TRANSPORT AND TELECOMMUNICATION INSTITUTE

ENGINEERING FACULTY

**The Online Shopping Platform**

COURSE PROJECT

in Programming

by

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# INTRODUCTION

Welcome to the documentation for "The Online Shopping Platform" project. In this section, I will provide an overview of the subject area, explain the importance of online shopping platforms and highlight the value of the program I have developed.

Subject Area:

The subject area of my project revolves around creating an efficient and user-friendly online shopping platform. Online shopping has become increasingly popular in recent years, providing convenience and accessibility to users worldwide. My program aims to enhance the shopping experience by offering a range of useful items that buyers can easily purchase from the comfort of their own homes.

## Relevant Classes and their Fields:

To make my online shop workable, I have implemented three classes. Let me briefly describe what do they consist of:

1. Buyer Class:
   * Login Username
   * Password
   * Buyer ID
   * Buyer's Name
   * Buyer's Address
   * Buyer's Phone Number
   * Buyer's Country
   * Balance (Amount the buyer has and can spend in the online shop)
2. Item Class:
   * Item Name
   * Item Price
   * Item Group
   * Item Vendor
3. Order Class:
   * Buyer's Name
   * Buyer's Address
   * Buyer's ID
   * Order ID
   * Order Date
   * Payment Status

## Relations between Classes:

The Buyer class and Item class are connected through the Order class. The Order class stores relevant information about the buyer, including their name, address, and ID. It also contains details about the order itself, such as the order ID, date, and payment status. This relationship enables efficient data manipulation and retrieval within the online shopping platform. Here is a diagram of the structure of classes and relations between them for better understanding:

Изображение выглядит как текст, снимок экрана, Шрифт, число

Автоматически созданное описание

## Main Tasks of the Project:

The main tasks of "The Online Shopping Platform" project include:

* + Implementing a user-friendly interface for buyers to browse and purchase items.
  + Managing buyer accounts, including login authentication and secure password storage.
  + Providing a seamless checkout process with order generation and tracking.
  + Ensuring accurate inventory management and updating item availability.
  + Enabling secure payment processing and tracking the payment status of orders.

By combining these functionalities, my program aims to deliver a comfortable online shopping experience for buyers. Throughout this documentation, I will see into the implementation details, usage instructions, and additional features of "The Online Shopping Platform" program.

# DESIGN

The UI/UX of "The Online Shopping Platform" is designed to provide a user-friendly and intuitive experience for buyers. The interface consists of various menus that allow users to navigate through different sections of the online shop, browse items, manage their account, and make purchases. The design has clear navigation menus, search functionality and informative item descriptions to enhance the overall user experience. Here are some examples of "The Online Shopping Platform" is design:

Изображение выглядит как текст, снимок экрана, Шрифт, число

Автоматически созданное описание

Figure 1: Log in / Sign up menu

Изображение выглядит как текст, снимок экрана, Шрифт, число

Автоматически созданное описание

Figure 2: The Main Menu

Изображение выглядит как текст, снимок экрана, Шрифт, число

Автоматически созданное описание

Figure 3: Catalog options

Изображение выглядит как текст, снимок экрана, меню

Автоматически созданное описание

Figure 4: Part of the catalog

## Declarations of Classes:

Изображение выглядит как текст, снимок экрана

Автоматически созданное описание Изображение выглядит как текст, снимок экрана

Автоматически созданное описание

Figure 5: Buyer class Figure 6: Item class

Изображение выглядит как текст, снимок экрана, Шрифт

Автоматически созданное описание

Figure 7: Order class

In "The Online Shopping Platform," several functions play a crucial role in its functionality and overall user experience. These functions contribute to various aspects of the platform, including user management, item management, cart management, and file handling. For example, here are two algorithms that are written in a pseudocode:

**Func** removeSelectedItem

function removeSelectedItem(filename, item\_name)

read binary file (filename)

write binary file (temp)

