CS 3500 – Software Engineering

Project Assignment #3 - Specification & Design

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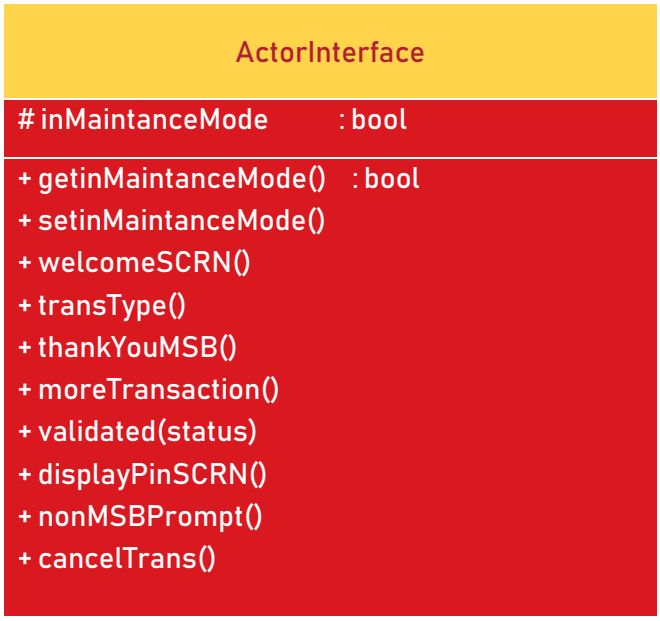
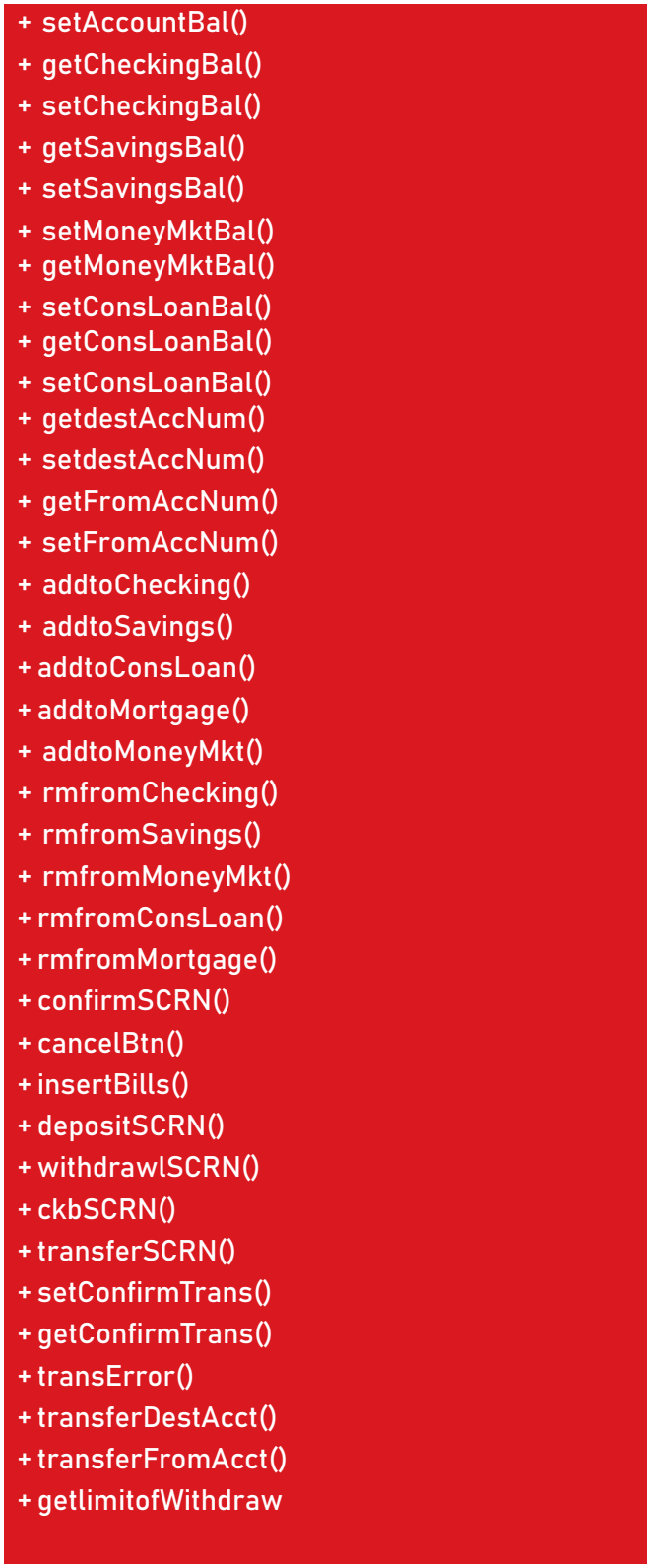


