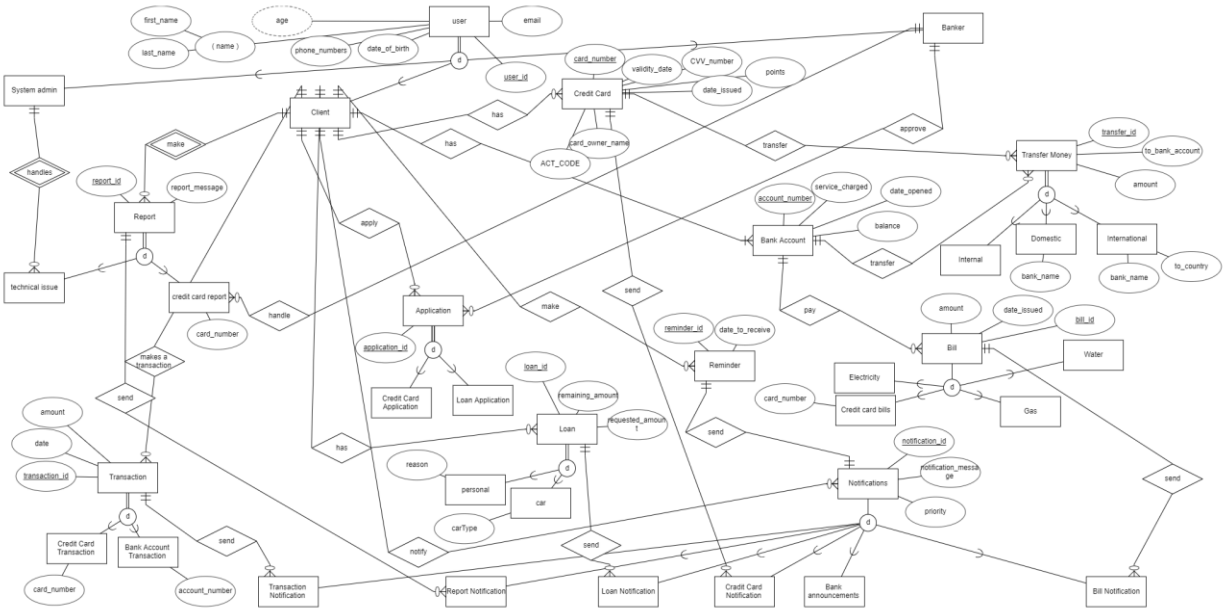
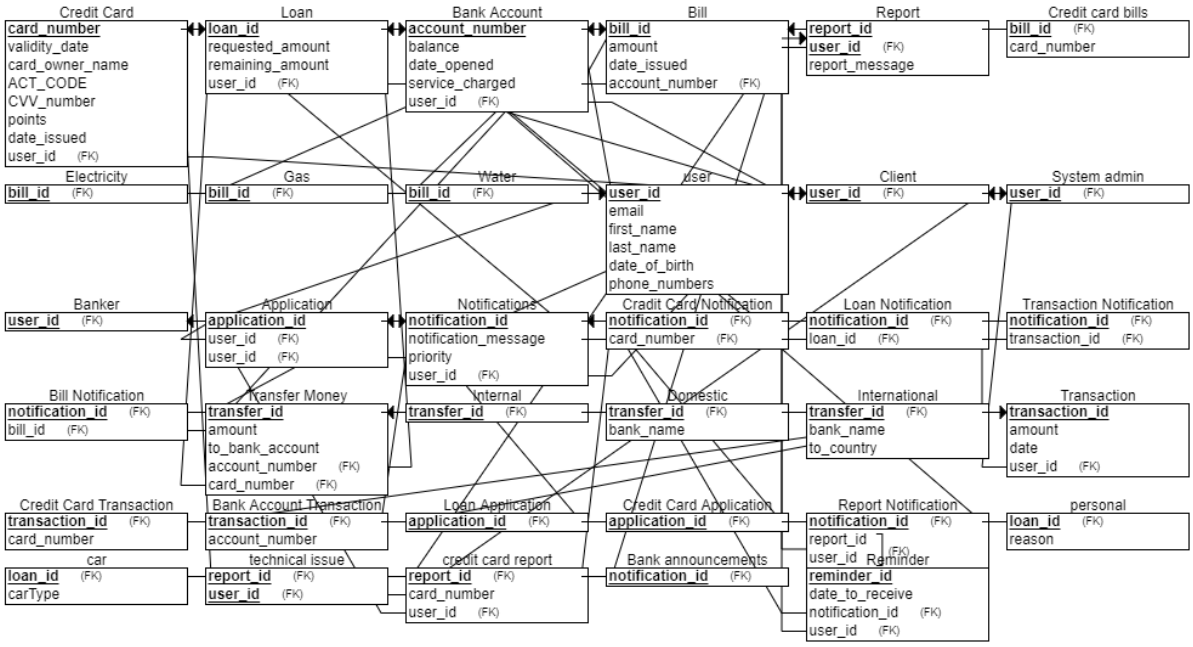
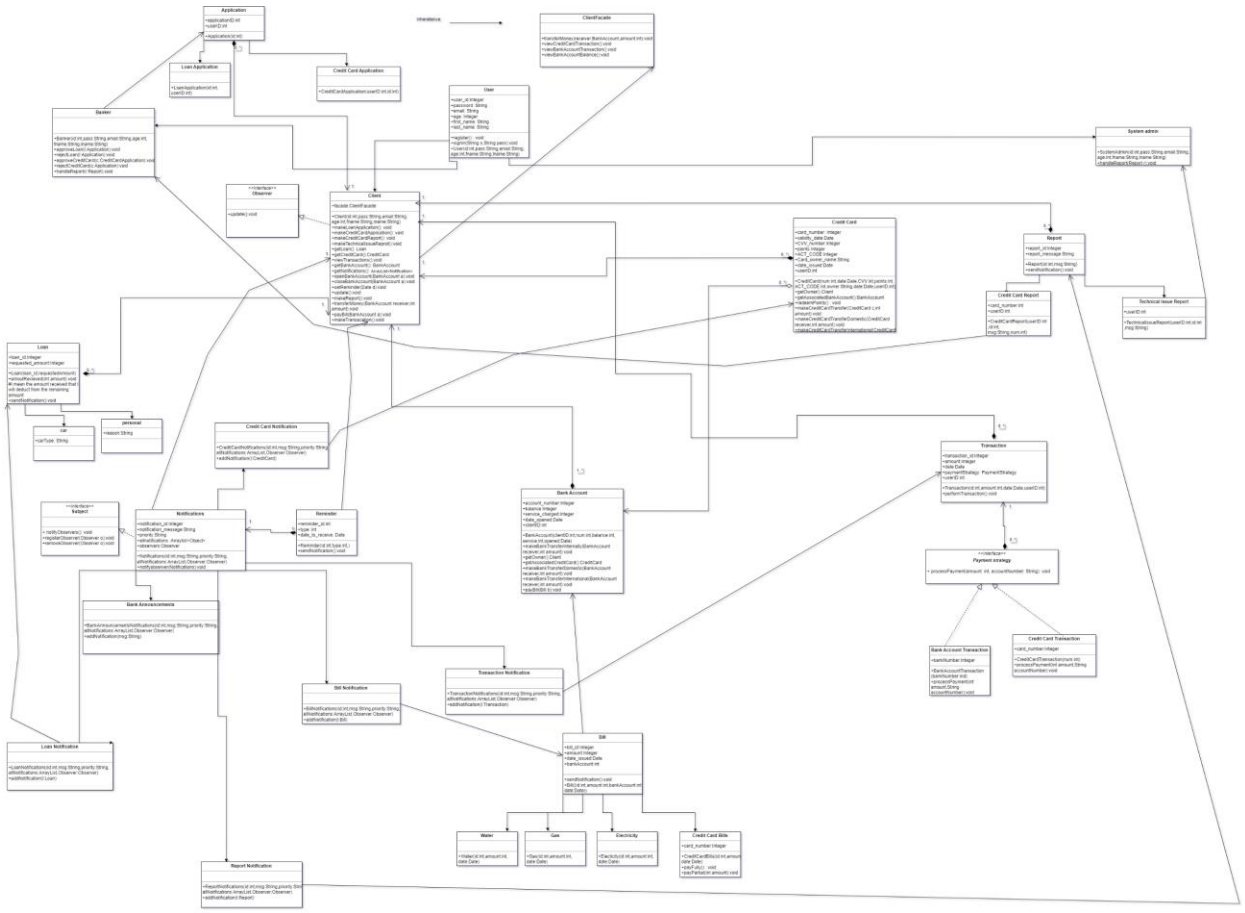
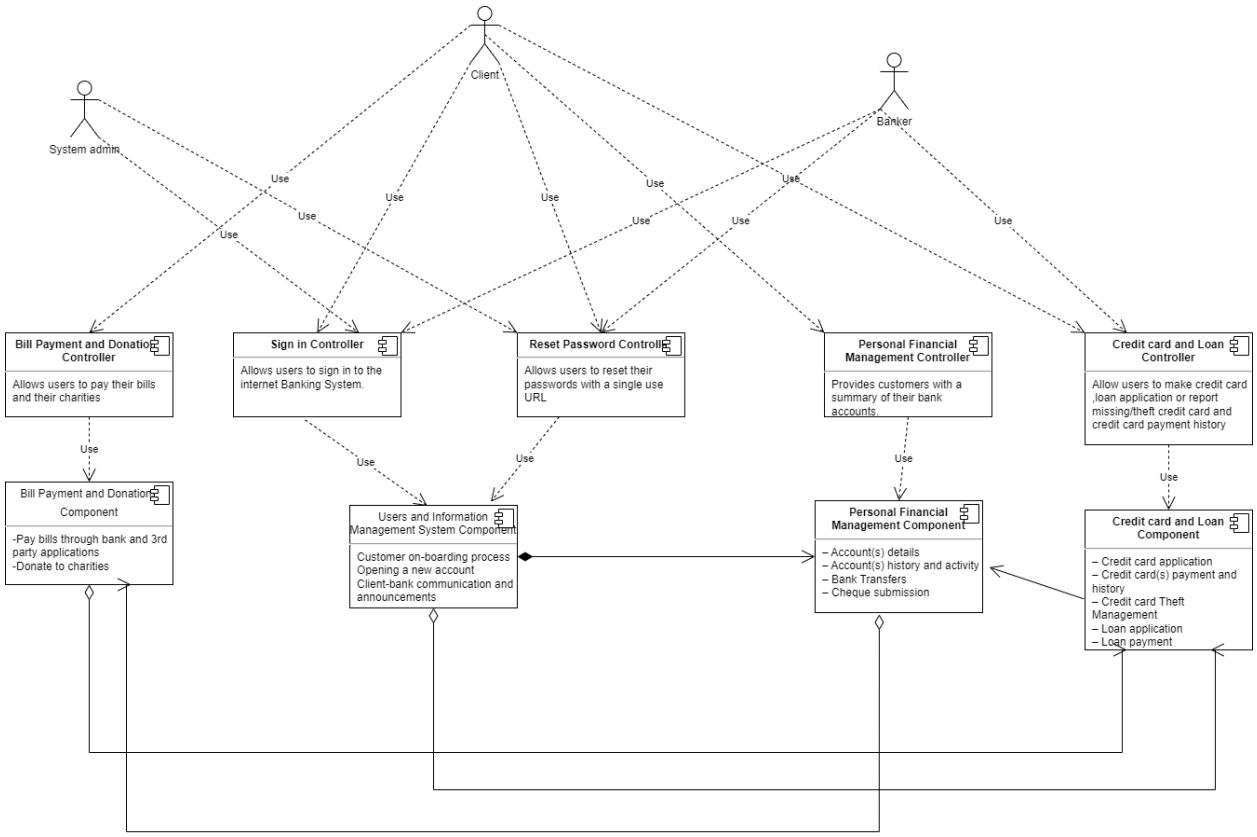

first_name
last_name
(name)
age
phone_numbers
date_of_birth
user
email
Banker
System admin
user_id
card_number
validity_date
CVV_number
points
date_issued
Credit Card
Client
has
has
card_owner_name
ACT_CODE
transfer
approve
Transfer Money
transfer_id
to_bank_account
amount
handles
make
report_id
report_message
Report
apply
account_number
service_charged
date_opened
Bank Account
balance
transfer
Internal
Domestic
International
bank_name
bank_name
to_country
technical issue
credit card report
handle
card_number
Application
make
send
pay
amount
date_issued
bill_id
Bill
Water
reminder_id
date_to_receive
Reminder
application_id
makes a transaction
send
Credit Card Application
Loan Application
loan_id
remaining_amount
Electricity
card_number
Credit card bills
Gas
amount
date
transaction_id
Transaction
has
Loan
requested_amount
send
notification_id
reason
personal
car
Notifications
notification_message
priority
send
Credit Card Transaction
Bank Account Transaction
send
carType
notify
send
card_number
account_number
Transaction Notification
Report Notification
Loan Notification
Cradit Card Notification
Bank announcements
Bill Notification


Credit Card
card_number
validity_date
card_owner_name
ACT_CODE
CVV_number
points
date_issued
user_id (FK)
Loan
loan_id
requested_amount
remaining_amount
user_id (FK)
Bank Account
account_number
balance
date_opened
service_charged
user_id (FK)
Bill
bill_id
amount
date_issued
account_number (FK)
Report
report_id
user_id (FK)
report_message
Credit card bills
bill_id (FK)
card_number
Electricity
bill_id (FK)
Gas
bill_id (FK)
Water
bill_id (FK)
user
user_id
email
first_name
last_name
date_of_birth
phone_numbers
Client
user_id (FK)
System admin
user_id (FK)
Banker
user_id (FK)
Application
application_id
