MINIVAULT APPLICATION

FY IT Sem II (2022-23)
Batch P6-2

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Problem Statement

The problem statement for our project is to develop a user-centric banking application called MiniVault. The goal is to create a platform that empowers users to have full control over their financial activities, without the need for physical branch visits or complex procedures. The application should offer convenience, security, and simplicity, enabling users to effectively manage their accounts, conduct transactions, and obtain passbook records.

Key challenges that the MiniVault application aims to address include:

1) **Accessibility**: Provide users with anytime, anywhere access to their accounts, eliminating the need for physical branch visits and long waiting times.
2) **Account Management**: Enable users to perform essential account management tasks, such as checking balances, viewing transaction history, and updating personal information, through a user-friendly interface.
3) **Security**: Implement robust security measures to protect user accounts and sensitive financial information, including encryption of passwords and secure data storage.
4) **Transaction Tracking:** Maintain accurate and up-to-date records of all financial transactions, including deposits, withdrawals, and fund transfers, to ensure transparency and enable users to track their financial activities.

System Architecture

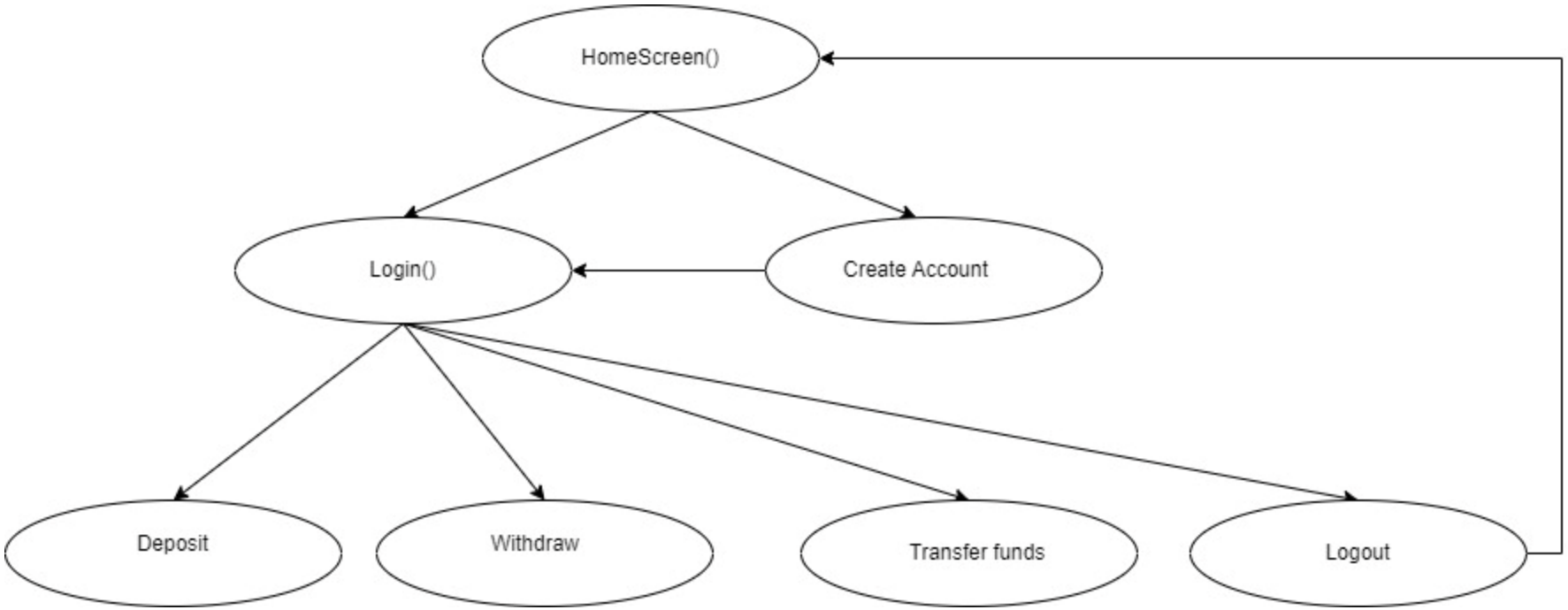
1. **User Interface:**
   1. The application interacts with users through command-line prompts and inputs.
   2. Users can create an account, log in, and perform various banking operations.
2. **Data Storage:**
   1. The application uses a JSON file ("data.json") to store user data such as account details, transaction history, and balances.
   2. The file is read and updated whenever necessary to maintain user information.
3. **Encryption:**
   1. The code utilizes a Caesar cipher encryption method to store and verify user passwords securely.
   2. The "encrypt" module handles the encryption and decryption processes.
4. **PDF Generation:**
   1. The application generates a PDF file containing the user's transaction history.
   2. The "pdf" module handles the generation of the PDF document.