The ActorInterface is the class which is focused on the user interactions. This class has the welcomeSCRN() which is shown to the user before any user interaction. If inMaintanceMode is true, then ATM machine is disabled for any non-System Administrator interaction. This can be triggered by other parts of the ATM system to prevent any causalities from happening. The transType() shows any type of transaction that a user would like to perform such as deposit, withdrawal, check balance, or transfer and records it by sending it to the Oracle Database. The thankYouMSB() is a message that appears whenever a user is done using the ATM and wants to confirm that their transaction was processed successfully. The moreTransaction() activates when a user is about to finish processing their transaction and is prompted if they would like to perform another one after their current one. It will then prompt for successful authentication by asking for their pin. The validated(status) is activated and displayed to the screen when a user has inputted their pin and based on their status, it will appear on the ATM if they're MSB preferred, non-preferred, system administrator, or a NON-MSB customer. The displayPINSCRN() is activated before validated(status) because the ATM will ask for a user's pin after inserting their card into the ATM to authenticate their identity. Overall, the ActorInterface will operations that correspond with every user to system interaction.

TransMenu	
- isPrefered	: bool
- isMSB	: bool
- interestRate	: double
- loanLimit	: double
+ displayPreferSCRN()	
+ displayNONPreferSCRN()	
+ displaySYSAdminSCRN()	
+ displayNONMSBSCRN()	
+ getLoanLimit()	: double
+ setLoanLimit()	
+ getInterestRate()	: double
+ setInterestRate()	
+ getisMSB()	: bool
+ setisMSB()	
+ setisPrefered()	: bool
+ getisPrefered()	
+ moreTrans()	
+ logoff()	

The TransMenu is the class which is focused on identifying the type of actor which is using the machine itself to enable the appropriate features correlating to a bank account. This class has the displayPreferSCRN() which is shown to the actor who is categorized as preferred according to the MSB database. This class has the displayNONPreferSCRN () which is shown to the actor who is categorized as non-preferred according to the MSB database. This class has the displaySYSAdminSCRN () which is shown to the actor who is categorized as the system administrator according to the MSB database. This class has the displayNONMSBSCRN () which is shown to the actor who is categorized as someone using an outside bank account according to the MSB database. The actor specified interest rate as well as loan limit is stored based on per actor basis. To summarize, the TransMenu class will display various type of screen based of validation status of any of the users and also hold important operations such as the interest rate and limits on loans.

Transaction
- isValidAcct : bool - transTime : int - transDate : int - transID : int - transAccNum : int - nearestBranch : string - isAuthenticated : bool - validedCurrency : bool - ATMLocation : string - accountBal :double - checkingBal :double - savingsBal :double - moneyMktBal :double - consLoanBal :double - mortgageBal - limitofWithdraw - confirmTrans :bool - destAccNum - fromAccNum
+ sendtoDBMS() + getValidAcct() : bool + setValidAcct() + getTransTime() : int + setTransTime () + getTransDT() : int + setTransDT() + getTransAccNum() : int + setTransAccNum() + getTransID() : int + setTransID() + generateTransID() + sendtoDBMS() + captureNONMSBAgree() + validAcct() + captureTrans() + validPartner() + getAccountBal()



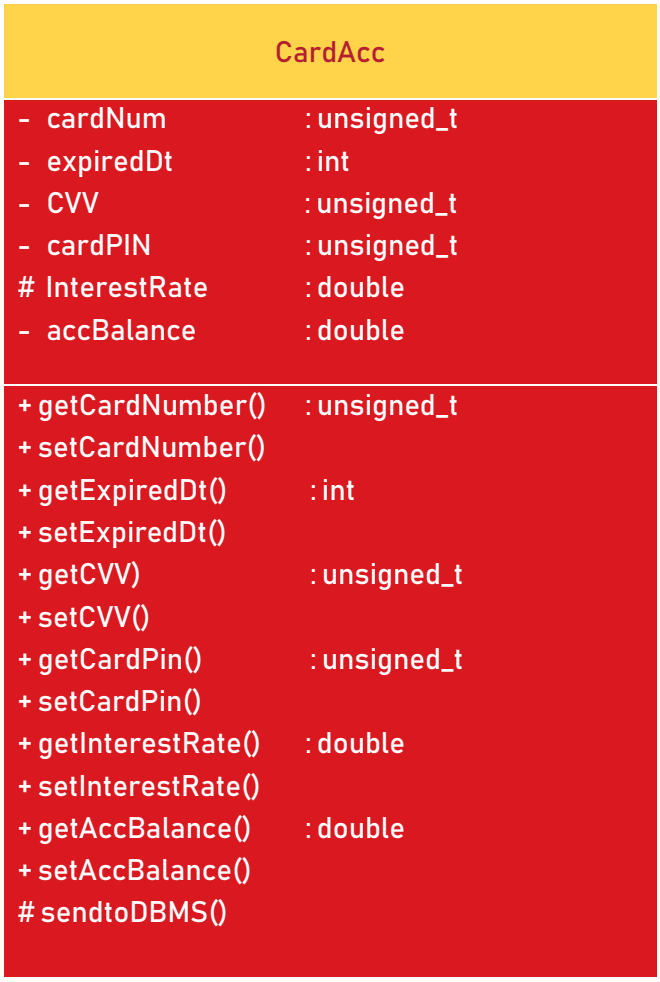
The Transaction class is focused on cataloging transactions done at a particular ATM machine. This class stores if the customer account is valid, a timestamp, an identification number for organization, account number associated with the transaction, nearest branch located to the ATM machine, where the ATM is located, if the actor account was ever activated and if any currency is counterfeit. The sendtoDBMS is a function made to connect and store this class information with bank database. To summarize, the Transaction class will contain all of the types of transactions being performed at any MSB ATM and in the background record every single one of these transactions and send it to the Oracle database

