ONLINE BANKING APPLICATION

15CSE313

SOFTWARE ENGINEERING

DINERO BANK

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ABSTRACT

Electronic banking has been transformed by the Internet, a new delivery channel for banking services that benefits both customers and banks. Access is fast, convenient, and available around the clock.

Customer's application for electronic banking facilities is expanding as the cost savings on transactions over the internet are significant. The setbacks that a traditional banking system has is that it can't make its investment analysis effectively as it lacks Internet strategy

The purpose is to note the likelihood of continued growth of internet banking and commerce as individual consumers purchase more and more products to access the internet and complete both financial and consumer transactions.

We, as a team of 5, thought of the importance of this system in a consumer's day to day life activities and recognized that we have to come up with a product that satisfies all the needs for secured end-to-end transactions and also meeting all the privacy policies a customer would prefer to have. This project aims at creation of a secure Internet banking systems and accessible to all users who have a valid User ID and password. We provide a real time environment for the existing system in the bank.

We came up with first fulfilling the basic expectations of the user, which includes registration of online bank account, customer login, handling account and transactions between customer and bank.

Then we've added functions for security to secure the personal data of the customer and the end-to-end transactions as well. Along with that we have taken measures to notify the user about updates made in his account, like updated balance, updated balance less than minimum balance, successful transactions and notification on account statements.

We have used the following tools and languages- HTML, Node JS, Express JS, pug, Angular JS, Java Script, CSS, Mongo DB and Bootstrap Framework.

We are using software engineering tools like SonarQube for static code analysis and Selenium for Unit testing.

We've adopted the agile methodology for software development because of the highly collaborative and more efficient nature of this method. This means of project management help teams manage work more efficiently and do the work more effectively while delivering the highest quality product that perfectly addresses to the customer's needs.

PROJECT PREVIEW

INTRODUCTION AND MOTIVATION

"With the advent of Internet, everything has transformed into its electronic version"

Banking is surely not far behind in this aspect. Now when people have to access to all kinds of gadgets like laptops, tablets – banking is just one click away from making financial transactions

In this fast paced world, electronic banking, is the term that describes all transactions that take place among companies, organizations, and individuals and their banking institutions. First conceptualized in the mid-1970s, some banks offered customers electronic banking in 1985. However, the lack of Internet users, and costs associated with using online banking, stunted the growth. The Internet explosion in the late-1990s made people more comfortable with making transactions over the web.

The purpose behind it all.

Online banking (or E banking) allows customers of a bank to conduct financial transactions on a secure website operated by the institution, which can be a retail or virtual bank, credit union or building society

Online banking is the practice of making bank transactions or paying bills via the Internet. Because of the rapid explosion of the Internet, people don't have to leave their house to shop, communicate, or even do their banking. Online banking allows customers to make deposits, withdrawals, and pay bills with the click of a mouse

The biggest advantage of online banking is the convenience.

1. You as a customer can make a transaction from anywhere- whether its home or work or even when you are on a holiday
2. You can make transactions at any time
3. You can use any device with internet access for your bank activities-phones, laptops, desktops and tablets
4. Banks offer a wide range of services through the online mode – payment of bills, transfer of money, checking account transactions via the Internet
5. All the transactions are automatically updated immediately; therefore you can always have access to your information without submitting any slips or documents. Thus, your account is always up-to-date without any discrepancies since the process is completely automated

6. Also, it saves a lot of time. The best part of Internet banking is that you can keep track of all your different accounts simultaneously. In case you have multiple accounts, you need not go to different branches of your bank

LANGUAGES OR TOOLS USED

1. Node JS and Express JS : used to integrate the front end and back end and make changes in the database
2. Mongo DB: Database for story user and admin details and transaction details
3. Star UML : used to make UML diagrams
4. HTML : UI form making
5. CSS : UI styling
6. Pug – template engine for Node JS
7. Bootstrap Framework : Framework used for HTML code
8. Java Script : dynamic programming language to communicate with the web browsers easily

PRODUCT BACKLOG

3.1 PRODUCT BACKLOG FROM JIRA

Summary	Priority	Assignee	Custom field (Story P
As a customer I should be able to logout	High	Vasudha	1
As a customer I should be able to reset my password if forgotten	High	Chakradha	2
ii.As a customer I should be able to see my last login details	Low	Vasudha	1
i.As a customer I should be able to transfer cash 1) to another account 2) to pay my bills	High	Vasudha	3
ii.As a customer I should be able to contact the customer care services	Low	Aishwarya	1
Report on Transaction record between 2 banks	Low	Charan	1
v.As the customer I want my account to be blocked in case of several unsuccessful attempts.	Medium	Chakradha	2
ii.As a customer I should be able to change my card pin	Medium	Srijha	2
As a customer I want my account to be secured.	Highest	Chakradha	3
i.As an admin I should be able to change the account status of a valid customer from blocked to unblocked	High	Charan	1
As a customer I should be able to login to my account	High	Srijha	2
iii.As an admin I should be able to approve loan requests	High	Srijha	1
As a customer I should be able to request for registering into the online banking account	High	Charan	2
As a customer I should be able to create my password	Medium	Charan	1
As a customer I can change my password whenever I wish to do so	High	Aishwarya	2
As a customer I should get a notification when: 1) transactions are successful. 2) about my monthly balance. 3) about my updated balance.	Low	Vasudha	2
iv.As a customer I want my account to not deduct balance in case of unsuccessful transaction	High	Chakradha	3
Report on Transaction history(Customer)	Low	Vasudha	1

3.2 EPIC 1: LOGIN

This Epic takes care of user registration and account login.

- *STORY1*: **As a registered user I should be able to login into my account using my credentials.**
- *STORY2:* **As a user I should be able to change the password whenever required.**
- *STORY3:* **As a user, I should be able to logout**

3.3 EPIC 2: REGISTRATION

This Epic facilitates registration of a new account user

- *STORY1*: **As a new user, I should be able to use my credentials to register online from my existing account**
- *STORY2:* **As a new user I should be able to create a new password**
- *STORY3:* **As an admin I should be able to view the newly registered account users**

3.4 EPIC 3: SECURITY

This Epic facilitates the security of the bank accounts from external threats.

- *STORY1:* **As a user, my account needs to be secured.**

- *STORY2:* **As a user, my account needs to blocked if the password is attempted more than three times**
- *STORY3:* **As a user, I should be able to know my last login details.**
- *STORY4:* **As a user , I should be able to sign out automatically from my account if not in use.**
- *STORY5:* **As a user, I want my account to not deduct balance in case of unsuccessful transactions.**

3.5 EPIC 4: TRANSACTION

This Epic facilitates transaction of money between different bank accounts
- *STORY1:* **As a user, I should be able to transfer cash to another bank account, between different branches and between two banks.**
- *STORY2:* **As a new user I should be able to pay my bills.**

3.6 EPIC 5: NOTIFICATIONS

This Epic facilitates the generation of notifications
- *STORY1:* **As a user I should get notified when 1) Transaction is successful 2) Monthly account balance, 3) about my updated balance**
- *STORY2:* **As a user, I should get notified if my current account balance is less than the required balance.**
- *STORY3:* **As a user, I should get information about my account statements**

3.7 EPIC 6: HANDLING OF ACCOUNT

This Epic facilitates the handling of the online bank account.
- *STORY1:* **As a user I should be able to view my account balance.**
- *STORY2:* **As a user, I should be able to change my card MPIN.**
- *STORY3 :* **As a user, I should be able to change my password whenever I wish to do so.**
- *STORY4:* **As a user, I should be able to request for loans**
- *STORY5:* **As an admin, I should be able to accept the loan requests.**

3.8 EPIC 7: HELP DESK

This Epic facilitates the handling of the online bank account.