Item item

while (end of file filename)

read objects item in filename

if object item item\_name doesnt equal item\_name

write object item to temp file

close file for reading

close file for writing

remove binary file filename

rename binary file temp to filename

**Func filterItemsByPrice**

vector object Item filterItemsByPrice (vector object Item items, maximum price)

vector object Item filteredItems

for item in vector items

if item's price is less or equal to maximum price

add item into vector filteredItems

return vector filteredItems

The program has a lot of useful functions and for better understanding, they are described in a detail in a CPP files. Every function has detailed description above them. Moreover, all data – buyer’s information, selected items from catalog, orders – are stored in binary files where each user has his own one – username.bin; username\_item.bin, username\_last\_order.bin. These functions collectively contribute to the core functionality of "The Online Shopping Platform," supporting user management, item management, cart management, and efficient handling of data through file operations. Their proper implementation ensures a smooth and intuitive user experience, making the platform more user-friendly and appealing to both buyers and sellers.

# TESTING

## Option 1 – Sign up

1. **Correct input:**

Enter your login username: Windows

Enter your login password: 4567sd

Enter your full name: John Doe

Enter country you are living in: Poland

Enter your phone number: +48 22234523

Enter your address: Jessiena 77

-------------------------------------

Please Log in into your account

Enter your login username: Windows

Enter your login password: 4567sd

Login successful!

**Result: Pass**

1. **Incorrect input for full name:**

Enter your login username: Windows

Enter your login password: 456sd

Enter your full name: Joh4 Do3

Invalid full name.

Please enter a valid full name:

…

**Result: Pass**

1. **Incorrect input for country:**

Enter your login username: Windows

Enter your login password: 456sd

Enter your full name: John Doe

Enter the country you are living in: P0land

Invalid country.

Please enter a valid country:

…

**Result: Pass**

1. **Incorrect input for phone number:**  
   Enter your login username: Windows

Enter your login password: 456sd

Enter your full name: John Doe

Enter the country you are living in: Poland

Enter your phone number (including dialing code): 482323243

Invalid phone number.

Please enter a valid phone number (including dialing code):

**…**

Please enter a valid phone number (including dialing code): +sfyyfysafg

Invalid phone number.

Please enter a valid phone number (including dialing code):

**Result: Pass**

## Option 2 – Log in

1. **Correct input:**

Enter your login username: Windows

Enter your login password: 456sd

Login successful!

**Result: Pass**

1. **Incorrect username:**

Enter your login username: WindoWW

Username doesn't exist!

**Result: Pass**

1. **Incorrect password:**Enter your login username: Windows

Enter your login password: 456sD

Incorrect username or password!

**Result: Pass**

## Option 3 – Password changer:

1. **Correct input for identification:**

Enter your login username: Windows

To change the password, we need to make sure that the account is yours.

Enter your full name: John Doe

Enter your phone number: +482236463

Enter your new password: sd654

Password changed successfully!

**Result: Pass**

1. **Incorrect input for full name:**

Enter your login username: Windows

To change the password, we need to make sure that the account is yours.

Enter your full name: John Deo23

Enter your phone number: +482236463

type std::runtime\_error: Incorrect information provided for password change!

**Result: Pass**

1. **Incorrect username:**

Enter your login username: Window$

To change the password, we need to make sure that the account is yours.

Enter your full name: John Doe

Enter your phone number: +482236463

Error opening file for reading!

**Result: Pass**

1. **Incorrect input for phone number:**

Enter your login username: Windows

To change the password, we need to make sure that the account is yours.

Enter your full name: John Doe

Enter your phone number: +38273423

type std::runtime\_error: Incorrect information provided for password change!