Connection
- isConnected : bool - DBMSHost : int - DBMSPort : int - DBMSID : int - DBMSUID : string - DBMSPwd : string - DBSMIP : string - DBMSAddress : int
+ getisConnected() : bool + setisConnected() + getDBMSHost() : int + setDBMSHost() + getDBMSPort() : int + setDBMSPort() + getDBMSID() : int + setDBMSID() + getDBMSUID() : string + setDBMSUID() + getDBMSPwd() : string + setDBMSPwd() + getDBMSIP() : string + setDBMSIP() + getDBMSAddress() : int + setDBMSAddress() + connectwDBMS() + closewDBMS() + excuteMaintanceMode() + logConnection()

The Connection class is focused on a particular ATM machine with the MSB bank. This class stores if the ATM is connected to the database. The DBMSHost stores the address of database server for the ATM to connect. The DBMSPort stores the port number of database server for the ATM to connect. The DBMSID stores the identification number of the ATM to connect server from the ATM. The DBMSUID stores the user identification number of the ATM to connect server from the ATM. The DBMSPwd stores the password of the ATM to connect server from the ATM. The DBSMIP stores the IP address of the ATM to connect server from the ATM. The DBMSAddress stores the IP address of the server
to connect server from the ATM. Overall this types holds many instances within it that ensure any ATM machine affiliated with MSB is connected and synched up to the Oracle Database. In conclusion, the Connection class is the behind-the-scenes or can be interpreted as the inner workings of the MSB ATM and how it's maintaining and synching everything that's being done to the Oracle Database.

Actor
- FName : string - MName : string - LName : string - Email : string # isPrefered : bool # isMSB : bool # restrictions : int + nonMSBAgree : bool - isAdmin : bool
+ getFName() : string + setFName() + getMName() : string + setMName() + getLName() : string + setLName() + getPrefered() : bool + setPrefered() + getisMSB() : bool + setisMSB() + getRestrictions() : int + setRestrictions() + getAdmin() : bool + setAdmin() + getEmail() : string + setEmail() # validAcct() + validInsertCard() # sendtoDBMS() + nonMSBPrompt() + moneyCheck() + acctFault()

The Actor class is focused on the particular ATM machine with the MSB bank. This class stores information regarding identifying the actor. This includes first name, middle name, last name, email, if the actor is preferred, whether the actor is using an account outside of MSB, if the actor is an Admin, if there are any restrictions placed on the account and whether if the user agrees regarding the three dollar fee if they are using an account outside of MSB. This class also checks if the account is properly validated and sends to the database all the information. Finally, the Actor class will store vital information regarding any user that's using the ATM and record their information along with their transaction and send it to the Oracle Database.



The CardAcc class is focused on the card inserted by the actor into the ATM machine. This class stores information regarding identifying the card. This includes card number, the expiration card, the card verification value, card pin number, interest rate associated with account and the account balance. To summarize, the CardAcc class is primarily focused on a user's ATM card that's associated with MSB and depending on their status, they will have different features and premiums over other accounts.

check	
- validChk	: bool
- Drawee	: string
- payor	: string
- DTIssue	: int
- CurrencyTotal	: unsigned_t
- Signatured	: bool
- routingNum	: unsigned_t
- AccNum	: unsigned_t
- number	; unsigned_t
- BackSigned	: bool
+ getValidChk ()	: bool
+ setValidChk ()	
+ getDrawee()	: string
+ setDrawee()	
+ getPayor()	: string
+ setPayor ()	
+ getDTIssue()	: int
+ setDTIssue()	
+ getCurrencyTotal()	: unsigned_t
+ setCurrencyTotal()	
+ getSignatured()	: bool
+ setSignatured()	
+ getRoutingNum()	: unsigned_t
+ setRoutingNum()	
+ getAccNum()	: unsigned_t
+ setAccNum()	
+ getNumber()	; unsigned_t
+ setNumber()	
+ getBackSigned()	: bool
+ setBackSigned()	
+ scanChk()	

