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.	Account deposit to, amount deposit	Transaction message or error message	The main interaction logic behind function of deposit

			Allow user to logout anytime			
	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.	Account number, account name	Create account message or	Allow users to create account in agent mode if the input account

			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.		error message	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!

FrontEnd

String accountListFile
String transactionSummary → main

String accountListFile
String transactionSummary

String login
String mode → login ← restart

atmObject(accountListFile)   agentObject(accountListFile)

ATM

__init__ — parent — Inheritance — child — __init__

Error Message

functionDeleteAccount or functionCreateAccount

AGENT

interface ← reenter

LOGOUT   LOGOUT

interface → functionLogout

greeting

greeting — if withdraw, deposit, transfer

if create, delete account

Account&
Amount — input — functionDeposit or functionWithdraw or functionTransfer

reenter

functionCreateAccount or functionDeleteAccount

input

account name &
account number

error

verifyAccount   sameAccount   error

error   existAccount   verifyDepositAmount   <<inherit>>
                                                                    existAccount   error
                                              or
error   verifyAmount   verifyWithdrawAmount   verifyAccount   error
                                              or
Text   verifyTransferAmount   error

recordTransaction ← transaction message   verifyAccountName
                    modify transaction summary list

modify transaction summary list
modify account list