System Architecture

5. **Customer Class:**
   1. The main functionality of the application is encapsulated within the Customer class.
   2. It handles account operations such as deposits, withdrawals, fund transfers, passbook viewing, and log out.
6. **Main Program Flow:**
   1. The "homeScreen" function serves as the starting point of the application.
   2. Users are prompted to log in or create a new account.
   3. Depending on the chosen option, the code directs the flow to the "login" or "createAccount" functions.
   4. Once logged in, users can access their account and perform banking operations until they choose to log out.

System Architecture

Flowchart



Features of designed System

1. **Account Creation**: Users can create accounts by providing their name, username, and password. The system enforces password security requirements and validates the inputs to ensure a valid account is created.
2. **Secure Login**: Users can securely log in to their accounts using their username and password. The system verifies the credentials and grants access only to authorized users.
3. **Banking Operations**: MiniVault allows users to perform various banking operations, including depositing funds, withdrawing funds, and transferring funds to other users. These operations are implemented with proper validation and verification to ensure accurate and secure transactions.
4. **Passbook Generation**: The system provides the functionality to generate passbooks in PDF format. Users can view their transaction history, and the system generates a downloadable PDF file containing detailed information about their transactions. This feature facilitates easy record-keeping and helps users keep track of their account activities.
5. **Data Security and Privacy**: MiniVault prioritizes data security and privacy. It integrates encryption techniques, such as Caesar encryption, to protect sensitive user information, such as passwords. The encryption ensures that user data remains secure and unreadable by unauthorized parties.

Result/Outputs

HomeScreen :

```
Welcome to MiniVault App
L- LogIn | C-Create Account:
```

Creating Account : Testcase 1=> If username already exists

```
Welcome to MiniVault App
CREATE AN ACCOUNT
Enter your Name: Heramb Rajendra Patil
Instructions:
The username can only contain letters (both uppercase and lowercase), numbers, and underscores.
No special characters or spaces are allowed in the username.
Enter your username: herambbp
You already have an account in MINIVAULT application. Please LogIn or try creating a new account with a different username.
```

Creating Account : Testcase 2=> If Name pattern does not match

```
Welcome to MiniVault App
CREATE AN ACCOUNT
Enter your Name: Heramb1
Invalid name.Type your name using alphabetic characters (A-Z, a-z) only.
Press enter to continue...
```

Result/Outputs

Login:-

```
Welcome to MiniVault App
LOG IN
Enter your username: heramb_patil
Enter your Password: ..........
```

After Login Succesfull

```
MINIVAULT CUSTOMER: Heramb Rajendra Patil
D-Deposit | W-Withdraw | TF-Transfer Funds | VP-ViewPassbook | LO-LogOut:
```

Deposit()

```
MINIVAULT CUSTOMER: Heramb Rajendra Patil
D-Deposit | W-Withdraw | TF-Transfer Funds | VP-ViewPassbook | LO-LogOut: D
Enter the amount you want to deposit: ₹1000
Username: heramb_patil
Dear Heramb Rajendra Patil,you have deposited 1000 rupees in your account and your bank balance is 1000 rupees
D-Deposit | W-Withdraw | TF-Transfer Funds | VP-ViewPassbook | LO-LogOut:
```

