CSE 440 Spring 2011
Task Analysis

Joy Kim	Nadine Tabing	Charlie Regan	Eric Wu
Group Manager	Writer	Reviewer	Designer

Problem and Solution Overview

Money is stored and spent in a variety of ways: it is kept in wallets, stored in checking accounts, retrieved with debit cards or checks, and borrowed using credit cards. Situations where payment options are limited may lead people to borrow money from friends or family, and repaying those loans is limited by what forms of money a person possesses. When people pay or loan each other money directly, commonly-used credit and debit cards are useless; people must make do with cash or checks. Both are troublesome; with cash, a person may not possess the exact amount needed, and with checks, a time-consuming visit to the bank is requirement to redeem funds. In addition, uncomfortable social situations arise when debts are forgotten or ignored, or if debtors are not easily reachable, and loaners lack a simple method by which they can keep track of the exact amounts of their loans and request direct repayment. Thus, we propose a smartphone application called Kibisis, which addresses these problems by allowing users to 1) access all their methods of payment in one place, 2) make immediate and direct payments to other people, and 3) keep track of their monetary transactions with others, so that they can make informed decisions about who to exchange money with.

Task Analysis Questions

Who is going to use the system?

Kibisis users will be those that have smartphones and often exchange money with friends and other social contacts. For example, students in college would benefit from Kibisis because they often do not have a steady income and thus split costs of various things like restaurant checks or rent with friends or roommates.

What tasks do they now perform?

Users presently perform the following tasks:

- Loan or borrow money to pay jointly or individually for things like restaurant checks, rent and utilities, and other goods; loans may have terms
- Follow up on debtors and repay lenders with cash, check, or goods
- Obtain money from checking or savings accounts via visits to an ATM, bank
- Spend money through cash, credit cards, debit cards, and checks
- Remember debts and loans mentally or through written bookkeeping

What tasks are desired?

Our target audience wants to be able to quickly and securely exchange money directly with each other. Additionally, our audience desires a close-to-automatic method to track debts and loans, which would remove the burden of written or mental bookkeeping.

How are tasks learned?

For current tasks, people learn what works best for them by experience. For example, someone may discover that sending e-mails to themselves is a more successful way of remembering debts, due to that person's habit of constantly checking e-mail. People also learn how to perform certain tasks (such as filling out checks or withdrawing money from ATMs) by observing their friends and family. For new tasks, Kibisis will likely provide a step-by-step tutorial and a help system to teach users how to perform the tasks they desire.

Where are the tasks performed?

Money exchanges, or following up on debts from past money exchanges, usually happen at the time and place where costs need to be split (for example, after a meal at a restaurant). However, it is possible for these tasks to happen anywhere -- a user may run into a friend that owes him five dollars while walking to class, and may take a brief moment to remind that friend about what they owe, or perhaps to receive the repayment right there. Additionally, to use Kibisis, users must be in a location where they can receive a Wi-Fi or 3G signal.

What's the relationship between customer and data?

Financial data is private, personal information that users want to keep secure; ideally, it should be impossible for malicious users to access financial data, yet very easy for users to access and utilize their own data for their own purposes. Similarly, users want data about money usage to be kept private; for example, an application which reveals how much money a user spends on a daily basis may reveal aspects about a user's lifestyle. Any data about loans or debts should be accessible only by the people involved in the transaction. To instill trust in its users, Kibisis should be transparent about how it protects the security and privacy of information it uses.

What other tools does the customer have?
Our intended audience currently possesses:

- Ways to carry and spend money (credit or debit cards, checks, cash, online transactions)
- Ways of obtaining cash (ATMs, banks, and cashback options)
- Ways of remembering debts owed (by memory, in writing, receipts, checkbooks, e-mails, other notes)
- Ways of calculating joint payments (by hand with paper and pen, with calculators which may be available on cellphones, or else with the help of servers at restaurants)

How do customers communicate with each other?
Customers tend use modes of communication that are private when discussing money. For example, to remind someone of a debt, a Facebook user may opt to send a reminder privately through a message, instead of through a public Wall post. Uses may alternatively give reminders through things like Post-It notes, e-mail, and SMS.

