

**Database Systems**

**Project Report**

**B(CY)-5B**

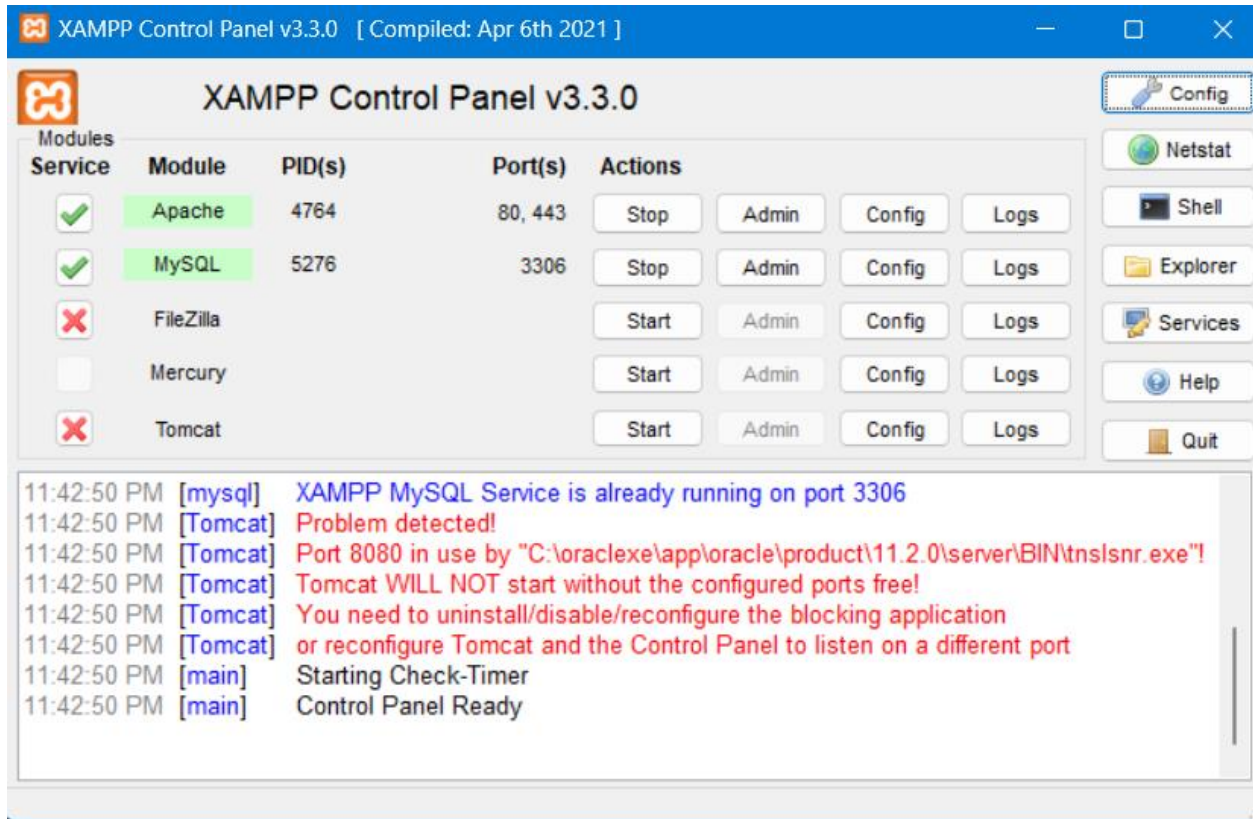
**22K-4709 Zakyas Ali**

**22K-4771 Mehtab Ahmed**

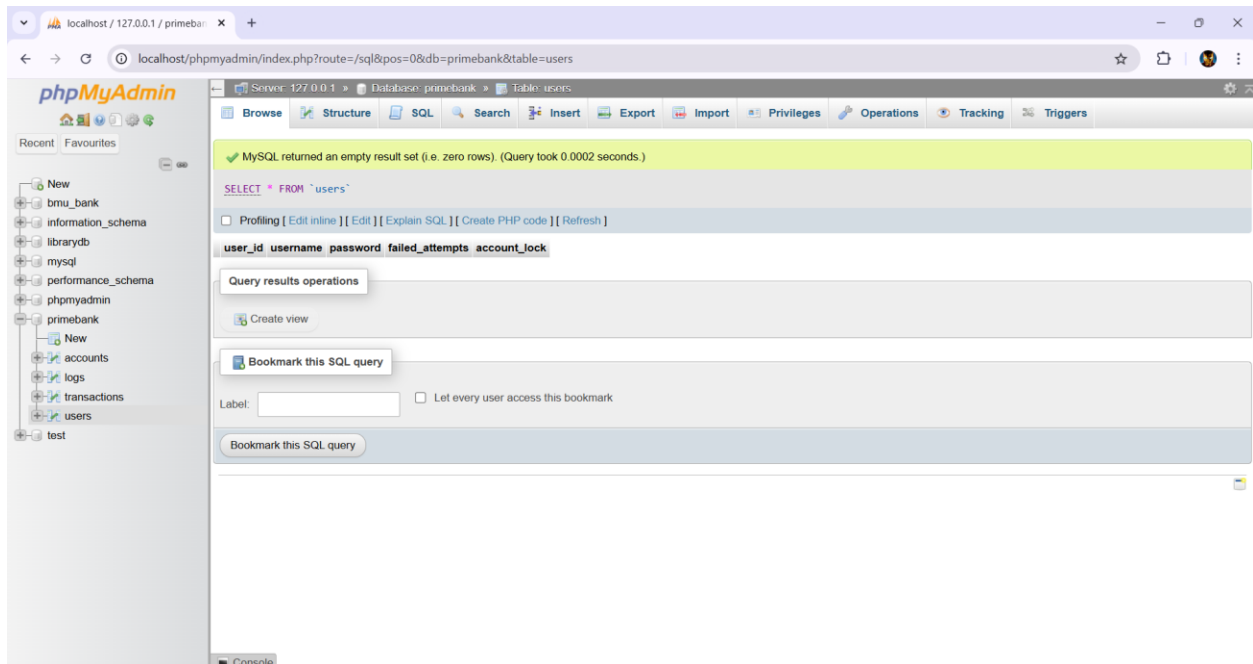
**“ThePrimeVaultBank.com”**

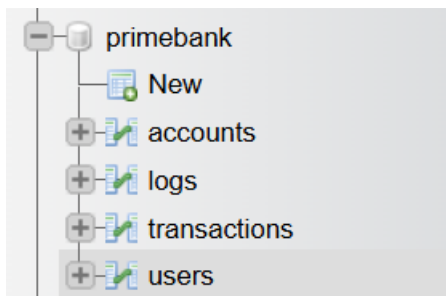
**Date: 5<sup>th</sup> Dec, 2024**

# Backend Database



Xampp PhpMyAdmin used for backend database management:





users table:

Table structure

Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 <b>user_id</b> 🔑	int(100)			No	None		AUTO_INCREMENT	Change  Drop  More
<input type="checkbox"/>	2 <b>username</b> 🧠	varchar(100)	utf8mb4_general_ci		No	None			Change  Drop  More
<input type="checkbox"/>	3 <b>password</b>	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change  Drop  More
<input type="checkbox"/>	4 <b>failed_attempts</b>	int(100)			No	None			Change  Drop  More
<input type="checkbox"/>	5 <b>account_lock</b>	tinyint(1)			No	None			Change  Drop  More

accounts table:

Table structure

Relation view

	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	account_id	int(100)			No	None		AUTO_INCREMENT	Change  Drop  More
<input type="checkbox"/>	2	user_id	int(100)			No	None			Change  Drop  More
<input type="checkbox"/>	3	account_no	bigint(100)			No	None			Change  Drop  More
<input type="checkbox"/>	4	balance	decimal(64,0)			No	None			Change  Drop  More

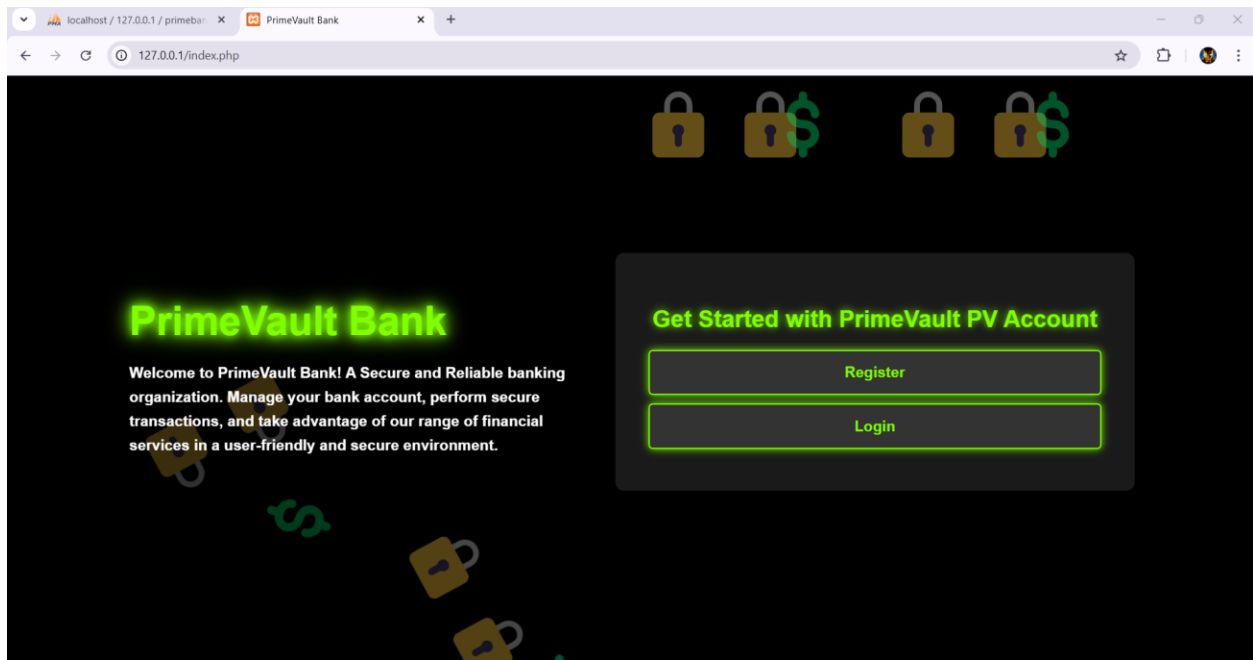
transactions table:

Table structure

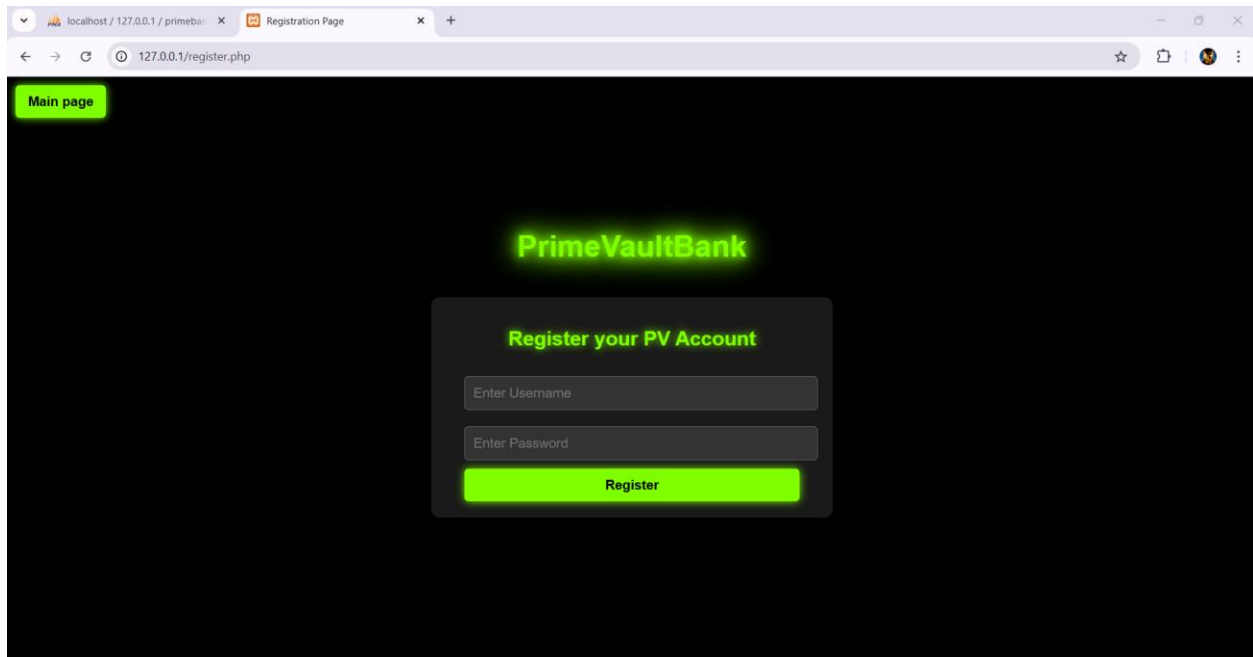
Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 transaction_id	int(11)			No	None		AUTO_INCREMENT	Change  Drop  More
<input type="checkbox"/>	2 account_id	int(100)			No	None			Change  Drop  More
<input type="checkbox"/>	3 transaction_type	enum('withdrawal', 'deposit', 'transfer')	utf8mb4_general_ci		No	None			Change  Drop  More
<input type="checkbox"/>	4 amount	decimal(10,0)			No	None			Change  Drop  More
<input type="checkbox"/>	5 transaction_date	timestamp			No	current_timestamp()			Change  Drop  More
<input type="checkbox"/>	6 sender_user_id	int(11)			No	None			Change  Drop  More
<input type="checkbox"/>	7 receiver_user_id	int(11)			No	None			Change  Drop  More
<input type="checkbox"/>	8 sender_account_no	varchar(20)	utf8mb4_general_ci		No	None			Change  Drop  More
<input type="checkbox"/>	9 receiver_account_no	varchar(20)	utf8mb4_general_ci		No	None			Change  Drop  More

