QBC

User Manual

Author: Aporrhia

2024

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1. Introduction

The project was named “Quantum Business Center” (QBC). The WEB application was built to simulate bank transactions by sending a certain sum of the money from one account to another. By logging in or registering a new account users can access their personal cabinet to view information about their account.

1.1. Overview

The main functionality of this WEB application is to transfer money from one account to another by filling certain fields provided by the form on the page. As well as to see all transactions that were completed through the whole time for logged in account. When clicking on the chosen transaction, the information about the transaction will be displayed with information about it. In addition to it, it is possible to generate and download PDF file with all necessary details about certain transaction.

Another possibility of this application is to add cards for the account. Going to the cards page, the ability to add cards with two branches is provided, these branches can be both Mastercard and Visa branches. These cards are used when a new transaction is being created. User must select one of the cards they have, in order to proceed with completion of the transaction. Account holders can also delete cards from their account.

On the homepage of the Quantum Business Center web application, clients are welcomed with an overview of their account, providing essential information in a user-friendly format. This includes details such as name, surname and current balance. Additionally, clients are provided with a convenient feature allowing them to write down notes for any specific needs or reminders they may have regarding their account. This feature is a practical tool for users to keep track of important information, such as future expenses or transaction references.

Moreover, clients of the QBC web application have access to the settings page, offering a detailed overview of their account. Within this section, users can review account details, including personal information. In addition, on the settings page a certain red button exists to delete clients’ accounts if there is a need to do that.

2. Installation Manual

2.1 Requirements

Before continuing with the manual, please be sure to check the requirements provided below. Make sure requirements are met.

Links to download necessary software requirements and dependencies will be provided in the next section.

System Requirements (Minimum)

Operating System:	Windows 8/10/11
CPU:	Intel(R) Core(TM) i5-5300U CPU
Cores:	2
System:	x64
RAM:	4.00 GB
Free Disk Space:	5 GB

Software Requirements

Visual Studio Code

MySQL Workbench

MySQL Server

Dependencies

Extension Pack for Java for Visual Studio Code

Spring Boot Extension Pack for Visual Studio Code

2.2 Installation of Software Requirements

If any of the requirements are already installed, it is possible to skip to the step needed.

Visual Studio Code

To download the environment from where the project will be started, please download Visual Studio Code and complete the basic installation steps provided by the Microsoft installer.

Visual Studio Code (https://code.visualstudio.com/)

MySQL Workbench and MySQL Server

One more important component of the project is the DataBase manager to store and manage data. Therefore, please download and install MySQL Installer and follow installation steps provided by the installer.

MySQL Installer (https://dev.mysql.com/downloads/installer/)

After installation is complete, please launch the MySQL Installer. The MySQL Installer Window with MySQL products will be opened. Please, be sure that MySQL Server and MySQL Workbench are installed. (Fig. 1)

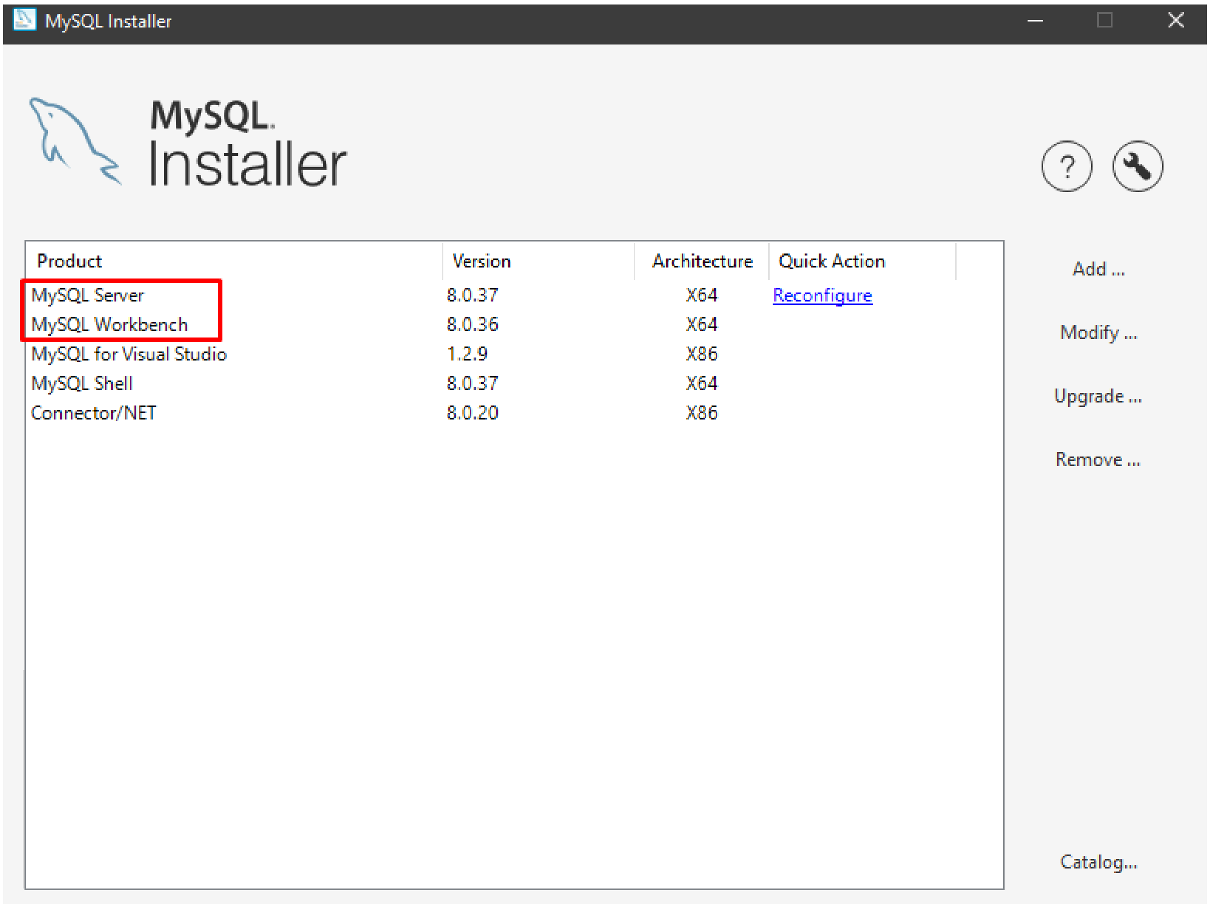

Fig. 1 MySQL Installer Window

If these products are not installed, click the Add option on the right side of the screen. There will be a dropdown menu of MySQL products. Please, select MySQL Server and MySQL Workbench options to install (preferred to choose the latest version). Once the product will be highlighted, the arrow in between the two boxes will be green and click on it to move products to be installed (Fig. 2).

After, proceed with the installation process by clicking the Next option in the bottom right.