Result/Outputs

Withdraw() :

```
D-Deposit | W-Withdraw | TF-Transfer Funds | VP-ViewPassbook | LO-LogOut: W
Enter the amount you want to withdraw: ₹600
Username: heramb_patil
Dear Heramb Rajendra Patil,you have withdrawed 600 rupees in your account and your bank balance is 400 rupees
D-Deposit | W-Withdraw | TF-Transfer Funds | VP-ViewPassbook | LO-LogOut:
```

Transfer funds() :

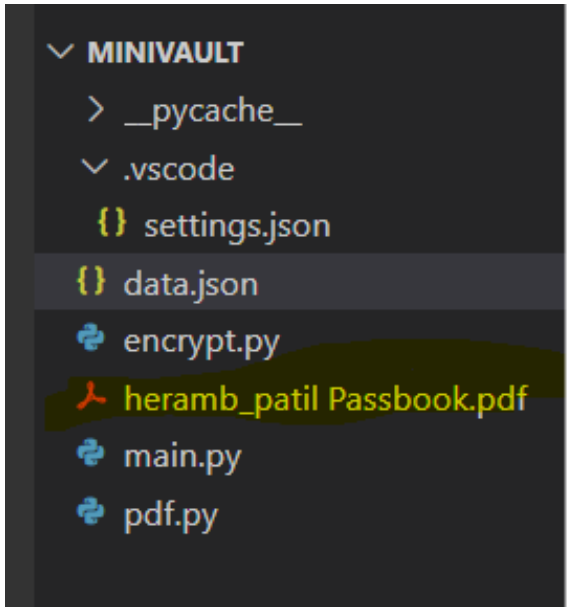
```
D-Deposit | W-Withdraw | TF-Transfer Funds | VP-ViewPassbook | LO-LogOut: tf
Enter username of bankholder you want to deposit amount in: parv
Enter the amount you want to deposit: ₹500
Insufficient balance for transfer.
```

```
MINIVAULT CUSTOMER: Heramb Rajendra Patil
D-Deposit | W-Withdraw | TF-Transfer Funds | VP-ViewPassbook | LO-LogOut: tf
Enter username of bankholder you want to deposit amount in: parv
Enter the amount you want to deposit: ₹200
Dear Heramb Rajendra Patil, successfully transferred 200 rupees to Parv Golccha.
Now your bank balance is 200 rupees
D-Deposit | W-Withdraw | TF-Transfer Funds | VP-ViewPassbook | LO-LogOut: vp
E:\SEM 2\MiniVault\heramb_patil Passbook.pdf
D-Deposit | W-Withdraw | TF-Transfer Funds | VP-ViewPassbook | LO-LogOut:
```

Result/Outputs

ViewPassbook()

```
D-Deposit | W-Withdraw | TF-Transfer Funds | VP-ViewPassbook | LO-LogOut: vp
E:\SEM 2\MiniVault\heramb_patil Passbook.pdf
D-Deposit | W-Withdraw | TF-Transfer Funds | VP-ViewPassbook | LO-LogOut:
```



Passbook

Name: Heramb Rajendra Patil Username: heramb_patil

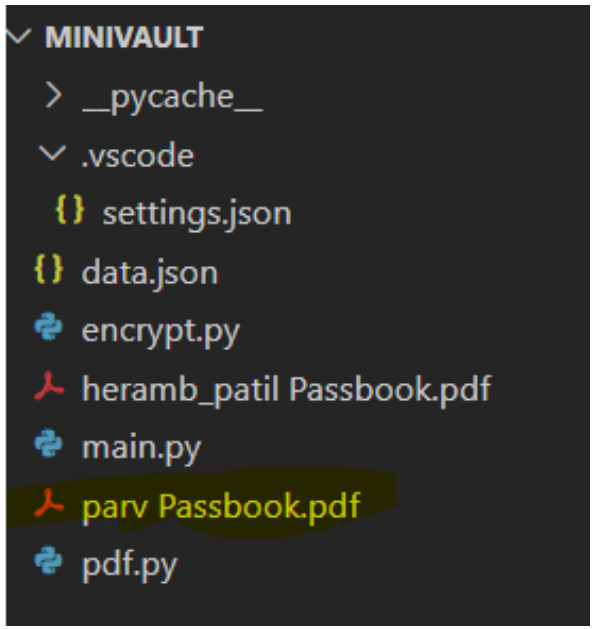
Printing time: 2023-05-31 00:13:54.972104