# User Registration



## Register User:



# PrimeVaultBank

## Register your PV Account

Register

## Register your PV Account

Register

User Registered Successfully, PV account created!

Data inserted in users table:

☒ Show all

Number of rows: 

All

Filter rows: 

Search this table

Extra options

← T →

user\_id

username

password

failed\_attempts

account\_lock

Edit

Copy

Delete

138

zakyas

\$2y\$10\$NP48cBcaF/CfF2sIUeWMNe8zScxqEWRzSzytiTw5gkx...

0

0

⬆

☐ Check all

With selected:

Edit

Copy

Delete

Export

☒ Show all

Number of rows: 

All

Filter rows: 

Search this table

User account created with user\_id foreign key:

☐ Show all

Number of rows: 25

Filter rows:

Extra options

↔ T ↔

▼

account\_id

user\_id

account\_no

balance

☐

Edit

Copy

Delete

24

138

7702556116

500

☐ Check all

With selected:

Edit

Copy

Delete

Export

☐ Show all

Number of rows: 25

Filter rows:

Query results operations

## Source file: register.php

```
withdrawal.php X Project Report DB.docx register.php X Settings fpdf.php index.php
register.php
1 <?php
2 session_start();
3 include('connection.php');
4 error_reporting(0);
5
6 if ($_SERVER['REQUEST_METHOD'] === 'POST' && isset($_POST['register'])) {
7     $username = mysqli_real_escape_string($conn, $_POST['username']);
8     $password = $_POST['password'];
9     $passwordhash = password_hash($_POST['password'], PASSWORD_DEFAULT);
10    $checkQuery = "SELECT * FROM users WHERE username = '$username'";
11    $result = mysqli_query($conn, $checkQuery);
12    if (mysqli_num_rows($result) > 0) {
13        $_SESSION['message'] = "Error: Username already exists.";
14    }
15    else{
16        if ($username != "" && strlen($password) >= 8) {
17            $QUERY = "INSERT INTO users (username, password) VALUES ('$username', '$passwordhash')";
18            $res = mysqli_query($conn, $QUERY);
19            $accountNumber = rand(1000000000, 9999999999);
20            $initialBalance = 1000;
21            $userId = mysqli_insert_id($conn);
22            $QUERY2 = "INSERT INTO accounts (user_id, account_no, balance) VALUES ('$userId', '$accountNumber', '$initialBalance')";
23            $res2 = mysqli_query($conn, $QUERY2);
24            if ($res && $res2) {
25                $_SESSION['message'] = "User Registered Successfully, PV account created!";
26            }
27            else {
28                $_SESSION['message'] = "Error: User Entry Unsuccessful: " . mysqli_error($conn);
29            }
30        }
31        else {
32            $_SESSION['message'] = "Error: Password should be 8 digits long & alphanumeric";
33        }
34    }
35    header("Location: " . $_SERVER['PHP_SELF']);
36    exit();
37 }
38 ?>
```