- *STORY1:* **As a user, I should be able to contact the customer care services.**
- *STORY2:* **As an admin I should be able to change the status of valid customer from blocked to unblocked status**
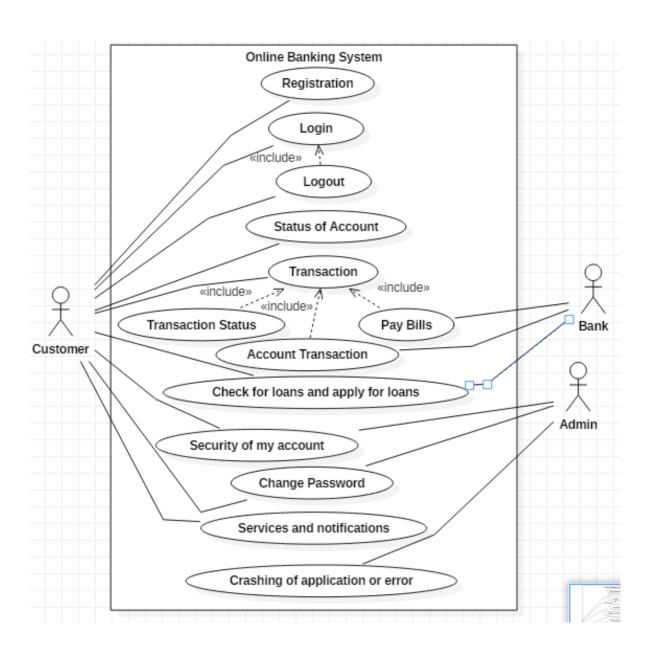
3.9 EPIC 8: REPORTS
This Epic facilitates the handling of the online bank account.
- *STORY1:* **Report on the transaction between two banks**
- *STORY2:* **Report on transaction history of the User.**
- *STORY3:* **As an admin I want the report of the feedback.**
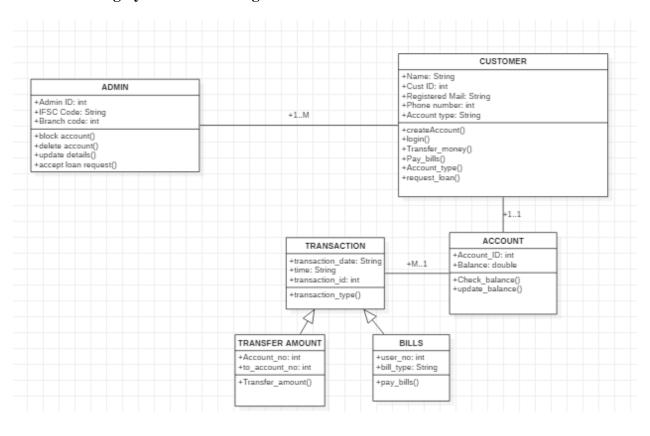
USE CASE DIAGRAMS

Online Banking Use case Diagram

Online Banking System – Class diagram

ADMIN
+Admin ID: int
+IFSC Code: String
+Branch code: int
+block account()
+delete account()
+update details()
+accept loan request()

+1..M

CUSTOMER
+Name: String
+Cust ID: int
+Registered Mail: String
+Phone number: int
+Account type: String
+createAccount()
+login()
+Transfer_money()
+Pay_bills()
+Account_type()
+request_loan()

+1..1

TRANSACTION
+transaction_date: String
+time: String
+transaction_id: int
+transaction_type()

+M..1

ACCOUNT
+Account_ID: int
+Balance: double
+Check_balance()
+update_balance()

TRANSFER AMOUNT
+Account_no: int
+to_account_no: int
+Transfer_amount()

BILLS
+user_no: int
+bill_type: String
+pay_bills()

TRIGGERS

Registration:

1) checks if the customer trying to register has already registered for their online bank account by checking if the account status of that customer is in NOA state. If not, the system notifies user that his account is already ACTIVE
2) checks if the credentials entered for registering are valid in the database. Else, throws error(because we need to update the status of that particular account belonging to the customer)
3) If credentials are invalid, stick to the same page and notify the user to try again. Else, go to the next page.

Login:

1) A customer whose account status is NOA cannot login
2) Checks if the customer entered the right credentials to login, if right, then go to the next page, else, stay in the same page

Transactions:

1) Checks if the destination bank account along with ifsc code within bank is available in the database and then proceeds for transaction
2) Checking the amount entered to be transacted is not greater than 50000
3) Checking if the amount entered to be transacted is less than the balance available in that account
4) After successful transaction the record is updated in Transaction history table
5) Check if the entered MPIN entered matches the MPIN belonging to that account id and then reports to the user
6) For paying bills, it checks if the bill id is valid along with the phone number and then proceeds. Otherwise it reports an error to the user
7) Checks if a bill is already paid
8) If credentials are invalid, stick to the same page and notify the user to try again. Else, go to the next page.

Logout:

1) When logout is prompted by the user, the date and time at that moment is retrieved and updated in the database as "last_login"

Forgot Password:

1) When a user has forgotten his password and opts to change it, the new password needs to be updated if the email and randomly generated passwords match

Reset password and Reset MPIN

1) When resetting the password or mpin a customer should enter his old password that needs to be valid in the record of that customer to update the new password entered by him

DATABASE NORMALIZATION

All Attributes are first in one table:

Table={branch_id, bank_name, bank_address, account_id, acc_type, balance_amount, MPIN, card_number, cust_id, cust_firstName, cust_lastName, last_login, phone_number, mail, address, state, password, acc_status, unsuccessful_login, tx_id, time_stamp, to_account, tx_status, tx_amount, cred_deb, admin_id, admin_email, admin_password}

Functional Dependencies:

Branch_id ➡ bank_name, bank_address

Account_id ➡ branch_id, acc_type, balance_amount, MPIN, card_number

Cust_id ➡ branch_id, account_id, cust_firstName, cust_lastName, last_login, phone_number, mail, address, state, password

Cust_id, account_id ➡ acc_status, unsuccessful_login

tx_id ➡ cust_id, account_id, time_stamp, to_account, tx_status, tx_amount, cred_deb

admin_id ➡ branch_id, admin_email, admin_password

First Normal Form

1) Primary keys should be there: tx_id, cust_id, branch_id, account_id
2) Repeated values : no repeated values

2nd Normal form:

Final tables in 2 NF is :

1) Table 1: {tx_id, cust_id, time_stamp, to_account, tx_status, tx_amount, cred_deb, account_id, cust_firstName, cust_lastName, last_login, phone_number, mail, address, state, password, acc_status, unsuccessful_login, branch_id, acc_type, balance_amount, MPIN, card_number, bank_name, bank_address}

   With FDs
   Account_id → branch_id, acc_type, balance_amount, MPIN, card_number
   Cust_id → account_id, cust_firstName, cust_lastName, last_login, phone_number, mail, address, state, password, acc_status, unsuccessful_login
   Branch_id → bank_name, bank_address
   Tx_id → cust_id, time_stamp, to_account, tx_status, tx_amount, cred_deb

2) Admin: {admin_id, admin_email, admin_password}
   FD:
   Admin_id → admin_email, admin_password