user_id (FK)
user_id (FK)
Notifications
notification_id
notification_message
priority
user_id (FK)
Cradit Card Notification
notification_id (FK)
card_number (FK)
Loan Notification
notification_id (FK)
loan_id (FK)
Transaction Notification
notification_id (FK)
transaction_id (FK)
Bill Notification
notification_id (FK)
bill_id (FK)
Transfer Money
transfer_id
amount
to_bank_account
account_number (FK)
card_number (FK)
Internal
transfer_id (FK)
Domestic
transfer_id (FK)
bank_name
International
transfer_id (FK)
bank_name
to_country
Transaction
transaction_id
amount
date
user_id (FK)
Credit Card Transaction
transaction_id (FK)
card_number
Bank Account Transaction
transaction_id (FK)
account_number
Loan Application
application_id (FK)
Credit Card Application
application_id (FK)
Report Notification
notification_id (FK)
report_id (FK)
user_id (FK)
personal
loan_id (FK)
reason
car
loan_id (FK)
carType
technical issue
report_id (FK)
user_id (FK)
credit card report
report_id (FK)
card_number
user_id (FK)
Bank announcements
notification_id (FK)
Reminder
reminder_id
date_to_receive
notification_id (FK)
user_id (FK)


Application
+application(int)
+application(int)
Inheritance
ClientFacade
+transferMoney(receiver:BankAccount,amount:int):void
+newCreditCardTransaction():void
+newBankAccountTransaction():void
+newBankAccountBalance():void
Loan Application
+Loan(Application(int,
user0:int)
Credit Card Application
+CreditCardApplication(user0:int,id:int)
User
+user_id:Integer
+password: String
+email: String
+phone: int
+first_name: String
+last_name: String
+register():void
+login(email:String,pass:String):void
+create(int:pass:String,email:String,
age:int,fname:String,lname:String)
Banker
+Banker(int:int,pass:String,email:String,age:int,
fname:String,lname:String)
+approve(Loan):void
+reject(Loan):Application):void
+approve(CreditCard):CreditCardApplication):void
+reject(CreditCard):Application):void