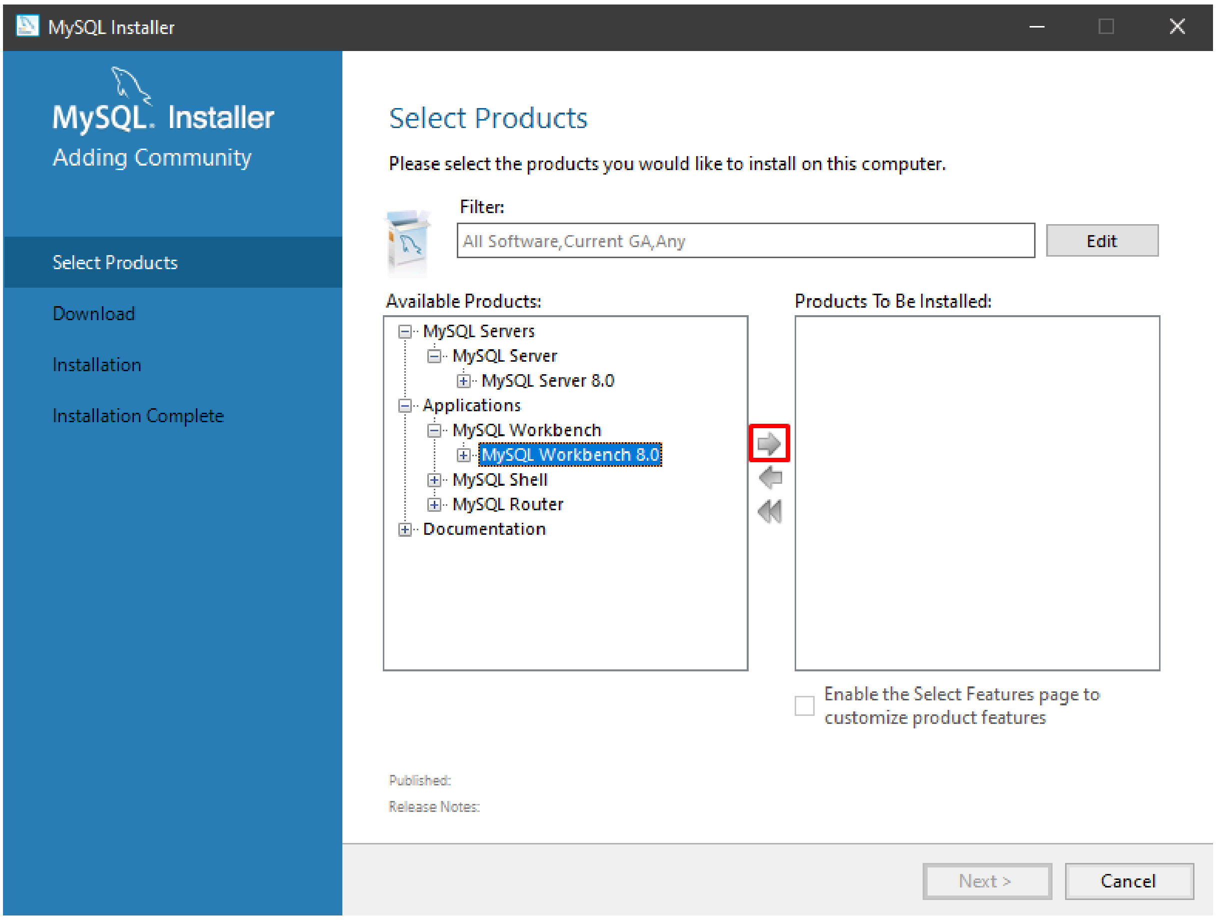

Fig. 2 Products installation window

On the MySQL Server configuration step, leave everything default. Please, be sure that the port is **3306** (Fig. 3) and set the password for the MySQL root to **0000** (Fig. 4). Because the project uses these data to connect to the database and work with data there.

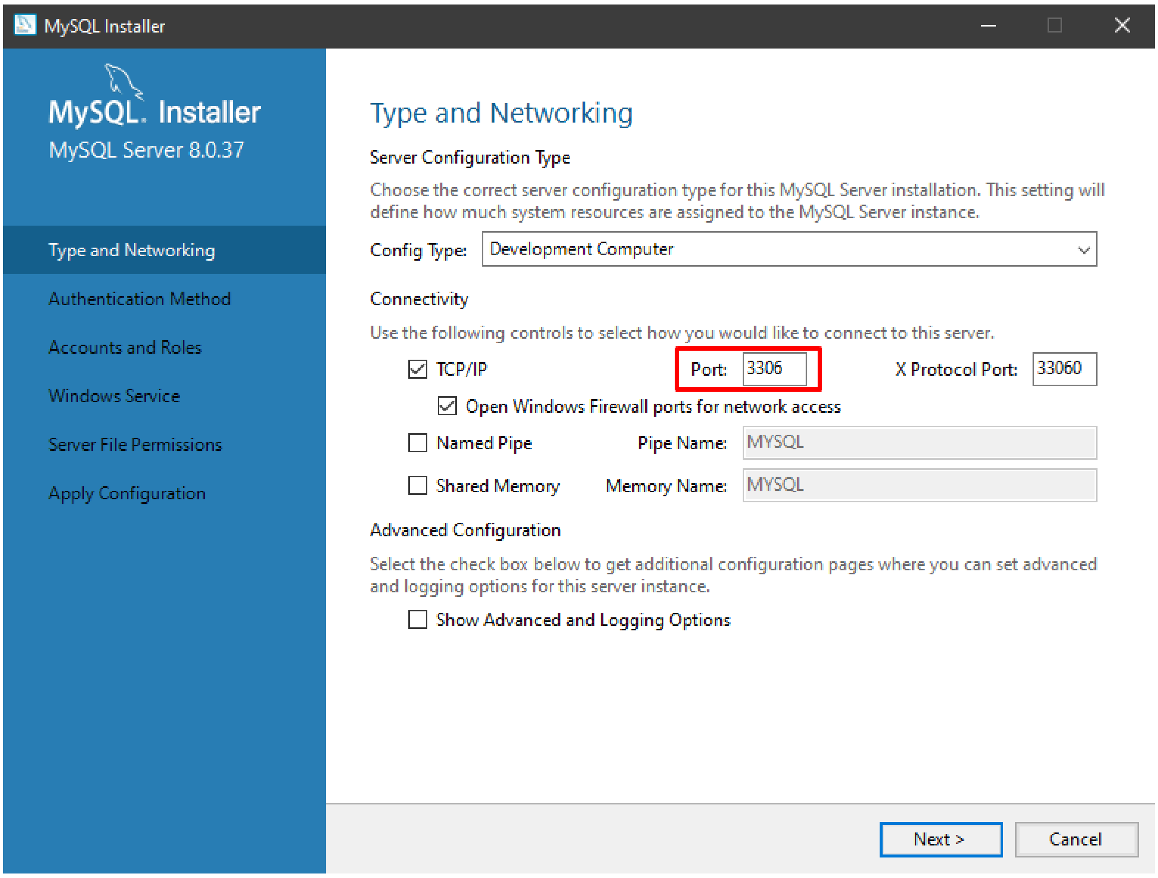

Fig. 3 Port configuration

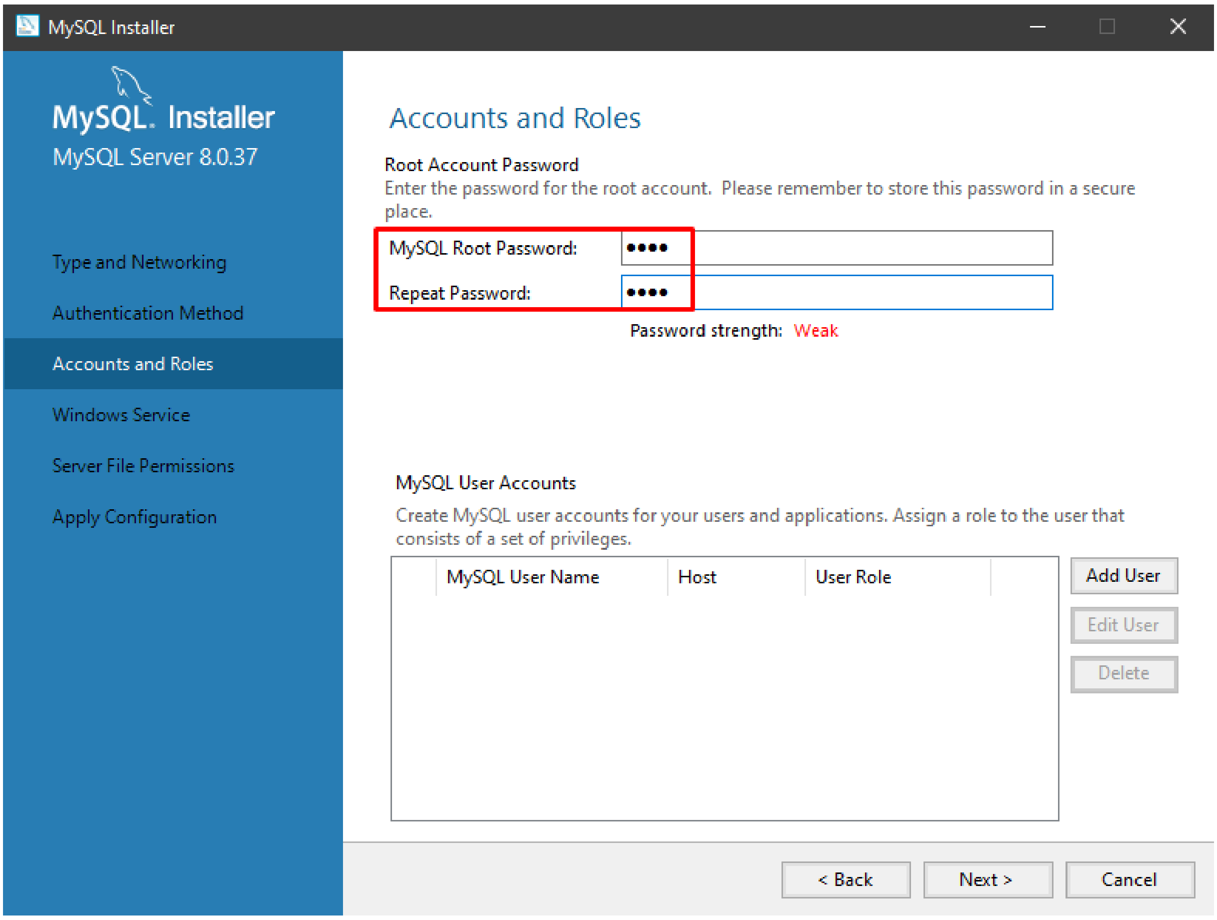

Fig. 4 Root password configuration

When both products are installed, it is now possible to launch MySQL Workbench. After the software is launched, there will be **Local instance MySQL80** by default. (Fig. 5)