3rd Normal Form:

Tables in 3 NF:

Branch: {branch_id, bank_address, bank_name}

Account: {account_id, card_number, MPIN, balance_amount, acc_type, branch_id}

Customer: {cust_id, unsuccessful_login, acc_status, password, state, address, mail, phone_number, last_login, cust_lastName, cust_firstName, account_id}

Transactions: {tx_id, cust_id, cred_deb, tx_amount, tx_status, to_account, time_stamp}
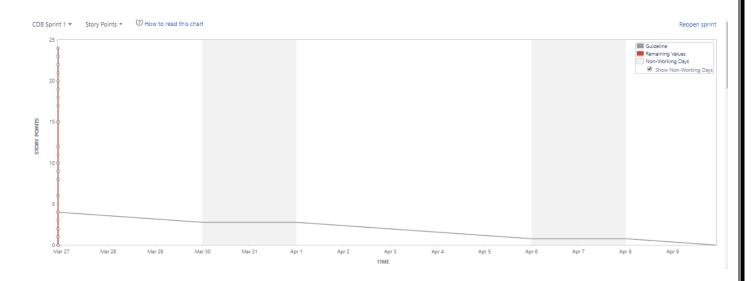
Admin: {admin_id, admin_password, admin_email, branch_id}

BCNF
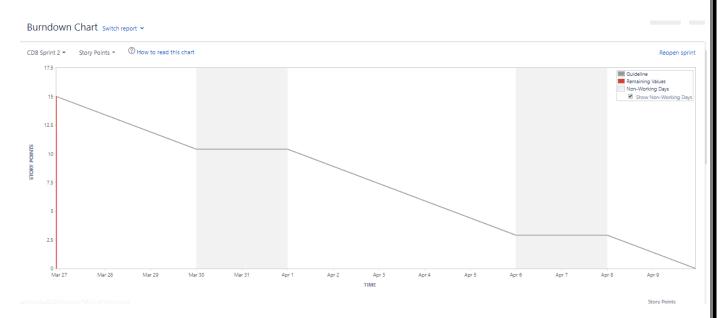
1) Branch is in BCNF
2) Account is in BCNF
3) Customer table is in BCNF
⇨ Customer : { cust_id, cust_firstName, cust_lastName, last_login, account_id, password, state, address, mail, phone_number, acc_status, unsuccessful_login}
⇨ (View Table for admin)Cust_access: {cust_id, account_id, mail, password, acc_status, unsuccessful_login}
4) Transaction is in BCNF
5) Admin is in BCNF
6) Junction_Table : {tx_id, admin_id}

5

SCRUM ACTIVITIES

Sprint 1 Burndown Charts

Sprint2 Burndown Chart

5.1 SPRINT1 BACKLOG

[CDB-29] Report on Transaction record between 2 banks Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	**Priority:**	Low
Reporter:	Aishwarya Ramaraj	**Assignee:**	Charan
Resolution:	Done	**Votes:**	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1, CDB Sprint 2

Description

Maintaining a report of such type helps improve the quality of the interface between the two banks for transaction and also keeps track of the amount transferred.

[CDB-27] ii. As a customer I should be able to contact the customer care services Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	Low
Reporter:	Aishwarya Ramaraj	Assignee:	Aishwarya Ramaraj
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1

Description

To contact the bank for any queries, a customer support phone number and email is provided

[CDB-26] **As an admin I should be able to change the account status of a valid customer from blocked to unblocked** Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	High
Reporter:	Aishwarya Ramaraj	Assignee:	Charan
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1

Description

A customer's account status can be changed from blocked to unblocked when he requests the admin. The admin on request, sends a 6 digit password through email to the customer to reset the password.

[CDB-24] As a customer I can change my password whenever I wish to do so Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	High
Reporter:	Aishwarya Ramaraj	Assignee:	Aishwarya Ramaraj
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1

Description

The user can reset the password if he wants to change it . User has to enter the existing password and then enter the new password and confirm it. If the details match correctly and the previous password is correct, this new password will be encrypted and will be replaced with the current password in the database.

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	Medium
Reporter:	Aishwarya Ramaraj	Assignee:	Srijha
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1

Description

If the customer wishes to change his card pin number, then he should enter his existing password and then a new valid four digit new password and confirm it. If the confirmed password matches the new password, this new password will be encrypted and will be replaced with the current password in the database.

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	High
Reporter:	Aishwarya Ramaraj	Assignee:	Vasudha
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1

Description

To transfer cash to another account or to pay the bills, when the customer clicks on pay after selecting what he wants to do, the transaction process happens. After validation of the details if the details are accurate the amount will be transferred to the recipients account .

[CDB-14] As the customer I want my account to be blocked in case of several unsuccessful attempts. Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	Medium
Reporter:	Aishwarya Ramaraj	Assignee:	Chakradhar
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1

Description

If there are more than 3 unsuccessful attempts while logging in then the account status of the customer will change from ACTIVE to BLOCKED.

[CDB-12] As a customer I want my account to be secured. Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	Highest
Reporter:	Aishwarya Ramaraj	Assignee:	Chakradhar
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1, CDB Sprint 2

Description

To secure the data of the customer the data will be first encrypted before storing the data into the database. The data will only be decrypted if there is a request from the customer.

[CDB-11] ii. As a customer I should be able to see my last login details Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	**Priority:**	Low
Reporter:	Aishwarya Ramaraj	**Assignee:**	Vasudha
Resolution:	Done	**Votes:**	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1

Description

Whenever customers logged in to the account the time of the login will be noted and will be put in the database. Also when the user logs in initially the last login details will be displayed in the homepage of the user.

[CDB-8] As a customer I should be able to logout Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	High
Reporter:	Aishwarya Ramaraj	Assignee:	Srijha
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1

Description

The user will be logged out from the services and the application will be redirected to the main home page

Status:	Done
Project:	<u>CSE-C Dinero Banking</u>
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	High
Reporter:	<u>Aishwarya Ramaraj</u>	Assignee:	<u>Chakradhar</u>
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1

Description

When the user forgets his password he can reset the password. The customer should enter the user id and account id first. Then a random password will be generated and will be sent to the mail of the registered customer. If the customer enters the password correctly, the user will be allowed to reset the password. This new password will be encrypted and will be replaced with the current password in the database.

[CDB-6] As a customer I should be able to login to my account Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	High
Reporter:	Aishwarya Ramaraj	Assignee:	Srijha
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1

Description

A customer can login to the account after entering the login page. Then the customer has to enter his account id and his password .If the account id matches with the entered user id then the password of the account will be taken from the database and decrypted. If the entered password matches with the decrypted password then the login will be successful and it will be directed to user home page.

[CDB-4] [As an admin I should be able to approve loan requests](#) Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	[CSE-C Dinero Banking](#)
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	High
Reporter:	[Aishwarya Ramaraj](#)	Assignee:	[Charan](#)
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1

Description

The admin can accept loan requests from the pool of request of loans from the customers.

[CDB-3] <u>As a customer I should be able to create my password</u> Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	<u>CSE-C Dinero Banking</u>
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	**Priority:**	Medium
Reporter:	<u>Aishwarya Ramaraj</u>	**Assignee:**	<u>Charan</u>
Resolution:	Done	**Votes:**	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1

Description

After entering the randomly generated password the customer will be allowed to create a password for the account so that he can use this password whenever he wants to login to the account. The password data will be stored into the database but the online account status will be changed from NOA(No online Account) to INACTIVE.