+handle(Report):Report):void
System admin
+System(int:int,pass:String,email:String,
age:int,fname:String,lname:String)
+handle(Report):Report):void
<<Interface>>
Observer
+update():void
Client
+Client(int:pass:String,email:String,
age:int,fname:String,lname:String)
+makeCreditCardApplication():void
+makeCreditCardReport():void
+makeTechnicalIssueReport():void
+getCreditCard():void
+getCreditCard(int):CreditCard
+viewTransactions():void
+getBankAccount():BankAccount
+makeBankAccountApplication()
+getBankAccount(BankAccount a):void
+closeBankAccount(BankAccount a):void
+setReminder(Date d):void
+update():void
+getBalance():void
+transferMoney(BankAccount receiver:int
amount):void
+buyBill(BankAccount a):void
+viewTransactions():void
Credit Card
+card_number: Integer
+validity_date:Date
+CVV_number:Integer
+card_type:Int
+ACT_CODE:Integer
+Card_owner_name:String
+date_issued:Date
+user0:int
+CreditCard(int:int,date:Date,CVV:int,points:int,
ACT_CODE:int,owner:String,date:Date,user0:int)
+getOwner():Client
+makeBankAccountTransfer(Account):BankAccount
+makeWithdraw():void
+makeCreditCardTransferCreditCard:Lint
amount):void
+makeCreditCardTransferDomestic(CreditCard
receiver:int,amount):void
+makeCreditCardTransferInternational(CreditCard
receiver:int,amount):void
Report
+report_id:Integer
+report_message:String
+Report(int:int,msg:String)
+send(Notification):void
Credit Card Report
+card_number:int
+user0:int
+CreditCardReport(user0:int
,card
,msg:String,num:int)
Technical Issue Report
+user0:int
+TechnicalIssueReport(user0:int,id:int
,msg:String)
Loan
+loan_id:Integer
+requested_amount:Integer
+Loan(loan_id:Integer,requested_amount:Int)
+amountReceived(int:amount):void
//If mean the amount received that
will deduct from the remaining
amount
+send(Notification):void
car
+carType: String
personal
+reason:String
Credit Card Notification
+CreditCardNotification(id:int,msg:String,priority:String
