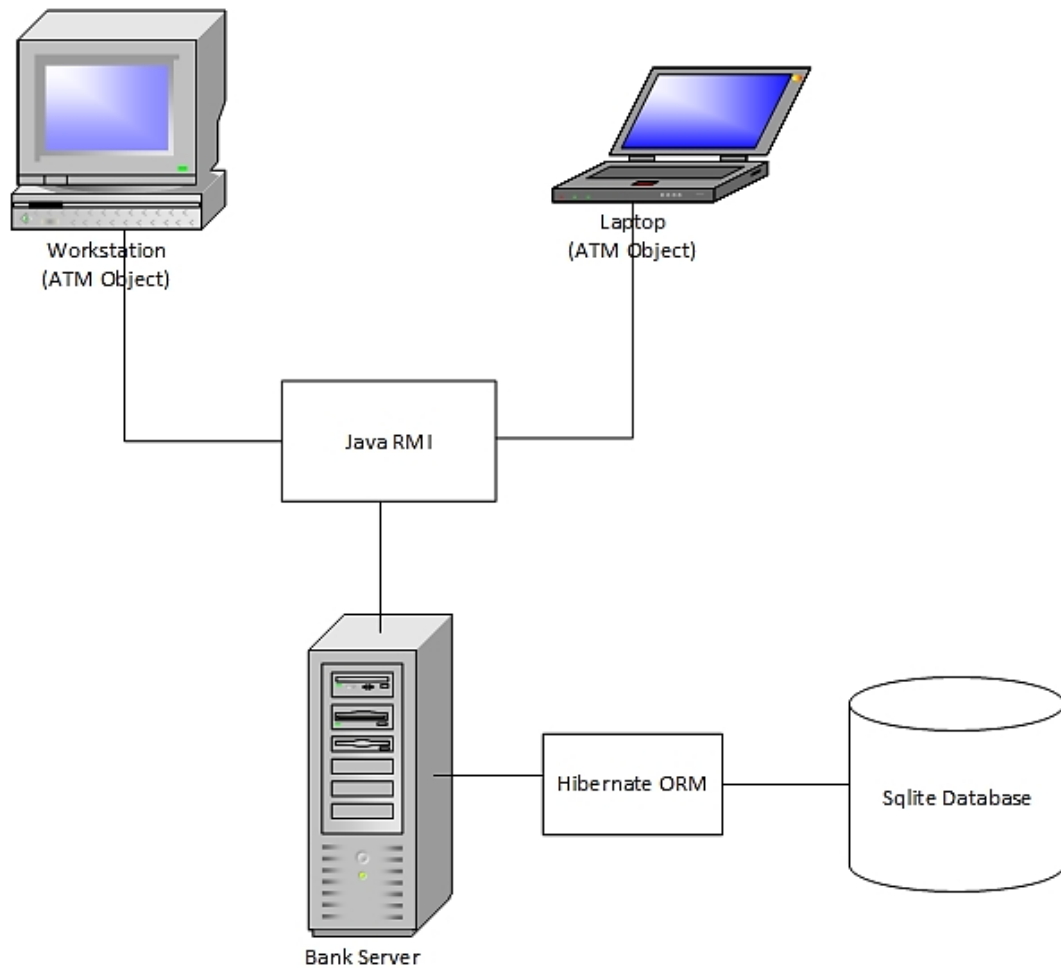
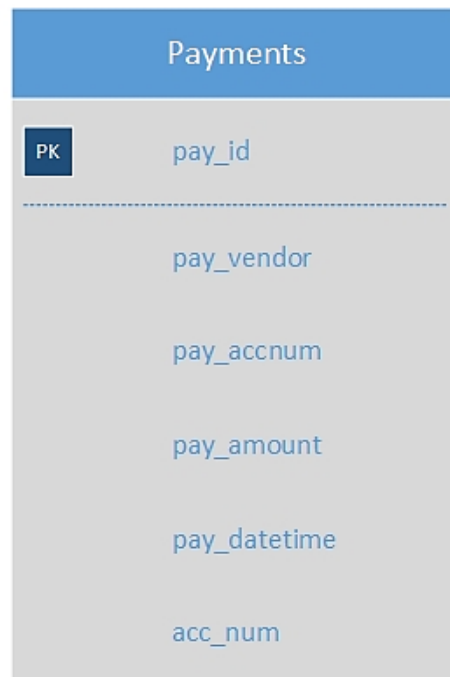
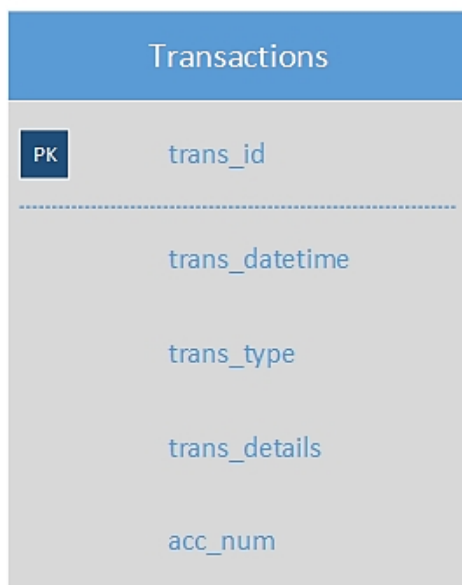
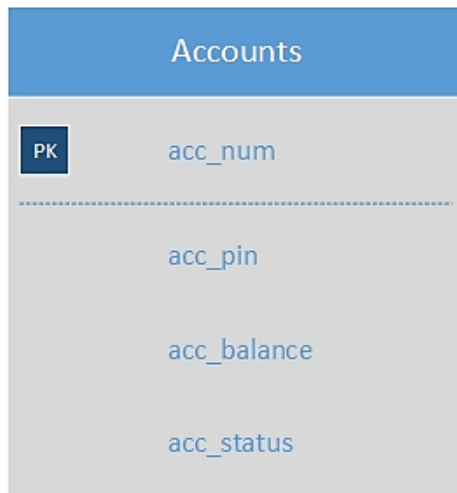


