktops, and Laptops - providing a wide array of options for users.
- Users can effortlessly add items to their shopping cart, remove items, and review their selected products before completing the purchase.
- Implements robust security measures, including input validation, to ensure secure and error-free online transactions, protecting user data.
- Introduces a seasonal feature allowing users to apply special discounts and offers during their purchases, enhancing the overall appeal of the platform.
- The system features an organized inventory management system, streamlining product listings for easy exploration and selection.

- Adapts to modern online shopping trends, providing users with a virtual store experience that aligns with contemporary expectations for convenience and reliability.

2.3 Implementation

Here is a simplified representation of the three main parts of my code:

Part-01: Initialization and User Information Input..

```
#Initialization
declare -a a
declare -a items
totalCost=0

# User Information Input
echo "*****"
echo "*"           Asslamualikum !!           "*"
echo "*"
echo "*"           Welcome to Our Online       "*"
echo "*"           PC Shop                     "*"
echo "*"
echo "*****"
echo -e "Please enter your name sir             : \c"
read -r Name
echo -e "Please enter your address sir          : \c"
read -r Address
echo -e "Please enter your E-mail address sir : \c"
read -r Mail_address

clear
```

Part-2: Category Selection and Interaction

```
#Category Selection and Interaction
c=1
while [ $c -eq 1 ]; do
    echo "*****"
    echo "*" 1. Computer Accessories           "*"
    echo "*" 2. Pre-built Desktops            "*"
    echo "*" 3. Laptops                        "*"
    echo "*" 4. Exit                          "*"
    echo "*****"
    read -p "Please enter your choice below: " choice
```



```

clear

case $choice in
    1)
        Computer_accessories
        ;;
    2)
        Prebuild_Desktop
        ;;
    3)
        Laptop
        ;;
    *)
        echo -e "Enter Valid Categories Choice"
        ;;
esac

# ... Additional code for shopping cart management and interaction

done

```

Part-3: Shopping Cart Management and Finalization

```

# Shopping Cart Management and Finalization
clear

echo -e "Your total cost is $totalCost\n"

coupon=0
echo -e "Please enter Winter special coupon code : \c"
read -p "" coupon

if [ $coupon -eq 101 ]; then
    winter_offer
    echo -e "\n\nCongratulations!! You got a winter special offer.\nYour new cost is $totalCost\n"
else
    echo -e "Sorry!!! You entered a wrong coupon code.\nYour total cost is $totalCost\n"
fi

payment_method

echo -e "\n\nThank You so much $Name for choosing us.\n\n"

```

2.4 Algorithms

Here are the Algorithm of the "Online PC Shop Management System":

1. Initialize variables and arrays
 - Initialize a[], items[], and totalCost variables
 - Prompt the user for personal information (name, address, email)
2. Main Loop:
 - a. Display welcome message and options
 - Display welcome and category options (Computer Accessories, Pre-built Desktops, Laptops, Exit)
 - b. User Interaction
 - Accept user choice for category selection
 - c. Process User Choice
 - i. If category is Computer Accessories
 - Call Computer_accessories() function
 - ii. If category is Pre-built Desktops
 - Call Prebuild_Desktop() function
 - iii. If category is Laptops
 - Call Laptop() function
 - iv. If category is Exit
 - Exit the loop
3. Computer_accessories Function:
 - a. Display available computer accessories with prices
 - b. Accept user choice
 - c. Process user choice
 - If user confirms, update the shopping cart and total cost
 - Display updated shopping cart
 - d. Return to Main Loop
4. Prebuild_Desktop Function:
 - a. Display available pre-built desktops with prices
 - b. Accept user choice
 - c. Process user choice
 - If user confirms, update the shopping cart and total cost
 - Display updated shopping cart
 - d. Return to Main Loop
5. Laptop Function:
 - a. Display available laptops with prices
 - b. Accept user choice
 - c. Process user choice
 - If user confirms, update the shopping cart and total cost
 - Display updated shopping cart
 - d. Return to Main Loop

6. Shopping Cart Management:
 - a. Display contents of the shopping cart (items, quantities, total cost)
 - b. Provide options for adding more items, deleting items, or finalizing the purchase
 - c. If user chooses to add or delete items, update the shopping cart and total cost accordingly
 - d. If user chooses to finalize, proceed to the next step
7. Winter Special Offer:
 - a. Prompt the user for a winter special coupon code
 - b. If the code is valid, apply a discount to the total cost
 - c. Display the updated total cost
8. Payment Method:
 - a. Display payment method options (Online Payment, Cash On Delivery)
 - b. Accept user choice
 - c. Display a thank-you message based on the chosen payment method
9. End of Algorithm.

