SPOTS – The Hyperlocal Digital Wallet

Goals and Tasks

We have chosen Momoe and Paytm as the two reference products for carrying out the initial CI and HE for the various goals. Although there are three members in our team, we had to provide 3 goals and 1 secondary goal – Seeking Technical support, since that was important for our business case. Also we have provided the Merchant side of the product as that is a new application which we feel will differentiate our product from those available in the market.

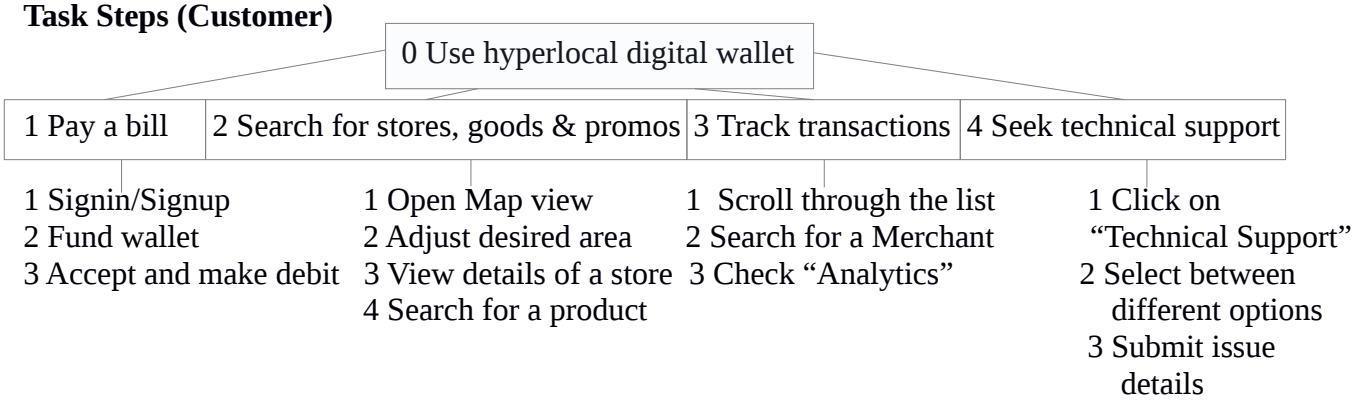
Customer

1. Pay a bill (Momoe)
    - Sign in or Signup
    - Fund wallet (with no upper limit)
    - Accept and debit with wallet
2. Search for stores, goods and promos (Momoe)
    - Open Map view
    - Adjust desired area
    - View details for a store
    - Search for a product
3. Track transactions (Paytm)
    - Click on Transaction button
    - Scroll through the list
    - Click on “Analytics” button
    - Search for a Merchant
4. Seek technical support (Paytm)
    - Click on “Technical Support”
    - Select between the different options
    - Submit the issue details

Merchant

1. Send a bill to the Customer (New Feature)
    - Login with Userid and Password
    - Fill bill details and send.
2. Check past transactions (Paytm)
    - Click on transaction history button
    - Scroll through list
    - Search for a particular customer
3. Seek technical support (Paytm)
    - Click on “Technical Support”
    - Select between the different options
    - Submit the issue details

Task Steps (Customer)



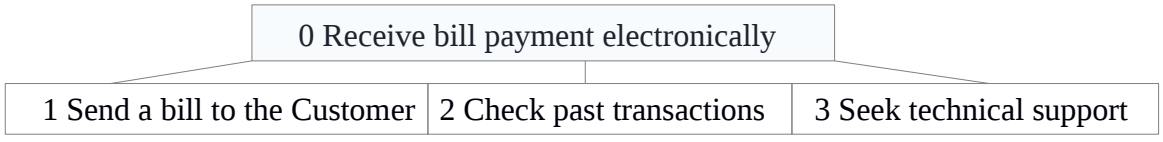
Goal 1
Sign in / Signup
1 Sign up with communication and profile details
2 Enter mobile number and password to sign in
Fund wallet
If total pending bill amount > wallet balance
1 Add one or more card details
2 Add any amount with card and PIN
Accept and make debit
1 Accept bill
2 Pay with wallet PIN authentication

Goal 2
Open Map view
1 Click on the map view button
Adjust desired area
1 Zoom in or out
2 Choose areas: Local, City, Country, or International with drop down menu.
View details of a store
1 Click on a location "marker" for a store/outlet
Search for a product
1 Enter product name in the search bar
2 Click "Search"

Goal 3
Scroll through the list
1 Click on the "Transaction history" button
2 Swipe down to scroll through the list
Search for a Merchant
Enter the merchant name in the bar
View list of past transactions at the merchant
Check Analytics
1 Click on the "Analytics" button
2 View the various graphs showing the spending information

Goal 4
Click on "Technical Support"
1 Search for button in the Home screen
2 Click that to get a popup with options
Select between different options
1 Choose from radio options available
Submit issue details
1 Write mail/call the customer care with details

Task Steps (Merchant)

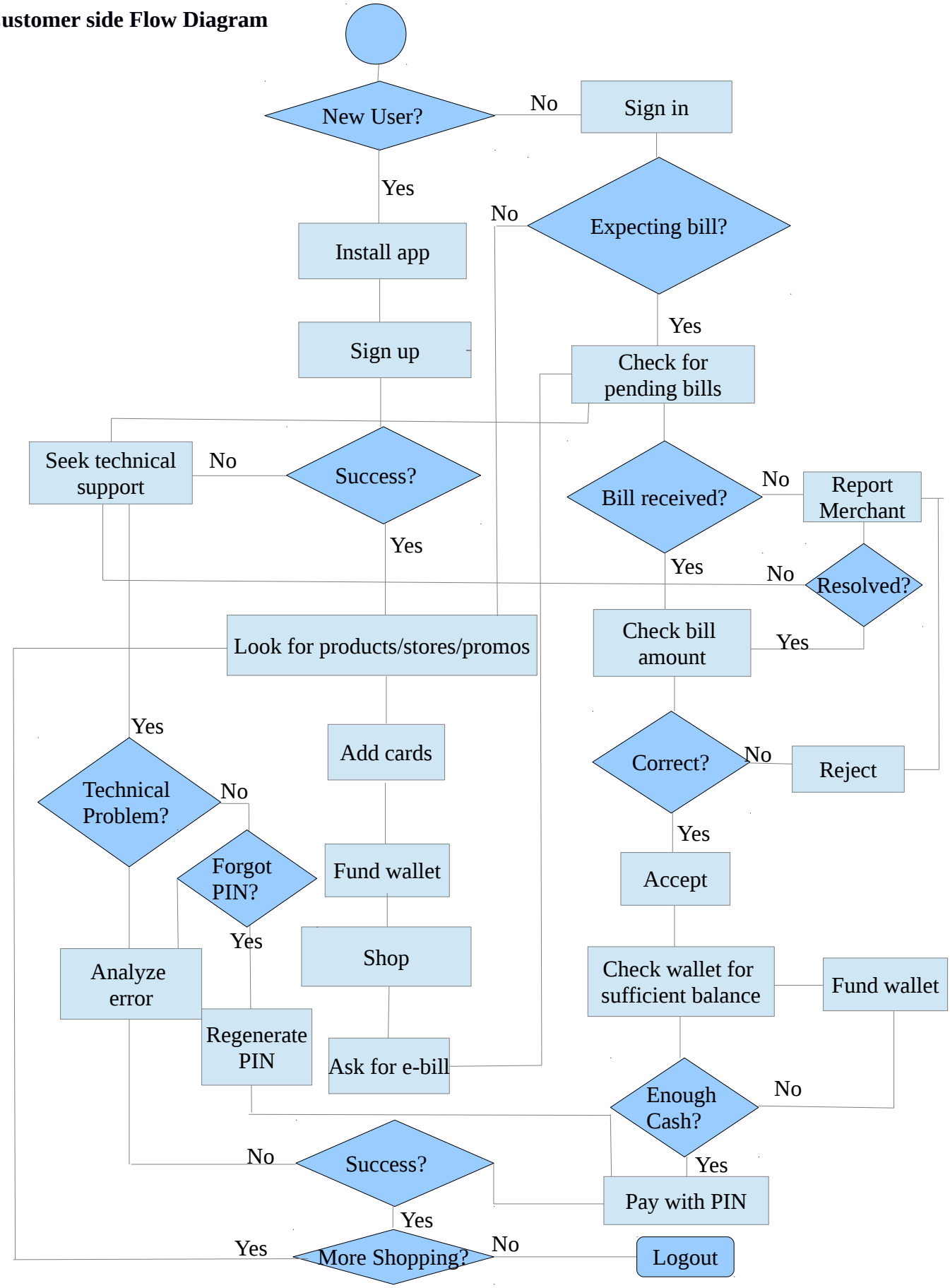


1 Login with Userid and Password
2 Fill up bill details and send

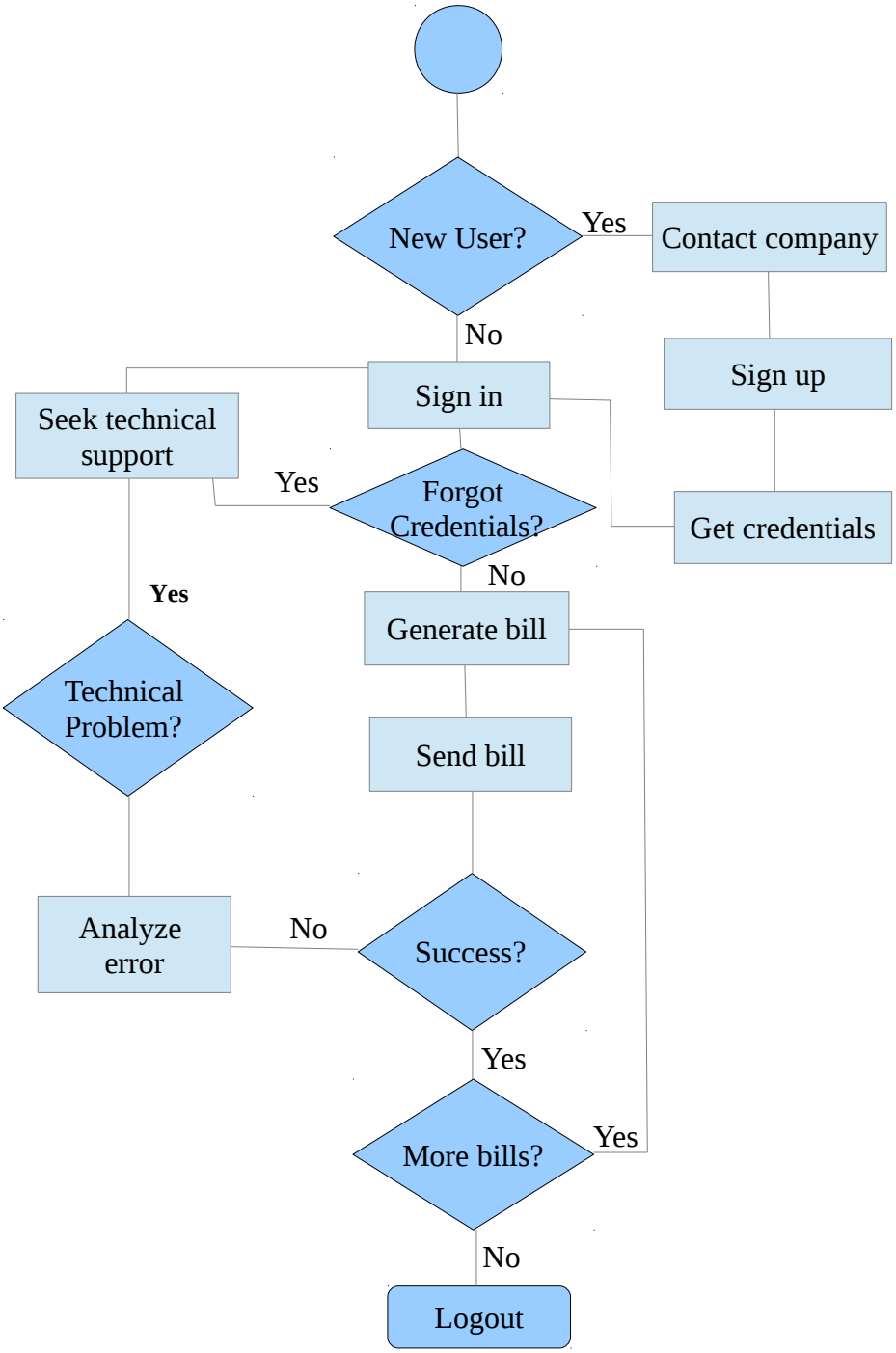
1 Click on transaction history button
2 Scroll through list
3 Search for a particular customer in the search bar

1 Click on "Technical Support"
2 Select between different options
3 Submit issue detail

Customer side Flow Diagram



Merchant side Flow diagram



CI AND HE FOR SIGN IN, WALLET/CARD MANAGEMENT AND BILL PAYMENT

Contextual Inquiry

User Persona

User 1 : Krishna, 34 years old – Young Male Adult
Krishna is an IT professional for the last 9 years. He is quite tech savvy and uses electronic gadgets of various sizes for work and day to day activities like online shopping, research, movies, traveling etc.
He loves going to pubs and like shopping in malls during weekends. Other days, he prefers getting things from local kirana stores. He also swipes his cards and pays cash at petrol pumps. He visits restaurants three to four times in a month. At most places he prefers paying by his cards. He has used Paytm specially during the “Demonetization” days. He says that electronic wallets and online stores that accepted payments with cards were a blessing during that period.
He uses an Android tablet for surfing while at home or while travelling.