SYSTEM ARCHITECTURE (3 – TIER)



ENTITY RELATIONSHIP DIAGRAM



DATA DICTIONARY

1. ACCOUNTS

Field Name	Data Type	Field Size	Description	Example
acc_num	Integer	-	Unique ID of each account	123456
acc_pin	Integer	4	PIN number for the account	1234
acc_balance	Double	-	Balance of the account	1000.00
acc_status	Boolean	1	Status of the account	1

2. TRANSACTIONS

Field Name	Data Type	Field Size	Description	Example
trans_id	Integer	-	Unique ID of each transaction	1234578
trans_datetime	DateTime	-	Date and Time of transaction	2019-09-05 10:33:15
trans_type	Varchar	10	Type of transaction	Deposit
trans_details	Text	-	Details of the transaction	Deposited \$1000
acc_num	integer	6	Account number of the transaction	123456

3. PAYMENTS

Field Name	Data Type	Field Size	Description	Example
pay_id	Integer	-	Unique ID for payment	123456
pay_vendor	Varchar	20	Vendor name	EFL
pay_accnum	Integer	6	Vendor account number	123456
pay_amount	Double	-	Payment amount	100
pay_datetime	DateTime	-	Date and Time of payment	2019-09-05 10:33:15
acc_num	integer	6	Account number	123456