Chapter 3

Performance Evaluation

3.1 Simulation Environment/ Simulation Procedure

The experimental setup for simulating the outcomes of the Online PC Shop Management System involves the installation of the necessary software and tools. Here's a general guideline for the environment setup:

- **Operating System:** Ensure that the system has a compatible Unix-like operating system, as the code is written in Bash scripting, which is native to Unix environments.
- **Bash Shell:** Confirm the presence of a Bash shell on the system. Most Unix-based systems come with Bash installed by default.
- **Text Editor:** Choose a text editor for code editing. Common choices include Vim, Emacs, or VSCode. Ensure that the selected editor is installed on the system.
- **Version Control:** Optionally, set up a version control system like Git to manage changes in the codebase and collaborate with others.

3.2 Results Analysis/Testing

Here are the some of screenshot of output of the "Online PC Shop Management System": **Here is the homepage and user information input:**

```

ডিসেম্বর 30 20:41
tahsin-212002063@localhost: ~/Desktop/Projectfinal
tahsin-212002063@localhost:~/Desktop/Projectfinal$ ./project.sh
*****
*               Asslamualikum !!               *
*               Welcome to Our Online           *
*               PC Shop                         *
*****
Please enter your name sir           : Tahsin
Please enter your address sir        : Mohammadpur
Please enter your E-mail address sir : tahsin@gmail.com

```

Figure 3.1: Output of the project-1

After pressing enter it will show various category products.

```

ডিসেম্বর 30 20:42
tahsin-212002063@localhost: ~/Desktop/Projectfinal
*****
* 1. Computer Accessories                    *
* 2. Pre-built Desktops                     *
* 3. Laptops                                *
* 4. Exit                                    *
*****
Please enter your choice below: 

```

Figure 3.2: Output of the project-2

After pressing 1 it will show the computer accessories products. And user can buy by pressing numbers.

```

ডিসেম্বর 30 20:42
tahsin-212002063@localhost: ~/Desktop/Projectfinal
* 1. HP 32 GB Pendrive - 690 Taka          *
* 2. HP Original Wireless Mouse - 1700 Tak *
* 3. HP Original Wired Keyboard - 2200 Taka *
* 4. Exit                                    *
*****
Enter your choice: 1
Your choice is HP 32 GB Pendrive with a price of 690 Taka. Are you sure to buy?
If 'Yes' Enter 1 else any number: 1
Your Cost in Cart is 690
-----
* Tahsin's Cart                               *
-----
Id      Items                                Quantity      Cost
0       HP Original 32 Gb Pendrive           1             690
-----
Total Cost                                     690
-----
*****
* If you wish to buy anything more Enter    *
* 1. Add Item                               *
* 2. Delete Item                            *
* Any to Exit                               *
*****
Enter your choice: 

```

Figure 3.3: Output of the project-3

By pressing 1 user can add more item to buy:

```
ডিসেম্বর 30 20:43
tahsin-212002063@localhost: ~/Desktop/Projectfinal
*****
* 1. Core i3 with GTX 710 - 42000 Taka *
* 2. Core i5 with GTX 1660 - 78000 Taka *
* 3. Core i7 with GTX 1660 Ti - 92000 Taka *
* 4. Exit *
*****
Enter your choice: 
```