User 2 : Uma, 33 years old – Young Female Adult
Uma is a working lady. She uses her phone for chatting with her friends, apartment neighbors through whatsapp and hike. She also uses her phone to make online reservations at restaurants and movie theaters and shares it socially. Although she is quite acquainted to a smartphone, she doesn't normally use her phone for making purchases online. She typically makes calls or uses her laptop to place orders for goods and services like a home delivery of grocery, or food. She pays by cash orat most of the shops that she visits during the week or on weekends. At bigger stores and marts she pays by her cards.
She uses a Nokia Lumia smartphone at home and outside. For this CI we are using the same device.

Transcript

Preliminary CI:

1. How frequently do you make offline transactions?
   User1: Usually during weekends and during weekdays mostly at the petrol station and small nearby kirana stores. Most of the daily needs are fulfilled with online grocery stores like Big Basket.
   User2: Mostly during weekends at malls and commercial areas. Other needs like grocery are available at nearby mart.
2. How do you prefer to pay for your offline bills?
   User1: Cards mostly. Only at small stores that don't have a card machine, I keep cash.
   User2: Cash and cards
3. Who pays for the bills?
   User1: Myself
   User2: Myself
4. What payment modes have you used for offline spending?
   User1: Cash and card.
   User2: Cash, card, sodexo meal coupons, voucher.
5. Have you ever used an electronic wallet?
   User1: Yes
   User2: No

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6. Do you think it is safe always to keep card information in an application that has access to Internet?
   User1: Yes, if the phone does not have malware.
   User2: Maybe

7. Do you know that Paytm, Momoe, Oxigen wallet, Ola money etc. allow payments at select merchant stores?
   User1: Yes. I have seen at a Cafe Coffee Day store.
   User2: Yes. I have seen an ad where Paytm is used to pay at local stores with a QR code.
8. Do you think paying for all transactions electronically will reduce tension like losing or running out of cash, forgetting your debit/credit cards etc.?
   User1: Yes definitely. The recent Demonetization in India has made us realize the importance of going cashless atleast partially.
   User2: May. But using wallets also has its own risks.
9. Do you think the Indian Government's movement to “Demonetize” 500 and 1000 rs. Notes and to track all monetary transactions will be eased by the use of an electronic wallet for offline transactions?
   User1: Yes.
   User2: Yes.
10. Do you think electronic wallets can avoid credit card frauds?
    User1: Yes. But the company should take care of the online security threats. There are too many cyber criminals nowadays.
    User2: Maybe
11. Do you think people need a cashless and cardless economy?
    User1: Yes, but in India its a remote dream.
    User2: No. Other options should also be available.
12. Would you use an electronic method for paying for your physical purchases and services?
    User1: I would like to try.
    User2: Yes
13. Have you used Google Map on your Android phone?
    User1: Yes.
    User2: Yes.
14. Do you think searching for a store, restaurant etc. will become easy if guided with a map?
    User1: Yes.
    User2: Yes.
15. Do you prefer to keep your location services on while you are out? Does battery consumption or privacy issues concern you?
    User1: Yes. I use maps while driving to new places. No, the car battery is enough for keeping the phone charged. I don't think Google will misuse the location information.
    User2: No I hardly keep the location switched on.
16. Have you used Hyperlocal online services?
    User1: No
    User2: Yes. Fresh menu shows restaurant food around my place.

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Signup in Momoe:

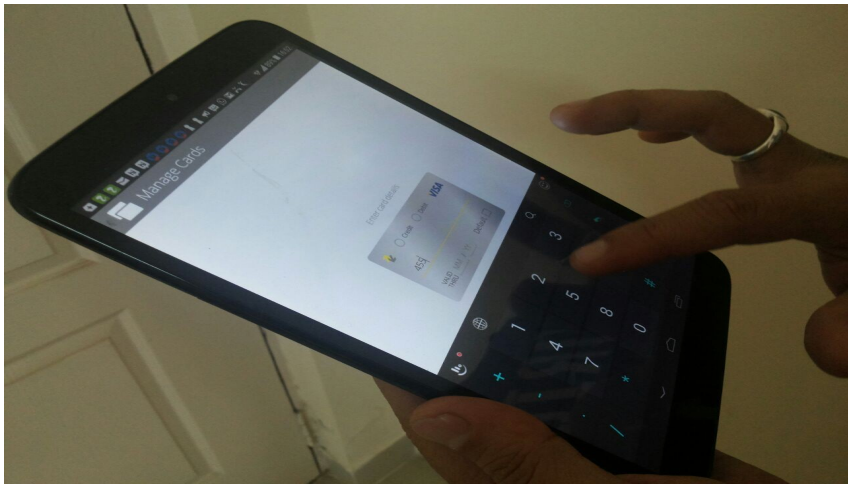
17. Do you think the signup process should contain personal information also?
User 1: Yes. Its not a problem.
User 2: Yes.
18. Do you think login should be mandatory for accessing the app that shows nearbuy store information or accepts financial information?
User 1: Only the stores can be shown without login. Any financial transactions should have a login.
User 2: Yes
19. How frequently do you forget your login id and password?
User 1: If not used for a month or so.
User 2: Quite frequently, as I don't use the apps very frequently.
20. Is the recovery process simple?
User 1: Easy
User 2: Usually easy
21. Do you feel the app should have the provision of login with different credentials or should it have the one that belongs to the owner of the phone only? Which one would you prefer?
User 1: It should enable logging in with different credentials.
User 2: Anything is fine.

Wallet, Card management and Bill payment in Momoe:

22. How many cards would you like to save in the wallet?
User 1: 2 cards maximum
User 2: One should be fine
23. Would you prefer to pay directly from the card like an online payment or is it better to fund the wallet and keep some money there?
User 1: Wallet
User 2: Wallet. But the other option should also be available.
25. Is the Card information area optimal and intuitive?
User 1: The representation and color is great but the size could have been a bit bigger.
User 2: Its ok.
26. Do you like that while paying you are the one entering the amount to pay or would you prefer the merchant to raise a bill in your number?
User 1: I would prefer the merchant to raise a bill and assign it to me.
User 2: I would like to pay for the bill after verifying as that is more convinient.
27. Is the bill payment process too tedious if it contains multiple steps? How many would you ideally prefer it to contain?
User 1: Two steps: first one to click on a “Pay” button and the next to enter a secure PIN or OTP.
User 2: If I am using a wallet, then two to three step, else similar to using a debit or credit card or netbanking.
28. Would you like to connect any other wallets you have to Momoe?
User1: Yes.
User2: Yes.

CI AND HE FOR SIGN IN, WALLET/CARD MANAGEMENT AND BILL PAYMENT

CI with User 1 for Signin/Signup, Card management, Wallet funding and bill payment



Krishna installed the application “Momoe” from Google PlayStore.
He likes the Splash screen that shows the highlights of the app.
In the next screen which is for login, he decides to skip the login process although there was an option for logging in using facebook.
In the next screen there is a mandatory registration process that cannot be skipped. But its a short form with the name, email id and phone number. He receives an error message in the email id section since there was an extra space there by mistake. He pressed “Go” button.
In the popup asking for a confirmation of his number, he pressed OK since the number was correct.
He entered the OTP.
After successfully completing the authentication, he was shown the nearby stores that accept “Momoe” payment. On clicking in the left panel, he saw the link to his profile that only had his photo, emailid and password information editable. So he got to know that it was only for the one user account. As he had mentioned in the CI before, he said he would always prefer having multiple accounts.
He clicked on “Wallet” in the panel and the screen showed options to recharge the wallet. There were options to recharge using other wallets also but those did not interest him much as he did not have accounts in them. So he went ahead with card swiping. He liked the card picture, but he said the color was a bit too dark and the size could have been a bit bigger since he was using it on a tablet.
He entered a wrong card number and got an error saying “Wrong card details” in the next screen and had the space again for the card details below without any graphic. He entered the details again correctly and clicked to PAY to proceed towards final authentication which is provided by the associated bank. The payment went through successfully.
In “Manage Cards” he saved several cards with all the information including CVV which is secret. So he was a bit concerned about that. But the layout of swiping through the horizontal card shaped information placeholders were appealing to him.
He clicked on “Momoe Support” to check if there is enough help available. He saw a pop up with “Call Us” and “Chat with us” options. That he felt was sufficient. He clicked on Chat option and a new screen came up with the message “Hi there. Thanks for reaching out to us. Send us your thoughts about the app and we'll get back to you.” This gave him the impression that this was infact similar to an email support service and not a chat. And also if there were definite timings for chatting with a customer service representative or calling them, then that too was not mentioned anywhere. That made him a bit skeptical about the quality of service that this application was providing.

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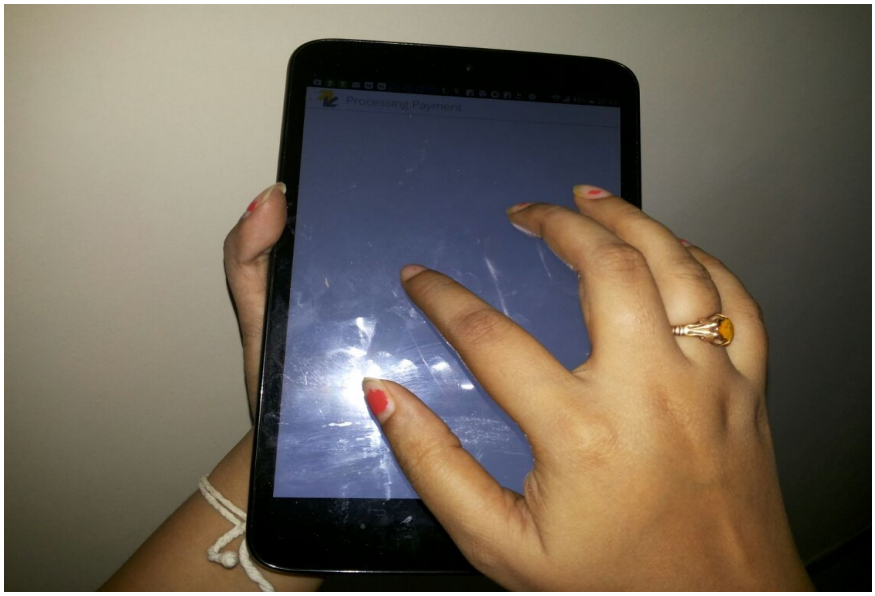
CI with User 2:



Uma installs the application in her tablet and swipes through the splash screens on startup.
She logs in with her facebook credentials. It was easy and quick. In the profile section she sees her name and email id as registered in facebook. But she was expecting her profile photo to appear there.
She clicked on a store, and entered a minimal amount in the “Bill Amount” section. She clicks on “Split Bill” Button to see an option to add friends from contact list to split the bill with. She could enter the amount she wanted to pay easily and proceed to checkout. She chose netbanking option and chose her bank from the list. She said the search was more useful since the color of the text was way too light. After choosing the bank she was rdirected to her bank's login page that asked for the UserID and password. She completed that process successfully.
She looked through the Manager Cards option and added several cards without any issue.
She was able to load cash into her wallet with he account at ICICI Pockets wallet service.