How often are the tasks performed?
Situations involving going out with friends to events or restaurants happen approximately bi-weekly; other situations, such as paying for rent, may happen on a monthly basis. Ideally, Kibisis will allow tasks such as money exchange to occur at a user's whim.

What are the time constraints on the tasks?
Users will want to check how much a person owes them on the fly; in the case that a person happened to run into a loaner or debtor, the task of "checking how much is owed" may be constrained by the fact that both the user and the other person are probably on their way to somewhere else. Thus, this task of checking debts and repaying them should only take about 20 to 30 seconds. A task like paying someone will probably happen in places like restaurants, when users will want to leave soon after finishing their meals, so this should take, at most, a few minutes.

What happens when things go wrong?
Money may be lost or compromised: for example, if a credit card number falls into the wrong hands, unauthorized purchases may be made. Even if nothing malicious happens to a user's money when something goes wrong, the user may lose trust in the system. Also, loan or debt information may be lost, which may result in incorrect records of how much money is owed.

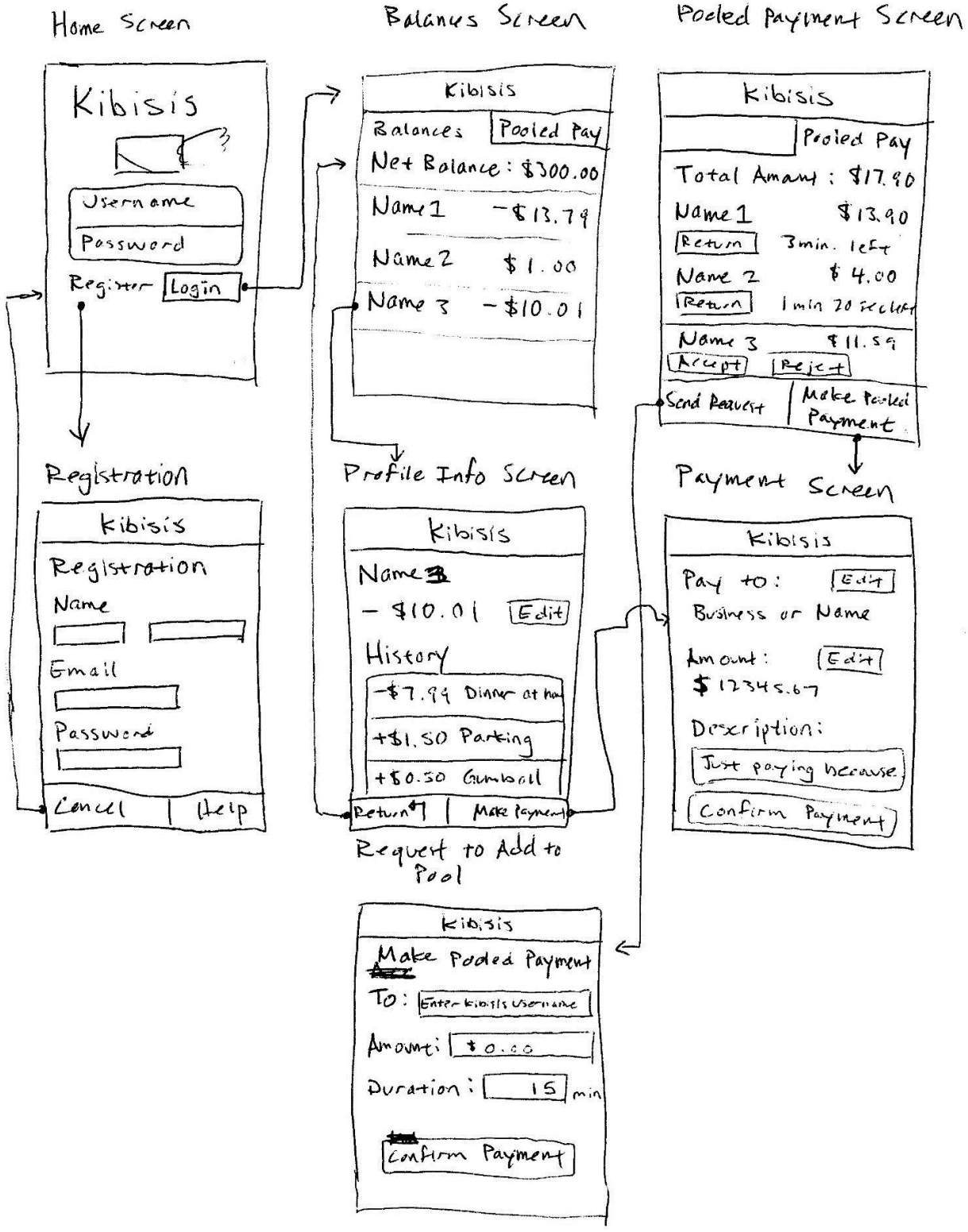
Current Versions of Tasks

1. Kibisis allows a user to track and exchange money without the need for physical currency. Create a new Kibisis account and associate a checking or savings account with it to begin using Kibisis.
2. One of Kibisis' purposes is to allow users to directly exchange money with each other. As part of this, Kibisis is able to track any debts that come out of these transactions. Make a single payment that settles any past debts between you and your friend.
3. Another of Kibisis' purposes is to allow users to easily pay as a group for a single good or service. Pool the money from your group to make a single payment for something.