[CDB-2] **As a customer I should be able to request for registering into the online banking account** Created: 01/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	High
Reporter:	Srijha	Assignee:	Chakradhar
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1

Description

A customer has to register into the account by clicking register account in the home page. After this, the user should enter the bank account number(account number is a unique 12 digit number) and account id. Then a random password will be generated and will be sent to the mail of the registered customer. This password should be entered by the customer to furtherly continue.

5.2 Sprint 1 retrospective notes

Backlogs :
- ❖ **Block account in case of multiple attempts**
- ❖ **Loan requests**
- ❖ **View transaction history for admin**
- ❖ **Block/ unblock customer online account by admin**

Retrospective:
- ❖ **Things that worked well**
  - • **Login**
  - • **Registration**
  - • **Transaction**
  - • **Mailing service**
  - • **Random password generation**
- ❖ **Things that needed to be improved**
  - • **Interface for the admin**
  - • **Loan requests acceptance by the admin**
  - • **Receiver side transaction table**

5.3 Sprint 2 Backlog

[CDB-40] As an admin I should be able to log out from the application Created: 26/Mar/19 Updated: 26/Mar/19 Resolved: 26/Mar/19	
Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	**Priority:**	Medium
Reporter:	Chakradhar	**Assignee:**	Srijha
Resolution:	Done	**Votes:**	0

Labels:	None
Remaining Estimate:	Not Specified
Time Spent:	Not Specified
Original Estimate:	Not Specified

Sprint:	CDB Sprint 2

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	Medium
Reporter:	Chakradhar	Assignee:	Aishwarya Ramaraj
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 2

Description

An admin should be able to access the data of the inactive customers in the account

[CDB-38] As an admin I should be able to access the active customers list Created: 26/Mar/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	**Priority:**	Medium
Reporter:	Chakradhar	**Assignee:**	Chakradhar
Resolution:	Done	**Votes:**	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 2

Description

An admin should get the data of all the customers whose account status is active

[CDB-37] As an admin i should be able to access all the customers Created: 26/Mar/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	**Priority:**	Medium
Reporter:	Chakradhar	**Assignee:**	Srijha
Resolution:	Done	**Votes:**	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 2

Description

An admin should be able to access all the accounts for doing some specific actions

[CDB-36] As an admin I should be able to login Created: 26/Mar/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	Medium
Reporter:	Chakradhar	Assignee:	Aishwarya Ramaraj
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 2

Description

An admin should be able to log in to the account

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	Low
Reporter:	Aishwarya Ramaraj	Assignee:	Aishwarya Ramaraj
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 2

Description

Less frequently module used is to be improved for betterment of the quality of the application

[CDB-29] Report on Transaction record between 2 banks Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	Low
Reporter:	Aishwarya Ramaraj	Assignee:	Charan
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1, CDB Sprint 2

Description

Maintaining a report of such type helps improve the quality of the interface between the two banks for transaction and also keeps track of the amount transferred.

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	Low
Reporter:	Aishwarya Ramaraj	Assignee:	Srijha
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 2

Description

After entering into the account ,the customer will be able to check his account balance in his home page but will not be manipulate the account balance

[CDB-20] iii. As a customer I should get information about my account statement Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	Low
Reporter:	Aishwarya Ramaraj	Assignee:	Aishwarya Ramaraj
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 2

Description

If the customer clicks the account statement information, the transactions data will be retrieved from the database and the details will be mailed to the registered mail of the user.

[CDB-19] ii. As a customer I should get notified if my updated balance is less than the minimum balance Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	Medium
Reporter:	Aishwarya Ramaraj	Assignee:	Vasudha
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 2

Description

If the newly updated balance is less than the minimum balance of the account then a mail will be sent to the customers registered account regarding the penalty to be paid.

[CDB-13] As a customer I want my account to not deduct balance in case of unsuccessful transaction Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	High
Reporter:	Aishwarya Ramaraj	Assignee:	Chakradhar
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 2

Description

If the transaction is not successful, then the amount will not be deducted from the users balance. And also a mail will be sent to the senders registered mail about the transaction failure.

[CDB-12] As a customer I want my account to be secured. Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	**Priority:**	Highest
Reporter:	Aishwarya Ramaraj	**Assignee:**	Chakradhar
Resolution:	Done	**Votes:**	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 1, CDB Sprint 2

Description

To secure the data of the customer the data will be first encrypted before storing the data into the database. The data will only be decrypted if there is a request from the customer.

[CDB-10] As a customer I should be able to sign out from my account automatically if not in use. Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	Priority:	Medium
Reporter:	Aishwarya Ramaraj	Assignee:	Chakradhar
Resolution:	Done	Votes:	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 2

Description

The customers account will automatically be signed out if inactive for more than 30 minutes.

[CDB-30] **Report on Transaction history(Customer)** Created: 04/Feb/19 Updated: 26/Mar/19 Resolved: 26/Mar/19

Status:	Done
Project:	CSE-C Dinero Banking
Component/s:	None
Affects Version/s:	None
Fix Version/s:	None

Type:	Story	**Priority:**	Low
Reporter:	Aishwarya Ramaraj	**Assignee:**	Vasudha
Resolution:	Done	**Votes:**	0
Labels:	None		
Remaining Estimate:	Not Specified		
Time Spent:	Not Specified		
Original Estimate:	Not Specified		

Sprint:	CDB Sprint 2

Description
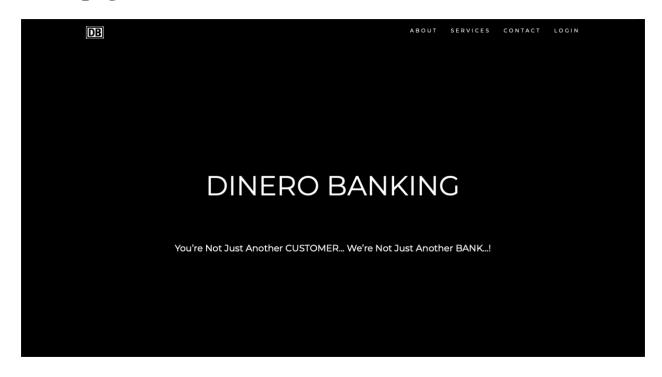
Whenever the transaction occurs the data of the transactions will be stored in the database. So when user wishes to look at them, the details will be retrieved from the database by using his account id for reference.