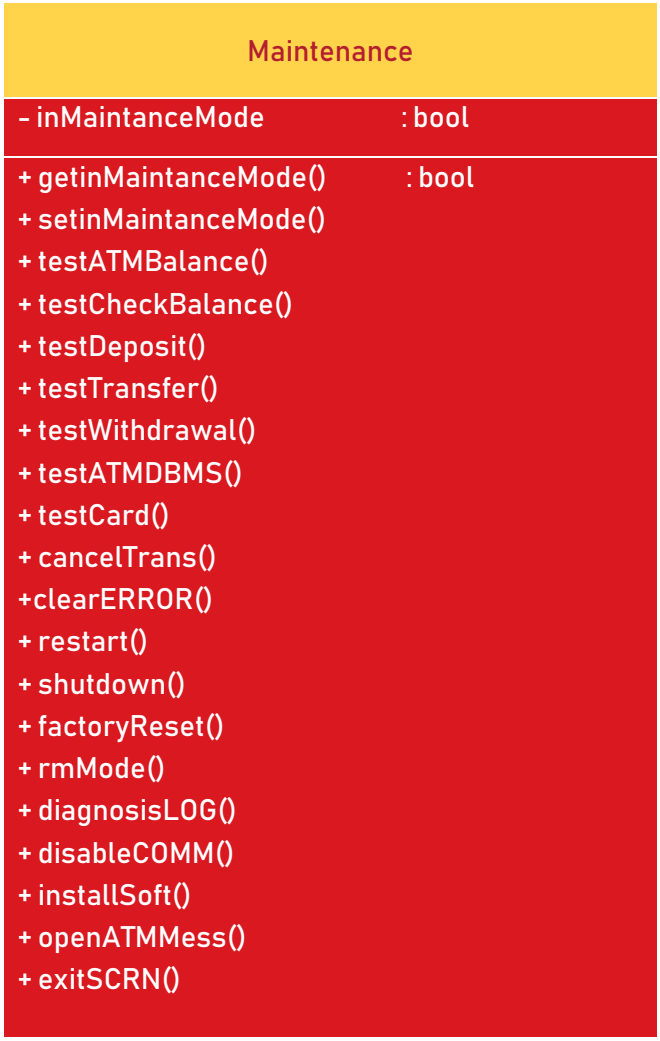
The check class is focused on the check inserted by the actor into the ATM machine. This class will hold many different types of operations that specify a check being properly deposited and inserted into the ATM. There's many operations that will check if the back of the check been signed, the proper account/routing number been noted, date, signature, pay to the order of, and if the check amount is correct.

ATMCore	
- unitID	: unsigned_t
- unitLocation	: string
- isOperational	: bool
- currencyTotal	: int
+ getUNITID()	: unsigned_t
+ setUNITID()	
+ getULocation	: string
+ setULocation	
+ getisOperational()	: bool
+ setisOperational()	
+ getCurrencyTotal()	: int
+ setCurrencyTotal()	
+ drawerClose()	
+ calcCurrTotal()	
+ errorLoginMess()	
+ ejectCard()	
- cancelTrans()	
- ATMCheck()	
- disableCOMM()	
- diagnosisLog()	
- addCurrBal()	
- rmCurrBal()	

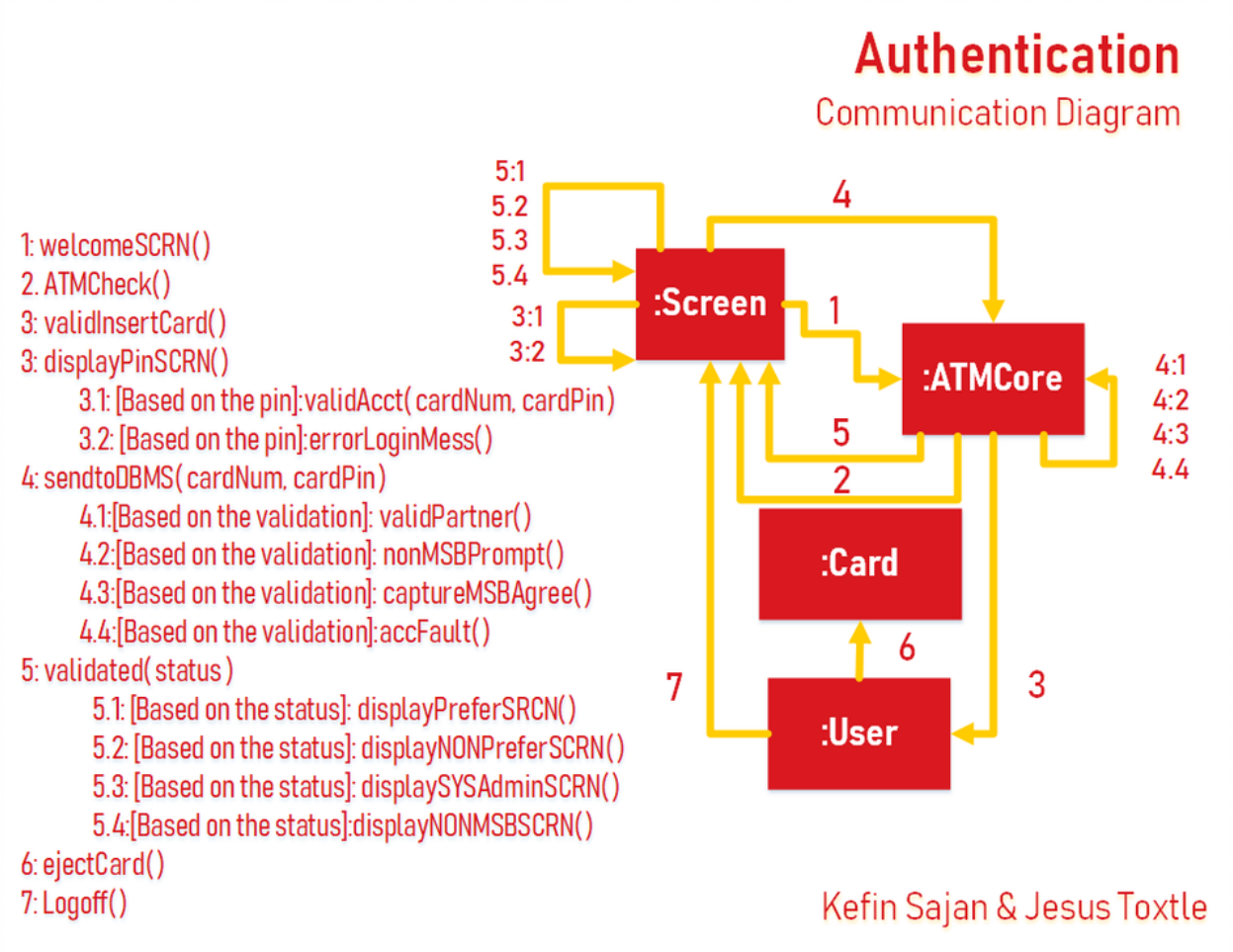
The ATMCore is a class that holds many important ATM operations that records any type of transaction being done and sends every recorded transaction to the connected Oracle database. There's many operations such as drawerClose() which activates when the ATM detects that the inputted cash/check from the user is inside and then closes immediately. Another operation that can activate and display to the screen is the errorLoginMess() which will activate if a user has unsuccessfully authenticate themselves after three times of inputting their pin incorrectly.

