

A SIMPLE BANK SYSTEM

User manual

APPLICATION SCENARIO

The system offers three types of account:

1. **Saver Account:** For Junior and Saver accounts, no withdraw more funds than their limit permits.
2. **Junior Account:** Only customers under the age of 16 may open a Junior account
3. **Current Account:** A customer may withdraw additional funds, up to, but not exceeding, their overdraft limit.

Each account has a unique account number. A customer is also issued a separate personal identification number (PIN) for that account.

Currently, the system doesn't offer functions to:

1. **register a customer.**
If you want to add a customer, please add it in the file:
"BankSystem/src/File/CreditAgency.txt"
in format:
(name,address,birth,credit).
2. **change PIN/ overdraft limit or other details of your account.**

If you want to change the them, please change it in the file:

"BankSystem/src/File/Accounts.txt"


in format:

(accID,type,PIN,balance,overdraftlimit,clearing,account_status,noticed)

note:

1. If you have trouble in finding your account ID, please check the file:
"BankSystem/src/File/AccountFinder.txt"
2. More details of the 3 text files above: please see "BankSystem/Readme.txt"
3. JavaDoc: see "BankSystem/JavaDoc"

DEVELOPMENT ENVIRONMENT

1. **IDE:** IntelliJ IDEA 2019.1 (Ultimate Edition)
2. **JRE:** 1.8.0_202-release-1483-b39 x86_64
3. **JVM:** OpenJDK 64-Bit Server VM by JetBrains s.r.o
4. **Operating System:** macOS 10.14.4
5. **Project SDK:** 11
6. **Copyright:** © 2019  Xi XIA