IMPLEMENTATION

Main page:


```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>DINERO BANK</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">
    <link href="https://fonts.googleapis.com/css?family=Montserrat" rel="stylesheet" type="text/css">
    <link href="https://fonts.googleapis.com/css?family=Lato" rel="stylesheet" type="text/css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>

    <link href="//maxcdn.bootstrapcdn.com/bootstrap/4.1.1/css/bootstrap.min.css" rel="stylesheet" id="bootstrap-css">
    <script src="//maxcdn.bootstrapcdn.com/bootstrap/4.1.1/js/bootstrap.min.js"></script>
    <script src="//cdnjs.cloudflare.com/ajax/libs/jquery/3.2.1/jquery.min.js"></script>

    <style>
    body {
        font: 400 15px Lato, sans-serif;
        line-height: 1.8;
        color: #818181;
    }
    h2 {
        font-size: 24px;
        text-transform: uppercase;
        color: #303030;
        font-weight: 600;
        margin-bottom: 30px;
    }
    h4 {
        font-size: 19px;
        line-height: 1.375em;
        color: #303030;
        font-weight: 400;
        margin-bottom: 30px;
    }
    .jumbotron {
        background: url(Press-Page-blue-logo.jpg);
        color: #fff;
        padding: 327px 25px;
        font-family: Montserrat, sans-serif;
```

```
</head>
<body id="myPage" data-spy="scroll" data-target=".navbar" data-offset="60">

<nav class="navbar navbar-default navbar-fixed-top">
    <div class="container">
        <div class="navbar-header">
            <button type="button" class="navbar-toggle" data-toggle="collapse" data-target="#myNavbar">
                <span class="icon-bar"></span>
                <span class="icon-bar"></span>
                <span class="icon-bar"></span>
            </button>

            <a class="navbar-brand" href="#myPage"><img src="C:\Users\user\Documents\6th sem\Software Engineering\CAPTURE.PNG" width="120" height="70"
        alt="logo"></a>
        </div>
        <div class="collapse navbar-collapse" id="myNavbar">
            <ul class="nav navbar-nav navbar-right">
                <li><a href="#about">ABOUT</a></li>
                <li><a href="#services">SERVICES</a></li>
                <li><a href="#customer_care">CUSTOMER CARE</a></li>
                <li><a href="file:///C:/Users/user/Documents/6th%20sem/Software%20Engineering/Login/login.html">LOGIN</a></li>
            </ul>
        </div>

    </div>
</nav>

    <div class="jumbotron text-center">
        <h1>DINERO BANKING</h1> <br><br>
    <p>You're Not Just Another CUSTOMER...    We're Not Just Another BANK...!</p>
    <br><br><br>
    <form>
</div>

<!-- Container (About Section) -->
<div id="about" class="container-fluid">
    <div class="row">
        <div class="col-sm-8">
            <h2>About Dinero Bank</h2><br>
            <h4>Dinero Bank is an innovation with technology at your home .Internet Banking is a convenient way to do banking from the comfort of your
            home or office. Avoid the queue or delays and try our simple and secure Internet Banking facility for an unmatched online banking
            experience.
                Just login today using your User ID and Password to experience Dinero Bank Internet Banking.</h4><br>
```
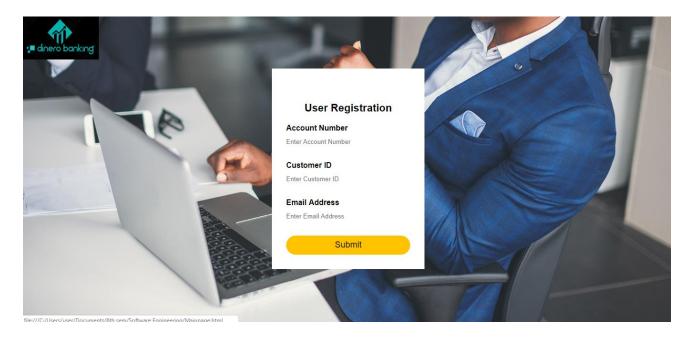
Login:

```
1   <html>
2   <head>
3   <title> Login Form Design </title>
4       <link rel="stylesheet" type="text/css" href="style.css">
5   <body>
6       <div class = "loginbox">
7           <h1> Login Here </h1>
8           <form>
9               <div class="tab">
10              <button class="tablinks" onclick="openCity(event, 'Customer')">Customer</button>
11              <button class="tablinks" onclick="openCity(event, 'Admin')">Admin</button>
12              </div>
13              <div id="Customer" class="tabcontent">
14              <p>CustomerID</p>
15              <input type="text" id="custid" name="custid" placeholder="Enter Customer ID" pattern="[0-9]{8}"required>
16              <p>Password</p> <input type="password" id="psw" name="psw" placeholder="Enter Password" >
17              <input type="submit" name="" value="Login">
18              <a href="file:///C:/Users/user/Documents/6th%20sem/Software%20Engineering/Login/forgot1.html"> Forgot  password </a><br>
19              <a href="file:///C:/`Users/user/Documents/6th%20sem/Software%20Engineering/Login/Registration.html">Create an account </a>
20
21              </div>
22              <div id="Admin" class="tabcontent">
23              <p>AdminID</p>
24              <input type="text" id="adminid" name="adminid" placeholder="Enter Admin ID" pattern="[0-9]{8}"required>
25              <p>Password</p> <input type="password" id="psw" name="psw" placeholder="Enter Password" >
26              <input type="submit" name="" value="Login">
27              <a href="file:///C:/Users/user/Documents/6th%20sem/Software%20Engineering/Login/forgot1.html"> Forgot  password </a><br>
28              </div>
29          </form>
30      </div>
31      <nav class="navbar navbar-default navbar-fixed-top">
32      <div class="container">
33          <div class="navbar-header">
34          <a class="navbar-brand" href="file:///C:/Users/user/Documents/6th%20sem/Software%20Engineering/Mainpage.html"><img
            src="C:\Users\user\Documents\6th sem\Software Engineering\CAPTURE.PNG" width="150" height="100" alt="logo"></a>
35          </div>
36      </div>
37      </nav>
38
39   </body>
40   </head>
41   </html>
```

Registration:


```html
1  <html>
2  <head>
3  <title>Registration Form Design </title>
4      <link rel="stylesheet" type="text/css" href="style.css">
5  <body>
6      <div class = "registerbox">
7          <h1>  User Registration</h1>
8          <form>
9              <p>Account Number</p>
10             <input type="text" id="acc_no" name="acc_no" placeholder="Enter Account Number" pattern ="[0-9]{9,18}" required>
11             <p>Customer ID</p>
12             <input type="text" id="custid" name="custid" placeholder="Enter Customer ID" pattern ="[0-9]{8}$"required>
13             <p>Email Address</p>
14             <input type="text" id="email" name="email" placeholder="Enter Email Address" pattern="^([a-zA-Z0-9_\-\.]+)@((\[[0-9]{1,3}\.[0-9]
               {1,3}\.[0-9]{1,3}\.)|(([a-zA-Z0-9\-]+\.)+))([a-zA-Z]{2,4}|[0-9]{1,3})(\]?)$" required>
15             <input type="submit" name="" value="Submit">
16
17         </form>
18
19     </div>
20      <nav class="navbar navbar-default navbar-fixed-top">
21   <div class="container">
22      <div class="navbar-header">
23      <a class="navbar-brand" href="file:///C:/Users/user/Documents/6th%20sem/Software%20Engineering/Mainpage.html"><img
        src="C:\Users\user\Documents\6th sem\Software Engineering\CAPTURE.PNG" width="160" height="100" alt="logo"></a>
24      </div>
25   </div>
26  </nav>
27
28  </body>
29  </head>
30  </html>
31  <style>
32  body{
33      margin: 0;
34      padding: 0;
35      background: url(Header-Man-with-Laptop.jpg);
36      background-size: cover;
37      background-position: center;
38      font-family: sans-serif;
39  }
```

```html
<!DOCTYPE html>
<html>
  <head>
    <title>ADMIN</title>
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://www.w3schools.com/w3css/4/w3.css">
    <style>
      body {
    font: 400 15px Lato, sans-serif;
    line-height: 1.8;
    color: #818181;
    }
  h2 {
      font-size: 24px;
      text-transform: uppercase;
      color: #303030;
      font-weight: 600;
      margin-bottom: 30px;
    }
  h4 {
      font-size: 19px;
      line-height: 1.375em;
      color: #303030;
      font-weight: 400;
      margin-bottom: 30px;
    }
  .jumbotron {
      background-color: #000000;
      color: #fff;
      padding: 327px 25px;
      font-family: Montserrat, sans-serif;
    }
  .container-fluid {
      padding: 60px 50px;
    }
  .bg-grey {
      background-color: #f6f6f6;
    }
  .logo {
      color: #000000;
      font-size: 200px;
    }
```