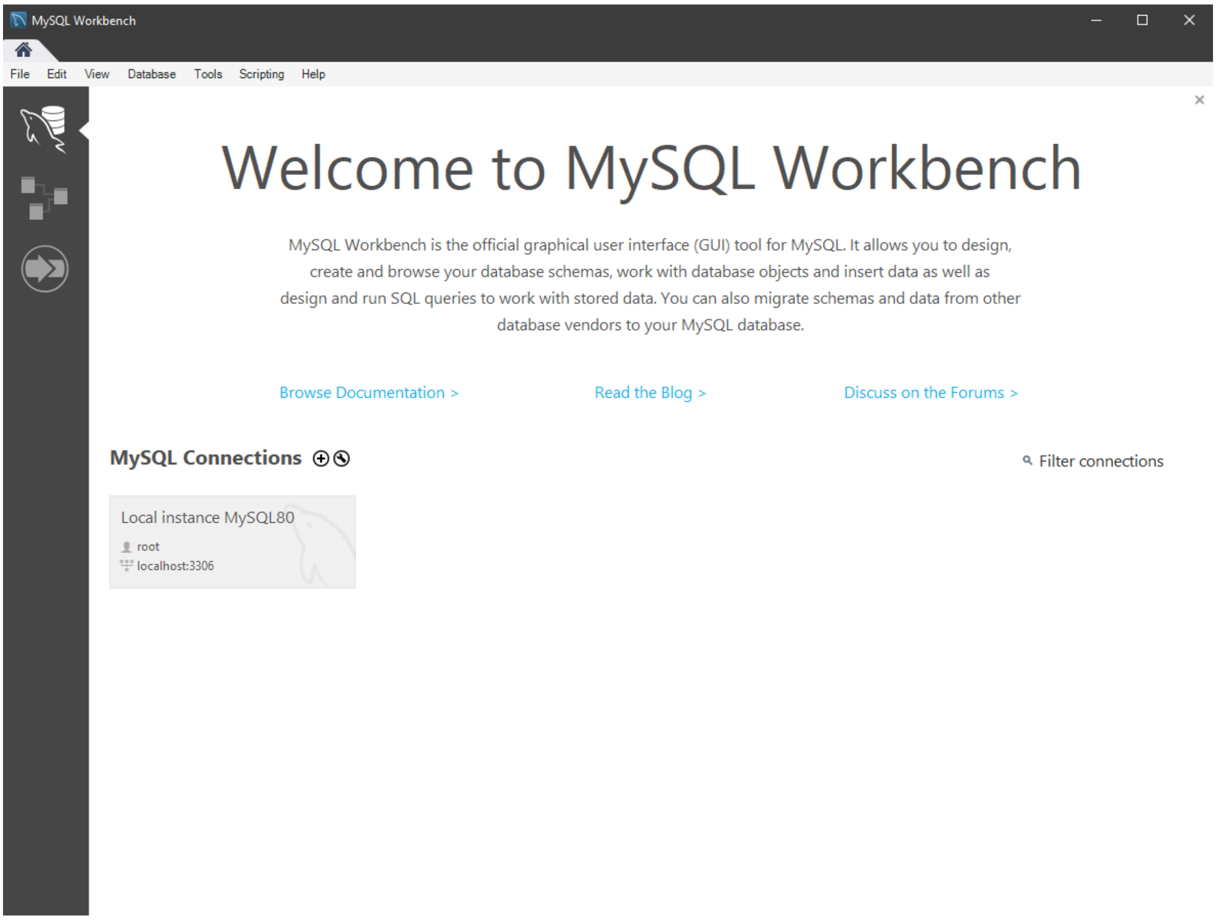

Fig. 5 Local instance connection

Whether the default connection was not created, then create it manually by pressing plus sign. Please, fill the fields as shown on (Fig. 6).

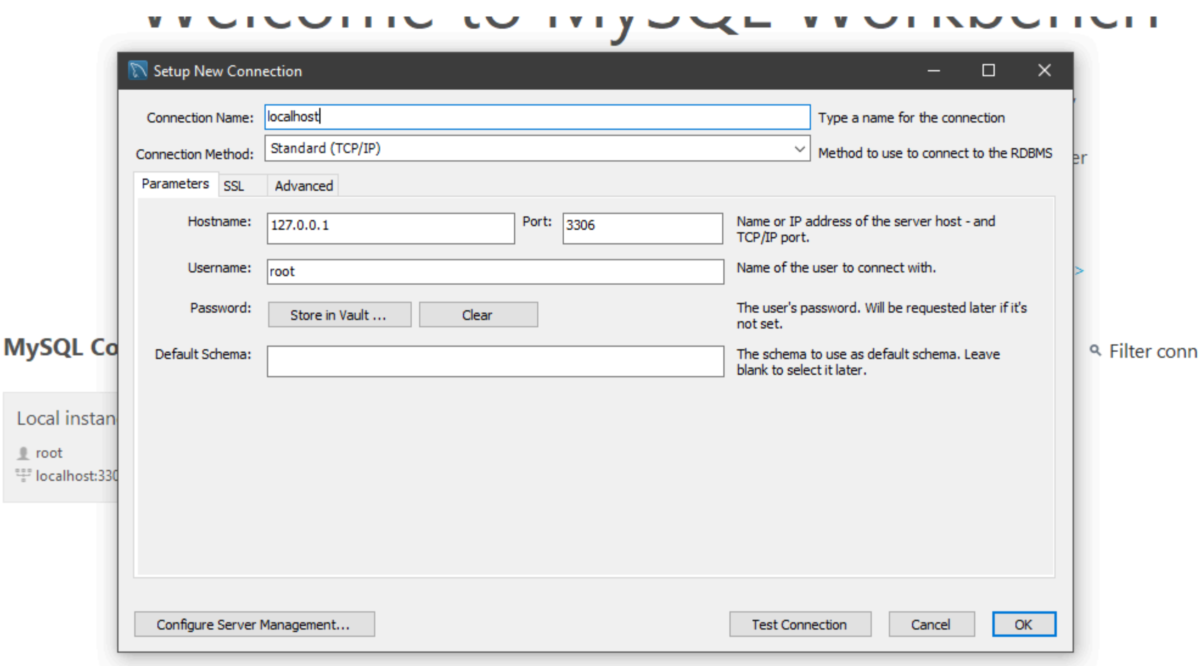

Fig. 6 Create new database connection

2.3 Installation of Dependencies

Next, it is the must to download and install dependencies for Visual Studio Code. They can be accessed in two ways.

The first one, through the links that leads to Microsoft website:

Extension Pack for Java:

(https://marketplace.visualstudio.com/items?itemName=vmware.vscode-boot-dev-pack)

Spring Boot Extension Pack:

(https://marketplace.visualstudio.com/items?itemName=vscjava.vscode-java-pack)

The second one, directly in the Visual Studio Code by going to the **Extensions** option on the left sidebar (Fig. 7).

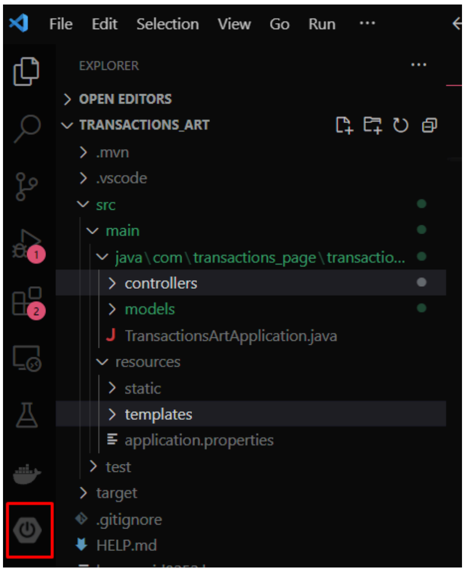

Fig. 7 Extensions option

In the search bar enter codes provided below, to install dependencies:

- Extension Pack for Java: code: vscjava.vscode-java-pack (Fig. 8)
- Spring Boot Extension Pack: code: vmware.vscode-boot-dev-pack (Fig. 9)

Both title and code can be searched, however for reliability, use codes.

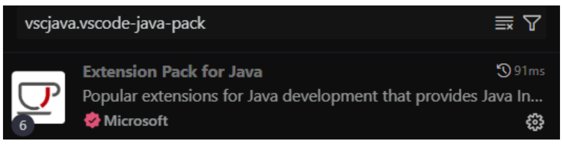

Fig. 8 Extension Pack for Java code

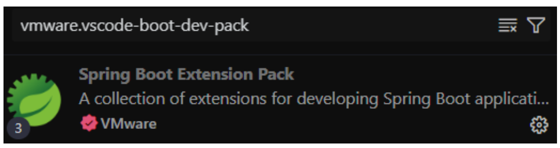

Fig. 9 Spring Boot Extension Pack code

3. User Manual

3.1 Starting the project

To start the project, go to the Spring Boot option on the left sidebar. (Fig. 10)

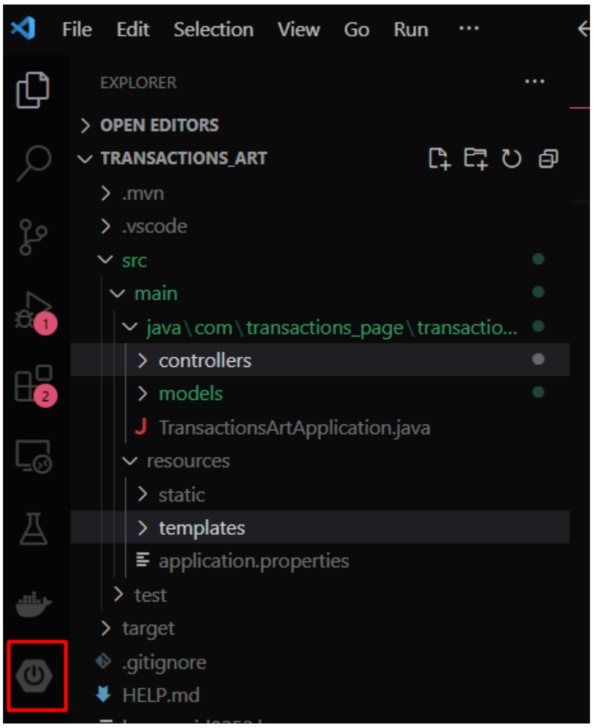

Fig. 10 Spring Boot option

Then click on the start button (Fig. 11).