# User login

localhost / 127.0.0.1 / primeba... x Login Page x +

127.0.0.1/login.php ☆ 📄 👤 ⋮

Main page

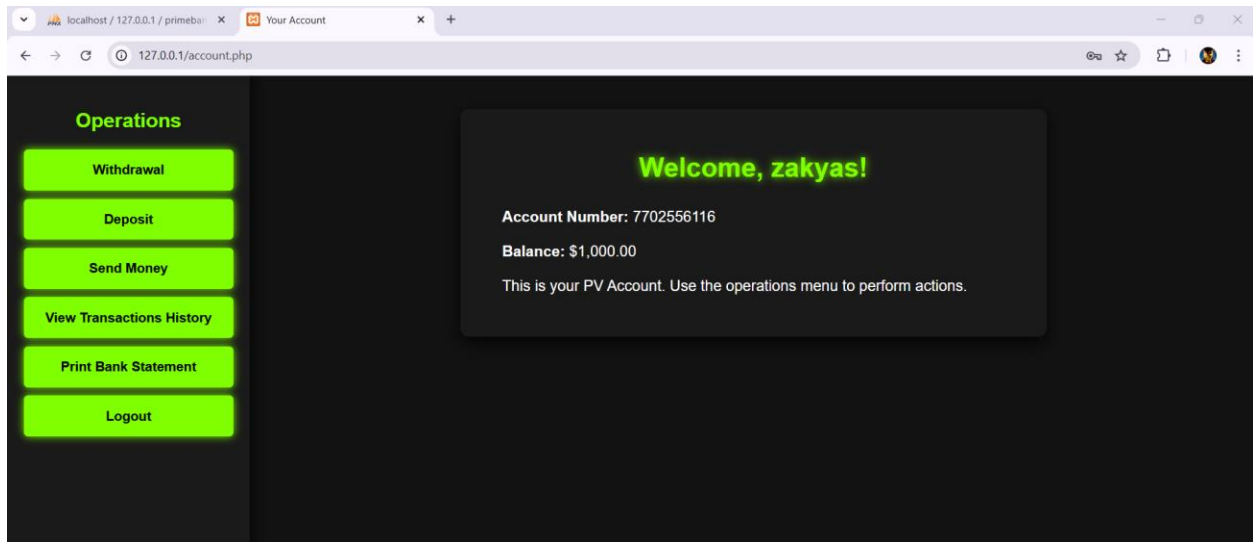
## PrimeVaultBank - Login

### Login

## PrimeVaultBank - Login

### Login

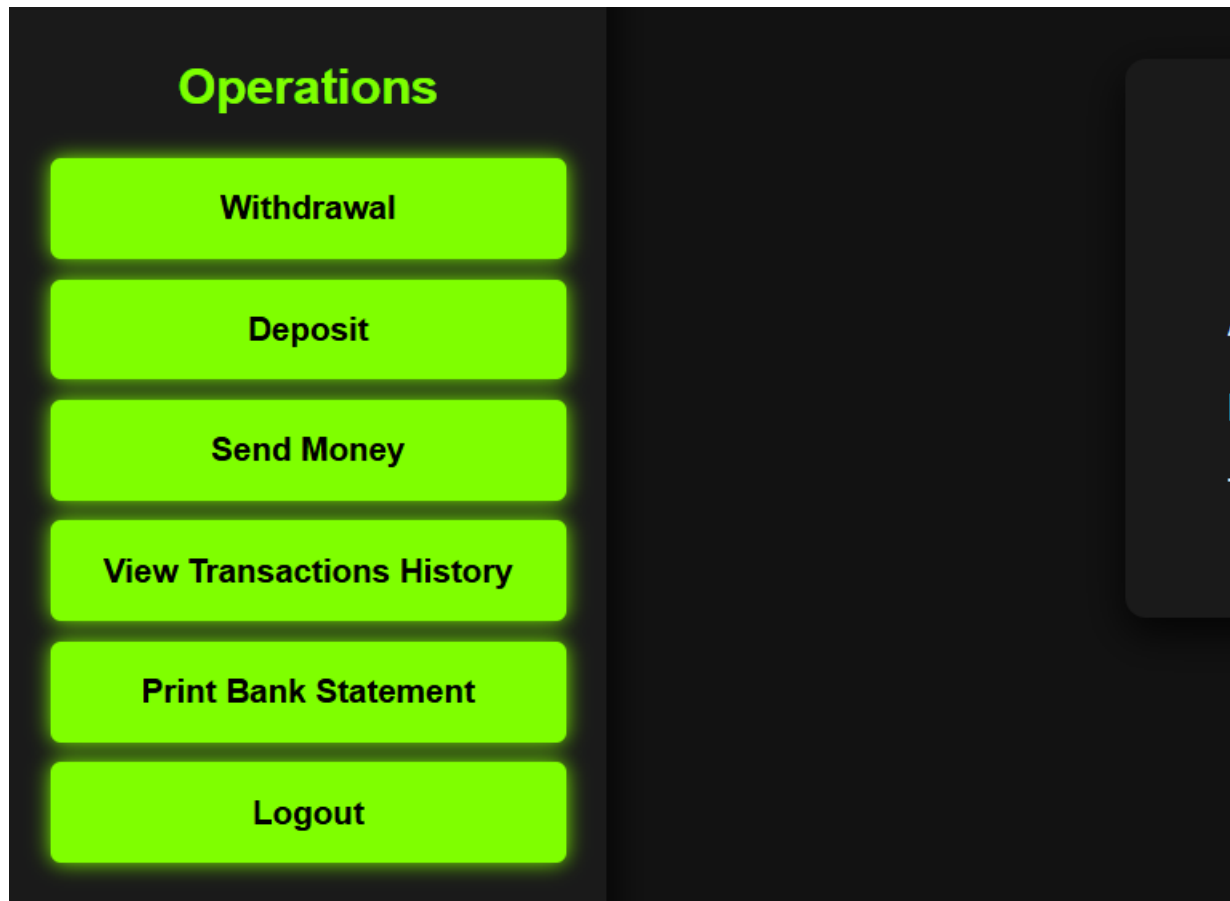




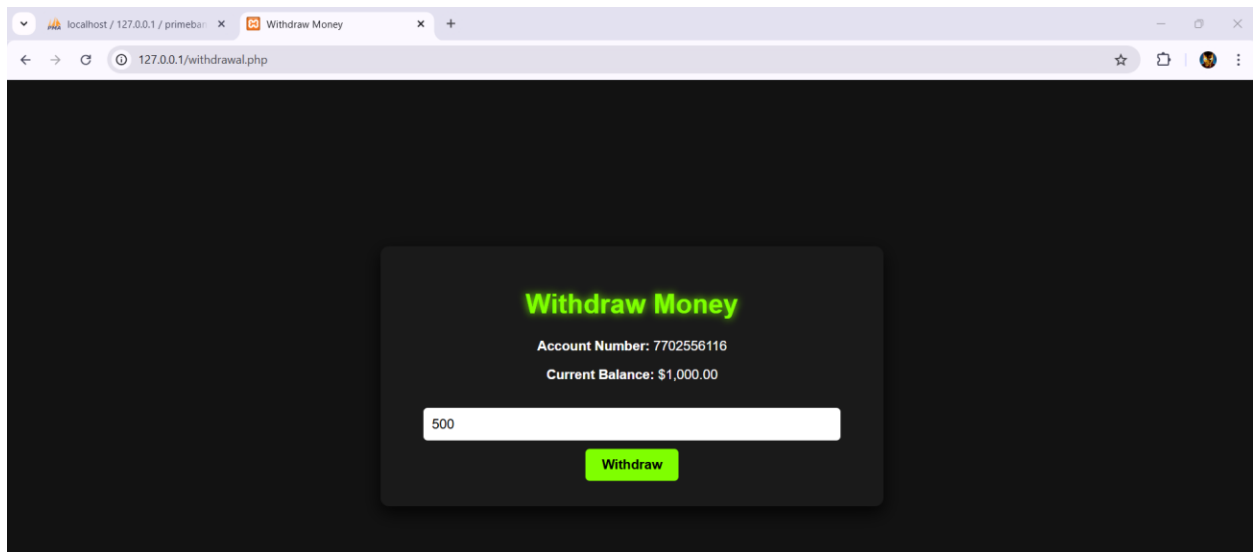
Source file: login.php

```
fpdf.php x index.php connection.php ...\\Code dbconnect.php
login.php
1 <?php
2 session_start();
3 include('connection.php');
4 error_reporting(0);
5
6 if ($_SERVER['REQUEST_METHOD'] === 'POST' && isset($_POST['login'])) {
7     $username = $_POST['username'];
8     $password = $_POST['password'];
9     $checkQuery = "SELECT * FROM users WHERE username = '$username'";
10
11     $result = mysqli_query($conn, $checkQuery);
12     if (mysqli_num_rows($result) > 0) {
13         $user = mysqli_fetch_assoc($result);
14         if (password_verify($password, $user['password'])) {
15             $_SESSION['username'] = $username;
16             $_SESSION['accno'] = $account_no;
17             header("Location: account.php");
18             exit();
19         } else {
20             $_SESSION['message'] = "Error: Incorrect password.";
21         }
22     } else {
23         $_SESSION['message'] = "Error: Username does not exist.";
24     }
25     header("Location: " . $_SERVER['PHP_SELF']);
26     exit();
27 }
28 ?>
29
```