6

<div align="center">

SAMPLE CODES

(BACKEND)

</div>

1) Transaction Module:

```
var transaction1 = { from_account: user, to_account: ac, tx_status: "Successful", tx_amount: sendamt, cred_deb: "Debit",
mongo.collection("Transaction").insertOne(transaction1, function (err, res) {
    if (err) throw err;
    console.log("inserted");
    db.close();
});
```

Inserting the data into the transaction table

```
    if (sendamt > accbal) {
        console.log("insufficient balance");
        var msg = "Insufficient Funds";
        res.render('t3', { message: msg });
        db.close();
    }
    else {
        if (accmpin == sendmpin) {

            //updating receivers amount
            console.log(sendamt);
            mongo.collection("Account").findOneAndUpdate(
                { _id: ac },
                { $inc: { "balance_amount": sendamt } }
            );

            //updating senders amount

            mongo.collection("Account").findOneAndUpdate(
                { _id: user },
                { $inc: { "balance_amount": -sendamt } }
            );
```

Code used for updating the account balance

```
//mail sending to user debit

var mailoptions = {
    from: 'dinerobanking@gmail.com',
    to: email,
    subject: 'Money Debited',
    text: 'Money Successfully Debited \n\nTransaction Details: \nAccount:' + ac + '\n' + 'Amount:' + sendamt + '\n' + 'R
};
transporter.sendMail(mailoptions, function (error, info) {
    if (error) {
        console.log(error);
    }
    else {
        console.log('Email sent' + info.response);
    }
});
```

Code used for mail generation after every debit

```
var dayy = (datetime.getHours()) + ":" + (datetime.getMinutes()) + ":" + datetime.getSeconds();

mongo.collection("Customers").findOneAndUpdate(
    { _id:  111111  },
    { $set: { "last_login": dayy } }
);
```

Code for checking the last login details

```
app.get('/', function(req, res){
  res.render("admin");
}
)
 var id;
app.post("/profile1", function(req, res){
  MongoClient.connect(url, function(err, db){
    if(err) throw err;
    console.log("ghgh");
    id = parseInt(req.body.id);
    console.log("_____");
    console.log(id);
    var mongo = db.db('my_dbss');
    mongo.collection("Customers").find({"account_id ":id}).toArray(function(err, doc){
      if (err) throw err;
      else if (doc.length == 0){
        console.log("Data doesn't exist");
        var msg="Authentication Failed. Please try again later";
                res.render("admin");

                console.log('hehe');
      }
      else{
        console.log(doc);
        res.render('profile1', { root: __dirname } ,{h1:doc[0]});

      }

      db.close();

    });
```

Code for accessing the user profile from the admin dashboard by clicking the user's account number

2) Registration Module

```
var mongo = db.db("mydb");
console.log(cid);
console.log(aid);
console.log(m);
mongo.collection("Customer_access").find({ "_id": { "cust_id": cid, "account_id": aid }, "mail": m }).toArray(function (err, result) {
  if (err) throw err;
  console.log(m);
  console.log(result);
  if (result.length == 0) {
      console.log("closing")
      resmsg="Account doesnt exist.please try again";
      res.render('f1',{message:resmsg});
    db.close();
  }

  else {
    if(result[0].acc_status=='NOA'){
      console.log("data exists");

      var generator = require('generate-password');
      var randompassword = generator.generate({ …
      });
      destmail=m
      console.log(m)
      console.log(randompassword)

      mongo.collection("Customer_access").findOneAndUpdate(
        { _id: { "cust_id": cid, "account_id": aid } },
        { $set: { "password": randompassword } }
      );
```

Registration of a new account and random password generation

3) Login Module

```
MongoClient.connect(url, { useNewUrlParser: true }, function (err, db) {
  if (err) throw err;
  if(button == "logging"){
    console.log('yayyyyy');
    var cusid=parseInt(req.body.userid);
    var pwd=req.body.pwd;
    var mongo = db.db("mydb");
    console.log(cusid);
    console.log(pwd);
    mongo.collection("Customers").find({_id: cusid, "password": pwd}).toArray(function (err, result) {
      //console.log(resu+"k");
      console.log(result)
      if (err) throw err;
      if (result.length == 0) {
        console.log("Invalid Credentials");

        var resmsg="Invalid credentials";
        res.render('login',{message : resmsg});
      }
      else {
        console.log("login success");
        cid=parseInt(cusid);
        ifsc=parseInt(result[0].ifsc);
        email=result[0].mail;
        res.render('f2');


      }
    });
  }
```

Login by an existing user using his/her credentials

4) Loan Requests from the user to the admin

```javascript
MongoClient.connect(url, function (err, client) {
    console.log('went Inside');
    var id=parseInt(req.body.eid);
    console.log(id);
    var db = client.db('mydb');
    if (err) throw err;
    db.collection("Loan").find({_id : id}).toArray(function (err, result) {
        if(result.length == 0){
            console.log('went here');
            var resmsg="No loan request exists";
            res.render('Page1.pug', { 'message': resmsg });
        }
        else{
            console.log(result[0].status)
            if(result[0].status=='Pending'){
                db.collection("Loan").findOneAndUpdate(
                    { _id: id  },
                    { $set: { "status": "Approved"
                    } }
                );
                var resmsg="Loan Status Changed successfully";
                res.render('Page1.pug', { 'message': resmsg });
            }
            else if(result[0].status=='Approved'){
                var resmsg="Request already approved"
                res.render('Page1.pug',{'message':resmsg});

            }
            else{
                var resmsg="Blocking cannot be done for unregistered Account"
                res.render('Page1.pug',{'message':resmsg});

            }
        }
    }
```

Approval and rejection of loan requests

```javascript
app.get('/request', function (req, res) {
    MongoClient.connect(url, function (err, client) {
        var db = client.db('mydb');
        if (err) throw err;
        db.collection("Loan").find({}).toArray(function (err, result) {
            if (err) throw err;

            res.render('loanrequests.pug', { 'result': result });

        });
    });
});
```

Getting loan requests

```javascript
app.get('/f_active', function (req, res) {
    MongoClient.connect(url, function (err, client) {
        var db = client.db('mydb');
        if (err) throw err;
        db.collection("Customers").find({acc_status : 'Active'}).toArray(function (err, result) {
            if (err) throw err;

            res.render('viewdetails.pug', { 'result': result });

        });
    });
});
```

Viewing the active customers data from the admin dashboard

```javascript
MongoClient.connect(url, function (err, client) {
    console.log('went Inside');
    var id=parseInt(req.body.eid);
    console.log(id);
    var db = client.db('mydb');
    if (err) throw err;
    db.collection("Customers").find({_id : id}).toArray(function (err, result) {
        if(result.length == 0){
            console.log('went here');
            var resmsg="Account doesnot exist";
            res.render('Page1.pug', { 'message': resmsg });
        }
        else{
            if(result[0].acc_status=='Active'){
                db.collection("Customer_access").findOneAndUpdate(
                    { _id: { "cust_id": id } },
                    { $set: { "acc_status": "Blocked"
                    } }
                );

                db.collection("Customers").findOneAndUpdate(
                    { _id: id },
                    { $set: { "acc_status": "Blocked"
                    } }
                );
                var resmsg="Account Status Changed";
                res.render('Page1.pug', { 'message': resmsg });
            }
            else{
                var resmsg="Blocking cannot be done for unregistered Account"
                res.render('Page1.pug',{'message':resmsg});

            }
        }
    }
```