GETTING STARTED

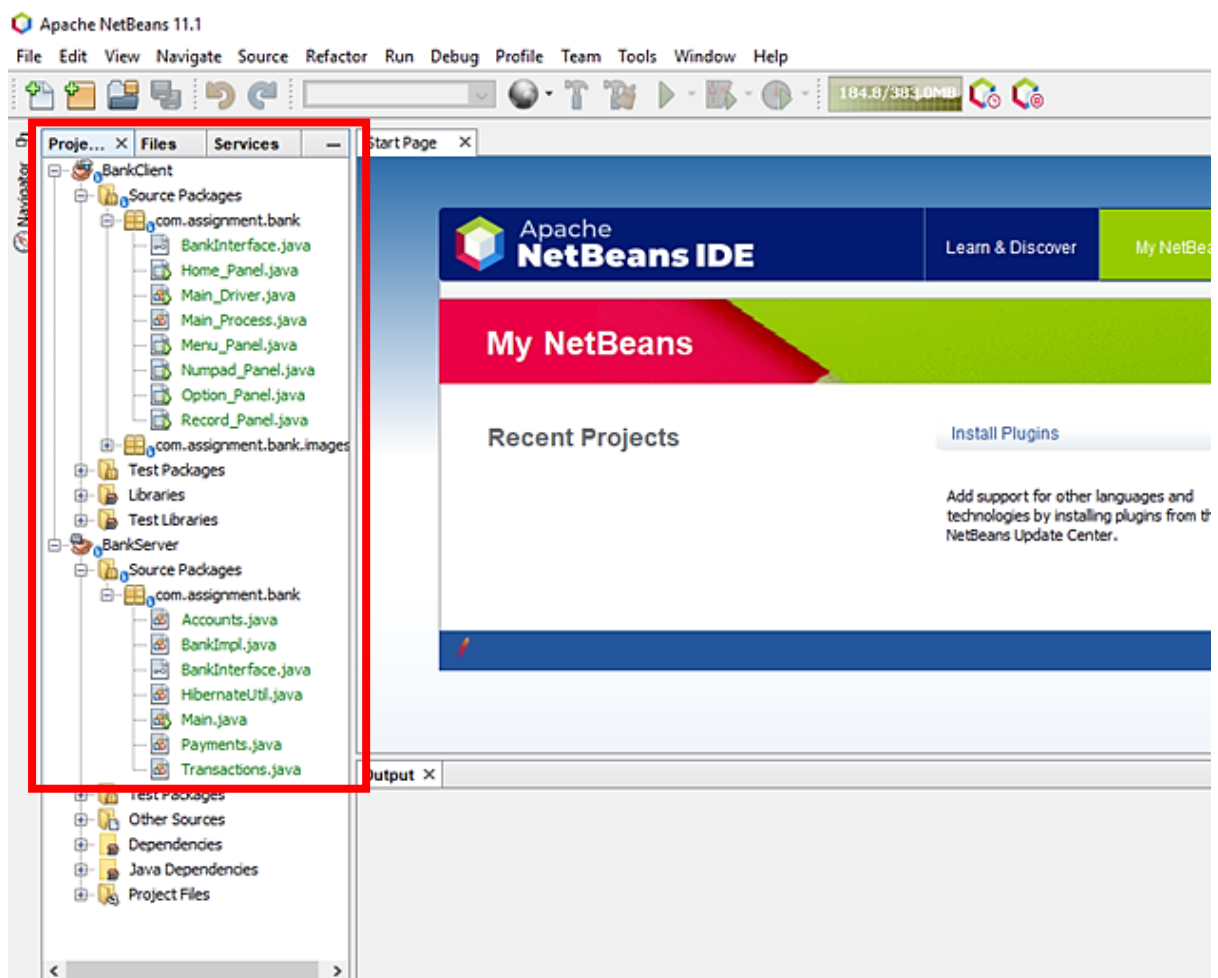
Assignment is Done as a maven project and requires the following software to installed before it can be used.

- Java JDK 12
 - for Windows @
<https://download.oracle.com/otn-pub/java/jdk/12.0.2+10/e482c34c86bd4bf8b56c0b35558996b9/jdk-12.0.2-windows-x64-bin.exe>
 - for Mac @
<https://download.oracle.com/otn-pub/java/jdk/12.0.2+10/e482c34c86bd4bf8b56c0b35558996b9/jdk-12.0.2-osx-x64-bin.dmg>
- Apache Netbeans IDE – Available @
 - for Windows @
<https://www-us.apache.org/dist/netbeans/netbeans/11.1/Apache-NetBeans-11.1-bin-windows-x64.exe>
 - for Mac @
<https://www-eu.apache.org/dist/netbeans/netbeans/11.1/Apache-NetBeans-11.1-bin-macosx.dmg>