PROJECT INSTALLATION

1. Download the package “BankSystem”
2. Open your IntelliJ IDEA, Press the “Open” button to open this project

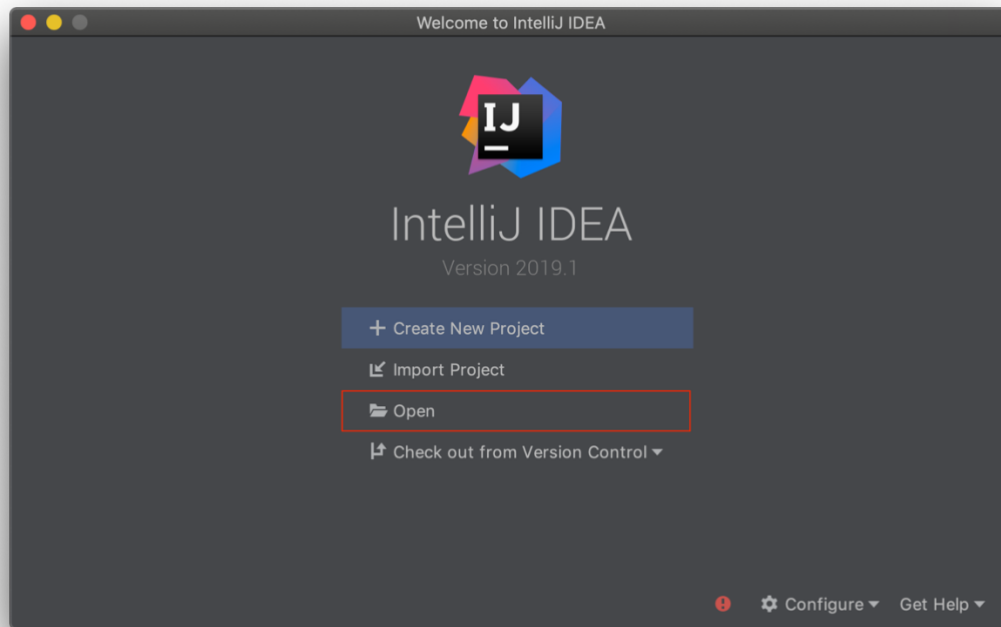


Figure 1. IntelliJ IDEA

3. Direct to the Folder “BankSystem”, click at the Folder and press the button “Open” to load project.

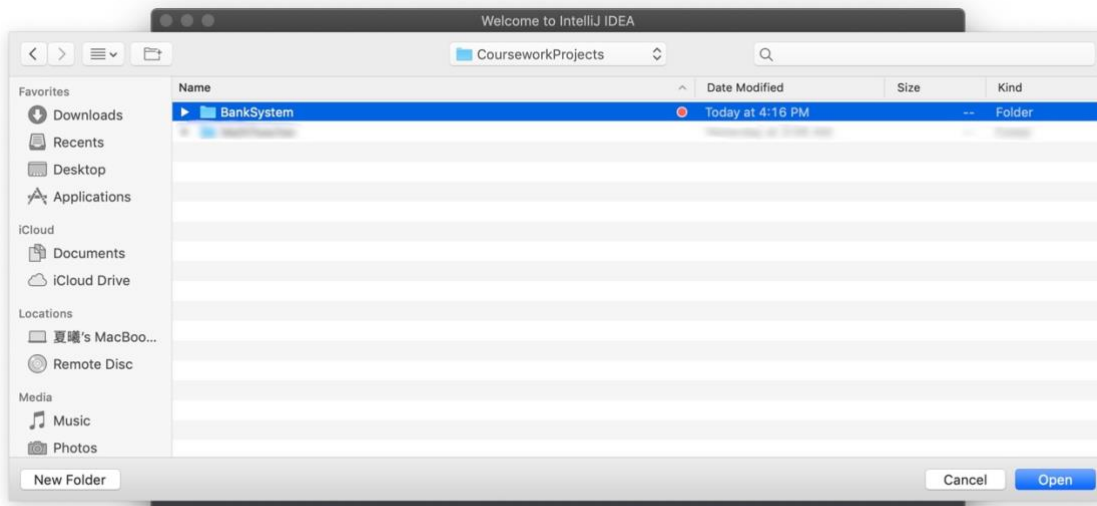


Figure 2. Load the project

4. Then you can see the project's overview.

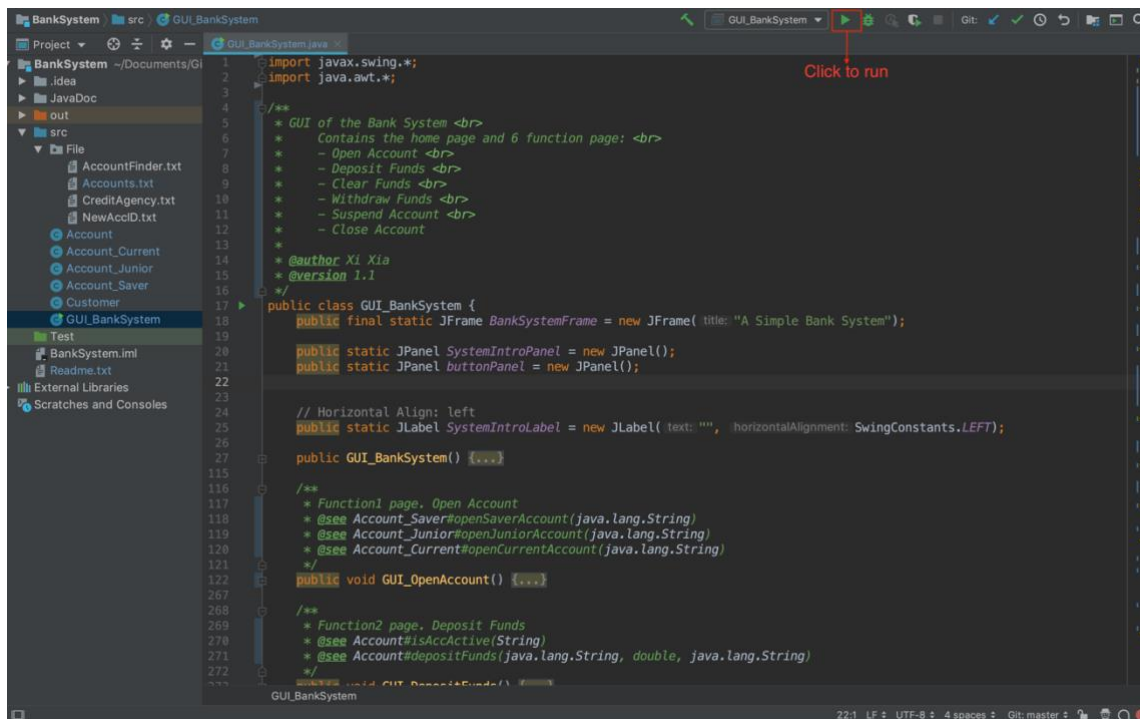


Figure 3. Project Overview

5. Click to open GUI_BankSystem.java. Then, click at the icon ► as has been noted in Fig. 3 to run the project. You will see the Graphical User Interface.

SYSTEM FUNCTIONS

The Bank System offers 6 functions. Home page is shown as Fig. 1. You can choose one function by pressing the corresponding button.

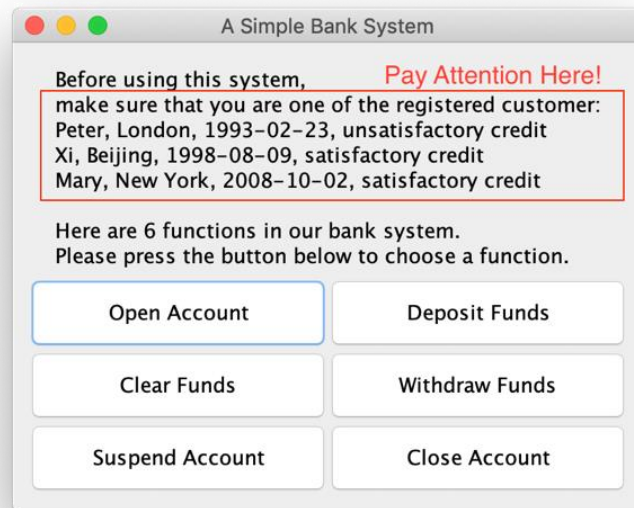


Figure 1. Bank System home page

Note:

1. We had only Registered 3 customers as noted in Fig. 1. Details are in the file: "BankSystem/src/File/CreditAgency.txt"
2. Reaction to all kinds of invalid inputs or operations is shown as Fig. 2.