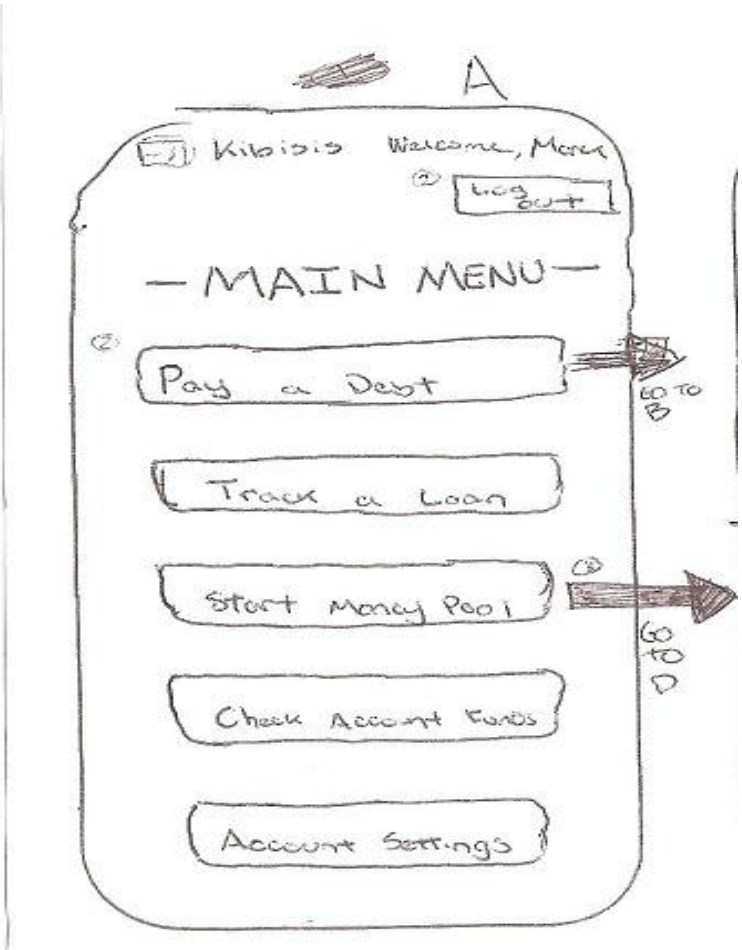
Storyboards

Design 1

Design 2


Home Screen
Balances Screen
Pooled Payment Screen
Kibisis
Username
Password
Register
Login
Registration
Kibisis
Registration
Name
Email
Password
Cancel
Help
Kibisis
Balances
Pooled Pay
Net Balance: $300.00
Name 1 -$13.79
Name 2 $1.00
Name 3 -$10.01
Profile Info Screen
Kibisis
Name 3
-$10.01
Edit
History
-$7.99 Dinner at ha
+$1.50 Parking
+$0.50 Gumball
Return
Make Payment
Request to Add to Pool
Kibisis
Make Pooled Payment
To: Enter Kibisis Username
Amount: $0.00
Duration: 15 min
Confirm Payment
Kibisis
Pooled Pay
Total Amount: $17.90
Name 1 $13.90
Return 3min. left
Name 2 $4.00
Return 1 min 20 seconds
Name 3 $11.59
Accept
Reject
Send Request
Make Pooled Payment
Payment Screen
Kibisis
Pay to: Edit
Business or Name
Amount: Edit
$12345.67
Description:
Just paying because
Confirm Payment

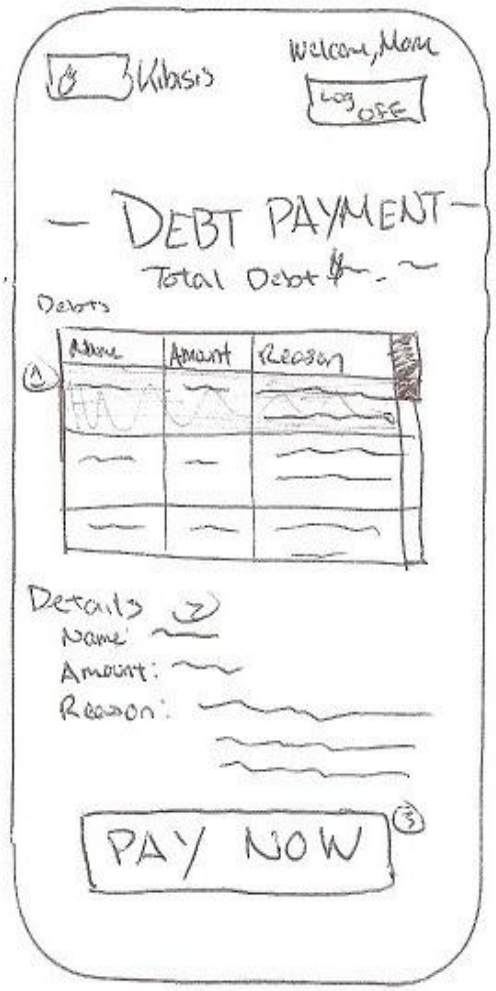
Design 3



Notes:

1. Allow user to log out out any time, don't want to stay logged in forever due to security risks
2. Main menu options should be short, don't want to overwhelm user
3. Track the money pool option in this story board