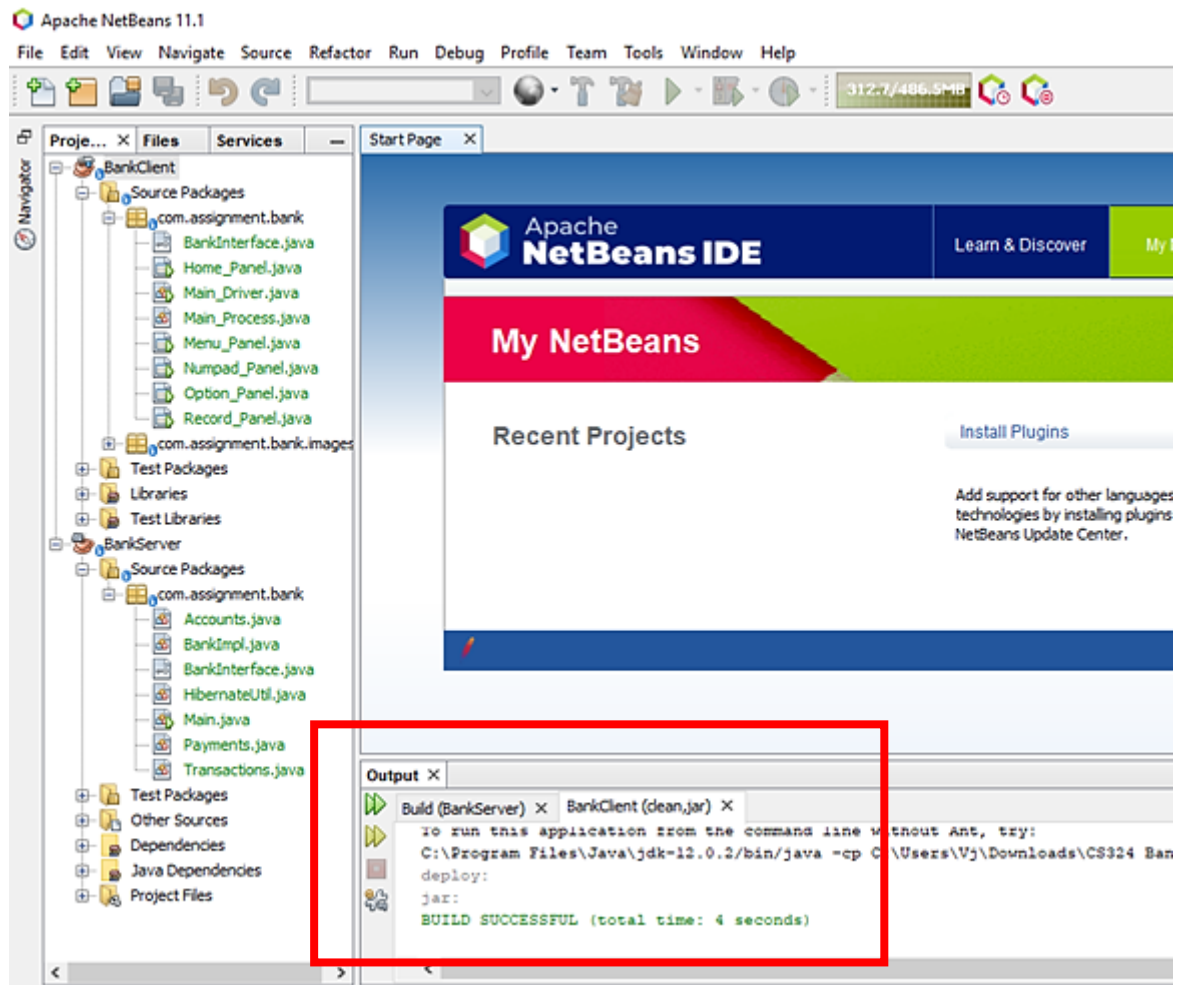
NOTE: Ensure you are connected to the internet and Netbeans IDE is not blocked by the Anti-Virus software.

Loading The Project

1. Run Netbeans IDE. Then click **File, Open Project**, locate **BankClient** folder and open project.
2. Next locate **BankServer** folder and open project. Once both projects are loaded the main screen should look like this.