ATMReceipt	
- unitID	: unsigned_t
- unitLocation	: string
- ActorName	: bool
- typeOfTrans	: string
- currencyExged	: double
+ toEmail	: bool
+ toPrint	: bool
- isPrinted	: bool
- isEmailed	: bool
- transTime	: time
- transDate	: date
- transID	: int
+ getUNITID()	: unsigned_t
+ getULocation	: string
+ getisOperational()	: bool
+ getCurrencyExged ()	: int
+ drawerClose()	
+ calcCurrTotal()	
+ errorLoginMess()	
+ ejectCard()	
- cancelTrans()	
- ATMCheck()	
- noReceipt()	
- receipt()	
- confirmEmail()	
- inputEmail()	
- changeEmail()	

The ATMReceipt is the class that will hold all of the different types that any user that interacts with the ATM can display their receipt. The receipt can either be printed out, sent to a user's email, confirm whether it's the correct email, display the specific type of MSB ATM any transaction was performed, any currency exchange, location, and also some other vital ATM operations. It holds some operations that are also used in the ATMCore such as ejectCard() which will eject a user's card whenever they're done with their transaction and confirm they wouldn't like to perform any other type of transaction.



The Maintenance class is the type that can only be used by one of the actors which is none other than the System Administrator. The system administrator would already have to authenticate themselves with the ATM and once in it, they will have access various ATM procedures. They can perform many different types of tests ranging from deposits, withdrawals, checking balance, transferring money between accounts, testing connection with the database, restarting the ATM, shutting it down, and many more operations. It comes down to what exactly the system administrator would like to check based off of the diagnosisLOG() and from there perform the correct operation to resolve the issue.