Blocking and Unblocking the user

```javascript
}}}
app.get('/f_inactive', function (req, res) {
    MongoClient.connect(url, function (err, client) {
        var db = client.db('mydb');
        if (err) throw err;
        db.collection("Customers").find({acc_status : 'NOA'}).toArray(function (err, result) {
            if (err) throw err;

            res.render('viewdetails.pug', { 'result': result });

        });
    });
});
```

Getting the inactive users

```javascript
var mailoptions={
    from:'dinerobanking@gmail.com',
    to: destmail,
    subject:'Password',
    text:randompassword
};
transporter.sendMail(mailoptions,function(error,info){
    if(error){
        console.log(error);
    }
    else{
        console.log('Email sent' + info.response);
    }
});
```

Mail service for the random password generation

5) Database insertion

```
var cust1 = {_id:{cust_id:13312728, account_id:1222496542241313}, mail:"aishwaryaramaraj2998@gmail.com", password:"", acc_status: "NOA", unsuccessfu
var cust2 = {_id:{cust_id:12216464, account_id:1222499056443567}, mail:"vasu.vasudha05@gmail.com", password:"", acc_status: "NOA", unsuccessful_logi
var cust3= {_id:{cust_id:53702338, account_id:1223891145506770}, mail:"chakradhargrandhi01@gmail.com", password:"", acc_status: "NOA", unsuccessful
var cust4 = {_id:{cust_id:33258000, account_id:1224446031123232}, mail:"glvcharan999@gmail.com", password:"", acc_status: "NOA", unsuccessful_login:

var customer1 = {_id:13312728, account_id:1222496542241313, ifsc:12225626268, cust_firstName:"Aishwarya", cust_lastName: "Ramaraj", acc_status: "NOA
var customer2 = {_id:12216464, account_id:1222499056443567, ifsc:12225626268, cust_firstName:"Vasudha", cust_lastName: "Achanta", acc_status: "NOA",
var customer3 = {_id:53702338, account_id:1223891145506770, ifsc:12225626268, cust_firstName:"Chakradhar", cust_lastName: "Grandhi", acc_status: "NO
var customer4 = {_id:33258000, account_id:1224446031123232, ifsc:12225626268, cust_firstName:"Srijha", cust_lastName: "Kalyan", acc_status: "NOA", l


var loan1={_id:53702338 ,cust_firstName:"Chakradhar",cust_lastName: "Grandhi",amount:50000,status:"Pending"}
var loan2={_id:12216464 ,cust_firstName:"Vasudha", cust_lastName: "Achanta",amount:50000,status:"Pending"}
s
var account1= {_id : 1222496542241313, ifsc:12225626268, acc_type : "Savings", balance_amount :20000, MPIN: "3096", card_number:"1234567461712342" }
var account2= {_id : 1223891145506770, ifsc: 12225626268, acc_type : "Current", balance_amount :30000, MPIN: "3096", card_number:"2134678955614141"
var account3= {_id : 1224446031123232, ifsc: 12225626268, acc_type : "Current", balance_amount :40000, MPIN: "3096", card_number:"3122565674738898"
var account4= {_id : 1222499056443567, ifsc: 12225626268, acc_type : "Savings", balance_amount :50000, MPIN: "3096", card_number:"7721334521215537"

var transaction1 = {_id:1337908077775116, cust_id:13312728, account_id:1222496542241313, time_stamp:"Saturday, 2 February 2019, 18:55 P.M", to_accou


var Branch1= {_id : 12225626268, Bank_name : "Dinero Bank New York", Bank_Address:"Wall Street, New York, 380006"};
var Branch2= {_id : 12235626268, Bank_name : "Dinero Bank Boston", Bank_Address:"Brattle Street, Boston, 390006" };
var Branch3= {_id : 12245626268, Bank_name : "Federal Bank", Bank_Address:"Harvard Square, Boston, 391006" };
var Branch4= {_id : 12255626268, Bank_name : "Yes Bank", Bank_Address:"Commonwealth Avenue, New York, 381006"};
```
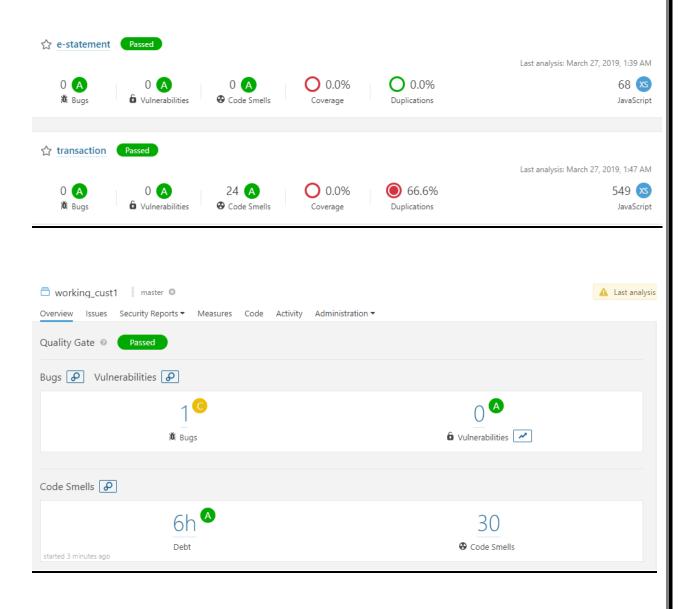
Database insertion of the Customer Table, Account table and Transaction table

```
var bill1={_id:100001,name:"HP",amount:500};
var bill2={_id:100002,name:"HP",amount:570};
var bill3={_id:200001,name:"INDANE",amount:700};
    var bill4={_id:200002,name:"INDANE",amount:870};
    var bill5={_id:100003,name:"HP",amount:500};
    var bill6={_id:100004,name:"HP",amount:570};
    var bill7={_id:200003,name:"INDANE",amount:700};
    var bill8={_id:200004,name:"INDANE",amount:870};
    var bill9={_id:100005,name:"HP",amount:500};
    var bill10={_id:100006,name:"HP",amount:570};
    var bill11={_id:200005,name:"INDANE",amount:700};
    var bill12={_id:200006,name:"INDANE",amount:870};
    var ebill1={_id:100000001,name:"ANDHRA PRADESH",amount:300};
    var ebill2={_id:100000002,name:"ANDHRA PRADESH",amount:1070};
    var ebill3={_id:100000003,name:"ANDHRA PRADESH",amount:600};
    var ebill4={_id:100000004,name:"ANDHRA PRADESH",amount:170};
    var ebill5={_id:100000005,name:"ANDHRA PRADESH",amount:5060};
    var ebill6={_id:100000006,name:"ANDHRA PRADESH",amount:1060};
    var ebill7={_id:200000001,name:"TAMIL NADU",amount:600};
    var ebill8={_id:200000002,name:"TAMIL NADU",amount:970};
    var ebill9={_id:200000003,name:"TAMIL NADU",amount:690};
    var ebill10={_id:200000004,name:"TAMIL NADU",amount:970};
    var ebill11={_id:200000005,name:"TAMIL NADU",amount:600};
    var ebill12={_id:200000006,name:"TAMIL NADU",amount:970};
    var mbill1={_id:9491788394,name:"JIO",amount:300};
    var mbill2={_id:9655511680,name:"AIRTEL",amount:1070};
    var mbill3={_id:7339000592,name:"BSNL",amount:600};
    var mbill4={_id:7538882663,name:"JIO",amount:170};
    var mbill5={_id:9490831893,name:"AIRTEL",amount:5060};
    var mbill6={_id:6281537224,name:"BSNL",amount:1060};
    var mbill7={_id:9440754156,name:"JIO",amount:600};
    var mbill8={_id:9440914599,name:"AIRTEL",amount:970};
    var mbill9={_id:7538882245,name:"BSNL",amount:690};
    var mbill10={_id:8850584901,name:"JIO",amount:970};
    var mbill11={ id:7013779179,name:"AIRTEL",amount:630};
```