## Option 4 – Selecting items / viewing cart:

1. **Selecting items from normal Item catalog and viewing them in the cart:**

\*Item table\*

Select an item to add to your cart (Enter 0 to exit): 5

\*Item table\*

Select an item to add to your cart (Enter 0 to exit): 2 3

Selected items:

Item: Sony WH-CH510

Price: 349$

Item Group: Electronics

Vendor: Sony

-----------------------------

Item: Samsung S21

Price: 799$

Item Group: Electronics

Vendor: Samsung

-----------------------------

Item: Nike Air Max

Price: 150$

Item Group: Footwear

Vendor: Nike

-----------------------------

Total Price: 1298$

Your order ID: 1

**Result: Pass**

1. **Items filtered by vendors. Viewing cart:**

Choose Unique Vendor:

Adidas Apple Canon Dell H&M Levi's Nike Samsung Sony Zara

----------------------------------------------------------------

--> Apple

\*Filtered Item table\*

Select an item to add to your cart (Enter 0 to exit): 1

-----------------------

Item added to the cart.

-----------------------

Select an item to add to your cart (Enter 0 to exit): 0

Selected items:

Item: Iphone 14

Price: 999$

Item Group: Electronics

Vendor: Apple

-----------------------------

Total Price: 999$

Your order ID: 1

**Result: Pass**

1. **Items filtered by price range. Viewing cart:**

Enter the maximum price: 678

\*Filtered Item table\*

Select an item to add to your cart (Enter 0 to exit): 5

-----------------------

Item added to the cart.

-----------------------

\*Filtered Item table\*

Select an item to add to your cart (Enter 0 to exit): 0

Selected items:

Item: Levi's Jeans

Price: 60$

Item Group: Clothes

Vendor: Levi's

-----------------------------

Total Price: 60$

Your order ID: 1

**Result: Pass**

1. **Items filtered by categories. Viewing cart:**

Choose Unique Group:

Clothes Electronics Footwear

----------------------------------------------------------------

--> Footwear

\*Filtered item table\*

Select an item to add to your cart (Enter 0 to exit): 3

-----------------------

Item added to the cart.

-----------------------

Select an item to add to your cart (Enter 0 to exit): 0

Selected items:

Item: Nike Air Jordan

Price: 200$

Item Group: Footwear

Vendor: Nike

-----------------------------

Total Price: 200$

Your order ID: 1

**Result: Pass**

1. **Items sorted by price (Lowest first). Viewing cart:**

\*Sorted Item table\*

Select an item to add to your cart (Enter 0 to exit): 1

-----------------------

Item added to the cart.

-----------------------

Select an item to add to your cart (Enter 0 to exit): 13

-----------------------

Item added to the cart.

-----------------------

Select an item to add to your cart (Enter 0 to exit): 0

Selected items:

Item: T-shirt

Price: 30$

Item Group: Clothes

Vendor: H&M

-----------------------------

Item: Apple MacBook Pro

Price: 1999$

Item Group: Electronics

Vendor: Apple

-----------------------------

Total Price: 2029$

Your order ID: 1

**Result: Pass**

1. **Items sorted by price (Highest first). Viewing cart:**

\*Sorted Item table\*

Select an item to add to your cart (Enter 0 to exit): 1

-----------------------

Item added to the cart.

-----------------------

Select an item to add to your cart (Enter 0 to exit): 13

-----------------------

Item added to the cart.

-----------------------

Select an item to add to your cart (Enter 0 to exit): 0

Selected items:

Item: Apple MacBook Pro

Price: 1999$

Item Group: Electronics

Vendor: Apple

-----------------------------

Item: T-shirt

Price: 30$

Item Group: Clothes

Vendor: H&M

-----------------------------

Total Price: 2029$

Your order ID: 1

**Result: Pass**

1. **Incorrect input for choosing:**

\*Item table\*

Select an item to add to your cart (Enter 0 to exit): D

--> Incorrect input!

**Result: Pass**

1. **Viewing cart when it’s empty:**

--> C

std::runtime\_error: Please, fill your cart before opening it!

