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| Class Name | Method Name | Parameter | Method Intension | Input | Output | Address Functionality |
| FrontEnd | main() | None | Allow manager to input account list file path and transaction summary file path, invoke login method | account list file,  transaction summary file | None | Able to run the program |
| login() | None | Allow user to login and choose mode(atm, agent) and create new object, print error message | login command, mode choice | Error message | Method allow user to login and choose mode, shows error message if user inputs invalid command. (logout before login, duplicate login, etc.) |
| ATM | \_\_init\_\_() | self, accountListFile  transactionSummary | Allow object initialization, take account list path as parameter, and pass it to readList method | None | None | Initialization ATM object to use methods in the class |
| readList() | self,fileName | Take account list file path as parameter and read the list, update accountList attribute | None | None | Read account list file for further usage |
| inputConvert() | self, amount | Take user input amount as parament, convert cent in string to float and return | None | None | Can properly handle user input string such as “001” |
| interface() | self | Shows greeting message and allow user input command for ATM, shows error message if user input AGENT command or mistype command, terminate if logout | Function user wants to use | Greeting message, error message | The main interaction logic behind ATM and agent mode |
| functionDeposit() | self | Allow user to deposit, verify the account and amount user typed in by calling verification methods, shows successfully deposit message if verification succeed, terminate otherwise. Add deposit history to transaction file.  Allow user to logout anytime | Account deposit to, amount deposit | Transaction message or error message | The main interaction logic behind function of deposit |
| functionWithdraw() | self | Allow user to withdraw, verify the account and amount user typed in by calling verification methods, shows successfully withdraw message if verification succeed, terminate otherwise. Add withdraw history to transaction file. Allow user to logout anytime | Account withdraw from, amount withdraw | Transaction message or error message | The main interaction logic of function of withdraw |
| functionTransfer() | self | Allow user to transfer, verify the account and amount user typed in by calling verification methods, shows successfully transfer message if verification succeed, terminate otherwise. Add withdraw history to transaction file. Allow user to logout anytime | Account transfer from/to, amount transfer | Transaction message or error message | The main interaction logic of function of transfer |
| functionCreateAccount() | self | Print error message that create account is not allowed in atm mode | None | None | Restriction which create account is not allowed in atm mode. It should be overridden in agent |
| functionDeleteAccount() | self | Print error message that delete account is not allowed in atm mode | None | None | Restriction which delete account is not allowed in atm mode. It should be overridden in agent |
| functionLogout() | self | Terminate program, write transaction summary into transaction summary file | None | (file) transaction summary file | Allow user logout and write transaction file when logout |
| recordTransaction() | self, transaction, account, amount | Take transaction type, account and amount as parameter, record transaction in corresponding dict for restriction which the daily deposit and withdraw amount is limited by 5000, transfer amount is limited by 10000 | None | None | Record transaction history in dict for user daily limit check, 5000 for deposit, withdraw and 10000 for transfer |
| verifyAccount() | self,account | Check the validate of user input account | None | Error message | Input account is invalid if length is not 7, account start with 0, or cannot find account in account list |
| verifyAmount() | self, amount | Check the validate of user input amount | None | Error message | Input amount is invalid if length is smaller than 3 or greater than 8, or the input amount is in digit format |
| verifyDepositAmount() | self, account, amount | Check the validate of user input deposit amount | None | Error message | Deposit amount is invalid if amount exceeds the limit of 2000 per transaction or daily limit of 5000 |
| verifyWithdrawAmount() | self, account, amount | Check the validate of user input withdraw amount | None | Error message | Withdraw amount is invalid if amount exceeds the limit of 2000 per transaction or daily limit of 5000 |
| verifyTransferAmount() | self, fromAccount, amount | Check the validate of user input transfer amount | None | Error message | Withdraw amount is invalid if amount exceeds the daily limit of 20000 |
| existAccount() | self,account | Search user input account from account list | None | None | Check if user input account exists in the account list |
| AGENT | \_\_init\_\_() | self, accountListFile  transactionSummary | Inherit ATM attributes and methods | None | None | Initialization AGENT object to use methods in the class |
| functionCreateAccount() | Self | 1.Overridden ATM create account method.  2.accept one account number input and one account name input, check the validate of the inputs. print successfully created account message if information is valid, otherwise print error message.  3.Record transaction by calling transactionList append method. 4.Allow user to logout anytime. | Account number, account name | Create account message or error message | Allow users to create account in agent mode if the input account name and number are valid |
| functionDeleteAccount | Self | 1.Overridden ATM delete account method.  2.accept one account number input and one account name input, check the validate of the inputs.  3.Delete account in account list file and print successfully delete account message if information is valid, otherwise print error message.  4.Record transaction by calling transactionList append method. 5.Allow user to logout anytime. | Account number, account name | Delete account message or error message | Allow agent to delete account in agent mode if the input account name and number are valid |
| sameAccount() | self, account | Check if the account number is in the account list in case of duplicating | None | Error message | Identify whether the user create an account which is already exist in the account list |
| verifyAccountName() | Self, accountname | Check if the account name is between 3 to 30 characters, begin and end with space. | None | Error message | Check the new account name should between 3 and 30 alphanumeric characters, and not beginning or ending with a space |
| Greeting() | Self | Overridden greeting in atm, shows special agent mode greeting message | None | Greeting message | Shows user successfully entered agent mode |

Note: the program could terminate at any step by typing logout and enter functionLogout function to logout!