# User operations



## Withdrawal operation



## Withdraw Money

**Account Number:** 7702556116

**Current Balance:** \$500.00

**Withdraw**

Withdrawal successful. You withdrew \$500.

Updated balance:

## Welcome, zakyas!

**Account Number:** 7702556116

**Balance:** \$500.00

This is your PV Account. Use the operations menu to perform actions.

## Source file: withdrawal.php

```
withdrawal.php × Project Report DB.docx register.php Settings fpdf.php index.php
withdrawal.php
35 if ($_SERVER['REQUEST_METHOD'] === 'POST') {
42 } else {
45     $update_query = "
46         WHERE account_no = '$account_no'
47     ";
49
50
51     if (mysqli_query($conn, $update_query)) {
52         // Log the withdrawal transaction in the transactions table
53         $transaction_type = 'withdrawal';
54         $transaction_date = date('Y-m-d H:i:s'); // Current date and time
55
56         // Insert the transaction only if the account_id exists in accounts
57         $check_account_query = "
58             SELECT 1 FROM accounts WHERE account_id = '$account_id'
59         ";
60         $check_result = mysqli_query($conn, $check_account_query);
61
62         if (mysqli_num_rows($check_result) > 0) {
63             // Proceed with the transaction insertion if account_id exists
64             $insert_transaction_query = "
65                 INSERT INTO transactions (account_id, transaction_type, amount, transaction_date, sender_user_id, receiver_user_id, sender_ac
66                 VALUES ('$account_id', '$transaction_type', '$withdrawal_amount', '$transaction_date', '$user_id', '$user_id', '$account_no',
67             ";
68
69             if (mysqli_query($conn, $insert_transaction_query)) {
70                 $message = "Withdrawal successful. You withdrew $$withdrawal_amount.";
71             } else {
72                 $message = "Error logging transaction.";
73             }
74         } else {
75             $message = "Account does not exist for transaction.";
76         }
77
78         $balance = $new_balance; // Update balance to show the new value
79     } else {
80         $message = "Error processing withdrawal.";
81     }
82 }
83 }
```

# Deposit operation

## Deposit Funds

Account Number: 7702556116

Current Balance: \$500.00

Deposit Funds

Go Back

## Deposit Funds

Account Number: 7702556116

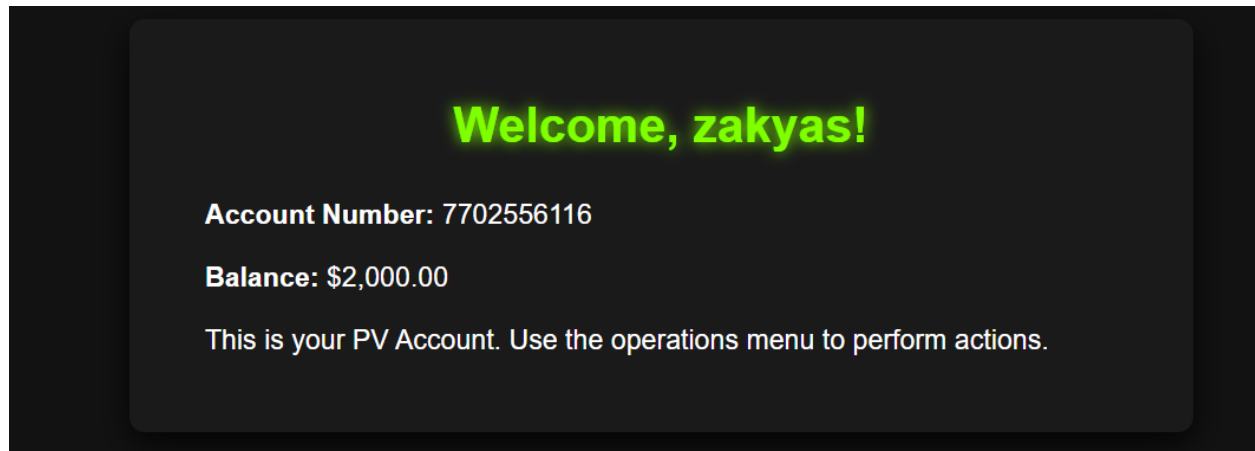
Current Balance: \$2,000.00

Deposit Funds

Funds deposited successfully. New balance: \$2,000.00

Go Back

Updated balance:



Source file: deposit.php

```
deposit.php ×  send.php  withdrawal.php  Project Report DB.docx  register.php  Settings
deposit.php
29     } else {
30         $balance = 0.00;
31     }
32
33
34     // Handle deposit request (previously debit)
35     if ($_SERVER['REQUEST_METHOD'] === 'POST') {
36         $deposit_amount = floatval($_POST['deposit_amount']); // Change from 'debit_amount' to 'deposit_amount'
37
38         if ($deposit_amount > 0) {
39             // Update the balance in the database by adding the deposit amount
40             $new_balance = $balance + $deposit_amount;
41             $update_query = "
42                 UPDATE accounts
43                 SET balance = $new_balance
44                 WHERE account_id = '$account_id'
45             ";
46
47             if (mysqli_query($conn, $update_query)) {
48                 // Insert transaction record into transactions table
49                 $transaction_query = "
50                     INSERT INTO transactions (account_id, transaction_type, amount, transaction_date, sender_user_id, receiver_user_id, sender_account_no, receiver_account_no)
51                     VALUES ('$account_id', 'deposit', '$deposit_amount', NOW(), '$user_id', '$user_id', '$account_no', '$account_no')
52                 ";
53
54                 if (mysqli_query($conn, $transaction_query)) {
55                     $balance = $new_balance;
56                     $success_message = "Funds deposited successfully. New balance: $" . number_format($balance, 2);
57                 } else {
58                     $error_message = "Error: Could not log the transaction.";
59                 }
60             } else {
61                 $error_message = "Error: Could not update balance.";
62             }
63         } else {
64             $error_message = "Please enter a valid amount.";
65         }
66     }
67     >>
```

## Send Money operation

### Send Money

Your Account Number: 7702556116

Current Balance: \$2,000.00

  
  
Transfer

### Send Money







Your Account Number: 7702556116

Current Balance: \$1,500.00

  
  
Transfer  

Transaction Successful! New Balance: \$1,500.00

Receiver & sender balance updated in database

				account_id	user_id	account_no	balance
<input type="checkbox"/>		Edit		Copy		Delete	24
					138	7702556116	1500
<input type="checkbox"/>		Edit		Copy		Delete	25
					139	5841239972	1500

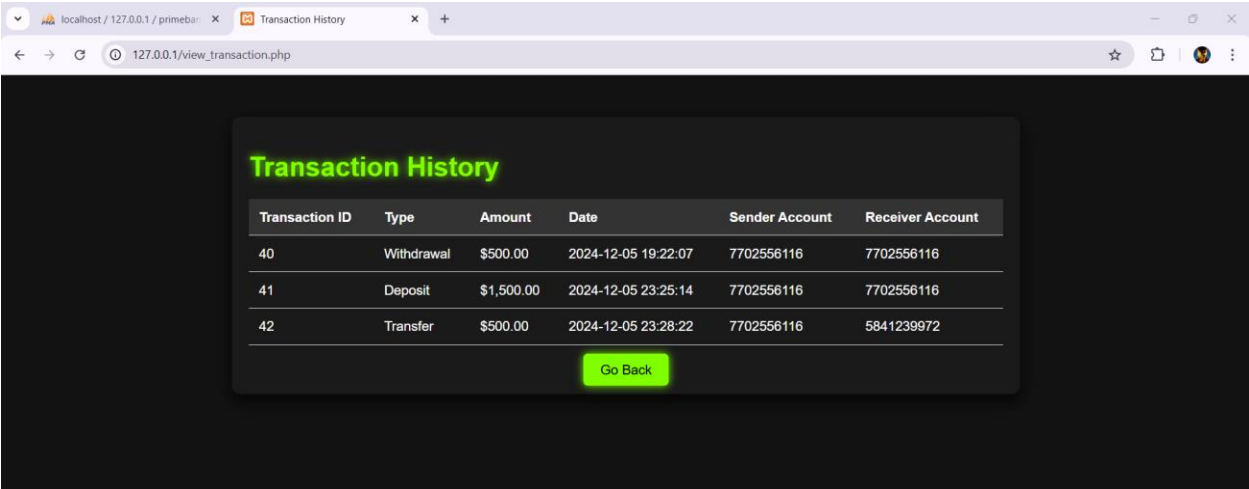
## Source file: send.php

```
deposit.php  send.php  withdrawal.php  Project Report DB.docx  register.php  Settings  ...

send.php
36  if ($_SERVER['REQUEST_METHOD'] === 'POST') {
37      // Validate CSRF token
38      if ($_POST['csrf_token'] !== $_SESSION['csrf_token']) {
39          $error_message = "Invalid CSRF token.";
40      } else {
41          if ($send_amount > 0) {
42              if ($send_amount > $sender_balance) {
43                  $error_message = "Not enough funds to complete the transaction.";
44              } else {
45                  // Check if the receiver account exists
46                  $receiver_query = "SELECT balance, user_id, account_id FROM accounts WHERE account_no = '$receiver_account_no'";
47                  $receiver_result = mysqli_query($conn, $receiver_query);
48                  $transaction_type = 'transfer';
49                  $transaction_date = date('Y-m-d H:i:s'); // Current date and time
50
51                  if ($receiver_result && mysqli_num_rows($receiver_result) > 0) {
52                      $receiver_row = mysqli_fetch_assoc($receiver_result);
53                      $receiver_balance = $receiver_row['balance'];
54                      $receiver_user_id = $receiver_row['user_id']; // Capture receiver_user_id for transaction record
55                      $receiver_account_id = $receiver_row['account_id']; // Capture receiver_account_id for transaction record
56
57                      // Start transaction for consistency
58                      mysqli_begin_transaction($conn);
59
60                      try {
61                          // Deduct amount from sender's balance
62                          $new_sender_balance = $sender_balance - $send_amount;
63                          $update_sender_query = "
64                          UPDATE accounts
65                          SET balance = $new_sender_balance
66                          WHERE account_no = '$sender_account_no'
67                          ";
68
69                          // Add amount to receiver's balance
70                          $new_receiver_balance = $receiver_balance + $send_amount;
71                          $update_receiver_query = "
72                          UPDATE accounts
73                          SET balance = $new_receiver_balance
74                          WHERE account_no = '$receiver_account_no'
75                          ";
76                      } catch (Exception $e) {
77                          // Transaction failed, rollback
78                      }
79                  }
80              }
81          }
82      }
83  }
```