,allNotifications:ArrayList,Observer Observer)
+addNotification(CreditCard)
Transaction
+transaction_id:Integer
+amount:Integer
+date:Date
+paymentStrategy: PaymentStrategy
+user0:int
+Transaction(int:id,int:amount,int,date:Date,user0:int)
+performTransaction():void
<<Interface>>
Subject
+ notify(Observers):void
+registerObserver(Observer o):void
+removeObserver(Observer o):void
Notifications
+notification_id:Integer
+notification_message:String
+date:Date
+allNotifications: ArrayList<Object>
+observers:Observer
+Notifications(int:id,msg:String,priority:String,
allNotifications:ArrayList Observer Observer)
+notifyobserver(Notification):void
Reminder
+reminder_id:int
+type:int
+date_to_receive:Date
+Reminder(int:id,type:int,)
+send(Notification):void
Bank Account
+account_number:Integer
+balance:Integer
+service_charge:Integer
+date_opened:Date
+user0:int
+BankAccount(int:id,int:num,int:balance,int,
service,int:opened:Date)
+makeBankTransferInternally(BankAccount
receiver,int:amount):void
+getOwner():Client
+makeCreditCardTransfer(CreditCard):CreditCard
+makeBankTransferDomestic(BankAccount
receiver,int:amount):void
+makeBankTransferInternational(BankAccount
receiver,int:amount):void
+buyBill(Bill b):void
<<Interface>>
Payment strategy
+ processPayment(amount: int,accountNumber: String): void
Bank Announcements
+BankAnnouncements(Notifications(int:id,msg:String,priority:String
,allNotifications:ArrayList Observer Observer)
+addNotification(msg:String)
Bank Account Transaction
+bankNumber:Integer
+BankAccountTransaction
(int:bankNumber)
+processPayment(int
amount:String
accountNumber):void
Credit Card Transaction
+card_number:Integer
+CreditCardTransaction(num:int)
+processPayment(int amount,String
accountNumber):void
Transaction Notification
+TransactionNotifications(id:int,msg:String,priority:String,
allNotifications:ArrayList Observer Observer)
+addNotification(Transaction)
Bill Notification