She was asked to check the support service and she said she prefered to call. So she clicked on the “Call” option and the mobile dialer came up. She called and it was connected immediately.

CI AND HE FOR SIGN IN, WALLET/CARD MANAGEMENT AND BILL PAYMENT

Heuristic Evaluation:

We evaluate the system based on these principles and refer to the others later.

Visibility of system status

The login process was quick and did not require any progress status to be shown to the user. So was the payment processes. Only the mobile phone verification process required the user to wait for the OTP to be received in the same phone. That took some time and did not have any status reflecting graphic.

Match between system and the real world

The cards that were pictured same as an actual card was appealing to the users. Also they could swipe through the saved cards. The cards were animated to turn over to get the CVV number. The bills had the option to split the amount among friends and restaurant bills could add a tip amount.

User control and freedom

It was possible to edit user account information. But the multiple accounts could be accessed through facebook accounts. The payments could be made through various options like cards, net banking, and other wallets. It was possible to save and delete card information.

Consistency and standards

The payment process for bills and wallet funding was similar. It was almost identical to the payment gateways of other web applications.

Error prevention

Wrong login credentials and card information was at once prompted. Garbage values were also handled at various places like email and bill amount.

Recognition rather than recall

The application when restarted had the previous credentials saved. Although this is a disadvantage in terms of multiple account access, it makes it easy for those who have just one account. Also all card information is well saved for future use.

Flexibility and efficiency of use

The payment process can be cancelled at any time and bill amount can be modified. This is an advantage for the user to pay as much as needed.

Aesthetic and minimalist design

The colors are light and give a pleasant feeling to the user. However the contrast could have been better. The information to be provided is not overwhelming and can be completed in a matter of few minutes.

Help users recognize, diagnose, and recover from errors

There were very few instances in the sign in and cards, wallets and bill payment section where errors could have taken place. All wrong entry were handled with simple error messages as seen in almost all other mobile applications.

Help and Documentation

The support with call and chat is practical. There is not tool to find textual help in the app. Also no screen for “How it works” that is seen in many other consumer applications.

CI and HE of the Low fidelity Prototype

CI has been done on the emulator in the laptop since installation had some issues.
Goals mentioned were to Sign up and Sign in and check bills, manage account details, cards and fund the wallet.

User 1:
The user clicks on the signup button and looks through the fields. He says that these are slightly more in number than Momoe application but that isn't a problem since many other apps have these steps. He asks about the 4 digit PIN since that is not something that was seen in the other application. He assumes that it was some kind of a second level authentication process. After signing up he sees the screen showing successful signup and option to either quit or start using the application. He chooses to continue.
After he is taken to the home screen containing a list of pending bills (hardcoded in the code), he clicks on the navigation bar and looks through the list of features.
He clicks on the “Account” and is taken to the screen where he can edit his details for communication and name etc. He goes back and clicks on “Manage Cards” where he sees that he can add, edit or delete a card. He said that the editing option was missing in Momoe and so that is something that is good since details might be added wrongly like CVV number or Valid till date.
He clicks on Add card and sees the screen for adding new card details. He says that it is different from Momoe as that had a card picture which was better in terms of look and feel but the color contrast was not good enough. So this simple form is better that way.
He goes back again to the Home screen and sees that the wallet balance is mentioned there. When he created a bill in Momoe, he saw notifications etc. at the top and the option to see details or delete the bill, but the balance was not known. So he felt that was an improvement and he could also fund it if needed. He clicked on the Fund wallet link in the navigation where he sees the Ui for funding the wallet. He says it was a bit more crowded but those were all related information. So that was fine. The next step as told would be the traditional payment process.
He went back and looked at the sharing, support and other options.

His main satisfaction was the support icons available at the places where those were needed and the option to Pay or decline a bill and also the Bill details having location information. Also being able to sign in using different mobile numbers is better than having just the phone owner details that can be modified. He has multiple devices with a sim card which he uses.

He said the wallet funding screen needed improvements to make it more attractive.
Also the map for the item/store search could have been the first screen since a user could use the app only for searching an item or a store and not for paying using this app.

User 2:

She looks at the screen and clicks on Signup link. She enters some random values for the fields and clicks in sigh up button. She is taken to the home screen where some bills are prepopulated.
She asks what the Pay button would do. I said that it was to pay using the PIN created during signup.
She confirmed that the Reject button was to tell the store manager that the bill amount is incorrect.
She saw that two bills were pending and total amount was greater than the wallet balance, so she had to fund it.
She clicked on the Navigation bar and saw that option. She clicked on that and was taken to the screen for funding. She chose the cards option and entered the short amount. The cards were available in a drop down menu and not in a swipe list, which she felt was a more concise way but less interactive.
She went back to click on the Account link where she saw that the picture placeholder was missing.
She looked through the rest and made some changes.
She then chose to go to the card management link where she saw some images for deleting or editing card details. She was a bit confused about the Add card option, whether to click on the image to add since there was no button. But then that was the only component there and so she clicked it when the add card screen came up. She liked the simple form design instead of the card picture and said that image did not make much of a difference. On clicking Save Card, she was taken back to the Home screen.

Overall, she was satisfied with the bill details part and account management. She also like the funding screen that collected the credentials in the same screen.
She did not like the color of the icons for support and said that was not matching with the rest.

We could not change that as it is the default color in Android Studio. But we can change it using some advanced options.

Uma needs to buy some stationary at a nearby store and so goes out with her wallet that has some cash and credit or debit cards. She also has her smartphone that she carries with her always.

After shopping, she pays with cash but due to the recent "Demonetization" by the government, the store keeper refuses to accept any old notes. She then tries to pay with her debit card, but the store keeper says due to too many swipes, the machine was out of order! She is pissed off!

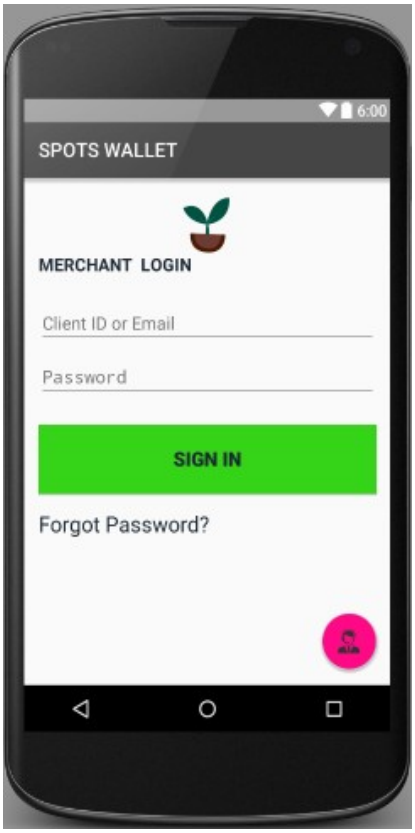
But then both the store keeper and Uma realize that SPOTS wallet can come to their rescue!

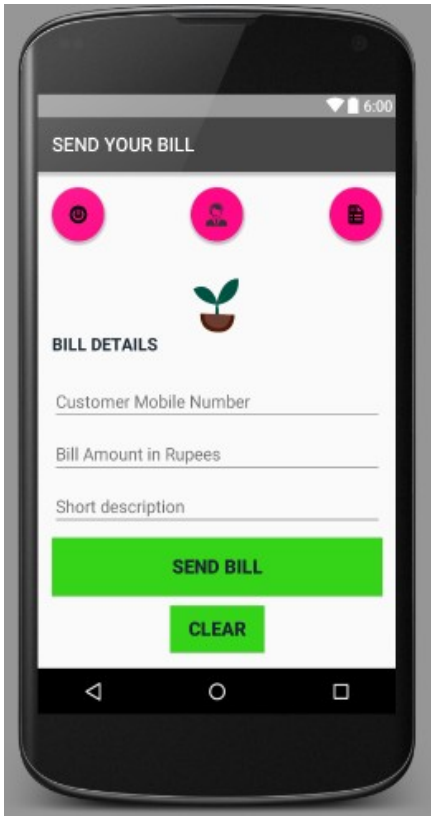
The store keeper sends the bill to Uma's number via SPOTS. Uma pays for it online. The store keeper instantly receives the conformation. The transaction is complete.

Uma has to meet her friends at a restaurant for lunch. She doesn't want to face the hassle of paying with cash or card. She searches for a place that accepts e-cash with SPOTS, but her wallet is low in balance. She refunds her wallet with netbanking in seconds!

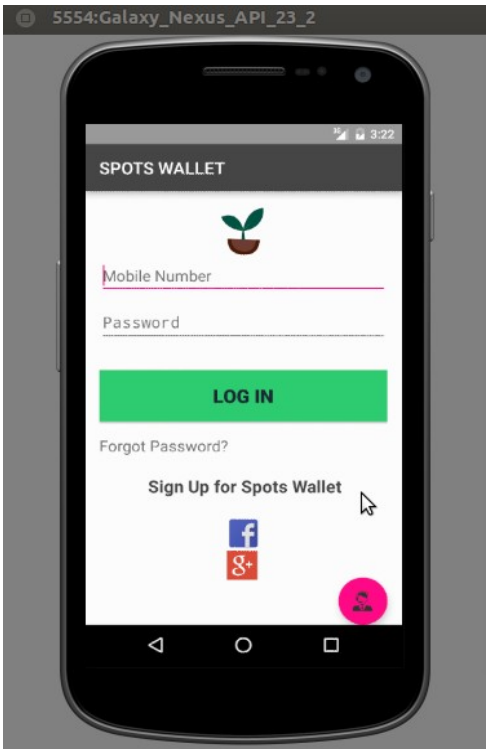
Uma's friend insists that she pays the bill. But she does not have SPOTS in the smartphone. Uma tells her to install and signup in a matter of minutes. And the fund her wallet using card. netbanking or another wallet. The restaurant manager then sends the bill with his SPOTS app to Uma's firend. She then makes a quick payment.