**Result: Pass**

1. **Adding items from different tables. Viewing cart:**--> I

\*Item table\*

Select an item to add to your cart (Enter 0 to exit): 3

Select an item to add to your cart (Enter 0 to exit): 0

--> R

Enter the maximum price: 450

\*Filtered item table by price range\*

Select an item to add to your cart (Enter 0 to exit): 3

-----------------------

Item added to the cart.

-----------------------

Select an item to add to your cart (Enter 0 to exit): 0

--> H

\*Sorted Item table by highest price first\*

Select an item to add to your cart (Enter 0 to exit): 3

-----------------------

Item added to the cart.

-----------------------

Select an item to add to your cart (Enter 0 to exit): 0

Selected items:

Item: Nike Air Max

Price: 150$

Item Group: Footwear

Vendor: Nike

-----------------------------

Item: Sony WH-CH510

Price: 349$

Item Group: Electronics

Vendor: Sony

-----------------------------

Item: Canon EOS 80D

Price: 1199$

Item Group: Electronics

Vendor: Canon

-----------------------------

Total Price: 1698$

Your order ID: 1

**Result: Pass**

## Option 5 – Cart options:

1. **Removing Item:**

Selected items:

Item: Nike Air Max

Price: 150$

Item Group: Footwear

Vendor: Nike

-----------------------------

Item: Sony WH-CH510

Price: 349$

Item Group: Electronics

Vendor: Sony

-----------------------------

Item: Canon EOS 80D

Price: 1199$

Item Group: Electronics

Vendor: Canon

-----------------------------

Total Price: 1698$

Your order ID: 1

--> R

Enter the name of the item to remove: Canon EOS 80D

Selected items:

Item: Nike Air Max

Price: 150$

Item Group: Footwear

Vendor: Nike

-----------------------------

Item: Sony WH-CH510

Price: 349$

Item Group: Electronics

Vendor: Sony

-----------------------------

Total Price: 499$

Your order ID: 1

**Result: Pass**

1. **Incorrect input for removing item:**

Selected items:

Item: Nike Air Max

Price: 150$

Item Group: Footwear

Vendor: Nike

-----------------------------

Item: Sony WH-CH510

Price: 349$

Item Group: Electronics

Vendor: Sony

-----------------------------

Total Price: 499$

Your order ID: 1

--> R

Enter the name of the item to remove: Nike Air Pac

--> C

Selected items:

Item: Nike Air Max

Price: 150$

Item Group: Footwear

Vendor: Nike

-----------------------------

Item: Sony WH-CH510

Price: 349$

Item Group: Electronics

Vendor: Sony

-----------------------------

Total Price: 499$

Your order ID: 1

--> R

Enter the name of the item to remove: 432342443

--> C

Selected items:

Item: Nike Air Max

Price: 150$

Item Group: Footwear

Vendor: Nike

-----------------------------

Item: Sony WH-CH510

Price: 349$

Item Group: Electronics

Vendor: Sony

-----------------------------

Total Price: 499$

Your order ID: 1

**Result: Pass**

## Option 6 – Making an order:

1. **Confirming order with no funds available:**Order ID: 1

Buyer ID: 1

Buyer's Full Name: John Doe

Order Date: 2023-05-31 13:29:45

Buyer Address: Jessiena 77

Total Price: 499$

Funds available: 0$

Status: No

----------------------------------

Please, check your order before comfirming it!

-> C

You have have enough balance to purchase these items!

Please, add funds to your balance.

**Result: Pass**

1. **Confirming order with equal amount of funds to total price:**

Order ID: 1

Buyer ID: 1

Buyer's Full Name: John Doe

Order Date: 2023-05-31 13:29:45

Buyer Address: Jessiena 77

Total Price: 499$

Funds available: 499$

Status: No

----------------------------------

Please, check your order before comfirming it!-> C

Thank you for your purchase!