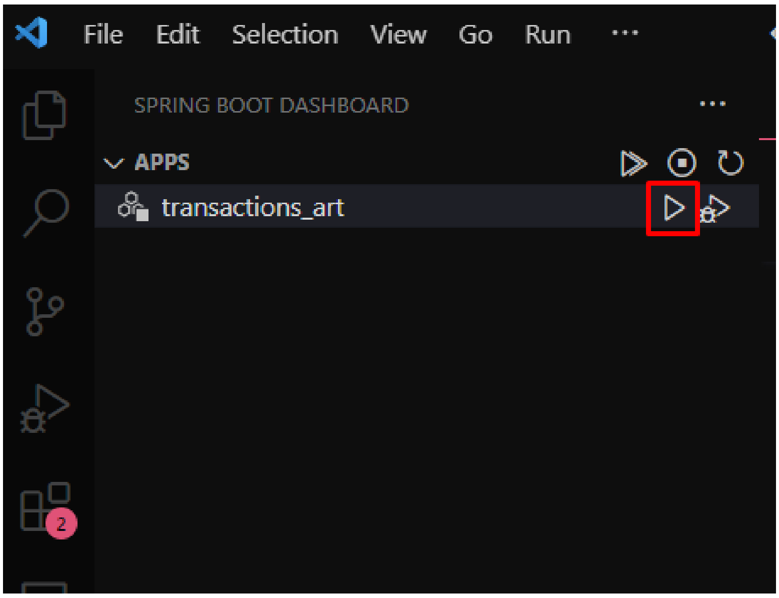

Fig. 11 Button to start the project

After the project has started, go to the browser and visit the project link: http://localhost:8080/

3.2 Signing in

Log In

Please, log in here (Fig. 12). For demonstration purposes in this manual, example data will be used.

Example data:

Country Code:	*34 (Spain)*
Phone Number:	*455234195*
Password:	*dneqwu*Yh3n*

Click on the dropdown menu in the first field. The list of country phone codes will open. Then scroll through the list and choose the country's phone code that is necessary. After, in the next field, please, enter the phone number of the account. Make sure to exclude the country code from this field as it has already been selected in the previous step of choosing the country's phone code. In the end, enter the password for the account to log in.

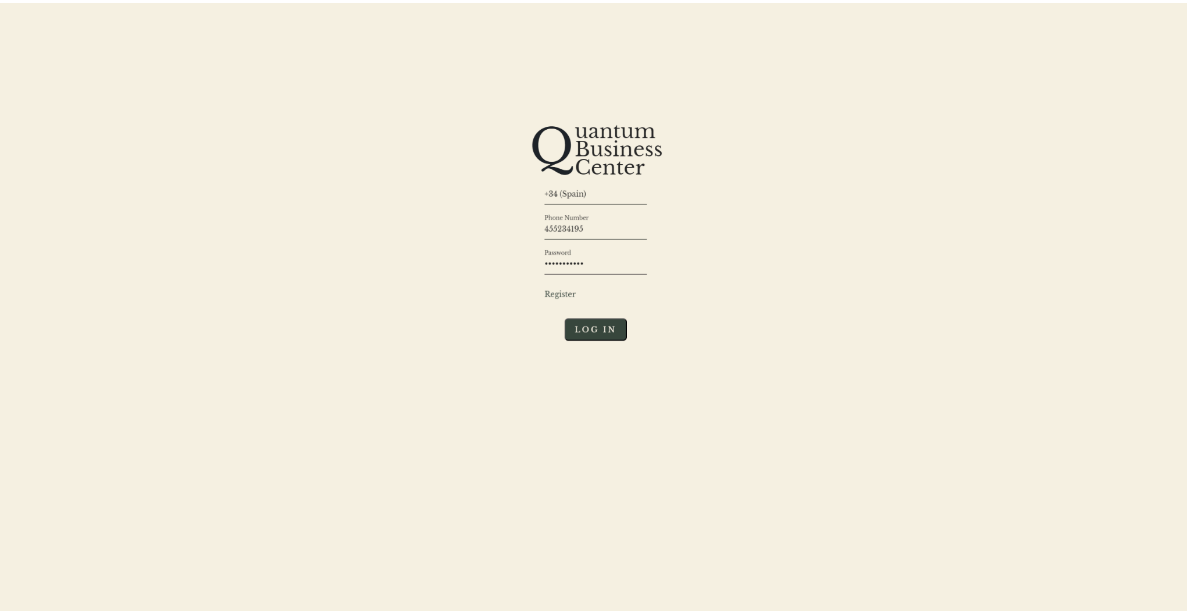

Fig. 12 Log In

After logging in, it will transfer to the account home page where the welcome title will be displayed with general information of the account. (Fig. 16)

Registration

At the Login page in the left bottom corner of the Login form can be seen the Register button (Fig. 12). By clicking on that button, the registration form will be shown. (Fig. 13)

To register a new account, please, follow instructions below.

In the beginning, please, provide the First name, as well as the Last name in the field below. The next field is for the email, enter the correct email, corresponding to the general form of the email, otherwise it will not be possible to register a new account. Next, select the date of birth, also check that the date is selected correctly and the registering client is older than 18 years old. If the set date is the correct one, the registration will not be possible. (Fig. 15)

After filling all these fields, click on the button **Next** to go to the next page of the registration form. (Fig. 14)

Firstly, choose the country and country's phone code for the phone number from the list of all available options. Scroll through and click on the country's phone code. Secondly, provide the phone number, without the phone code, because it was chosen with the country. Thirdly, choose the bank where the account will be registered. Different banks are set up in different countries. Lastly, please write the password for the account, as well as confirm the password in the field below.

In the end, click the **Register** button. If every field is correct, then registration will be successful and will transfer to the Login page, where it is necessary to Login with a newly created account. (Fig. 12)