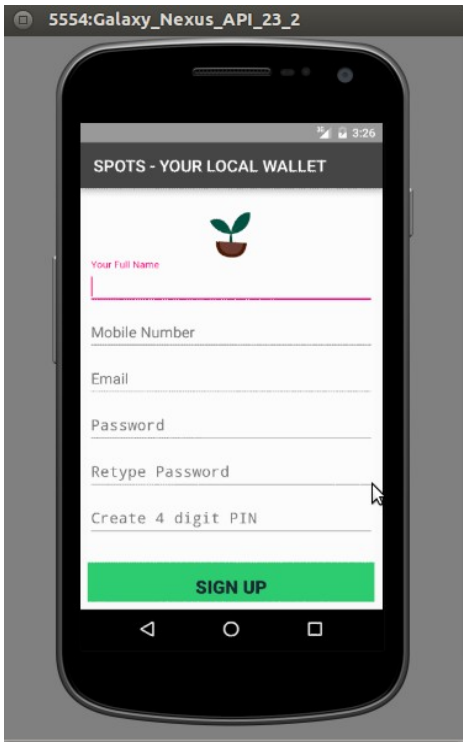
Merchant App

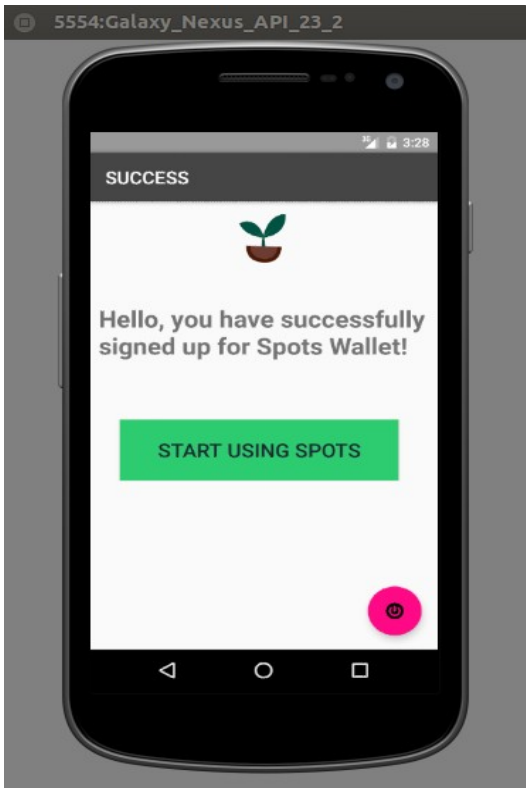


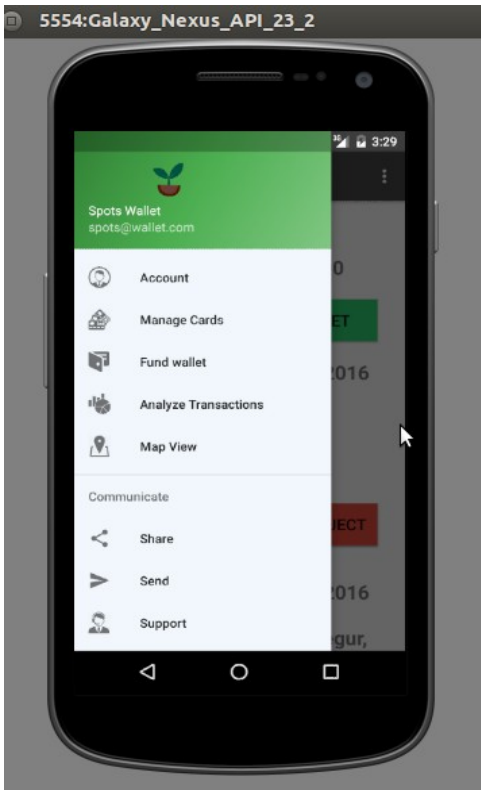


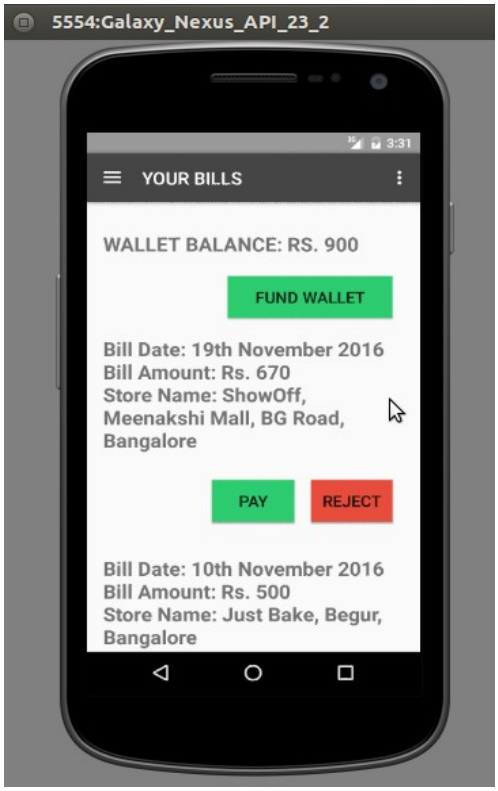
Customer App







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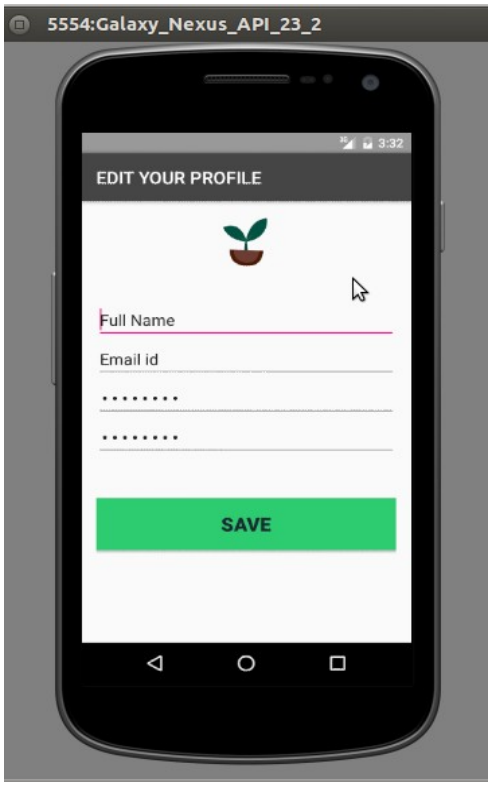
YOUR BILLS
WALLET BALANCE: RS. 900
FUND WALLET
Bill Date: 19th November 2016
Bill Amount: Rs. 670
Store Name: ShowOff,
Meenakshi Mall, BG Road,
Bangalore
PAY
REJECT
Bill Date: 10th November 2016
Bill Amount: Rs. 500
Store Name: Just Bake, Begur,
Bangalore


5554:Galaxy_Nexus_API_23_2
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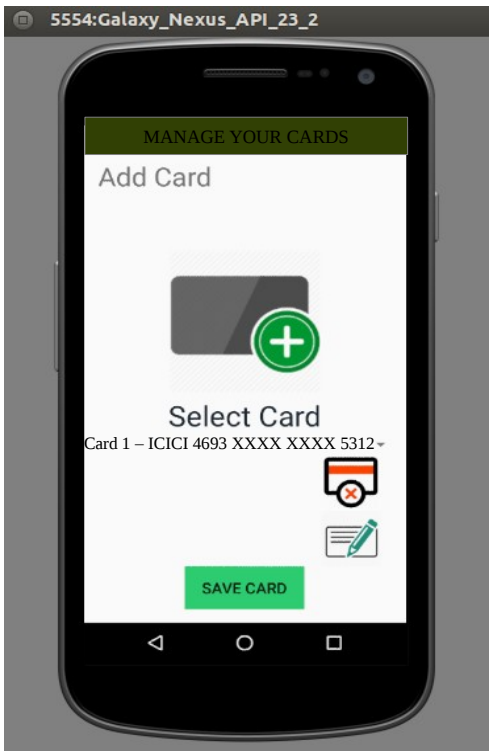
EDIT YOUR PROFILE
Full Name
Email id
SAVE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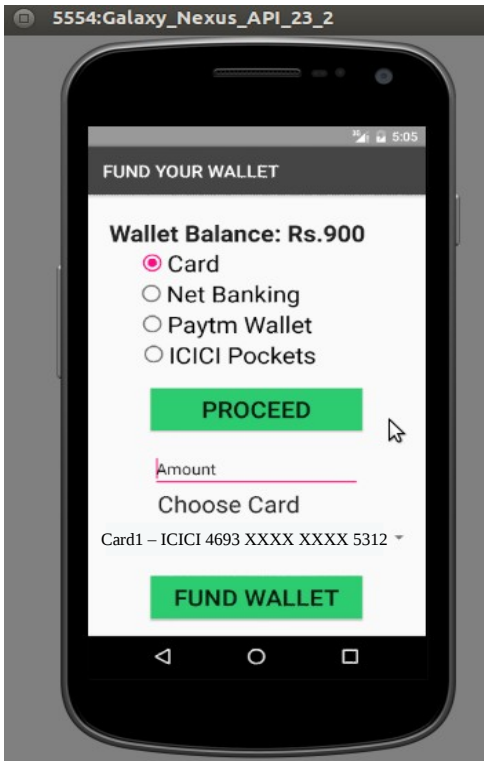
MANAGE YOUR CARDS
Add Card
Select Card
Card 1 – ICICI 4693 XXXX XXXX 5312
SAVE CARD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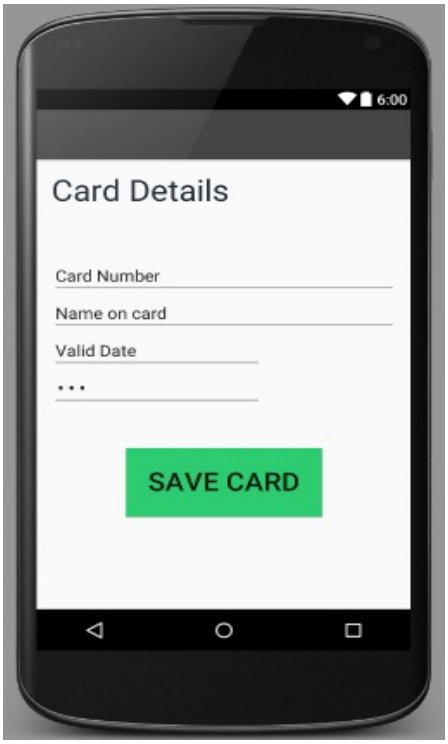
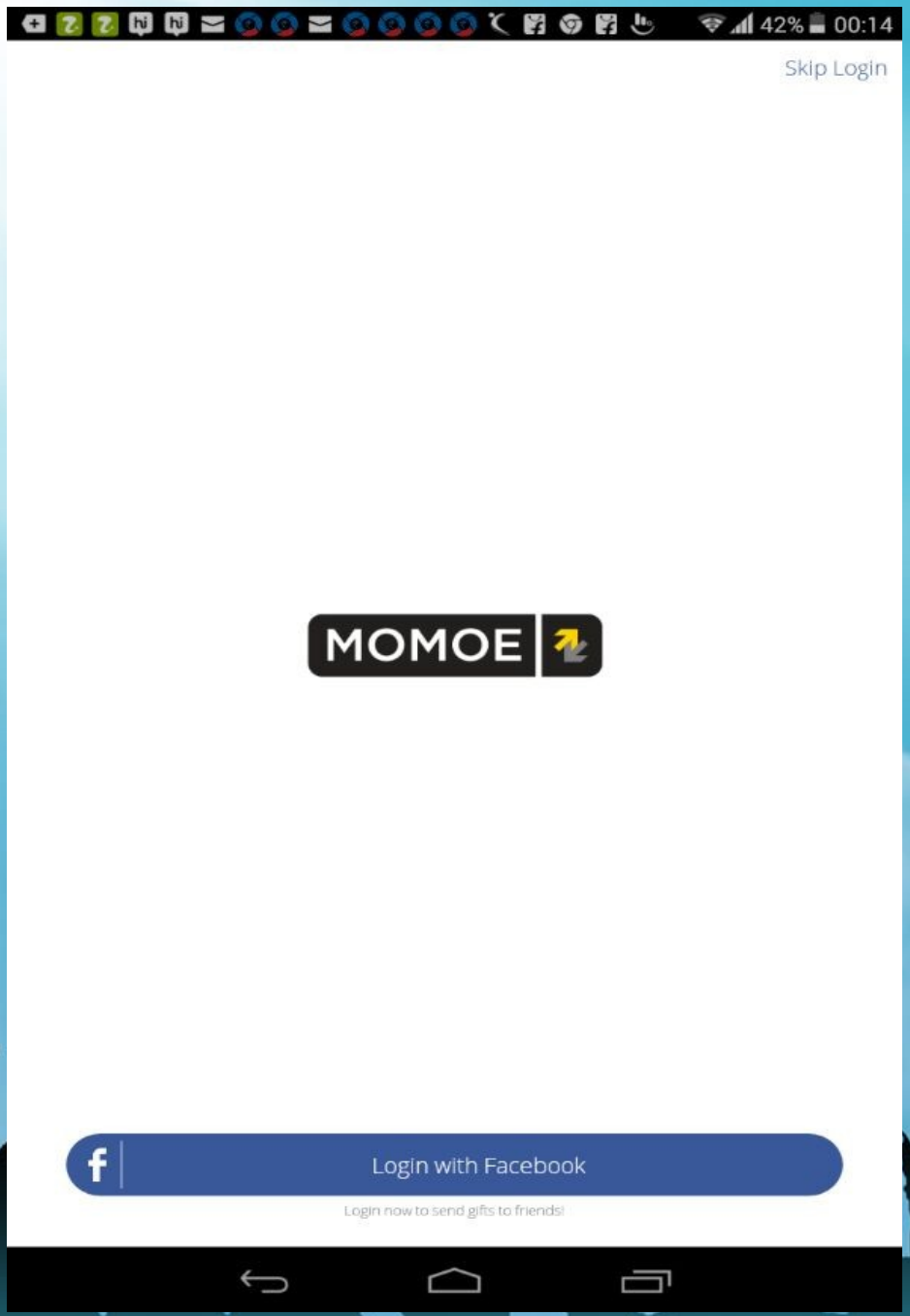
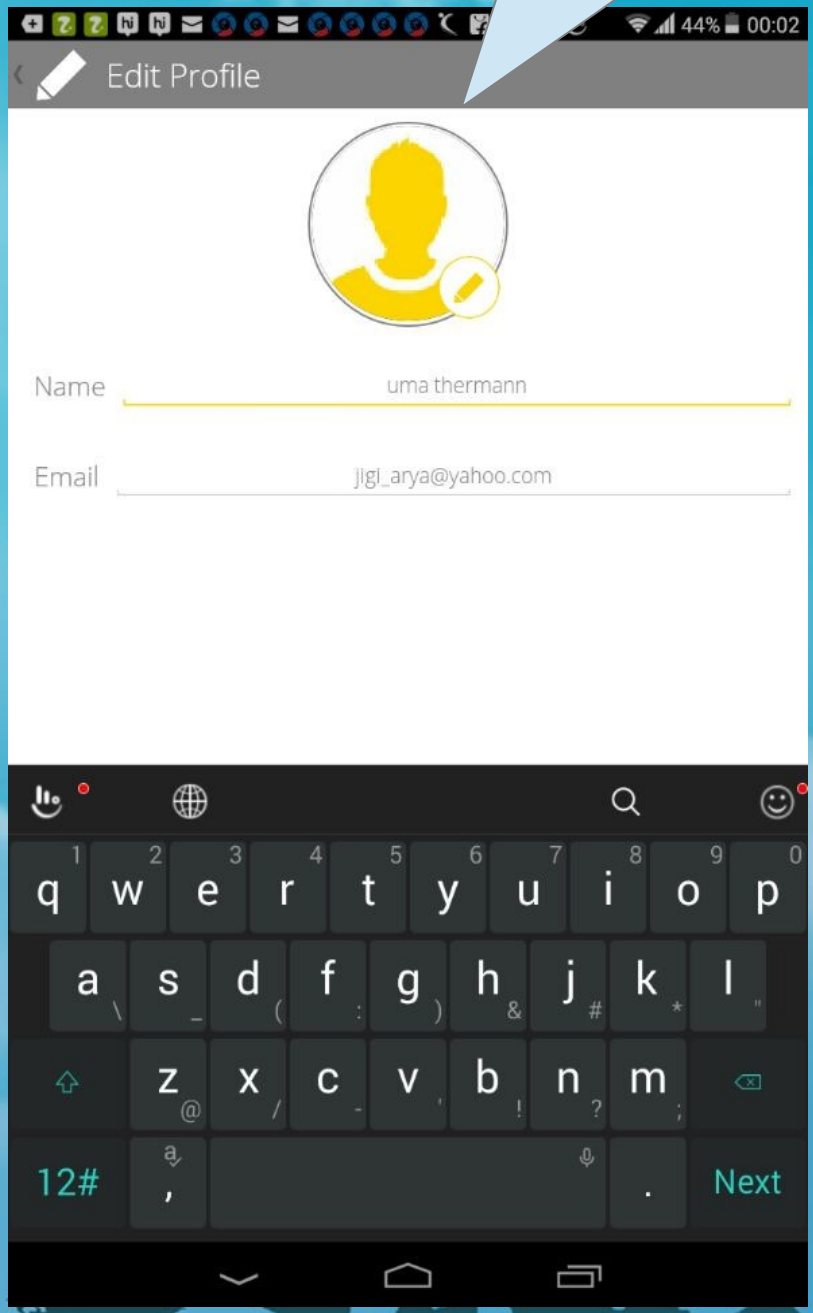
5:05
FUND YOUR WALLET
Wallet Balance: Rs.900
Card
Net Banking
Paytm Wallet
ICICI Pockets
PROCEED
Amount
Choose Card
Card1 – ICICI 4693 XXXX XXXX 5312
FUND WALLET