Transaction Type	Amount	Balance	Date
Deposit	Rs 1000/-	Rs 1000/-	2023-05-30 23:45:10.145647
Withdraw	Rs 600/-	Rs 400/-	2023-05-30 23:46:23.411762
TF:parv	Rs 200/-	Rs 200/-	2023-05-31 00:13:40.701080

Result/Outputs

ViewPassbook()

```
MINIVAULT CUSTOMER: Parv Golccha
D-Deposit | W-Withdraw | TF-Transfer Funds | VP-ViewPassbook | LO-LogOut: vp
E:\SEM 2\MiniVault\parv Passbook.pdf
D-Deposit | W-Withdraw | TF-Transfer Funds | VP-ViewPassbook | LO-LogOut:
```



Passbook

Name: Parv Golccha Username: parv

Printing time: 2023-05-31 00:18:03.118403

Transaction Type	Amount	Balance	Date
Deposit	Rs 1000/-	Rs 1000/-	2023-05-30 21:22:21.932349
Deposit	Rs 1000/-	Rs 2000/-	2023-05-30 21:24:52.966196
Received fund	Rs 200/-	Rs 1900/-	2023-05-31 00:06:38.634732

Conclusion

- In conclusion, the MiniVault project has effectively addressed the problem statement by providing a reliable and secure banking solution for users. By implementing features such as account creation, secure login, deposit and withdrawal functionalities, fund transfers, passbook generation, and encryption techniques, the application offers a comprehensive and user-friendly banking experience.
- The significance of the MiniVault application lies in its ability to provide individuals with a convenient and secure platform to manage their finances. Users can easily create accounts, securely access their information, perform banking operations, and maintain a record of their transactions through the passbook feature. The integration of encryption techniques ensures data security and privacy, enhancing user confidence in the system.
- Moreover, the project's successful implementation demonstrates the potential for technology to streamline and improve traditional banking processes. The MiniVault application offers an alternative to traditional brick-and-mortar banking, allowing users to manage their finances from the comfort of their homes or on the go.

Conclusion

- Looking towards the future, there are several possibilities for further improvements and enhancements. Some potential areas for future development include:

1. **Enhanced User Interface:** Improving the user interface to make it more intuitive, visually appealing, and user-friendly can enhance the overall user experience.
2. **Additional Banking Services:** Expanding the range of banking services offered, such as bill payments, account transfers, investment tracking, and loan management, can provide users with a more comprehensive financial management solution.
3. **Mobile Application:** Developing a mobile application version of MiniVault can cater to users who prefer accessing their accounts through smartphones and tablets, providing greater flexibility and convenience.
4. **Integration with External Systems:** Integrating with external systems, such as payment gateways or financial APIs, can enable users to perform transactions beyond the scope of the MiniVault application, expanding its functionality and usefulness.
5. **Enhanced Security Measures:** Continuously improving and updating the encryption techniques and implementing additional security measures to safeguard user data from potential threats and vulnerabilities.

References

https://pypi.org/project/pyttsx3/
https://pypi.org/project/DateTime/
https://pypi.org/project/pwinput/
https://docs.python.org/3/library/json.html

FPDF:-
https://github.com/reingart/pyfpdf/blob/master/docs/Templates.md

Implemented this concepts:-

- OOPS
- Caeser cipher – dicts,random module,etc
- FPDF library
- Regular expressions
- File handling
- Exception handling
- JSON , etc.

THANK YOU!