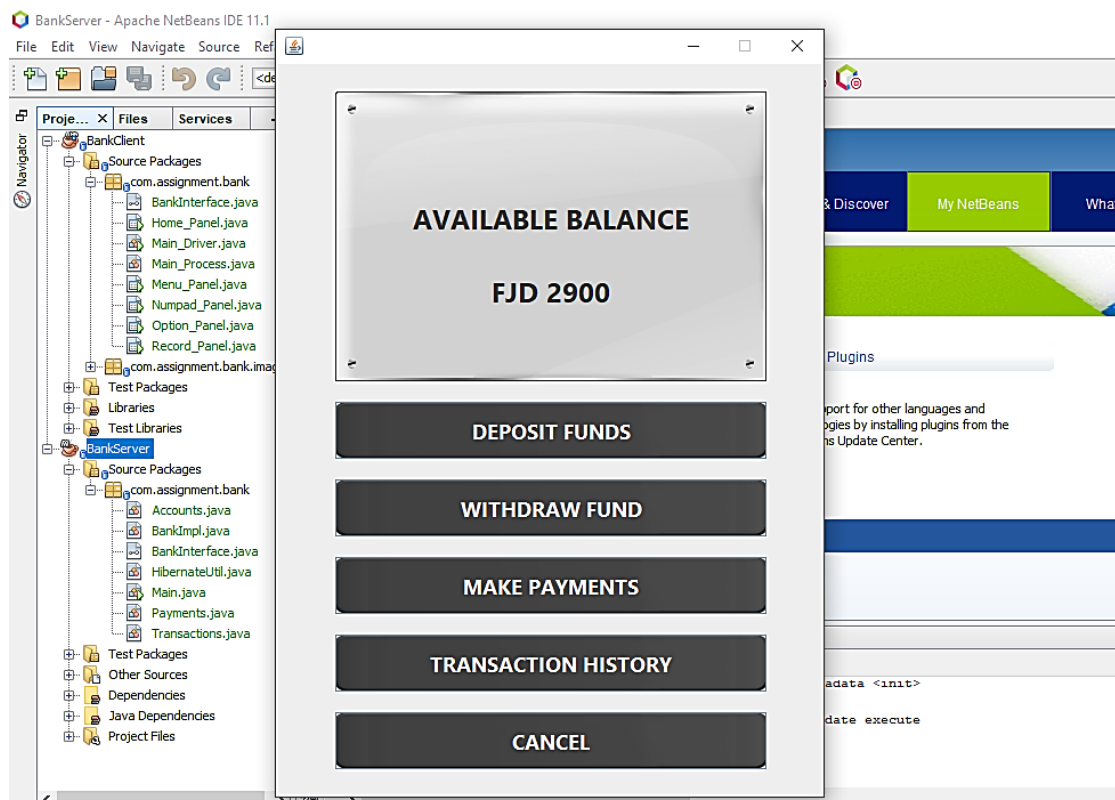


3. Right Click on BankServer and click **Clean and Build**. Netbeans will now download all required files to run the software.
4. Once Building is finished right click on BankClient and select again **Clean and Build**. Wait for Netbeans to finish building.