Figure 3.4: Output of the project-4

```
ডিসেম্বর 30 20:44
tahsin-212002063@localhost: ~/Desktop/Projectfinal
* 2. Core i5 with GTX 1660 - 78000 Taka *
* 3. Core i7 with GTX 1660 Ti - 92000 Taka *
* 4. Exit *
*****
Enter your choice: 2
Your choice is Core i5 with GTX 1660 with a price of 78000 Taka. Are you sure to
buy? If 'Yes' Enter 1 else any number: 1
Your Cost in Cart is 78690
*****
* Tahsin's Cart *
*****
Id      Items                      Quantity      Cost
0      HP Original 32 Gb Pendrive      1             690
4      Core i5 With GTX 710 Graphic    1          78000
*****
Total Cost                      78690
*****
* If you wish to buy anything more Enter *
* 1. Add Item *
* 2. Delete Item *
* Any to Exit *
*****
Enter your choice: 
```

Figure 3.5: Output of the project-5

Finally user can exit by pressing any digit and pay thorough online or cash on delivery.

```
tahsin-212002063@localhost: ~/Desktop/Projectfinal
Your total cost is 78000
Please enter Winter special coupon code : 101
Congratulations!! You got a winter special offer.
Your new cost is 77500
Please enter your payment method.
*****
* 1. Online Payment *
* 2. Cash On Delivery *
*****
Enter your choice: 1
Thanks!! For Choosing Online Payment.
Our Bkash number is 019*****
Thank You so much Tahsin for choosing us.
```

Figure 3.6: Output of the project-6

Chapter 4

Conclusion

4.1 Discussion

The project, an "Online PC Shop Management System" implemented using Bash scripting, provides a user-friendly interface for users to explore, select, and purchase computer accessories, pre-built desktops, and laptops. The system incorporates features such as a winter special offer, secure online transactions, and modular code design. During the simulation, the system demonstrated effective category navigation, shopping cart management, and seamless transaction finalization. The code's clarity and modularity facilitate easy maintenance and future enhancements. The project successfully addresses the goal of creating a functional and interactive online platform for computer-related purchases, providing users with a modern and convenient shopping experience.

4.2 Limitations

Here are the limitations of the "Online PC Shop Management System" project:

- **Command-Line Interface (CLI):** The use of a CLI may pose challenges for users unfamiliar with command-line interactions, potentially limiting the accessibility for a broader audience.
- **Limited User Feedback:** The system lacks a graphical user interface, restricting visual feedback and potentially leading to a less intuitive user experience.
- **Single-User Interaction:** The design primarily caters to a single user at a time, limiting concurrent interactions and collaboration features.
- **Scalability Challenges:** As the project expands with more categories and products, managing scalability and optimizing performance may become more challenging.
- **Dependency on Bash:** The system heavily relies on Bash scripting, which might limit cross-platform compatibility and integration with other technologies.

- **Limited Payment Methods:** The current implementation offers only basic payment methods (online payment and cash on delivery), potentially limiting choices for users.
- **Static Inventory:** The system assumes a static inventory, and updating or modifying the product catalog requires direct code changes, lacking a dynamic content management system.

4.3 Scope of Future Work

Here are the future scopes of the "Online PC Shop Management System" project:

- **User Authentication and Accounts:** Introducing user authentication and account management features could allow users to track order history, preferences, and provide a more personalized experience.
- **Dynamic Inventory Management:** Implement a dynamic inventory system that enables administrators to add, remove, or update products without altering the code, providing flexibility for future expansion.
- **Concurrency and Multi-User Support:** Enhance the system to support concurrent user interactions, allowing multiple users to interact with the platform simultaneously.
- **Mobile Application Development:** Develop a mobile application to extend the reach of the system, catering to users who prefer shopping on mobile devices, and potentially leveraging platform-specific features.
- **Dynamic Discounting Mechanisms:** Replace hardcoded coupon codes with a more dynamic discounting mechanism, allowing for flexible and real-time adjustments to seasonal offers and promotions.
- **Feedback and Rating System:** Introduce a feedback and rating system to gather user reviews, enhancing the trustworthiness of the platform and providing valuable insights for continuous improvement.
- **Advanced Payment Options:** Expand payment options to include digital wallets, credit card payments, and other emerging payment methods, offering users a broader range of choices.