3. Reaction to all kinds of successful operations is shown as Fig. 3.



Figure 2. Invalid Input/Operation Notice

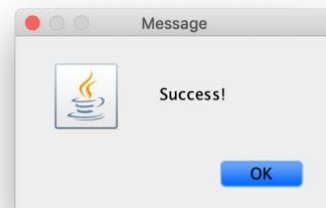


Figure 3. Successful Operation Notice

DESCRIPTIONS OF THE SIX FUNCTIONS

1. Open Account

In order to open an account, the customer must provide the following information: ① name, ② address, ③ date of birth, ④ type of account to be opened. shown as Fig. 4.

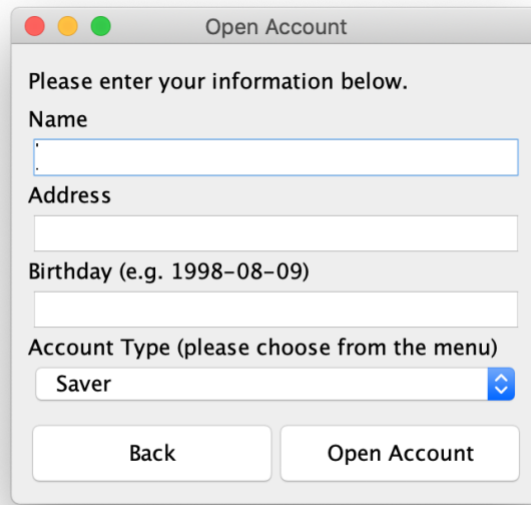
A screenshot of a web form titled "Open Account". The form has a light gray background and rounded corners. At the top, there are three colored circles (red, yellow, green) and the title "Open Account". Below the title, the text "Please enter your information below." is displayed. The form contains four input fields: "Name" (a text box), "Address" (a text box), "Birthday (e.g. 1998-08-09)" (a text box), and "Account Type (please choose from the menu)" (a dropdown menu with "Saver" selected). At the bottom of the form, there are two buttons: "Back" and "Open Account".