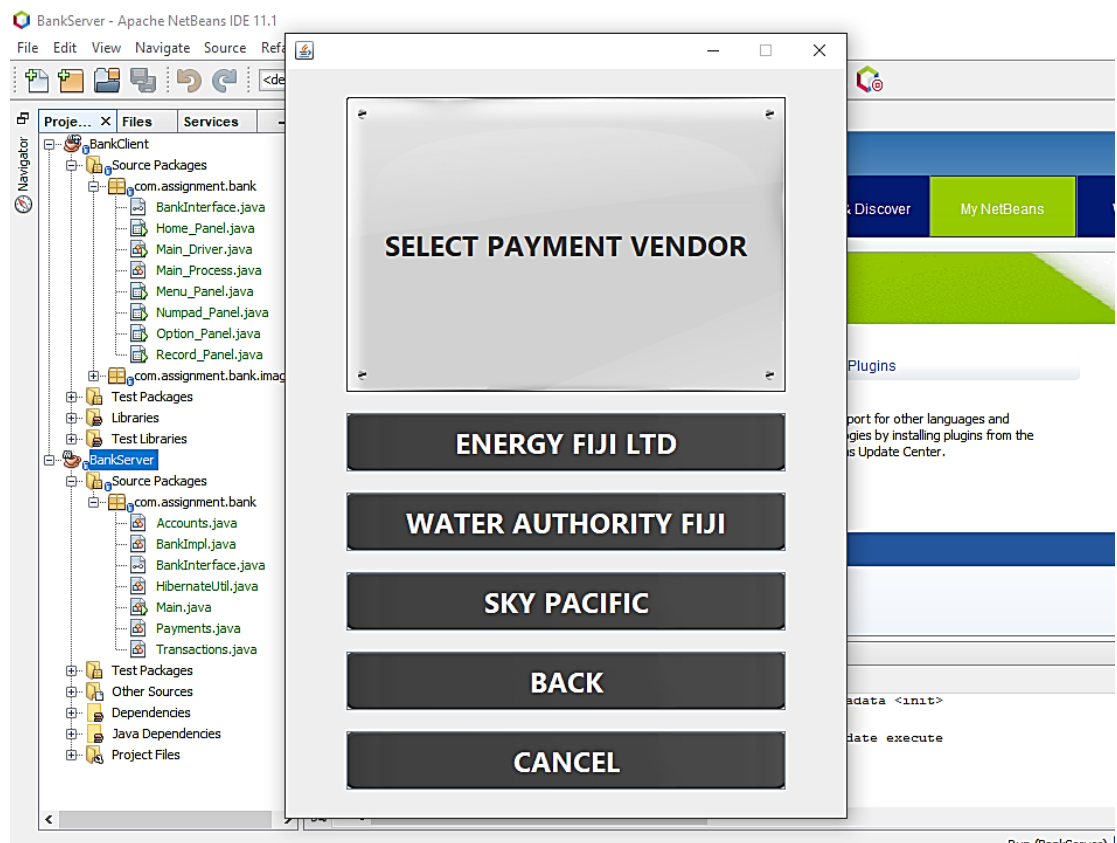
Running and Using the Application

5. Right Click on BankServer and click **Run**. Netbeans will now run the software. Output should show “**system is ready**”
6. Once BankServer is running, right click on BankClient and select again **Run**. Application should now start.
7. Click **Press to Start**.
8. To use the application, you need to enter the correct account number and pin. These details can be found in the **Test Accounts** section.
 - **Note.** If the pin is entered incorrectly too many time the account will be locked out and can no longer be used unless activated in the database again.
9. Once you successfully log in the you should now be able to access the menu.