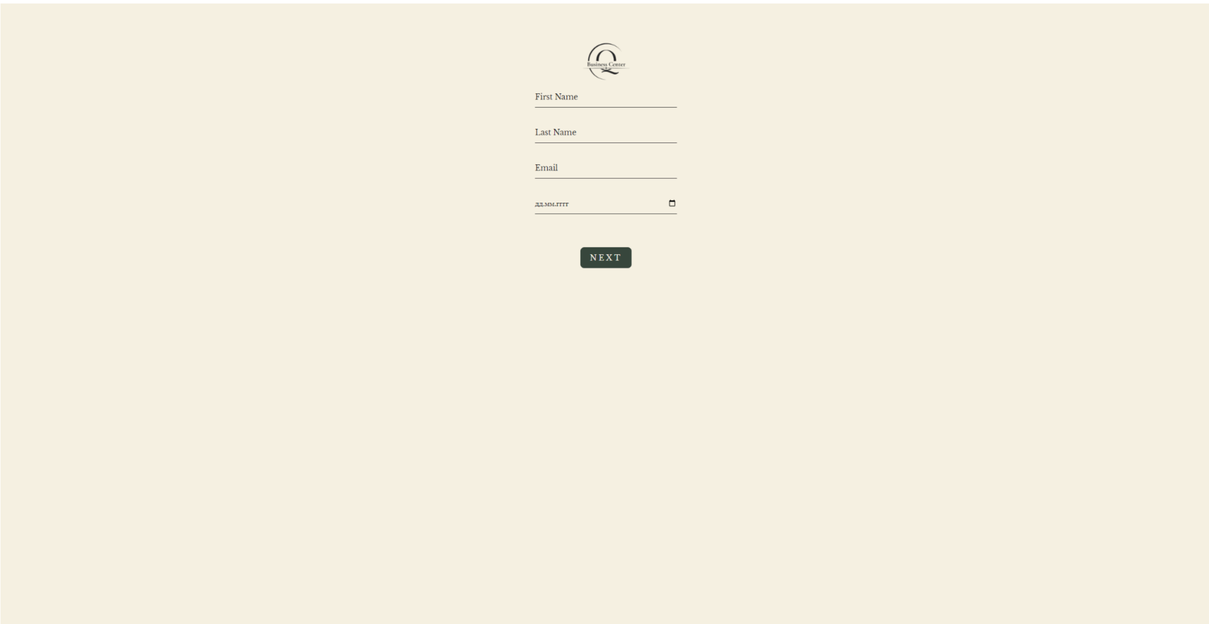

Fig. 13 First page of the registration form

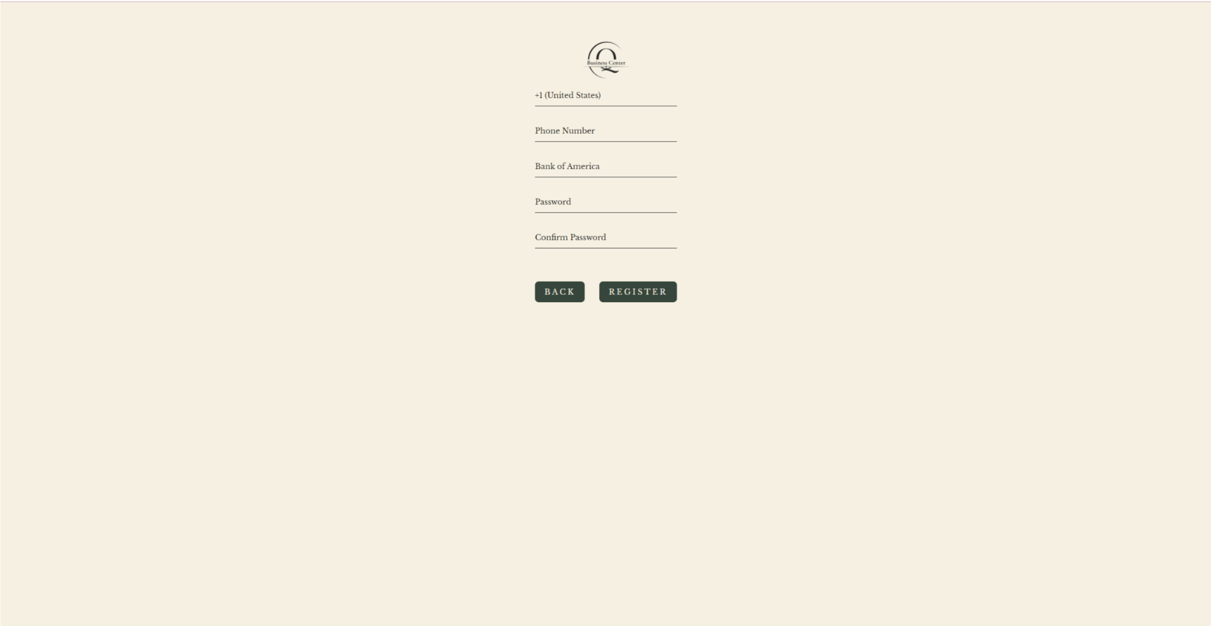

Fig. 14 Second page of the registration form

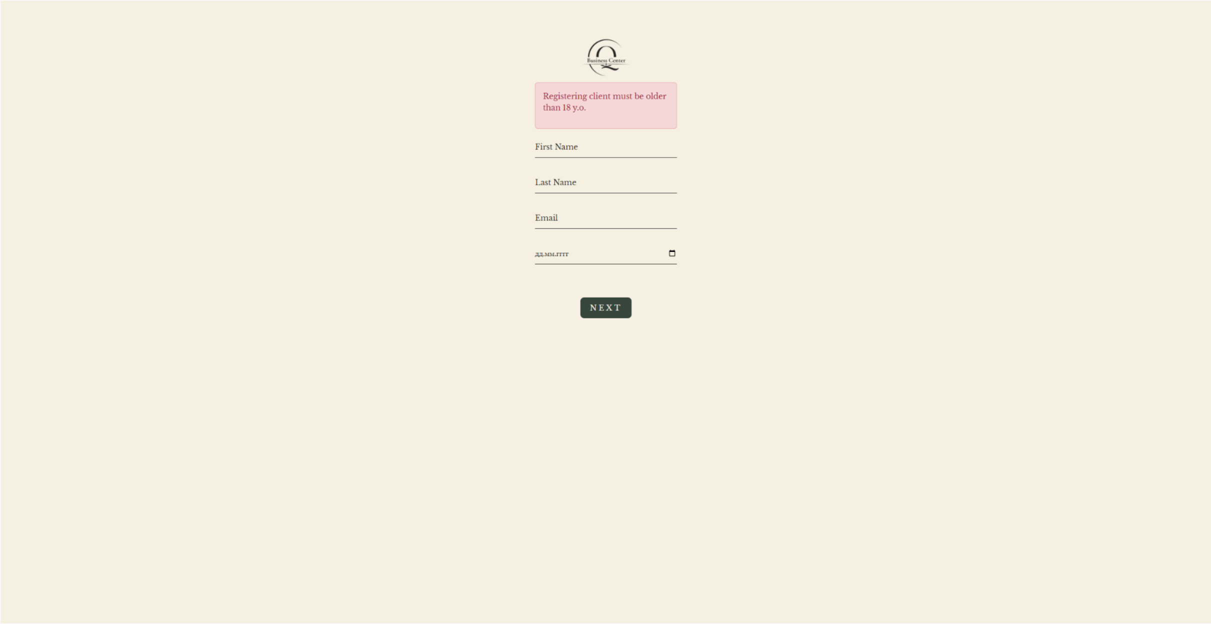

Fig. 15 Incorrect date of birth

3.3 Personal Cabinet Usage

Account Home Page

After the successful login, the home page will be welcoming returning or new clients (Fig. 16). To understand each element, this home page will be described by parts.

Fig. 16.1: This is the logo of the QBC project, located in the head of the webpage.

Fig. 16.2: Logout button, by clicking on this button, immediately the client will be logged out of the account. It persists in the head of the webpage, for convenience.

Fig. 16.3: Navigation bar of the website. There can be seen four options: Home, Transactions, Cards and Setting. Home - is the place which client sees after logging in, in other words, the page is described right now. Other options will be described later in the manual, corresponding to their section.

Fig. 16.4: This is the general information that displays. The current balance and the amount that was sent to other people in total.

Fig. 16.5: This is the free space to take a note, write down some information or an idea so as not to forget about it. By clicking the **Update** button, it will save / update the current note that is written in that space. If the note is not usable anymore or has no intentions to leave it there, it is possible to click the **Delete** button. It clears the field and deletes the note that was written there.

Fig. 16.6: Lastly, this is a footer field with other information, such as Socials, Useful Links and Connections. In the Socials is provided the author's page. In Useful Links settings and help categories can be found. In the last column, as information is provided the address of the QBC.

Forward on, the information of the header, navigation bar and footer will not be described again.

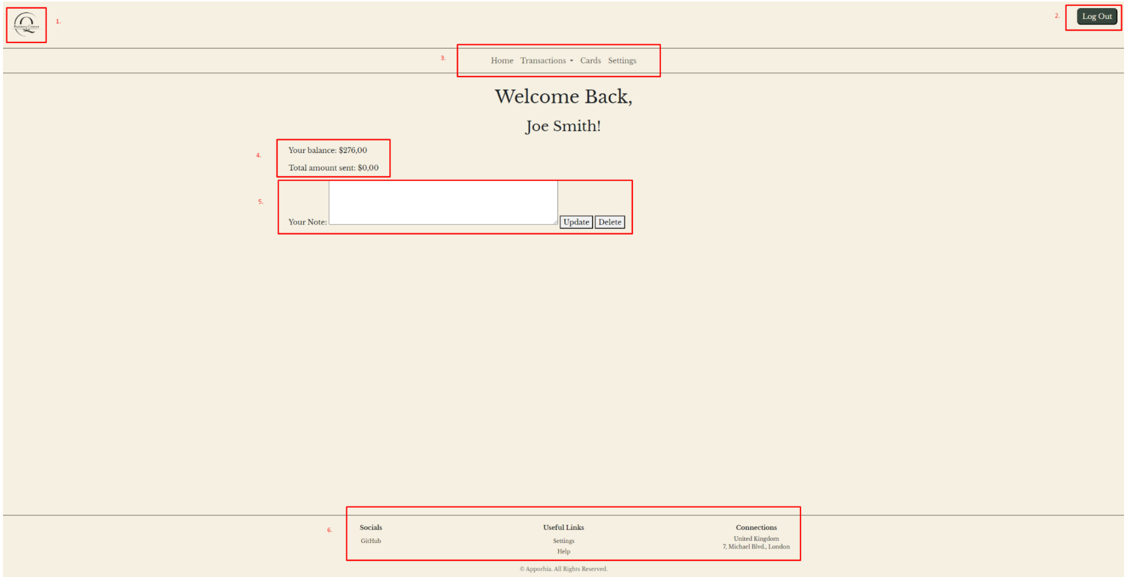

Fig. 16 Account home page

Cards

In this section will be described how cards are added to the account and removed from the account. Because cards are mandatory for the transactions to be complete, it is necessary to add / create new cards. (Fig. 17)

Here are presented few fields that need to be filled for the card. In the first option is the list of two types of cards: Debit and Credit. Please, choose one of the options.

In the next field, provide a card number. There are few constraints for this field, such as:

- Length of the card number. It must be exactly 16 digits.
- If the card number starts with 4, then it will be a Visa type card.
- If the card number starts from 51 to 55, then it will be a MasterCard type card.

For the next two fields, the expiration date must be selected. In the **Month** field need to select the month, and in the **Year** field select the year. The date must be at least a month from the current date (the date the card is being created). If the date is incorrect, then the error will be displayed, saying that the expiration date is invalid. (Fig. 18)

After that just click the button **Create Card** to create the card.