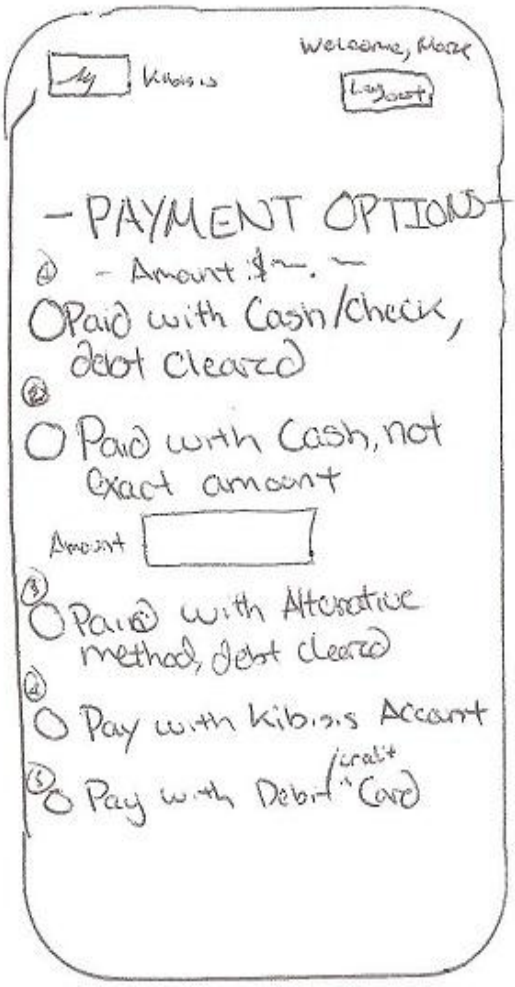
B



Notes

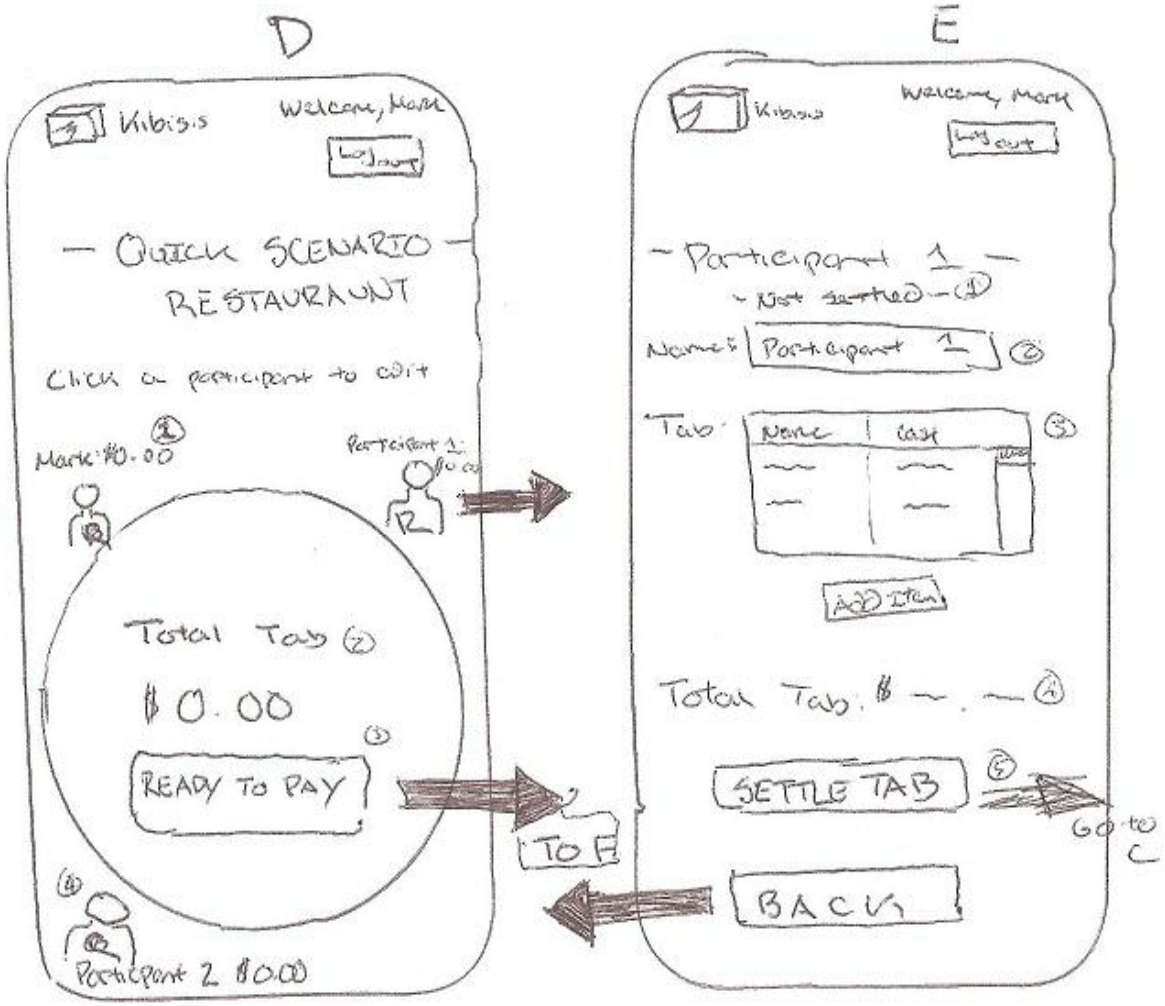
1. List of all debts with a snapshot of key information, can tap on a debt to get more information
2. Detailed information regarding the selected debt can expand this section if more detail is needed
3. This will take you to screen C