Authentication
Communication Diagram
1: welcomeSCRN()
2. ATMCheck()
3: validInsertCard()
3: displayPinSCRN()
3.1: [Based on the pin]:validAcct(cardNum, cardPin)
3.2: [Based on the pin]:errorLoginMess()
4: sendtoDBMS(cardNum, cardPin)
4.1:[Based on the validation]: validPartner()
4.2:[Based on the validation]: nonMSBPrompt()
4.3:[Based on the validation]: captureMSBAgree()
4.4:[Based on the validation]:accFault()
5: validated(status)
5.1: [Based on the status]: displayPreferSRCN()
5.2: [Based on the status]: displayNONPreferSCRN()
5.3: [Based on the status]: displaySYSAdminSCRN()
5.4:[Based on the status]:displayNONMSBSCRN()
6: ejectCard()
7: Logoff()
5:1
5.2
5.3
5.4
3:1
3:2
4
1
5
2
6
7
3
4:1
4:2
4:3
4.4
:Screen
:ATMCore
:Card
:User
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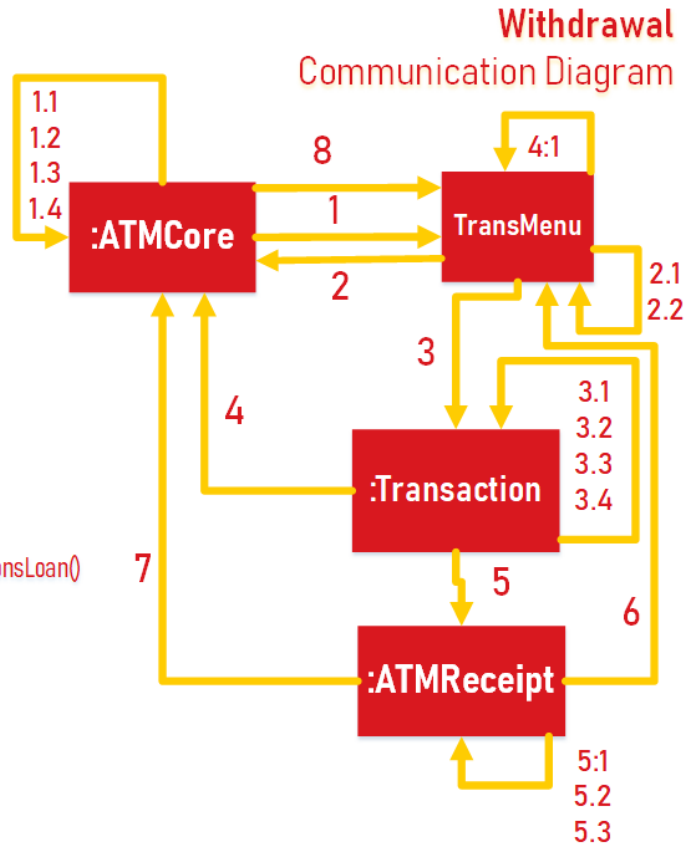
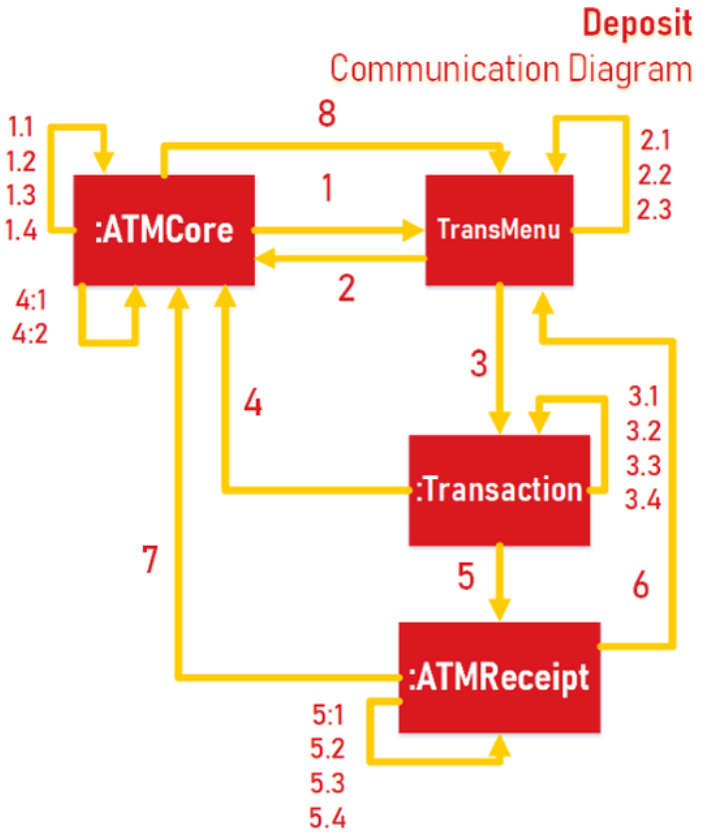
1. validated(status)
    1.1:[Based on the status]: displayPreferSCRN()
    1.2:[Based on the status]: displayNONPreferSCRN()
    1.3:[Based on the status]: displaySYSAdminSCRN()
    1.4:[Based on the status]: displayNONMSBSCRN()
2. calcCurrTotal()
2. withdrawalSCRN()
    2.1: [Based on the type]: rmCash()
    2.2: [Based on the type]: cancelBtn()
3. depositSCRN()
    3.1:[Based on the account]: rmfromChecking()
    3.2:[Based on the account]: rmfromSavings()
    3.3:[Based on the account]: rmfromMoneyMrkt()
    3.4:[Based on the account and isPreferred]; addtoConsLoan()
4. confirmSCRN()
    4.1: [Based on confirmation type]: rmCurrBal()
5. receipt()
    5.1 [Based on receipt type]: toPrint()
    5.2 [Based on receipt type]: toEmail()
    5.3 [Based on receipt type]: noReceipt()
6. moreTransaction()
7. ejectCard()
8.Logoff()