# View Transactions History operation



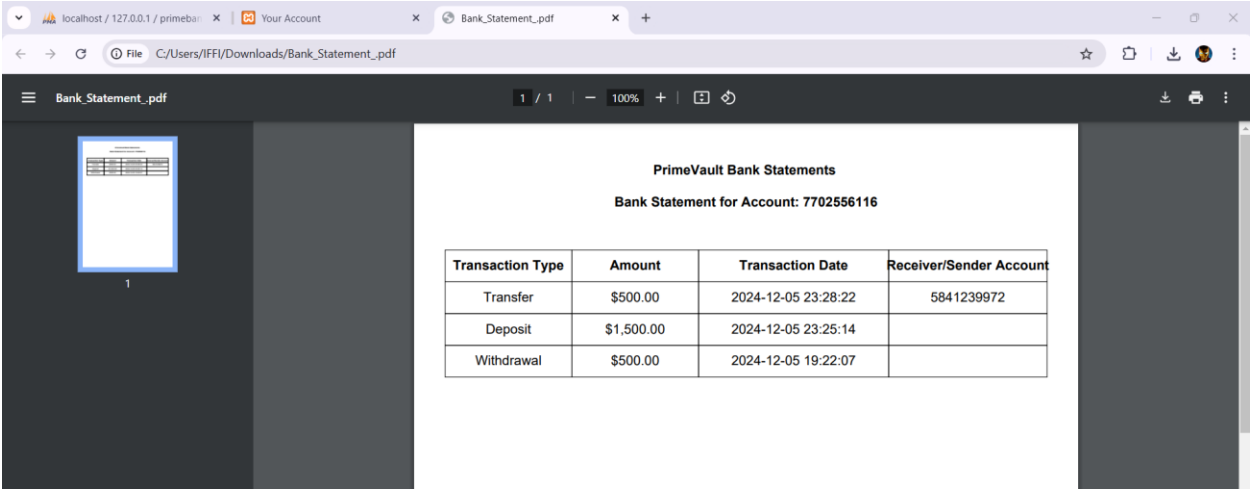
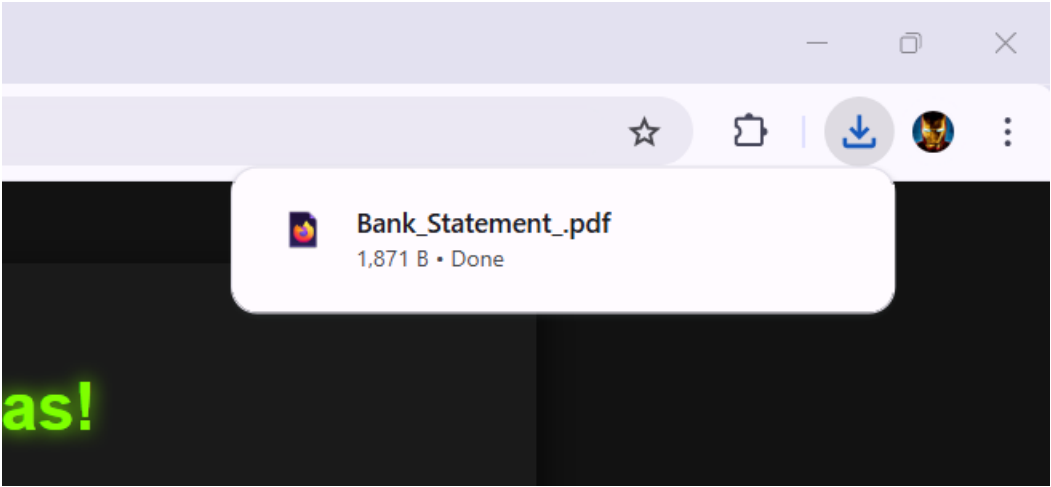
All transactions inserted in transactions table:

	transaction_id	account_id	transaction_type	amount	transaction_date	sender_user_id	receiver_user_id	sender_account_no	receiver_account_no
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	40	24	withdrawal	500	2024-12-05 19:22:07	138	138	7702556116	7702556116
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	41	24	deposit	1500	2024-12-05 23:25:14	138	138	7702556116	7702556116
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	42	24	transfer	500	2024-12-05 23:28:22	138	139	7702556116	5841239972