+BillNotifications(id:int,msg:String,priority:String,
allNotifications:ArrayList Observer Observer)
+addNotification(Bill)
Bill
+bill_id:Integer
+amount:Integer
+date_issued:Date
+bankAccount:int
+send(Notification):void
+Bill(int:id,int:amount,int:bankAccount,int
date:Date)
Loan Notification
+LoanNotifications(id:int,msg:String,priority:String,
allNotifications:ArrayList Observer Observer)
+addNotification(Loan)
Water
+Water(int:id,int:amount,int,
date:Date)
Gas
+Gas(int:id,int:amount:Int,
date:Date)
Electricity
+Electricity(int:id,int:amount:Int,
date:Date)
Credit Card Bills
+card_number:Integer
+CreditCardBills(int:id,int:amount
date:Date)
+payFullBill():void
+payPartialBill(int amount):void
Report Notification
+ReportNotifications(int:id,msg:String,priority:String
allNotifications:ArrayList Observer Observer)
+addNotification(Report)


Client
System admin
Banker
Use
Bill Payment and Donation Controller
Allows users to pay their bills and their charities
Sign in Controller
Allows users to sign in to the internet Banking System.
Reset Password Controller
Allows users to reset their passwords with a single use URL
Personal Financial Management Controller
Provides customers with a summary of their bank accounts.
Credit card and Loan Controller
Allow users to make credit card ,loan application or report missing/theft credit card and credit card payment history
Bill Payment and Donation Component
-Pay bills through bank and 3rd party applications
-Donate to charities
Users and Information Management System Component
Customer on-boarding process
Opening a new account
Client-bank communication and announcements
Personal Financial Management Component
– Account(s) details
– Account(s) history and activity
– Bank Transfers
– Cheque submission
Credit card and Loan Component
– Credit card application
– Credit card(s) payment and history
– Credit card Theft Management
– Loan application
– Loan payment