E



Notes

1. Option 1 will be used when the debt has been paid in cash and no electronic transaction was required.
2. Option 2 will be used when cash is used but not in exact amount, a debt or a loan will be created to/from the source based on how much cash was given
3. Any other payment method that removes the debt (possible bartering)
4. Payment using a kibsis account, simple exchange. If payment is from another Kibsis, applies they log in or phone tap.
5. Payment with debit card, requires card reader to be done.



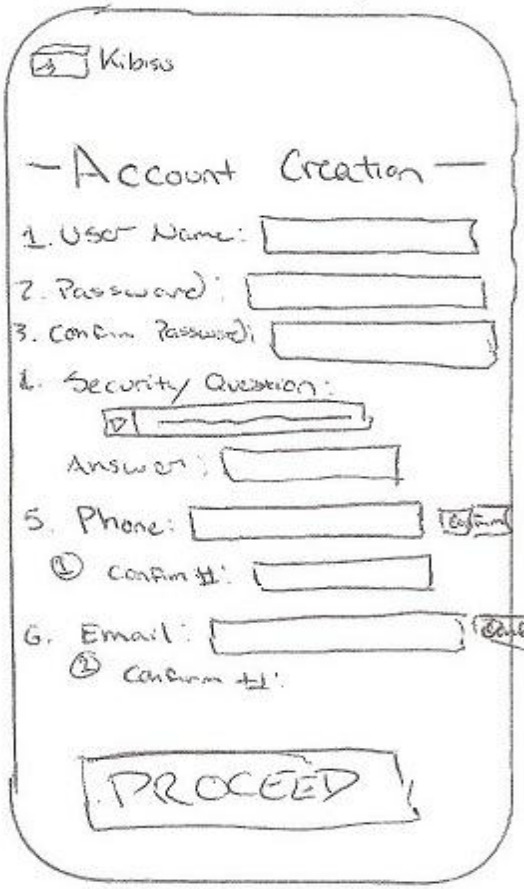
Notes

1. Each participant is tracked individually with an accrued portion of the tab that is next to their name, touching their icon will allow you to edit and pay
2. Total tab is tracked on the table to ensure the total amount is correct.
3. When ready to pay you can click this button for payment options
(1) Participants will appear red if they have not settled this tab, Green if they have

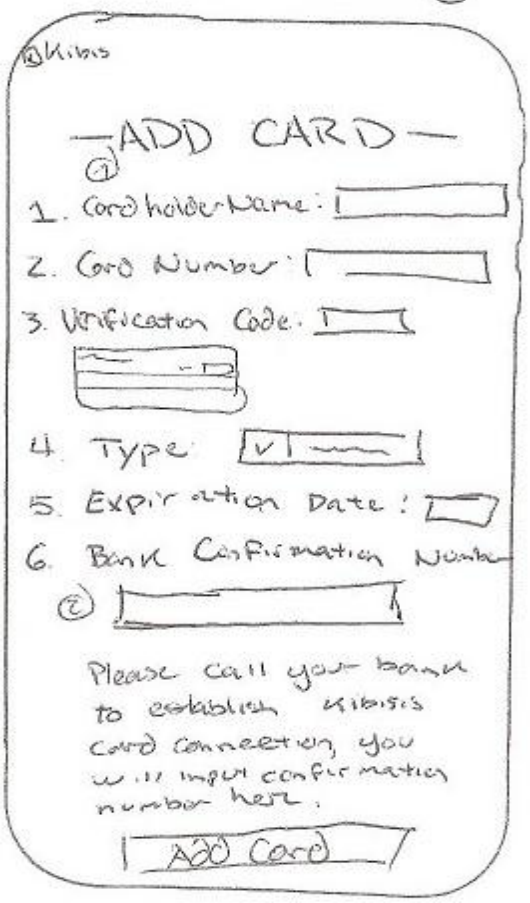
Notes

(1) Indicates if participant has settled their cost for the money pool
(2) Can change persons name for easier tracking
(3) list of all items on ~~their~~ participants tab along with cost
(4) Total tab amount for reference
(5) Can settle tab using any payment method using some procedure e.g. Previous tasks (see screen 2)