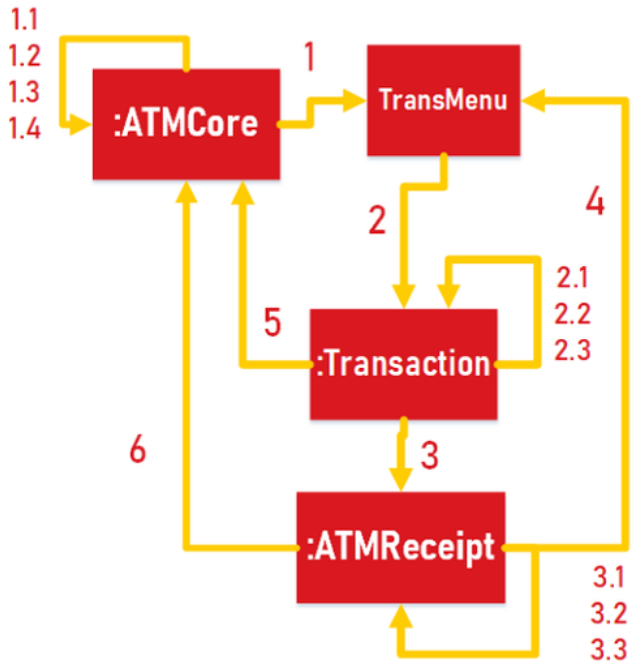


1. validated(status)
    1.1:[Based on the status]: displayPreferSCRN()
    1.2:[Based on the status]: displayNONPreferSCRN()
    1.3:[Based on the status]: displaySYSAdminSCRN()
    1.4:[Based on the status]: displayNONMSBSCRN()
2. depositSCRN()
    2.1: [Based on the type]: addCash()
    2.2: [Based on the type]: addChecks()
    2.3: [Based on the type]: addBoth()
    2.4: [Based on the type]: cancelBtn()
3. depositSCRN()
    3.1:[Based on the account]: addtoChecking()
    3.2:[Based on the account]: addtoSavings()
    3.3:[Based on the account]: addtoMoneyMrkt()
4. confirmSCRN()
    4.1: [Based on confirmation type]: insertBills()
    4.2: [Based on confirmation type]: scanChk()
5. receipt()
    5.1 [Based on receipt type]: toPrint()
    5.2 [Based on receipt type]: toEmail()
    5.3 [Based on receipt type]: noReceipt()
6. moreTransaction()
7. ejectCard()
8. Logoff()



1. validated(status)
    1.1:[Based on the status]: displayPreferSCRN()
    1.2:[Based on the status]: displayNONPreferSCRN()
    1.3:[Based on the status]: displaySYSAdminSCRN()
    1.4:[Based on the status]: displayNONMSBSCRN()
2. transferSCRN()
2. confirmSCRN()
2. transferFromAcct()
    2.1:[Based on selected account]: rmfromChecking
    2.2:[Based on selected account]: rmfromsaving
    2.3:[Based on selected account]: rmfromMoneyMkt()
2. transDestAcct()
    2.1:[Based on selected account]: addtoChecking
    2.2:[Based on selected account]: addtosaving
    2.3:[Based on selected account]: addtoMoneyMkt()
    2.4:[Based on selected account]: addtoMortage
    2.5:[Based on selected account]: addtoConsLoan()
3. receipt()
    3.1 [Based on receipt type]: toPrint()
    3.2 [Based on receipt type]: toEmail()
    3.3 [Based on receipt type]: noReceipt()
4. moreTransaction()
5. ejectCard()
6.Logoff()