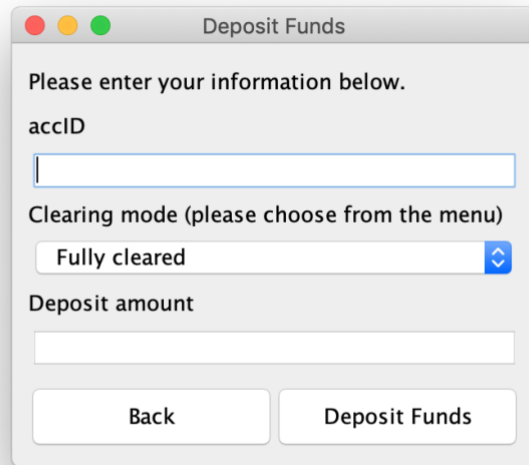
Figure 4. Open Account page

Note:

- a. Only customer with satisfactory credit history can open an account
- b. Only customers under the age of 16 may open a Junior account
- c. All current accounts' overdraft limit is set as 2000
- d. When opening an account, the PIN is set the same as the customer's birthday.

2. Deposit Funds

The depositor should provide ① an account number, ② the amount to be deposited shown as Fig. 5.

A macOS-style dialog box titled "Deposit Funds". It contains the text "Please enter your information below." followed by three input fields: "accID", "Clearing mode (please choose from the menu)" (a dropdown menu showing "Fully cleared"), and "Deposit amount". At the bottom are two buttons: "Back" and "Deposit Funds".

Deposit Funds

Please enter your information below.

accID

Clearing mode (please choose from the menu)

Fully cleared

Deposit amount

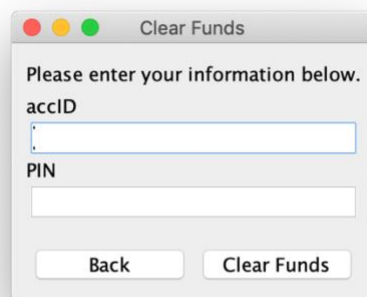
Back Deposit Funds

Figure 5. Deposit Funds page

When funds are deposited, they are either cleared (the funds have been fully credited, e.g. Cash), or un-cleared (transfer of funds is pending, e.g. using Cheque). Cleared funds are immediately credited to the account.

3. Clear Funds

An external bank clearing system periodically clears un-cleared funds. Once cleared, they are immediately credited to the account. Customers can credit uncleared funds to an account by entering ① **appropriate account number** and ② **PIN** shown as Fig. 6.

A macOS-style dialog box titled "Clear Funds". It contains the text "Please enter your information below." followed by two input fields: "accID" and "PIN". At the bottom are two buttons: "Back" and "Clear Funds".

Clear Funds

Please enter your information below.

accID

PIN

Back Clear Funds

Figure 6. Clear Funds page

4. Withdraw Funds

Customers may withdraw funds from an account by supplying ① their account number, ② an appropriate identification (in this case, their PIN), and ③ the amount to be withdrawn shown as Fig. 7.