Example card:

Type: *Debit*

Card Number: *5312689224344423*

Month: *12*

Year: *2025*

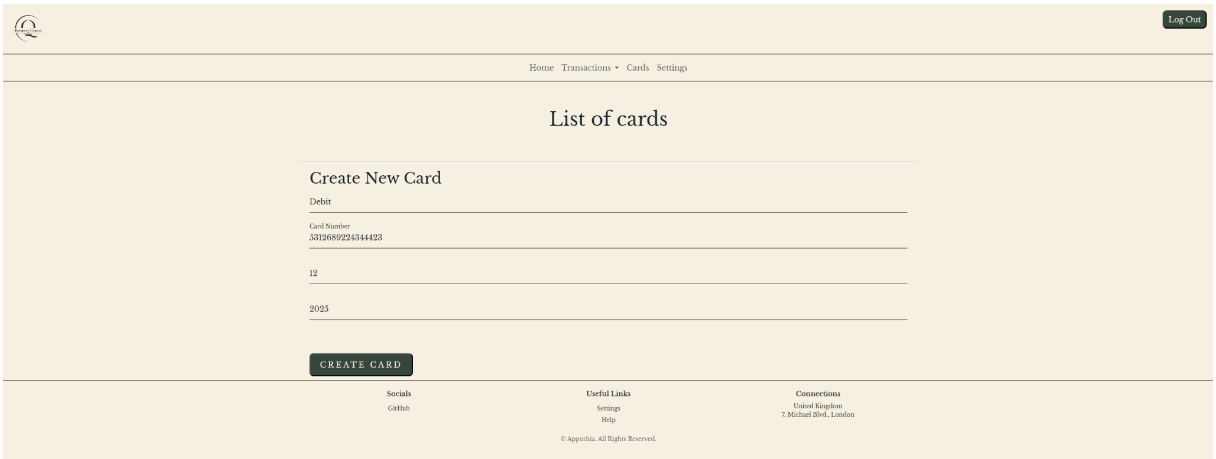

Fig. 17 List of cards and new card form

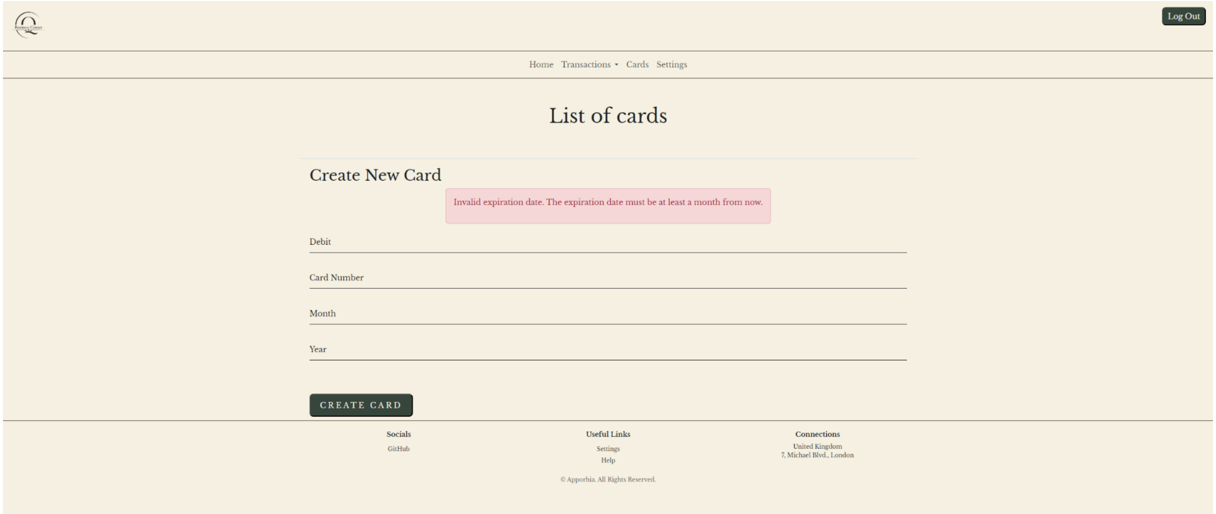

Fig. 18 Invalid expiration date

When a card is successfully created, it will be displayed above in the list of all cards with the possibility to delete the card by clicking **Delete Card**. (Fig. 19)

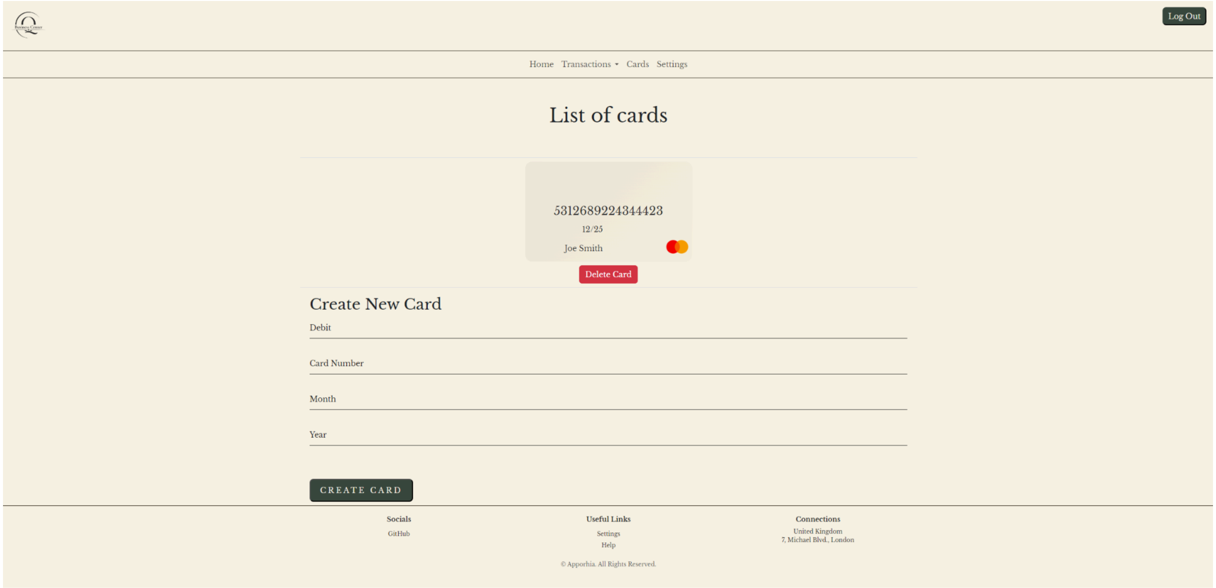

Fig. 19 Existing cards list

Transaction Form

The next section that will be described is the transaction form for sending money to another account. To access that page, please, click on the **Transaction** option in the navigation bar. Drop list will appear with two options. For this section will describe the **New Transaction** option. (Fig. 20)

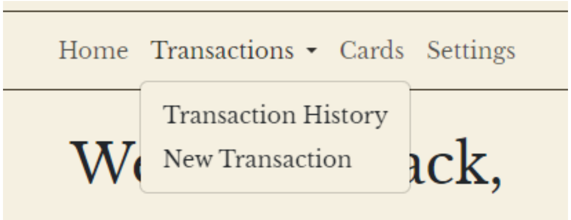

Fig. 20 New transaction drop list option

After visiting the page where the form is for the new transaction, there will be displayed several fields to fill, in order to make a transaction (Fig. 21). As it can be seen, there is the field that is already filled. That is the list of available cards for this account. It will be automatically chosen if there exists at least one card. If the account has more than one card, the client can choose the only one that is necessary.

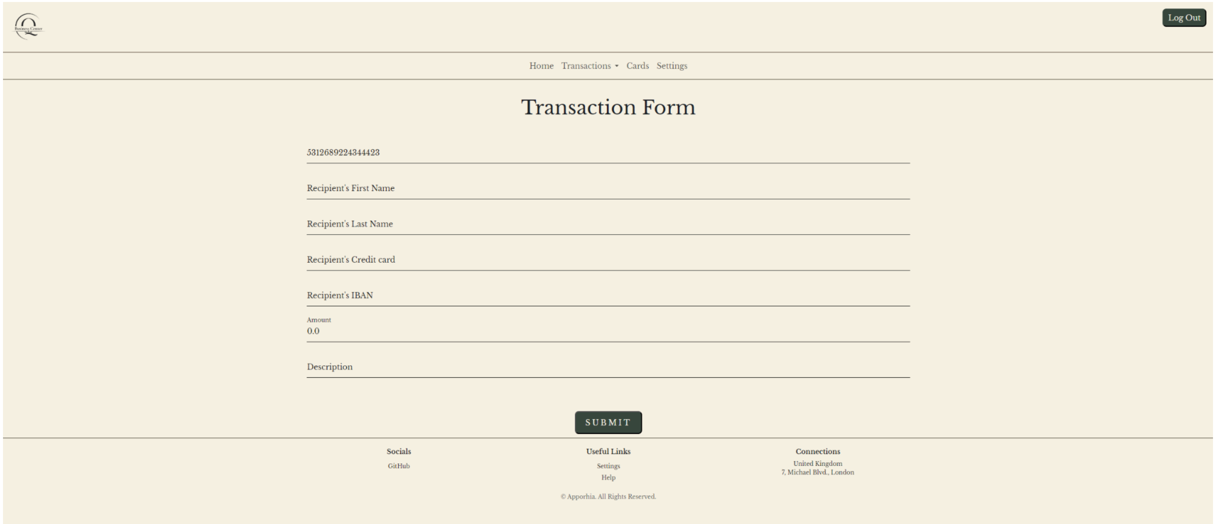

Fig. 21 Transaction form

Next fields are already labelled for convenience, however for clarification each field will be described, as well as an example will be provided.