7

SOFTWARE ENGINEERING TOOLS USED

7.1 Static code analysis (SonarQube)

7.1.1. Screenshots/report of the scanning results

☆ e-statement `Passed`

Last analysis: March 27, 2019, 1:39 AM

0 Ⓐ 🐛 Bugs	0 Ⓐ 🔓 Vulnerabilities	0 Ⓐ 💥 Code Smells	⭕ 0.0% Coverage	⭕ 0.0% Duplications	68 Ⓧⓢ JavaScript

☆ transaction `Passed`

Last analysis: March 27, 2019, 1:47 AM

0 Ⓐ 🐛 Bugs	0 Ⓐ 🔓 Vulnerabilities	24 Ⓐ 💥 Code Smells	⭕ 0.0% Coverage	⬤ 66.6% Duplications	549 Ⓧⓢ JavaScript

🗀 working_cust1   master ⊙   ⚠ Last analysis

Overview   Issues   Security Reports ▾   Measures   Code   Activity   Administration ▾

Quality Gate ⦾   `Passed`

Bugs 🔎   Vulnerabilities 🔎

1 Ⓒ
🐛 Bugs

0 Ⓐ
🔓 Vulnerabilities 📈

Code Smells 🔎

6h Ⓐ
Debt

started 3 minutes ago

30
💥 Code Smells

7.1.2. Actions taken

7.1.3. Any additional details

We have performed code quality analysis on all codes related to Sprint1.

7.2. Unit testing
7.2.1. Tool used and its setup detail
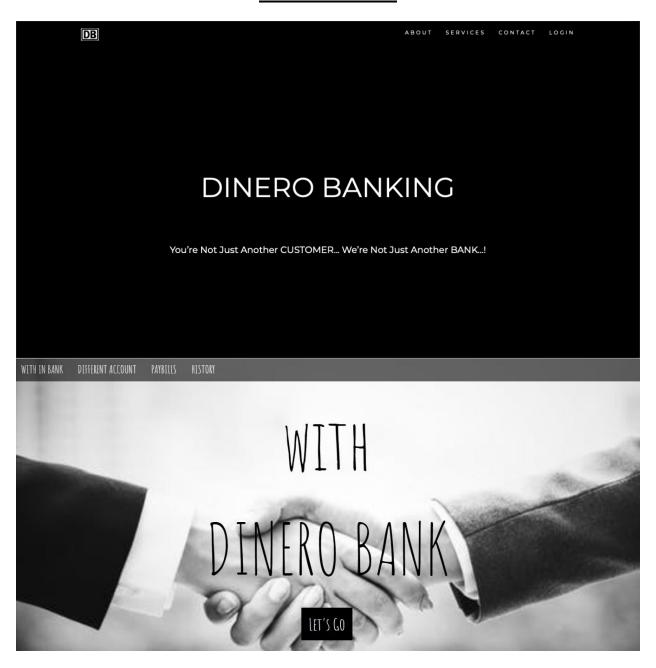
Java and Selenium Tool
7.2.2. Test cases statistics (#Units in the code and #unit tests written for   each unit)

We first took the HTML file for each module and ran the code which is in Java using the tool. The tool scanned through the whole file and returned no errors by completing the test successfully

7.2.3. Test case code

```java
public class Hello {
    public static void main(String[] args)throws IOException
    {
        System.setProperty("webdriver.chrome.driver", "D:\\chromedriver_win32\\chromedriver.exe");
        ChromeDriver driver = new ChromeDriver();
        driver.get("file:///D:/registration.html");
        driver.manage().window().maximize();
        String url=driver.getCurrentUrl();
        driver.findElement(By.id("acc_no")).sendKeys("1223891145506770");
        driver.findElement(By.id("custid")).sendKeys("53702338");
        driver.findElement(By.id("email")).sendKeys("chakradhargrandhi01@gmail.com");
        driver.findElement(By.id("sub")).click();
        String c_url=driver.getCurrentUrl();

        /*System.out.println(c_url);
        System.out.println("\n");
        System.out.println(url);*/
         if(url.equals(c_url))
            {
            System.out.println("Fail");

            }
            else
            {

            System.out.println("Pass");

            }
        System.out.println("Test Completed successfully ...");
```

Problems @ Javadoc Declaration Console ⊠

<terminated> Hello [Java Application] C:\Program Files\Java\jdk-11.0.1\bin\javaw.exe (Mar 27, 2019, 10:39:51 AM)

Please protect ports used by ChromeDriver and related test frameworks to prevent access by malicious code.
Mar 27, 2019 10:39:55 AM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: OSS
Pass
Test Completed successfully ...

8

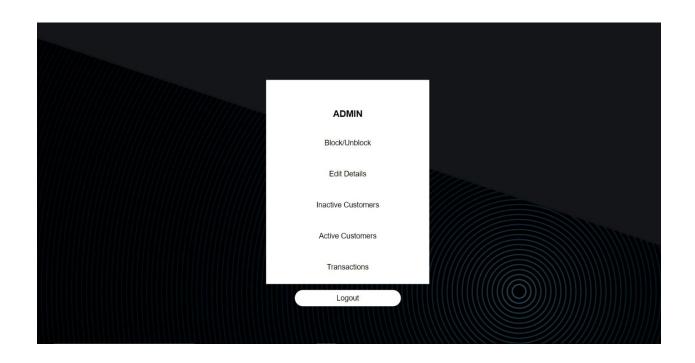<div align="center">

<u>SCREENSHOTS</u>

</div>

ADMIN

Block/Unblock

Edit Details

Inactive Customers

Active Customers

Transactions

Logout

Customer Details

Search customer

Enter the Customer ID block unblock

Customer ID	Account ID	Name	Phone Number	Account Status
13312728	1222496542241313	Aishwarya Ramaraj	9655511680	NOA
12216464	1222499056443567	Vasudha Achanta	9610129289	NOA
53702338	1223891145506770	Chakradhar Grandhi	7538881212	Active
33258000	1224446031123232	Srijha Kalyan	7466123423	NOA

9

<u>Conclusion</u>

Throughout the development of the application, we learnt how an application is designed best to meet the customer's needs and how an organization implements the Agile methodology into software development.
It helped us in forming a better vision of the emerging product and work more effectively to improve the quality and helped us to determine the best way to deliver the highest priority features within the time constraint.

This project has helped us in getting a clear view of how a software should be developed from scratch for real-time usage.
We thank Amrita School of Engineering and the concerned faculty of the course (15CSE313) for guiding us throughout the project