6:00
Card Details
Card Number
Name on card
Valid Date
SAVE CARD

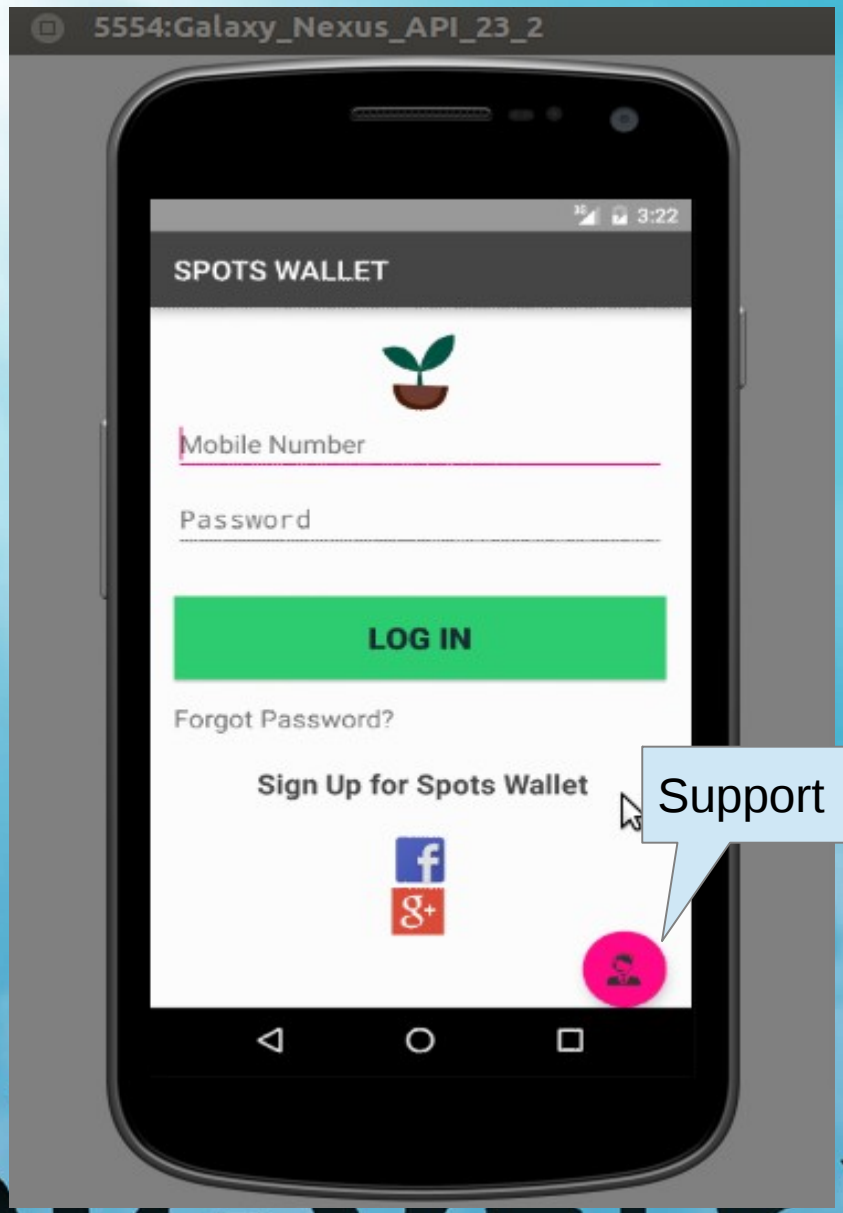
Profile Creation and Editing (Momoe)