**Result: Pass**

## Option 7 – Viewing buyer’s information:

1. **Viewing buyer's information:**

--> V

Buyer info:

Username: Windows

ID: 1

Name: John Doe

Country: Poland

Phone number: +482236463

Address: Jessiena 77

**Result: Pass**

## Option 8 – Balance:

1. **Adding funds to balance:**

--> B

Current Balance: 0$

-----------------------------

--> A

Enter the amount to add: 1000

Updated Balance: 1000$

-----------------------------

--> B

Current Balance: 1000$

-----------------------------

**Result: Pass**

## Option 9 – Last order history:

1. **Reading binary file with history, if it doesn’t exist:**

--> L

terminate called after throwing an instance of 'std::runtime\_error'

what(): Please, fill your cart before opening it!

**Result: Pass**

1. **Reading binary file with history, if it exists:**

--> L

Selected items:

Item: Iphone 14

Price: 999$

Item Group: Electronics

Vendor: Apple

-----------------------------

Total Price: 999$ **Result: Pass**

# Results

**Изображение выглядит как текст, снимок экрана, Шрифт, линия

Автоматически созданное описание**

**1 – Logging into account to gain access to the shop. After logging in, I have options what I want to do. For instance, I want to buy a new phone.**

**Изображение выглядит как текст, снимок экрана, Шрифт

Автоматически созданное описание**

**2 – In order to buy something, we need money, so I choose B option to check my balance. My current balance is 1$, so I need to add more money to my balance, if I want to buy something good.**

**Изображение выглядит как текст, снимок экрана, Шрифт, число

Автоматически созданное описание**

**3 – After adding more money to my balance, I will choose option A, to check available items.**

**Изображение выглядит как текст, снимок экрана, Шрифт, число

Автоматически созданное описание**

**4 – Due to I want to buy a new phone, I will chose option C, to filter item list by Electronics group.**

**Изображение выглядит как текст, снимок экрана, Шрифт, число

Автоматически созданное описание**

**5 – And here we go. Iphone 14 costs exactly 999$. What a lucky day! I will add it to my cart!**

**Изображение выглядит как текст, снимок экрана, Шрифт

Автоматически созданное описание**

**6 – After checking my cart, I would like to confirm my order.**

**Изображение выглядит как текст, снимок экрана, Шрифт

Автоматически созданное описание**

****

**7 – And there we go, I just bought a new Iphone 14 for 999$. Now I can check my last order in the main menu.**

**Изображение выглядит как текст, снимок экрана, Шрифт

Автоматически созданное описание**

# Conclusion

Reflecting on this course project, I must admit that it was an incredibly challenging task for me. However, amidst the difficulties, there were numerous advantages to be gained. Throughout the project, I learned something new, acquired valuable skills such as utilizing new functions for reading, writing, and converting data types. These newfound abilities will undoubtedly prove invaluable in my future undertakings.

As the deadline approached, I encountered a multitude of obstacles that tested my patience 😊 and problem-solving abilities. Working on macOS initially presented no issues, but when I attempted to transfer my code to a Windows environment, I was confronted with a perplexing predicament. It became evident that the two operating systems employed distinct methods for reading and writing binary files, resulting in a conflict within my code. Consequently, I had to thoroughly rewrite a significant portion of my work, leaving me concerned that unnoticed errors may have slipped through the cracks due to time constraints.

Linking classes correctly was not an easy task for me. Determined to overcome this problem, I embarked on extensive research in search of solutions that would allow me to successfully complete this coursework. Although my code may appear somewhat unrefined, this project has offered me a valuable firsthand experience of crafting my own software, albeit on a smaller scale.

To sump up, I have resolved to prioritize the Windows platform for my future projects and labs, as my encounters with macOS have frequently resulted in unnecessary complications. In summary, despite the time constraints and the desire for more testing, bug fixing, and the inclusion of additional features, I am grateful for the immense learning experience this project has provided me. It has equipped me with the confidence to undertake future programming endeavors and has served as a stepping stone towards my growth as a developer.