Source file: view\_transaction.php

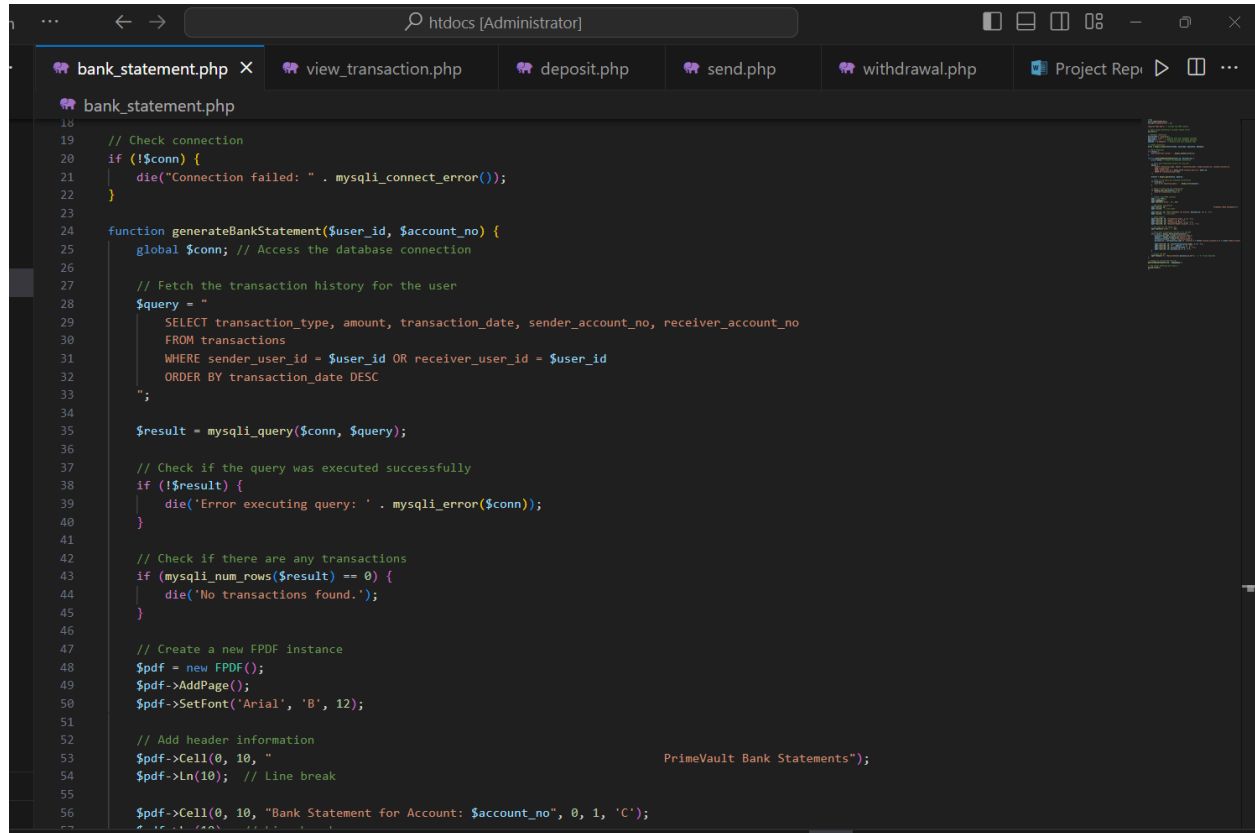
```
view_transaction.php X deposit.php send.php withdrawal.php Project Report DB.docx register.p
view_transaction.php
1 <?php
2 session_start();
3 include('connection.php');
4
5 // Check if the user is logged in; if not, redirect to the login page
6 if (!isset($_SESSION['username'])) {
7     header("Location: login.php");
8     exit();
9 }
10
11 // Fetch the logged-in username from the session
12 $username = $_SESSION['username'];
13
14 // Query to fetch the user's details
15 $query = "
16     SELECT u.user_id, u.username
17     FROM users u
18     WHERE u.username = '$username'
19 ";
20 $result = mysqli_query($conn, $query);
21
22 if ($result && mysqli_num_rows($result) > 0) {
23     $row = mysqli_fetch_assoc($result);
24     $user_id = $row['user_id']; // Store the user_id to filter transactions
25 } else {
26     $error_message = "Error: User not found.";
27     echo $error_message;
28     exit();
29 }
30
31 // Query to fetch the transaction history for the logged-in user
32 $transaction_query = "
33     SELECT t.transaction_id, t.transaction_type, t.amount, t.transaction_date, t.sender_account_no, t.receiver_account_no
34     FROM transactions t
35     WHERE t.sender_user_id = '$user_id' OR t.receiver_user_id = '$user_id'
36 ";
37 $transaction_result = mysqli_query($conn, $transaction_query);
38 ?>
```

# View Transactions History operation



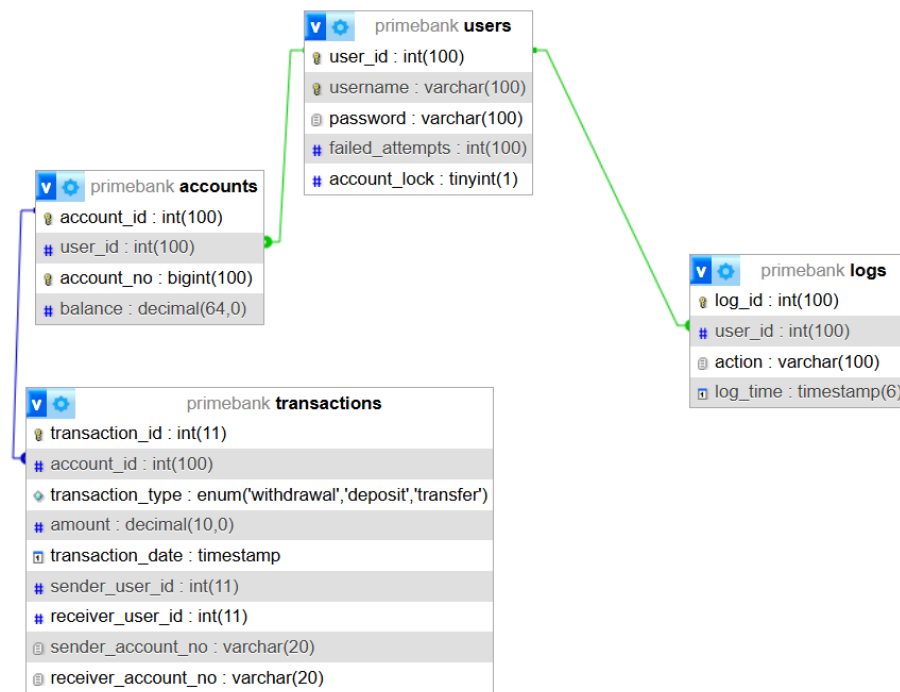
Transaction Type	Amount	Transaction Date	Receiver/Sender Account
Transfer	\$500.00	2024-12-05 23:28:22	5841239972
Deposit	\$1,500.00	2024-12-05 23:25:14	
Withdrawal	\$500.00	2024-12-05 19:22:07	

## Source file: bank\_statement.php



```
18
19 // Check connection
20 if (!$conn) {
21     die("Connection failed: " . mysqli_connect_error());
22 }
23
24 function generateBankStatement($user_id, $account_no) {
25     global $conn; // Access the database connection
26
27     // Fetch the transaction history for the user
28     $query = "
29         SELECT transaction_type, amount, transaction_date, sender_account_no, receiver_account_no
30         FROM transactions
31         WHERE sender_user_id = $user_id OR receiver_user_id = $user_id
32         ORDER BY transaction_date DESC
33     ";
34
35     $result = mysqli_query($conn, $query);
36
37     // Check if the query was executed successfully
38     if (!$result) {
39         die("Error executing query: " . mysqli_error($conn));
40     }
41
42     // Check if there are any transactions
43     if (mysqli_num_rows($result) == 0) {
44         die("No transactions found.");
45     }
46
47     // Create a new FPDF instance
48     $pdf = new FPDF();
49     $pdf->AddPage();
50     $pdf->SetFont('Arial', 'B', 12);
51
52     // Add header information
53     $pdf->Cell(0, 10, "PrimeVault Bank Statements");
54     $pdf->Ln(10); // Line break
55
56     $pdf->Cell(0, 10, "Bank Statement for Account: $account_no", 0, 1, 'C');
```

# Entity Relationship diagram



## Normalization Applied

Users table: 3NF

Account table: 2NF

Transactions table: 3NF

Logs table: 2NF