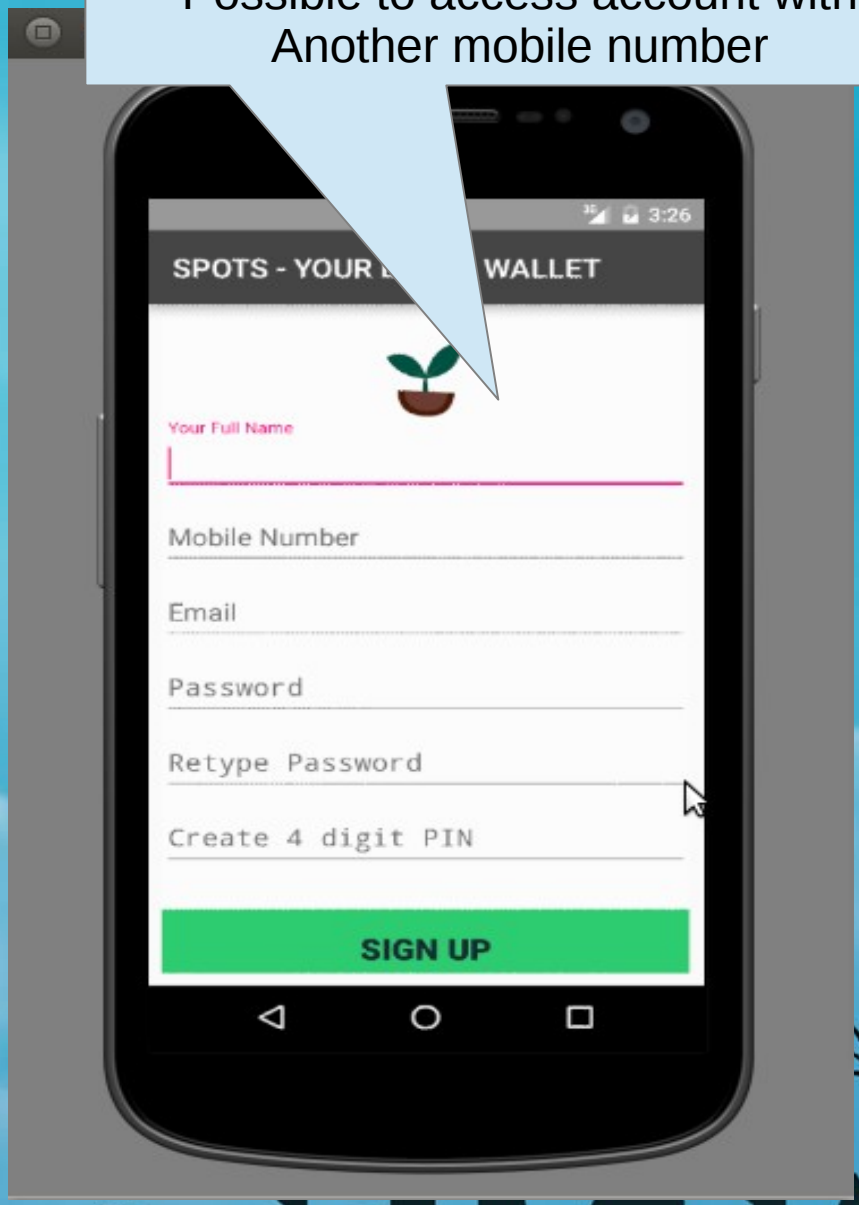
Single User Account



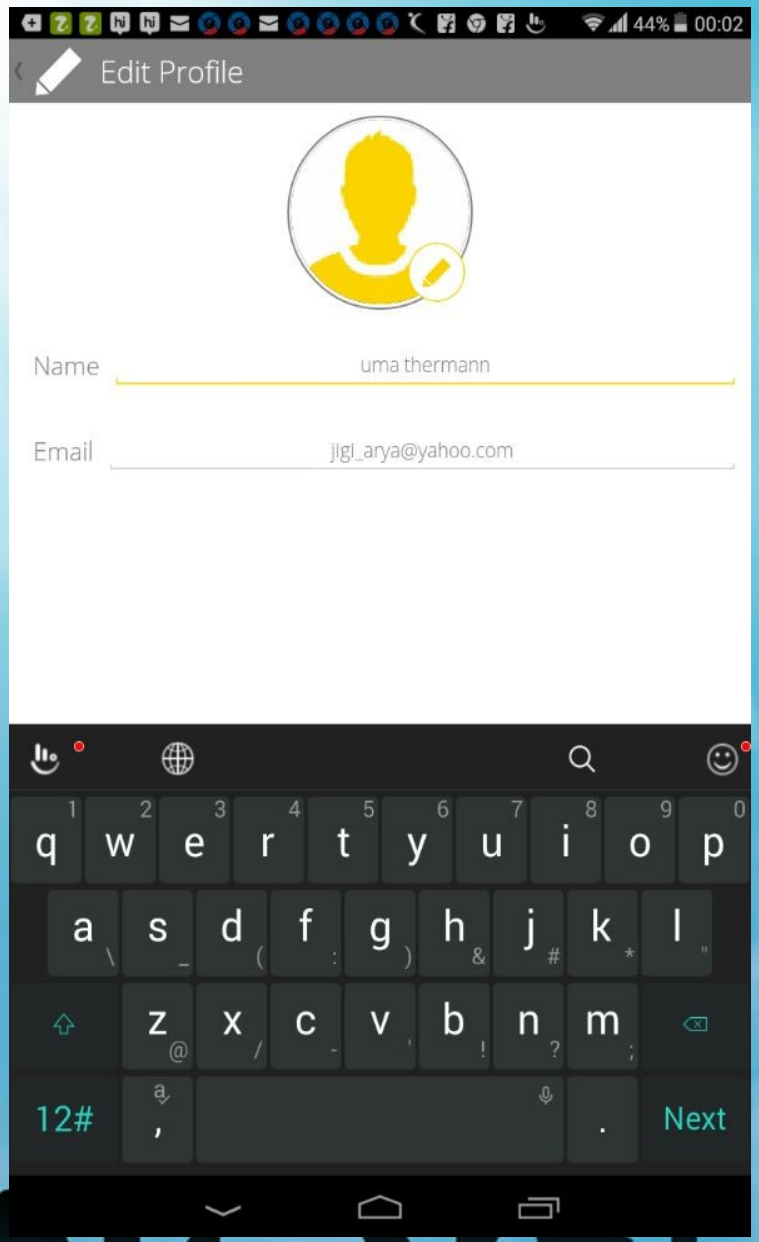


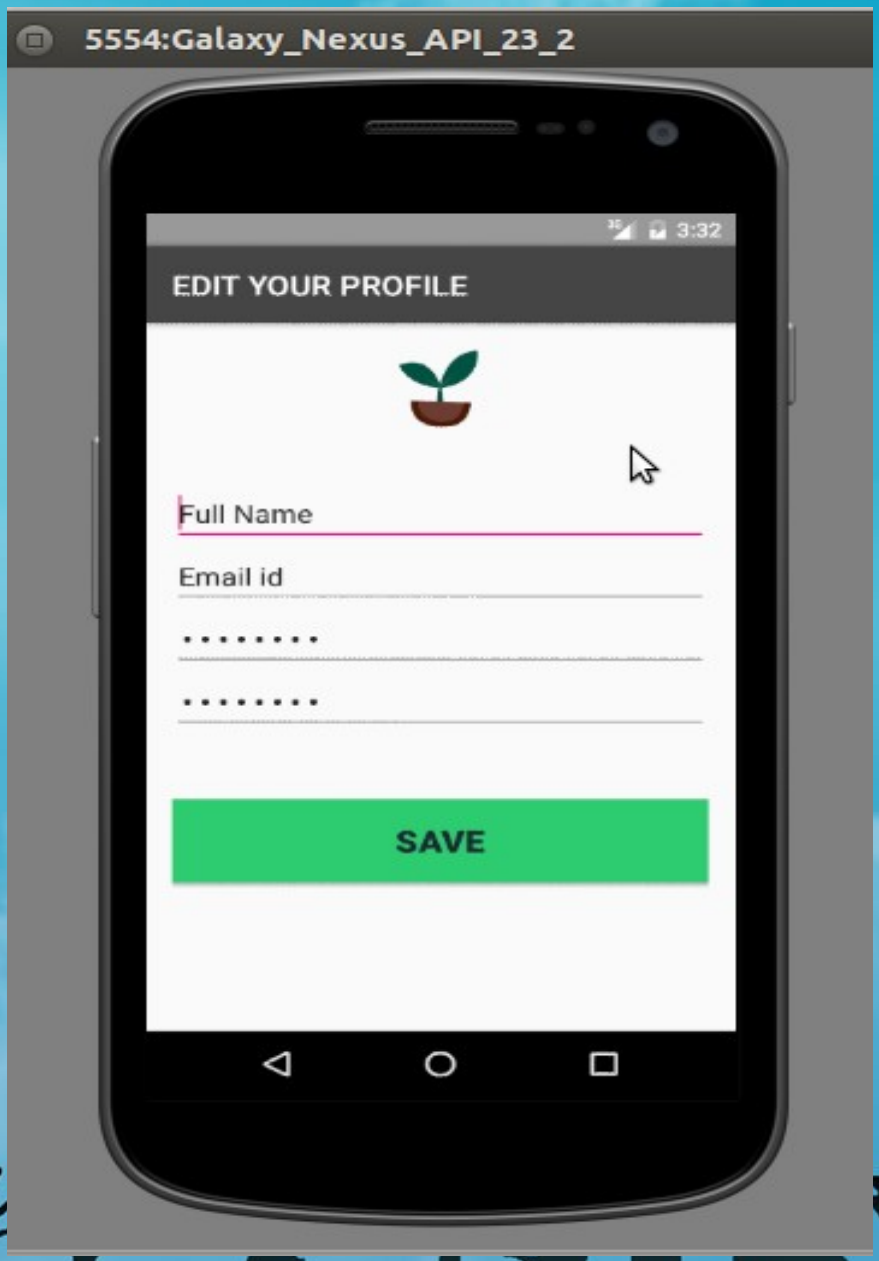
Profile Creation and Editing



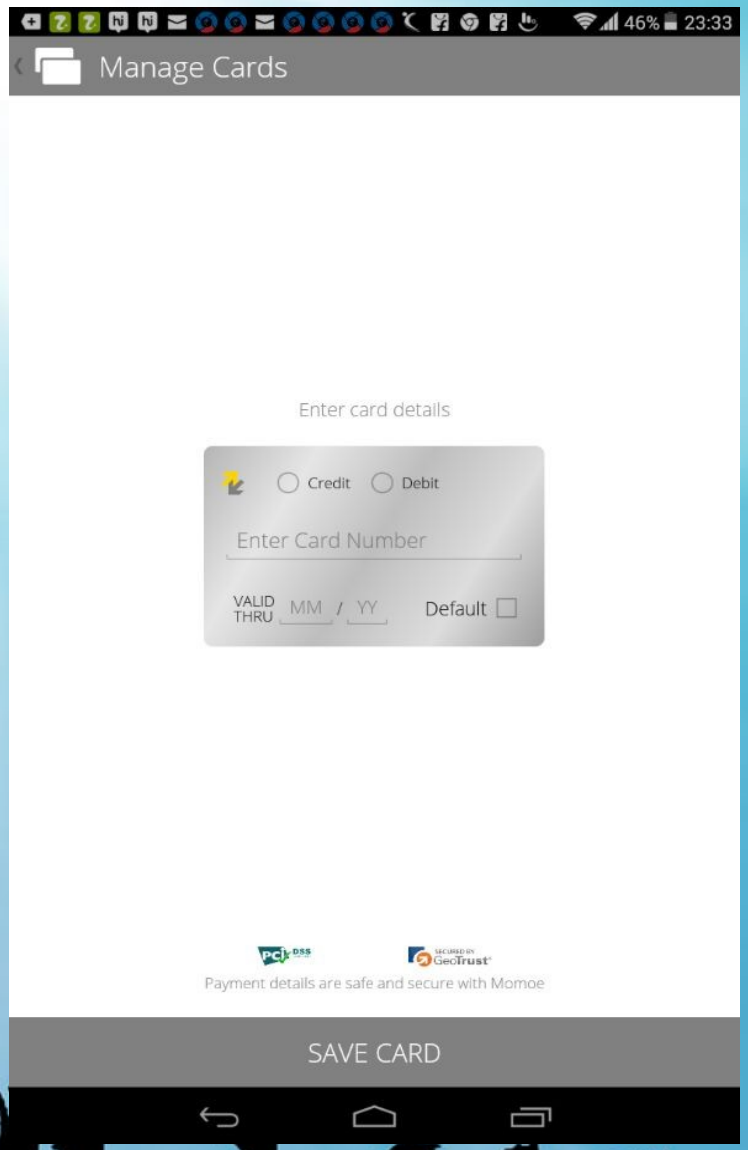


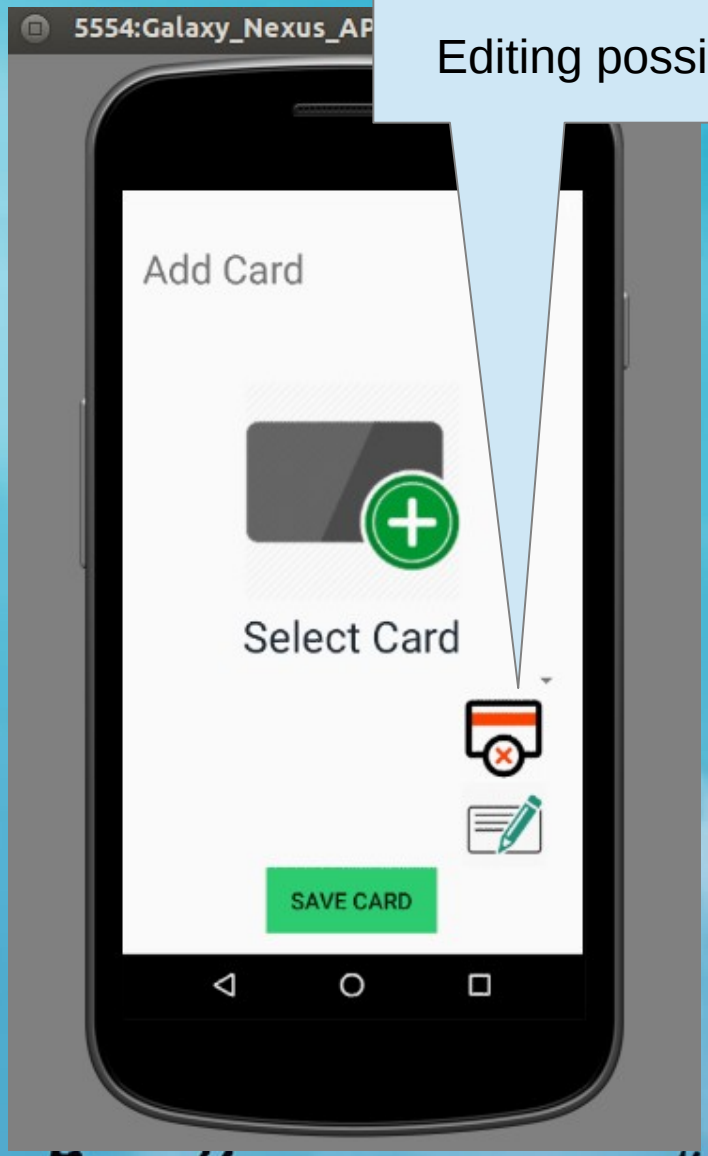
Profile Creation and Editing



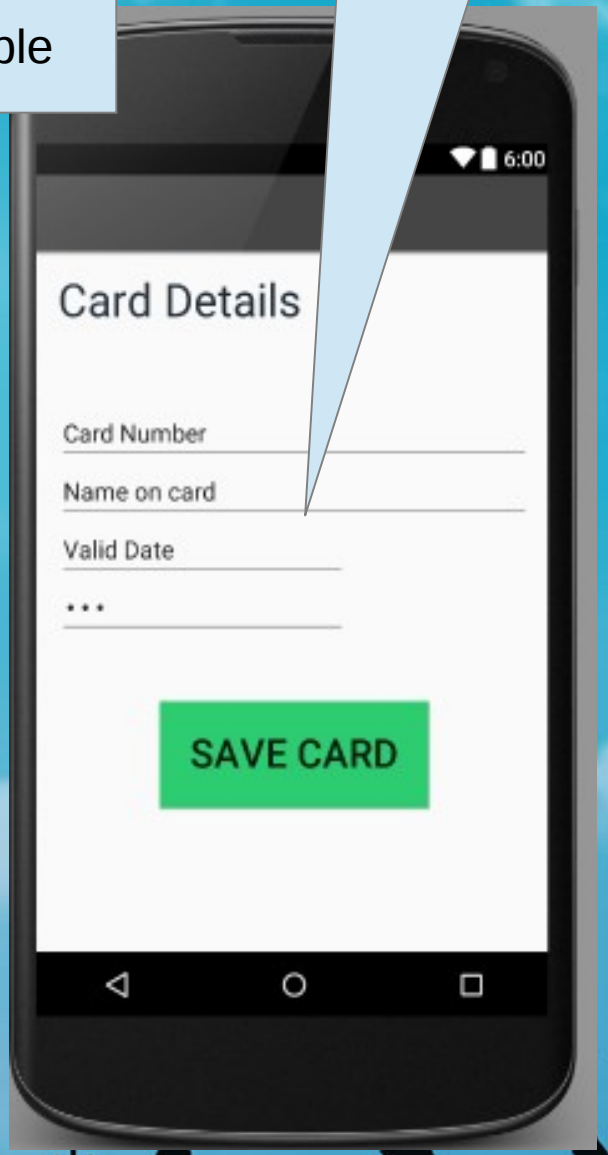


Adding and Managing Cards.