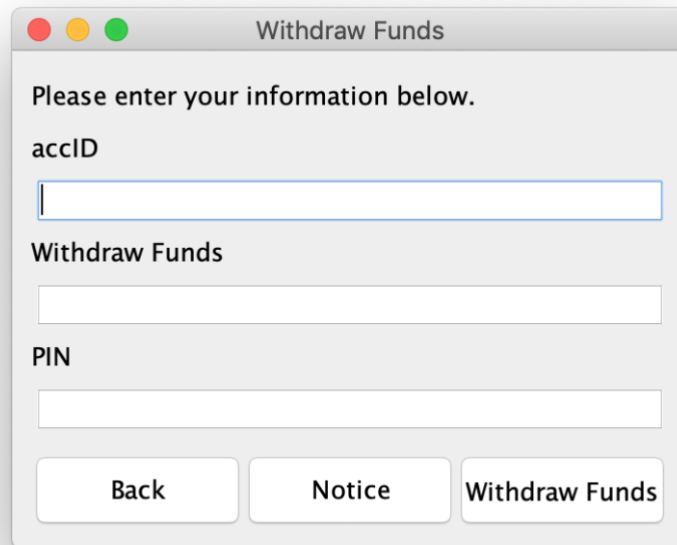
A screenshot of a 'Withdraw Funds' dialog box. The dialog has a title bar with three colored buttons (red, yellow, green) and the text 'Withdraw Funds'. Inside, it says 'Please enter your information below.' followed by three input fields: 'accID', 'Withdraw Funds' (the amount), and 'PIN'. At the bottom, there are three buttons: 'Back', 'Notice', and 'Withdraw Funds'.

Figure 7. Withdraw Funds page

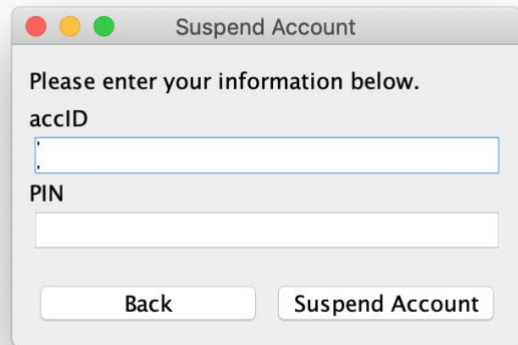
A customer cannot withdraw more funds than their limit permits (determined by the type of account).

Note:

- a. You should provide a correct PIN matching to the account ID.
- b. For a Saver account, a minimum period of notice (in days) must be given before any withdrawal.
- c. Here, we haven't defined the days required to notice, you can simply click on the button "Notice" to give a notice before withdrawal.
- d. For Saver/Junior Accounts, withdrawal amount should not exceed your balance. For Current Account, withdrawal amount should not exceed your (balance + overdraft limit)

5. Suspend Account

Customers can suspend an account by entering ① appropriate account number and ② PIN shown as Fig. 8.



The image shows a standard macOS-style dialog box titled "Suspend Account". It contains a prompt "Please enter your information below." and two text input fields. The first field is labeled "accID" and the second is labeled "PIN". Below the fields are two buttons: "Back" and "Suspend Account".

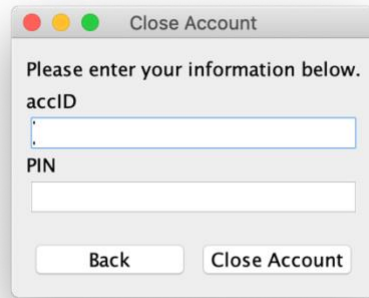
Figure 8. Suspend Account page

Note:

- a. You should provide a correct PIN matching to the account ID.
- b. After the account is suspended, no further transactions (Deposit, Withdraw) is allowed.

6. Close Account

Customers can close the cleared account by entering ① appropriate account number and ② PIN shown as Fig. 9.

A screenshot of a macOS-style dialog box titled "Close Account". The dialog has a title bar with red, yellow, and green window control buttons. The main content area contains the text "Please enter your information below." followed by two labels: "accID" and "PIN". Each label is followed by a text input field. The "accID" field contains a single dot character. At the bottom of the dialog, there are two buttons: "Back" and "Close Account".

Please enter your information below.

accID

PIN

Back Close Account

Figure 9. Close Account page

Note:

- a. Only when the balance has been cleared, can this account be closed.
- b. Closed accounts are not deleted. Just the status of accounts are changed to "CLOSED", and you can still see the records in text files.

REFERENCE

1. [CaseStudy: a simple banking system](#)
2. [Code for calculating age using birthday in format "yyyy-MM-dd"](#)