After the card number, there are two rows corresponding to the recipient's first name and last name. Also there is a recipient's card number field that requires manual input of the recipient's car number and below is located the recipient's IBAN field. All these fields are required to be filled in order to send the transaction to that person. Please, be sure that data is written correctly without mistakes.

Also, in the amount field must be written the amount that will be sent to the receiving person. Here, please, be sure that the amount is less or equal to the amount of money on the current account. Because it is not possible to send imaginary money out of nowhere.

Lastly, there is a field for the description of the transaction, that is not necessary, however if there is a will to leave a message with the sending amount, it is possible to do so.

Example:

Sender's card:	*Any of currently existing on the account*
Recipient's First Name:	*Bob*
Recipient's Last Name:	*Builder*
Recipient's Credit Card:	*4832455512842245*
Recipient's IBAN:	*IT65DEUTDEFF199906125164*
Amount:	*25.57*
Description:	*For the demonstration*

When the form is filled, press on the **Submit** button to send the form and money to the person. Once it is sent, automatically the transactions history page will be opened.

But be careful! Transaction will not be sent if any of these points are not met:

- Correct data input
- Recipient exists. Recipient's first name, last name, credit card and IBAN must exist in order for the form to be correct.
- Amount is less or equal to the current account's balance.
- Do not send money to the account that is currently logged in. It is not possible.

Transactions History

The history of all transactions, whether they be incoming or outgoing, will be displayed on this page (Fig. 22). If suddenly the balance of the current account becomes bigger, then go to the history page and look who sent money and say *Thanks!* to that person.

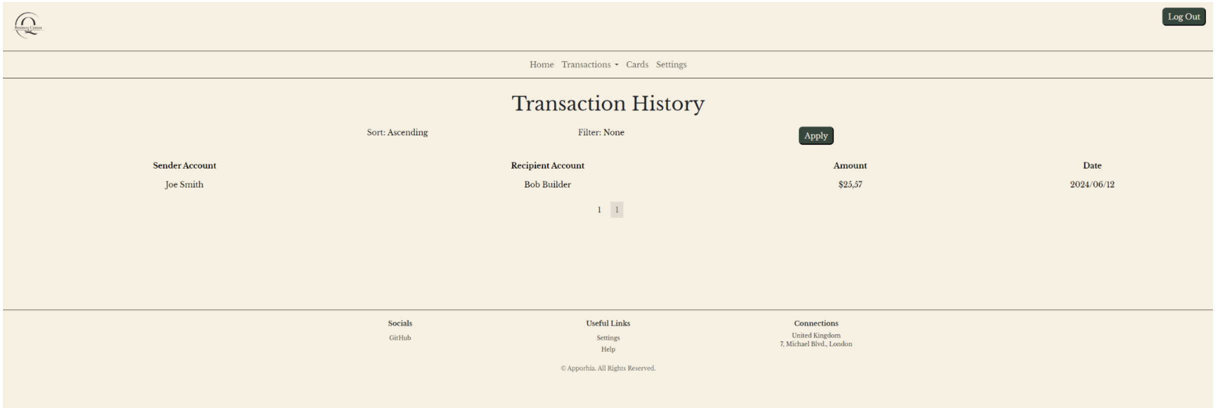

Fig. 22 Transactions history

This page also can be accessed from any other page when logged in, by pressing the **Transactions** drop list in the navigation bar and choosing the **Transaction History** option. (Fig. 20)

For demonstration purposes, it will be better to have at least two records here. Therefore, this is where Bob Builder comes to the rescue. (Fig. 23)

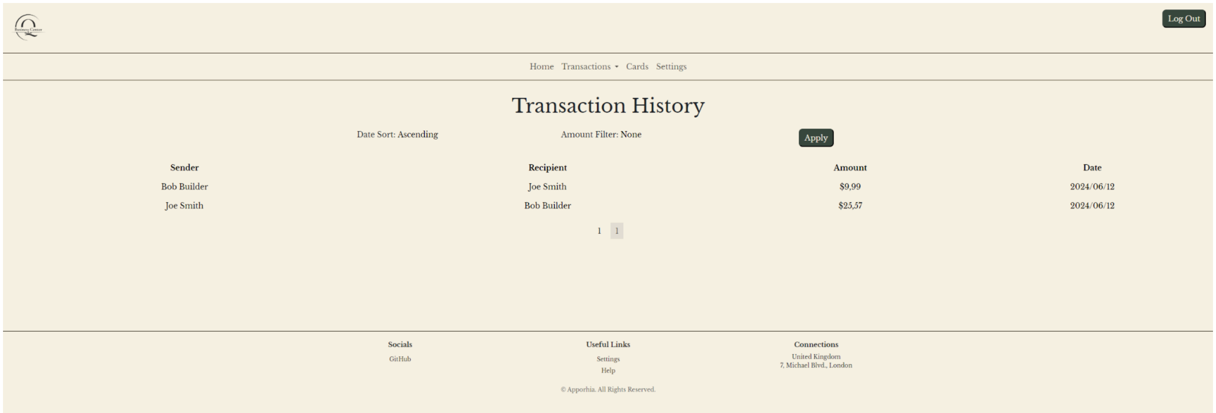

Fig. 23 Bob's help

After Bob provided some help with demonstration, now it is possible to look into the details for each transaction here, as well as sorting and filtering the records.

Here can be seen general information, such as who is the sender and recipient, the amount that was transferred and the date of the transaction. If the date sorting must be applied, then click on the Ascending option (default option) and choose between two: Ascending or Descending (Fig. 24). It will sort by the moment when a transaction was made, even up to the seconds.

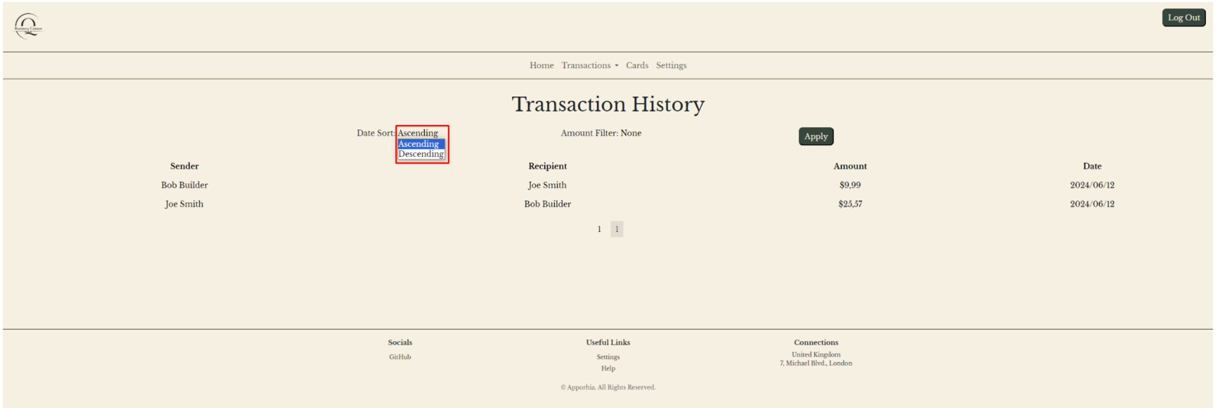

Fig. 24 Date sorting

For filtering are available three options:

- 0 - 50
- 50 - 250
- 250 - max

These are three criteria by what records can be filtered. (Fig. 25)

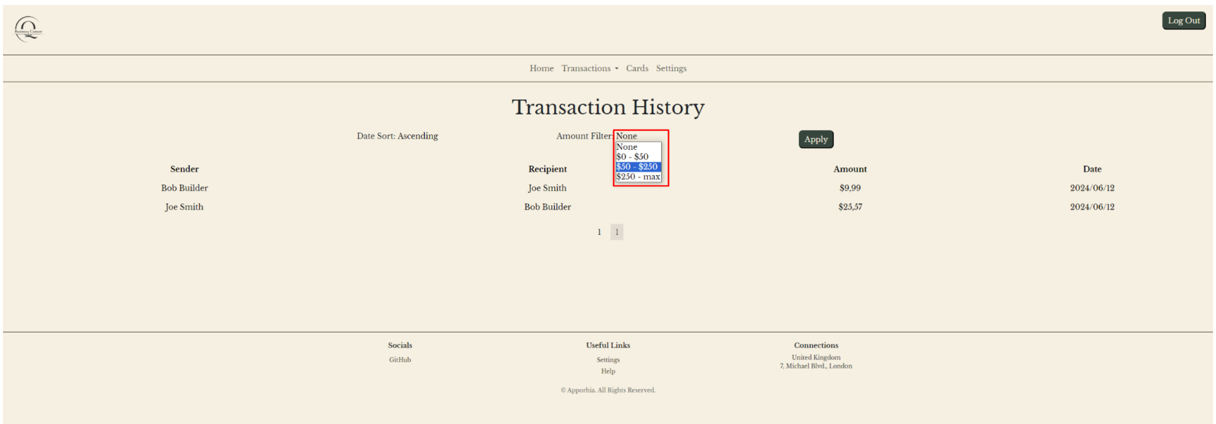

Fig. 25 Amount filtering

As at the moment, only two records exist and both have amounts under $50, then for demonstration will be chosen the second option ($50 - $250). After sorting and filtering options have been chosen, please, click the **Apply** button to see a new list of the records.