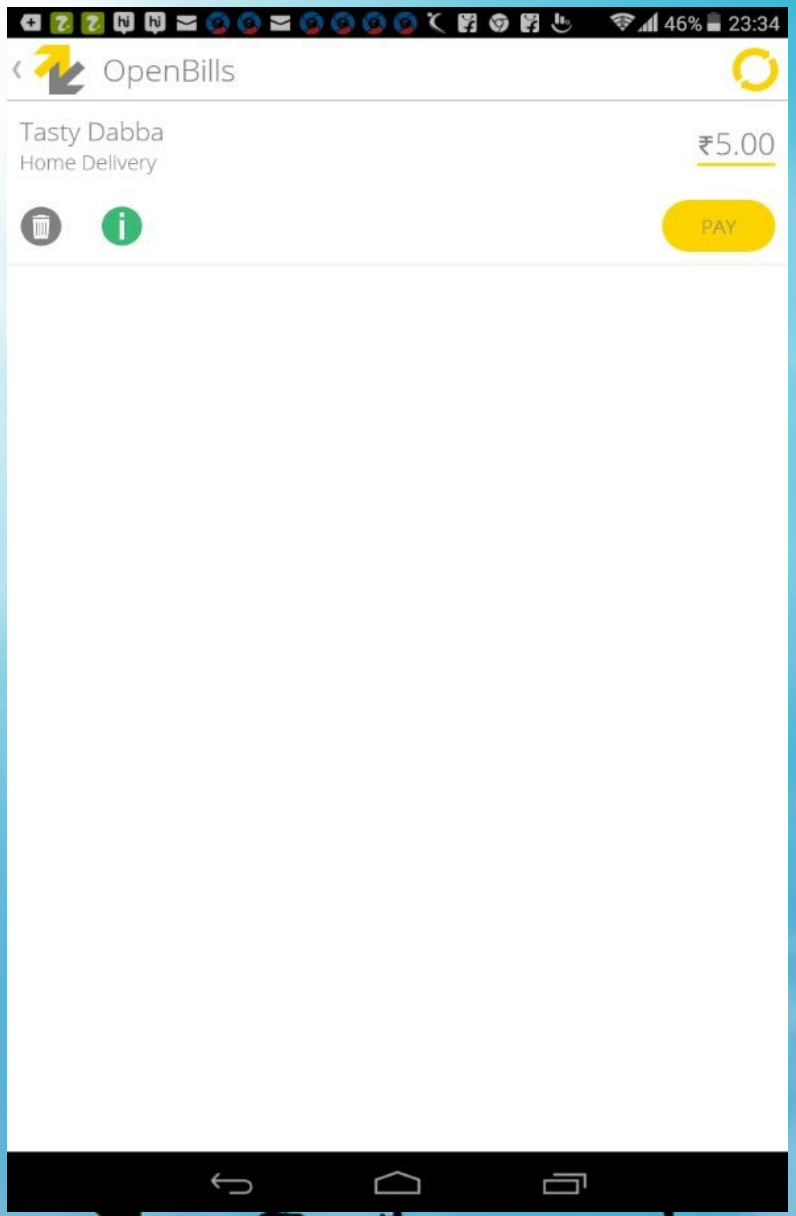


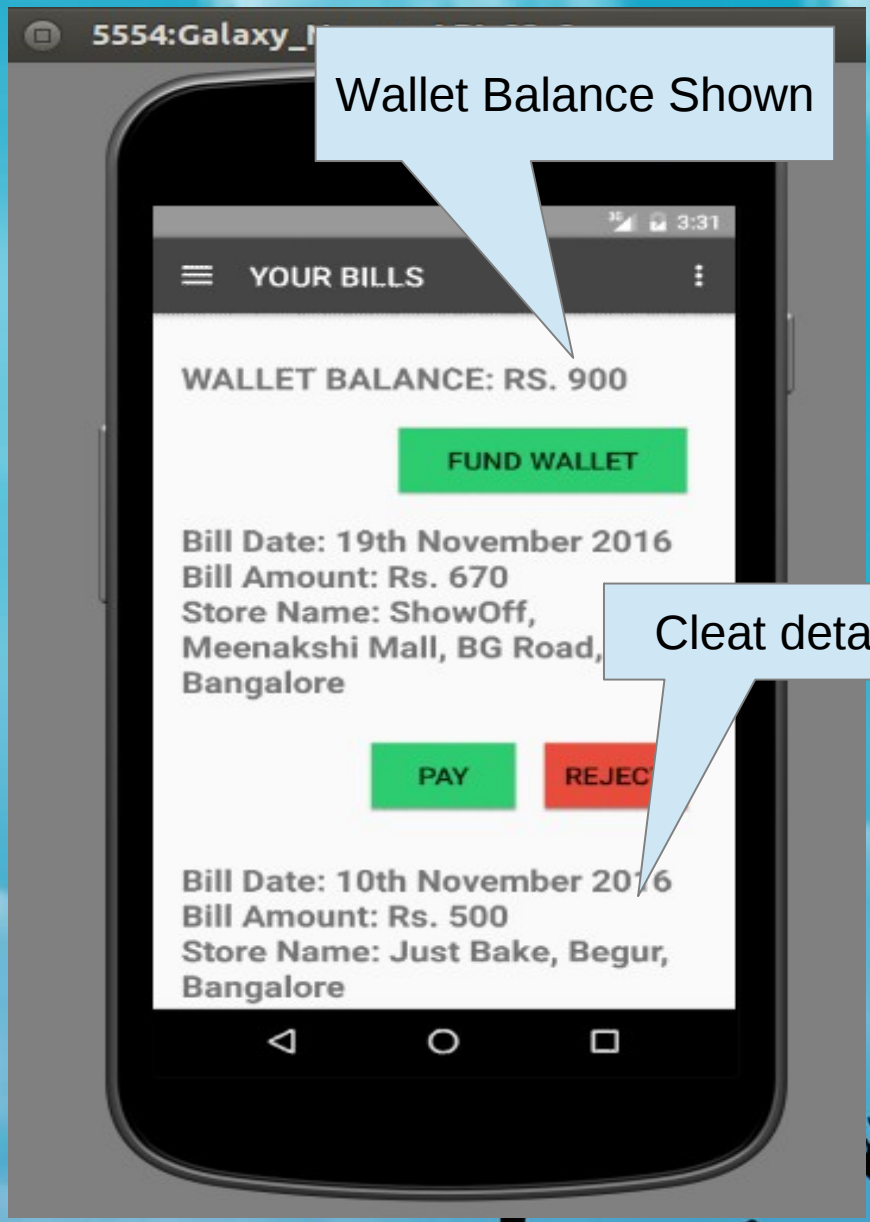
Editing possible



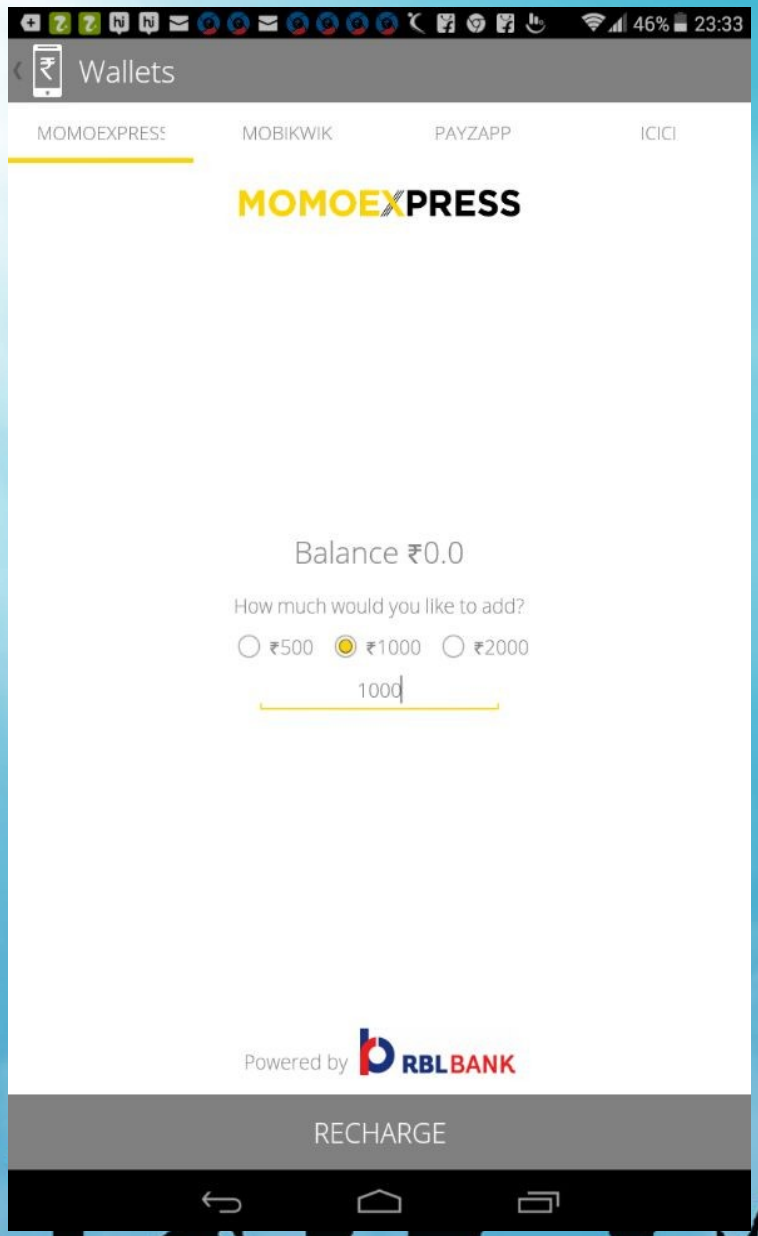
High contrast clear values

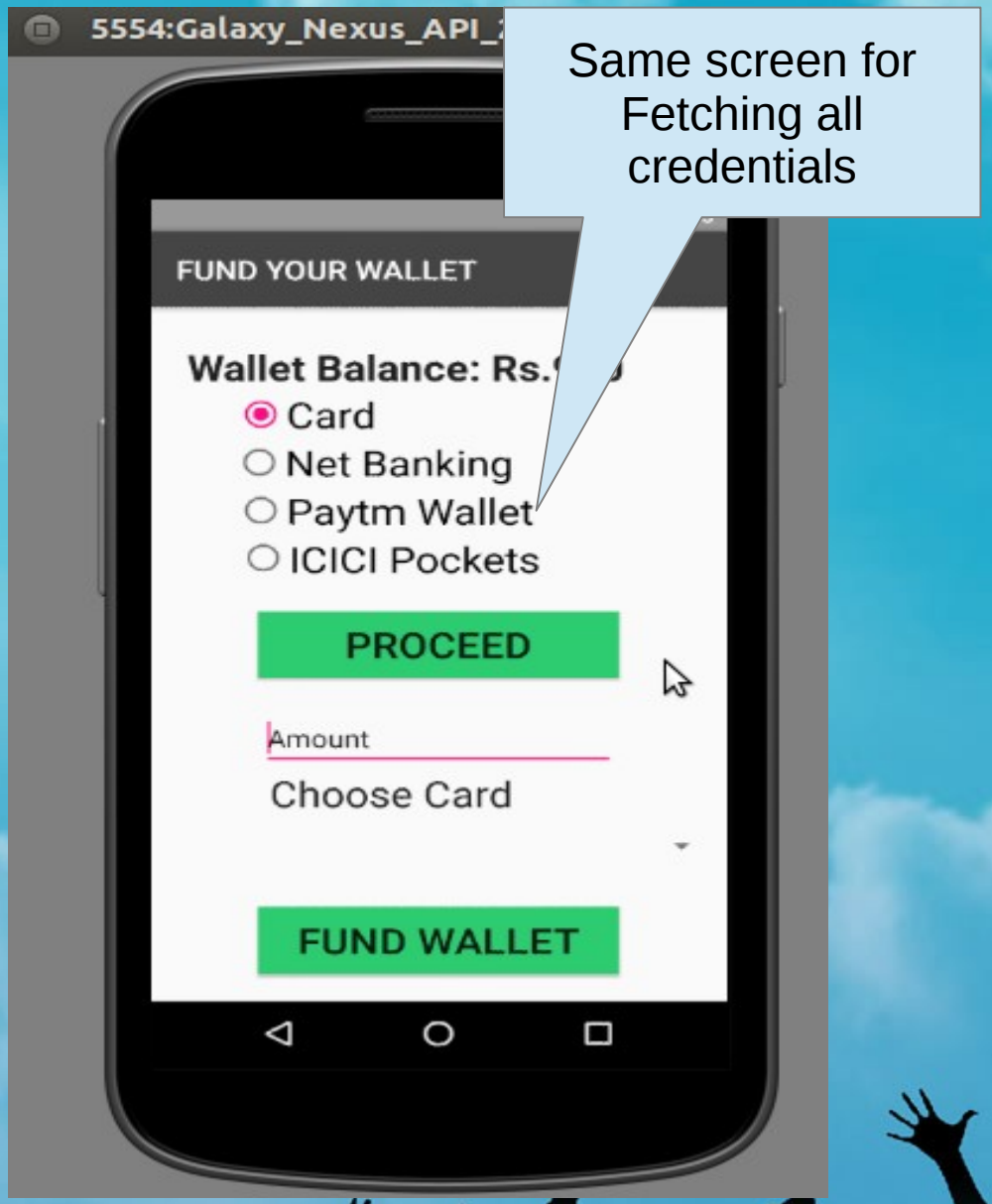
Managing Bills





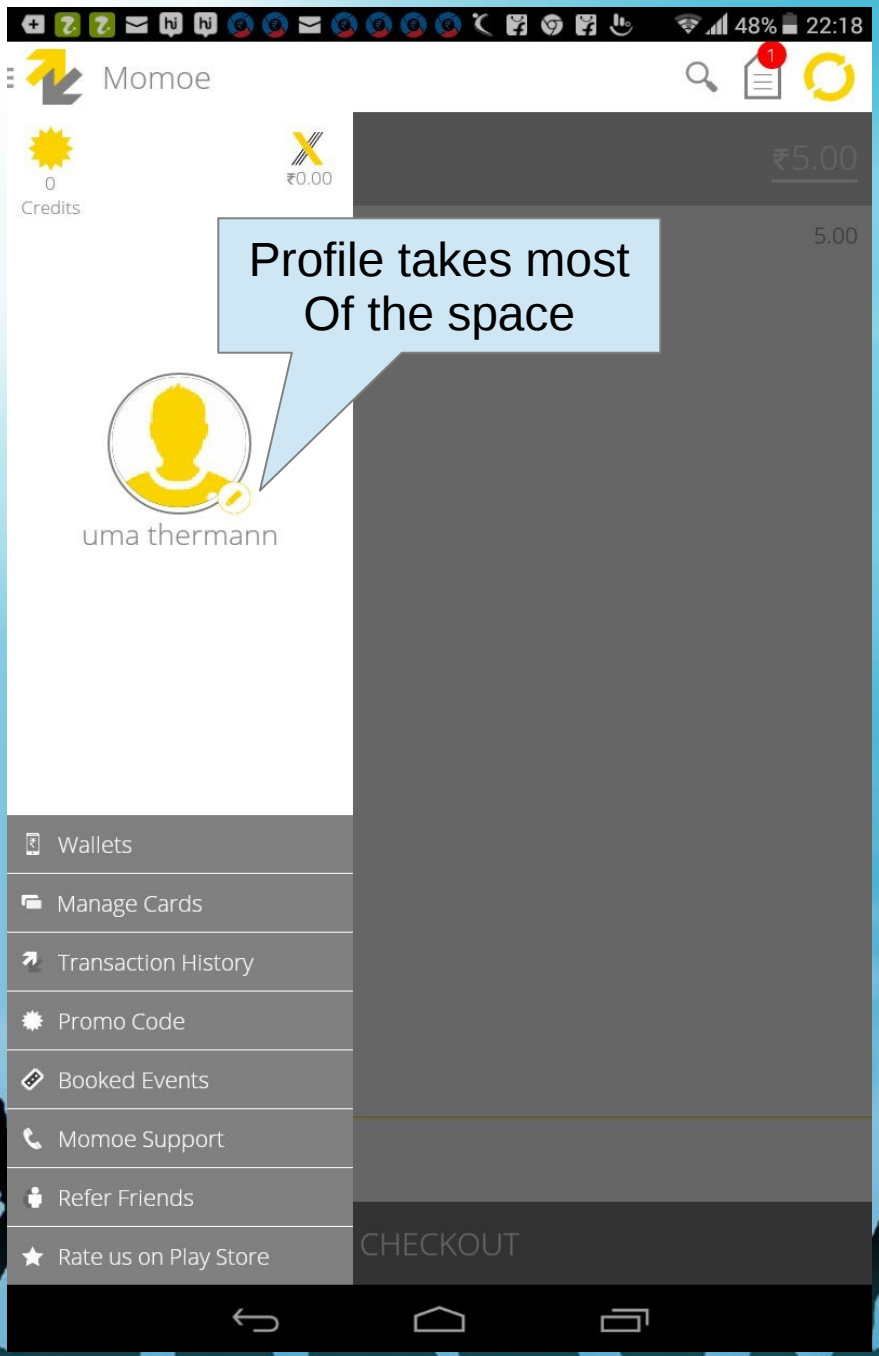
Funding Wallet

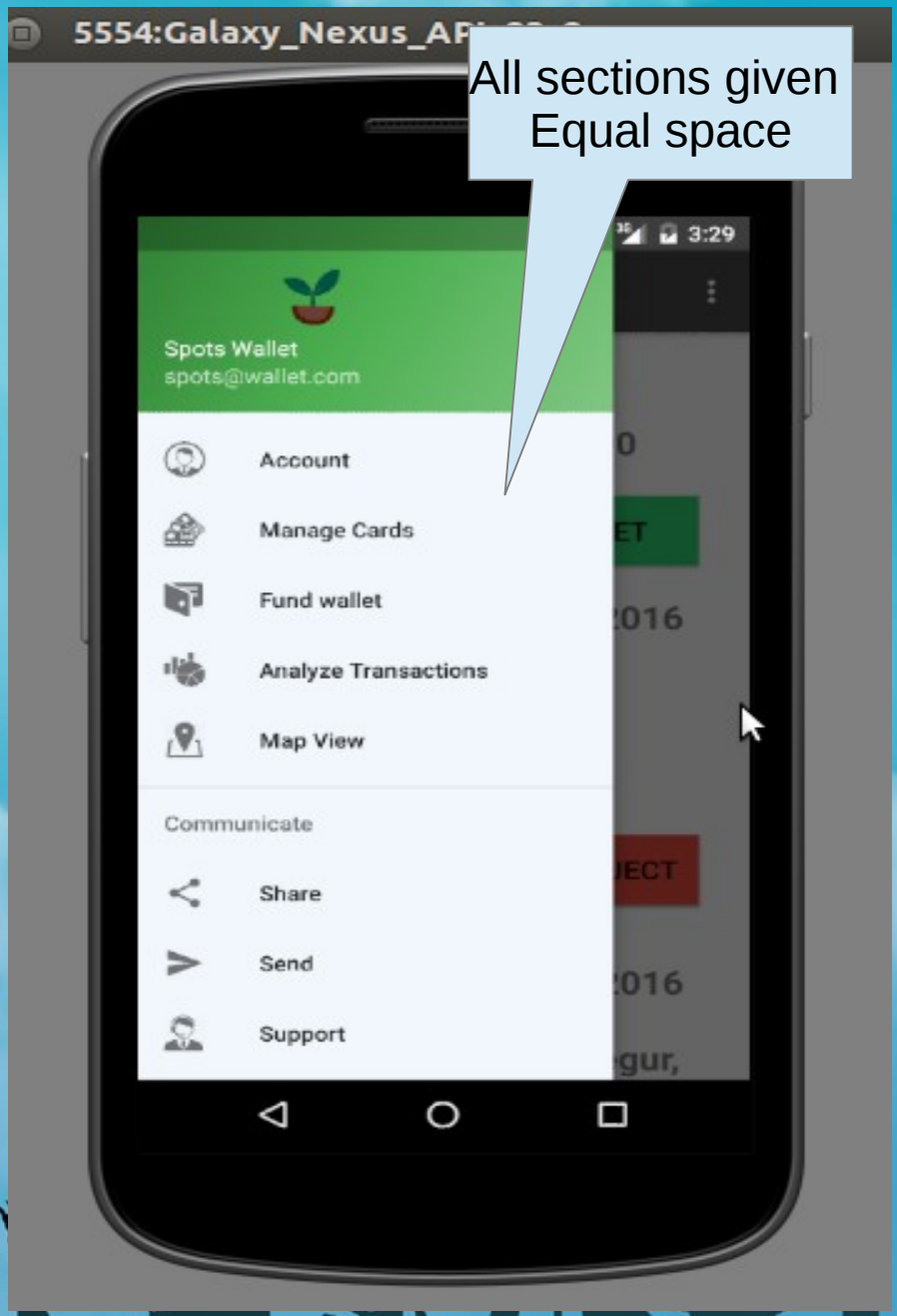




Same screen for Fetching all credentials

Overview of Features





Heuristic Evaluation:

We evaluate the system based on these principles and refer to the others later.

Visibility of system status

The login process was quick and did not require any progress status to be shown to the user. So was the payment processes. Mobile phone verification is not implemented with OTP or code. There is no other place where the system needs to show the status.

Match between system and the real world

The bill information contains the details of the location of the store and date which is seen in an actual bill. The card details are collected field wise and not in the image of an actual card.

User control and freedom

Multiple account information can be used through the same application. Card information can be edited apart from deleting. The bill assigned can be rejected or accepted with payment. Wallet can be funded just before bill payment. Splitting of bill is not possible although it can be shared socially.

Consistency and standards

Login can be done with social logins like facebook and Google apart from signing up. PIN is created for extra authentication. Buttons and drop down menu with card information have the same layout. Color change according to function. But in Card management, pictorial depiction for operations is seen.

Error prevention

Wrong login credentials while logging in was handled. Garbage values were also handled at various places like email and phone number. Wrong bill amount was not handled and similarly identical passwords and other field values as that requires advanced programming.

Recognition rather than recall

Card information can be saved. Login requires entering the mobile number and password.

Flexibility and efficiency of use

Multiple accounts can be created and modified. Same is for cards. Bills can be accepted or rejected.

Aesthetic and minimalist design

The colors have a high contrast and information on each screen is kept minimum except for the wallet funding screen that has credentials in the same screen. The information to be provided is not overwhelming and can be completed in a matter of few minutes. The screen is not empty with too few fields either.

Help users recognize, diagnose, and recover from errors

Card information can be edited and removed. Other errors are not handled yet in the code.

Help and Documentation

There are support floating icons at the bottom of the login screen and the navigation drawer.
There is no screen for functions as of now.