Transfer
Communication Diagram



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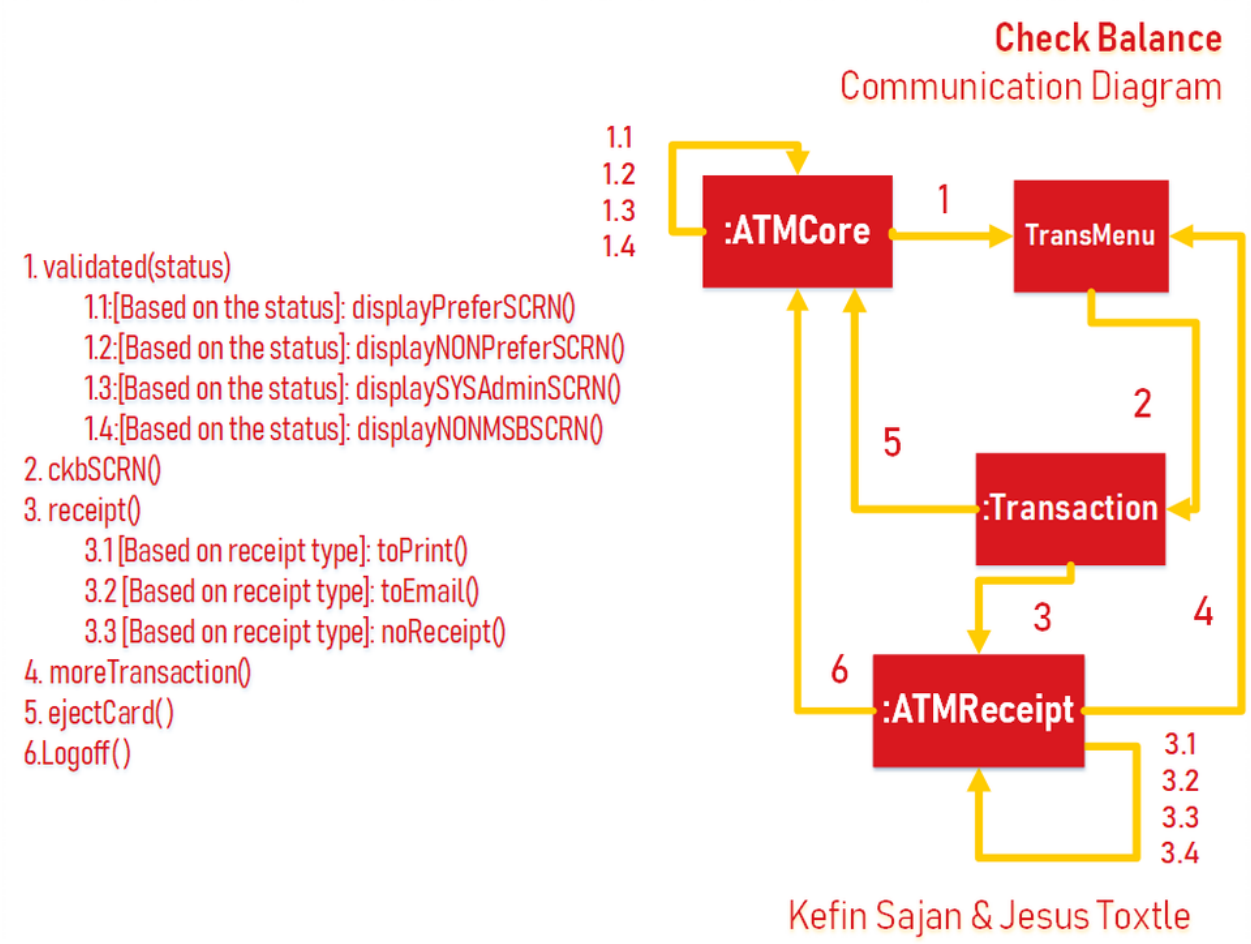
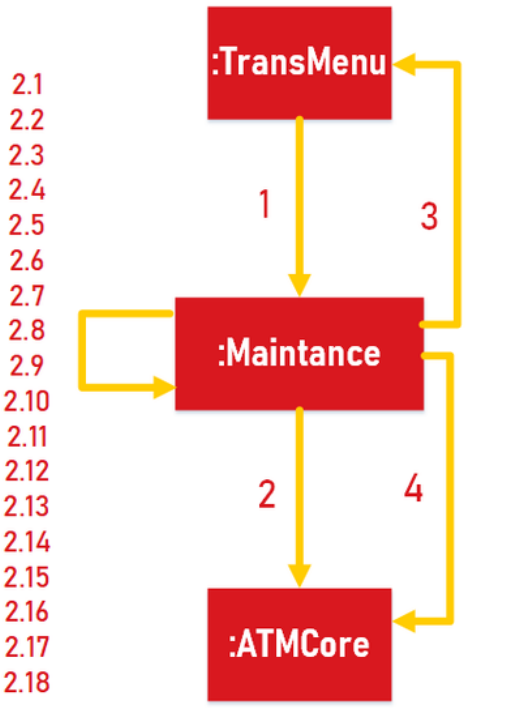
1. validated(status)
    1.1:[Based on the status]: displayPreferSCRN()
    1.2:[Based on the status]: displayNONPreferSCRN()
    1.3:[Based on the status]: displaySYSAdminSCRN()
    1.4:[Based on the status]: displayNONMSBSCRN()
2. ckbSCRN()
3. receipt()
    3.1 [Based on receipt type]: toPrint()
    3.2 [Based on receipt type]: toEmail()
    3.3 [Based on receipt type]: noReceipt()
4. moreTransaction()
5. ejectCard()
6.Logoff()



1: displaySYSAdminSCRN( )
2: Maintenance()
- 2.1 [Based on selection:] installSoft()
- 2.2 [Based on selection:]: openATMMess()
- 2.3 [Based on selection]: exitSCRN()
- 2.4 [Based on selection]: disableCOMM()
- 2.5 [Based on selection]: diagnosisLOG()
- 2.6 [Based on selection]: clearERROR()
- 2.7 [Based on selection]: restart()
- 2.8 [Based on selection]: shutdown()
- 2.9[Based on selection]: factoryReset()
- 2.10 [Based on selection]: mMode()
- 2.11 [Based on selection]: testATMSCRN()
- 2.12 [Based on test]: testATMBalance()
- 2.13 [Based on test]: testCheckbalance()
- 2.14 [Based on test]: testDeposit()
- 2.15 [Based on test]: testTransfer()
- 2.16 [Based on test]: testWithdrawal()
- 2.17 [Based on test]: testATMDBMS()
- 2.18 [Based on test]: testCard()

3. moreTransaction()
4. ejectCard()

Maintenance
Communication Diagram



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