As expected, no records can be found with these parameters. (Fig, 26)

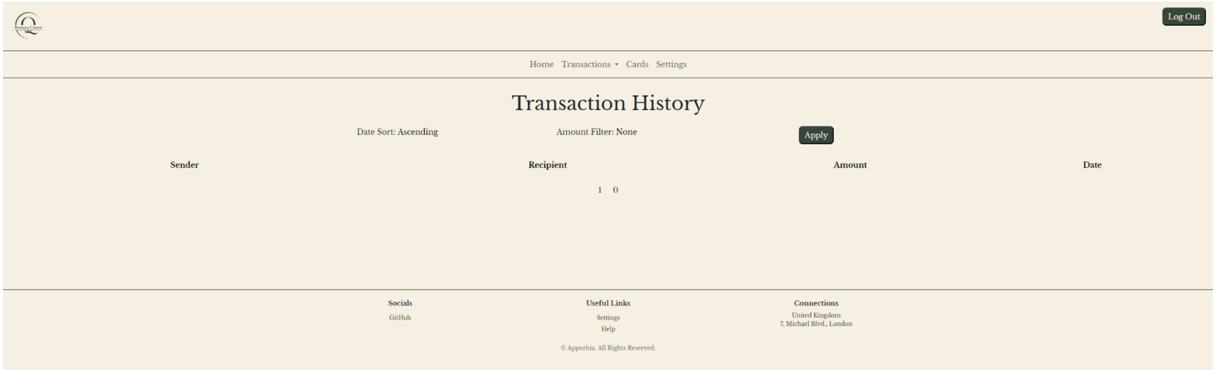

Fig. 26 Result of sorting and filtering

Transactions Details

It is possible to know more about transaction details by clicking on the transaction itself from the list. For this demonstration, will be chosen the one, where money was sent to Bob Builder. Here can be seen almost all information about the current transaction. (Fig. 27)

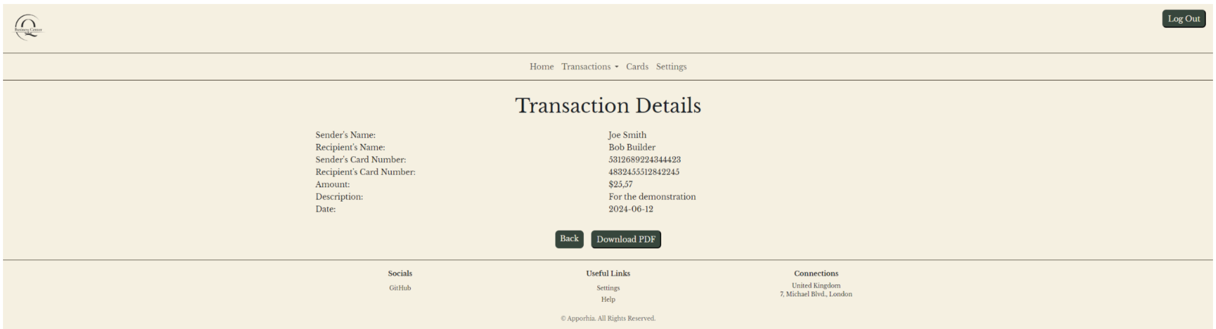

Fig. 27 Transaction details

Also, there is an option to download the PDF file of this transaction if it is necessary to have it as a file. Please, click on the **Download PDF** button to view the file.

Once it is downloaded, open it where it is more convenient to observe. In this PDF file will be written all possible for viewing details of both clients, sender and recipient. (Fig. 28)

Quantum Business Center
7, Michael Blvd., London
United Kingdom, UK

12 of 6, 2024, 20:22:10
Account number: 199905151683

Comapny Name
Comapny Address
State, Zip

Account Details

SENDER

First Name	Joe
Last Name	Smith
Account Status	active
IBAN	ES30BNPAFRPP199905151683
Bank	BNP Paribas
Credit Card	5312689224344423

RECIPIENT

First Name	Bob
Last Name	Builder
Account Status	active
IBAN	IT65DEUTDEFF199906125164
Bank	Deutsche Bank
Credit Card	4832455512842245

Transaction Details

DATE	SENDER	RECIPIENT	DESCRIPTION	AMOUNT
12/06/2024	ES30BNPAFRP P199905151683	IT65DEUTDEFF 199906125164	For the demonstration	$25.57

Fig. 28 Transaction PDF

Settings

On the settings page it is possible to see all information about the account. As well as delete the account that is currently logged in by clicking on the **Delete Account** button. (Fig. 29)

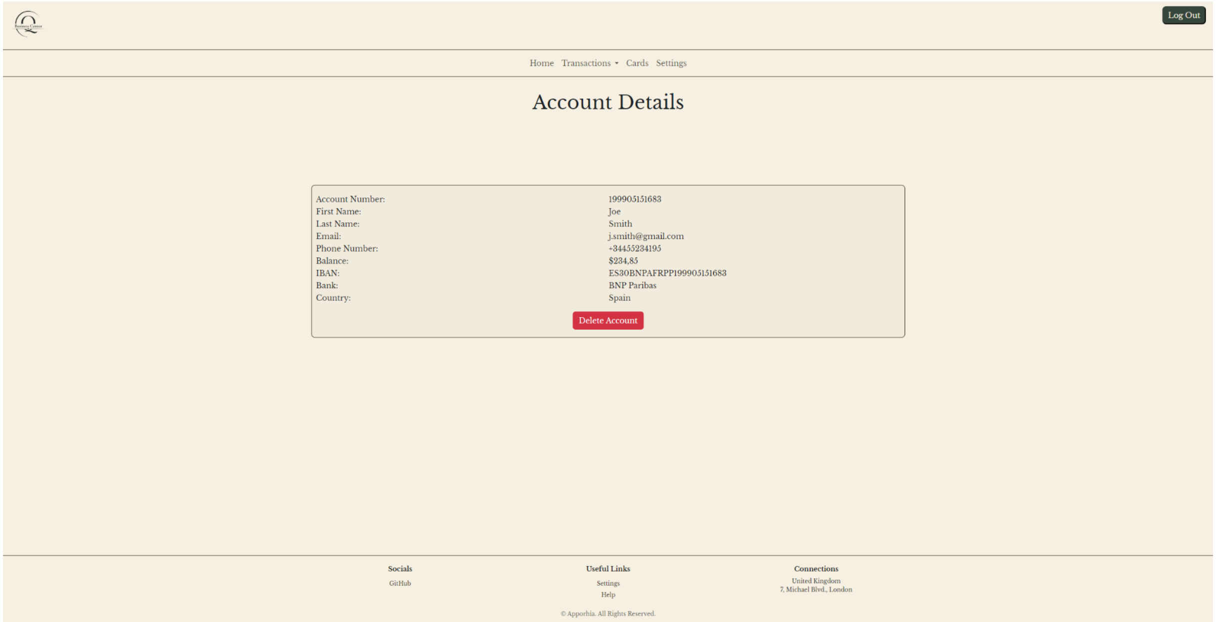

Fig. 29 Setting page

Help

The last page that will be described is the help page that is provided in the footer of the website. If there are any questions, clients can contact the administrator. (Fig. 30)

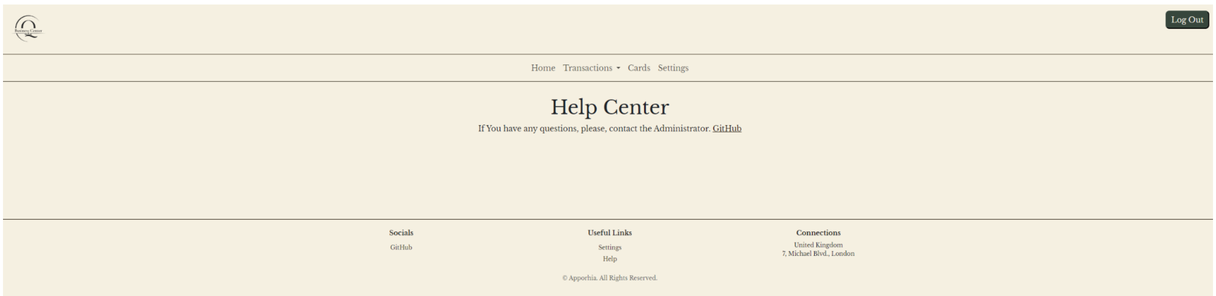

Fig. 30 Help page