F



G



Notes

1. Once the Confirm button is pressed a test message is sent to the phone with a confirmation number that must be entered to proceed.
2. Once the Confirm button is pressed a test message is sent to the email with a confirmation number that must be entered to proceed.

Notes

1. Standard online transaction questions for credit/debit cards.
2. Bank must verify card owner and allow Kibisu's use for card. This will help establish trust since user will know it is sanctioned by bank

Selected Interface Design Discussion

Selected Design and Reasoning for Choice

We decided to move forward with Design 1 for our interface. Design 1 seemed to contain the majority of general features that we were sure we wanted to incorporate into Kibisis, such as a contact list, an implementation of a “Money Pool” for shared payments, and buttons with clearly labelled functions. After reviewing all of the proposed interface designs, we also created with a list of additionally desired features. We thought that incorporating these features into Design 1 would be easiest since it organized screens in a simple, logical way and effectively conveyed a majority of our agreed upon features.

Interface Description

We plan to implement Kibisis as an application for smartphones with touchscreens. The user will first have to log in with their Kibisis account (Design 1, screen 1). If they do not yet have an account, they will be able to create and set up an account from the application (Design 1, screens 2 and 3 or Design 3, screens F and G). Once they log in, the user will see a “Status” page which contains summary information such as the user’s net debt or net lent money (similar to Design 2’s Balances screen). This “Status” page will also contain a menu or tab system to allow users to quickly access certain tasks (Design 1, screen 4 or Design 2, Balances screen). From this menu, users will be able to view their contacts, make an payment as an individual, make a payment as a group, view and edit bank account information, and log out. For the most part, payments will be carried out by tapping two phones equipped with Kibisis (Design 1, screens 7 and 8), and a confirmation screen showing the amount being paid and the bank account acting source of the money will be displayed before the user can complete any payment (Design 2, Payment screen). Every screen in Kibisis will also display a “Welcome, *username*” in the corner (Design 3); since Kibisis deals with personal financial information, users should be able to easily verify that they are dealing with their own account. Lastly, as a background feature of the interface, if another person is not yet in a user’s contact list when a user taps phones with them, the other person will automatically be added to the user’s contact list. However, if the other user is already present in a contact list and any of his/her user details have changed, the contact list will automatically be updated to reflect those changes.

Functionality Summary

Design 1 demonstrates the key screens the user would see as they perform three different tasks. For the first task, "Creating and Setting up a new Kibisis Account," users are given fields into which to input their information. After the user creates a Kibisis account, they are shown an "Add Bank Account" screen; Kibisis requires some source of money from which to draw funds for transfer, and so users are guided into setting up

the account before accessing other features of Kibisis. Because a bank account number is sensitive financial information, an extra link titled "How is this secure?" is available for users at the bottom of the screen; this allows users to educate themselves on Kibisis's security standards, which will be high enough to encourage trust in the system. Users will be able to add or edit bank accounts at any time using the Accounts screen, which they can access from the main menu.