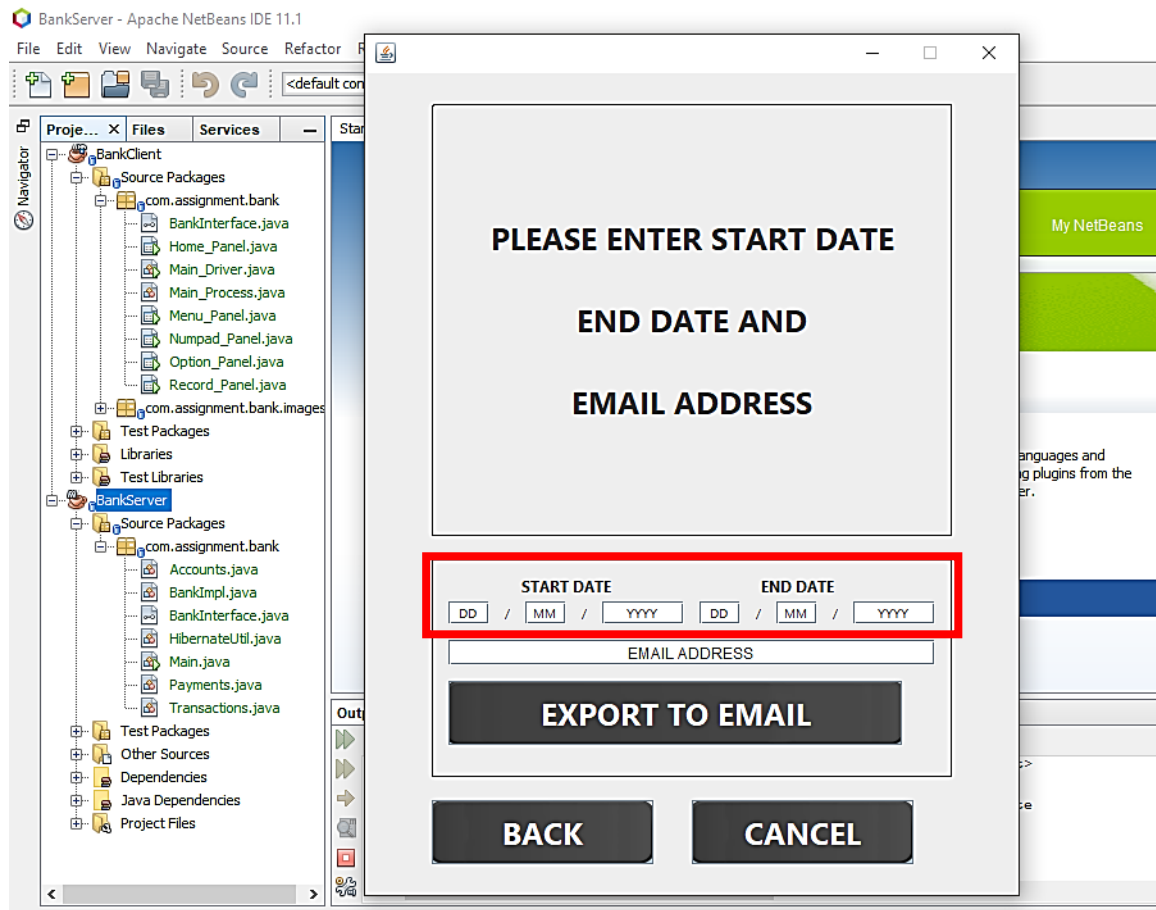


10. From the menu you can select the following options.
 - **Deposit** – Where you can make deposits to the account.

- **Withdraw** – Where you can withdraw from the account.
 - **Note.** You can only withdraw amount less than or equal to the available balance. Withdrawals greater than this amount will result in an overdraft and will not be processed.
- **Make Payments** – You can make payments to any of the available vendors. A receipt will be issued for each payment.



- **Transaction History** – You can email your transaction history to any email of your choice. You can set the start and end date to filter the results.
 - **Note.** Enter the date according to the format specified. Example. When filling in a number 9 for day it should be filled as 09 and not just 9.
 - **Note.** Make sure that the email address entered is correct and that you are connected to the internet. Process will fail otherwise.



- **Cancel** – Clicking cancel on any of the panels will log you out and return to the home screen.
- **Back** – Will take you to the previous page

Software Testing

The following tests can be carried out on the software

- **Valid Account Check** – Enter one of the given account numbers to see if proceeds to request for the pin.
- **Invalid Account Check** – Enter a random account number to see if it detects it as an invalid entry. It should state that account does not exist and request user input again.
- **Invalid Pin Check** – Enter a random pin and the application should notify you that it is invalid.
- **Account Status check** – If the pin is entered incorrectly many times the software application should lock out the account. When trying to log in again the application will state account is locked.
- **Valid Pin Check** – When entering the correct pin application should log in and open the menu.
- **Deposit Function Check** – Following the instruction given by the application make a deposit and see if the value is added to the account balance.
- **Withdraw Function Check** - Following the instruction given by the application make a withdrawal and see if the value is subtracted from the account balance.
- **Overdraft Check** – When making a withdrawal, enter an amount greater than the account balance. Application should indicate an overdraft and request a new amount to be entered.
- **Payment Check** - Following the instruction given by the application make a payment and see if the value is subtracted from the account balance. Application should also issue a receipt for payment.
- **Transaction Check** – Entering the dates and email correctly, send the transaction history to your email and check if you receive the email. Once you get the email, check whether all the transactions conducted in the previous test appear in the transaction history.

Test Accounts

Account Number	Account Pin	Balance
123465	1243	1000
123464	1242	1000
123463	1241	1000
123462	1240	1000
123461	1239	1000
123460	1238	1000
123459	1237	1000
123458	1236	1000
123457	1235	1000
123456	1234	2900