The second demonstrated function is "Making a payment to another person." In Design 1, this screen starts at the contacts list page, from which other Kibisis users can be found. In this case, the user has found "Sam Fewman," and in clicking his name can see a concise description of the loans and debts to Sam: the user owes Sam $50, whereas Sam owes the user $10. From here, a user can add an additional debt between himself and Sam, or start a payment to settle any net debts. In clicking "Details" at the bottom of the screen, the transaction history between Sam and the user is shown, and it is revealed that the debt of $50 is the sum of two transactions: the first a loan of $40 for a video game, the second a loan of $10 for tickets. The underlined words -- "tickets" and "game" -- are notes that the user has input herself, as reminders of why the money was borrowed. This screen also shows that the user lent Sam $10 for "food." Each entry in this history is also associated with the date on which the entry was created. Users will also be able to make a payment to another person by selecting “Single Pay” from the main menu. When making a payment to a single person, users will be able to enter the amount they are paying, the method they want to use to pay (either by physically tapping or using Wi-Fi or 3G for a distance exchange), and which bank account they want the money to come from.

The last function is "Making a group payment," which is meant to address the situation in which a group of people are all sharing payment of something, such as a restaurant tab. Participating in a shared payment is also known as contributing to a “Money Pool.” After selecting “Group Pay” from the main menu to start a Money Pool, the screen will then instruct the user to "Tap other Kibisis phones to this phone.” Each participant in the Money Pool who isn’t the initiator will have a chance to use their own phones with Kibisis to enter the amount they are contributing to the Money Pool and tap their phones with the Money Pool initiator’s phone. As the money from the other phones are tapped in, the total amount of money currently in the Pool is displayed at the bottom of the screen. Then, once the Money Pool is ready, the user who initiated the group payment can choose to pay the bill in its entirety, all at once.

Though Design 1 is a good base which we will move forward with, some other features from the other sketches that we wish to incorporate into our next iteration of it are as follows:

1. A PIN number users will input to authorize all transactions (similar to making payments with debit cards); this PIN number should be chosen when users first create their Kibisis account
2. A function to search and sort the contacts list by name and money owed
3. A way to include users without Kibisis in the Money Pool
4. A Return Payment option, which would allow users to “undo” a payment into the Money Pool
5. A way to pay/receive money over a wireless connection, without the requirement of tapping phones together

Scenarios

Scenario for Task 1

Mark is a recent college graduate and often has to exchange money with his roommates and friends for things like rent and group dinners. A friend suggests that he download Kibisis so that they can quickly exchange money with each other. After downloading and running it, a log-in screen appears on his phone. Mark clicks “Create a new account” near the bottom of the log-in page and selects a username and password. The next screen explains that his account has been created and that he needs to associate one of his bank accounts to Kibisis to begin using it. Mark begins to enter his checking account information, but starts to worry about security. He clicks on a link located by the checking account information fields titled “How is this secure?” which displays an explanation of the security measures used to prevent information leaks. Satisfied, Mark enters the rest of his information and clicks the “Add Account” button to finish.

Scenario for Task 2

Mark would like see his roommate Sam’s debt for the electricity bill Mark paid last week. Mark would also like to pay Sam for this month’s rent. To do this, Mark uses Kibisis to consolidate his debts and loans with Sam. Mark searches for Sam’s name in the Kibisis contacts list, then presses it to see what amount Sam owes Mark for the electricity bill ($50). Here, Mark presses “Add debt” at the bottom of the screen to add that Mark owes Sam for rent ($350). Then, Mark presses “Start Payment” to pay off the net amount to clear balances between Mark and Sam: a total of $300 from Mark to Sam. At the payment confirmation screen, Mark verifies the amount to pay, the recipient of the money, and payment method. Here, Mark is prompted for his 4-digit PIN code. Finally, Mark clears his balances with Sam by pressing “Confirm Payment”.

Scenario for Task 3

Mark, Rachel and Brittany have just finished eating at a local sit-down restaurant where tabs cannot be split. Mark decides to create a money pool using Kibisis to pay for the tab after collecting the money from his friends. He opens up the Kibisis app on his phone, logs into his account and starts a new Money Pool. Rachel and Brittany enter the amount they owe in Kibisis on their phones and enter their PIN numbers for security purposes. When Rachel and Brittany are ready, Mark taps his phone against theirs to add them to the money pool. He confirms that the final amount is equal to the amount on the bill and taps “Pay.” Rachel and Brittany receive confirmation messages on their phone for the tab amount which they accept. Mark then pays with his debit card, having received the money pool into his account.