SI669 Final SI669 Final Project Plan

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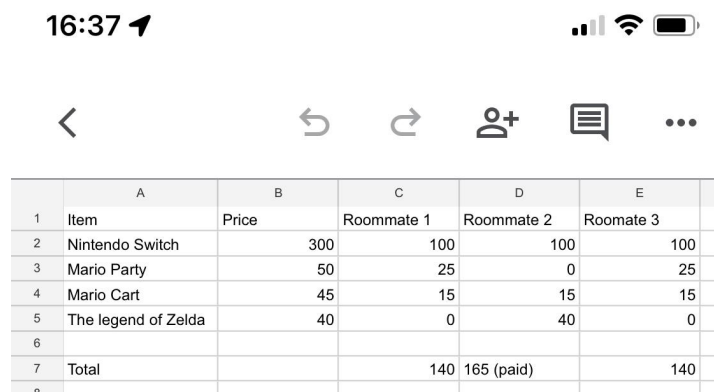Yixin Zheng (yixinzh)
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Target Audience and Value Proposition

We know that keeping a common account book among different people is complicated, but it doesn't have to be. Our project makes it simpler than ever for users to split bills as well as control their own account. In our accounting application, users can record shared expenditure, and make payments individually based on the fair value calculated by the application.

Our targeted user can be anyone who will split a bill with others. When roommates are buying different goods from the grocery, it usually takes a long time to figure out what each individual needs to pay for. With our application, they just need to input the buyer of the item with its price, and in the end the price will be calculated automatically. For now, there are many accounting software, but no one supports the function of splitting a bill. Similar to google shared drive, our application is like a shared account.

Inspiration

With the development of cloud technology, much information can be stored in a cloud database, and we're making more sharing economic behaviors. For example, roommates may buy a Nintendo Switch and games cartridges together. However, it's bothersome for them to split the bills because each individual may just want to pay for the game that he or she plays. Usually, we will save the information about price and players of the game in Excel or a google sheet to record how much charge is left.

16:37

	A	B	C	D	E
1	Item	Price	Roommate 1	Roommate 2	Roomate 3
2	Nintendo Switch	300	100	100	100
3	Mario Party	50	25	0	25
4	Mario Cart	45	15	15	15
5	The legend of Zelda	40	0	40	0
6					
7	Total		140	165 (paid)	140
8					

Figure 1: Google Sheet

This is a bit inconvenient because usually we don't calculate how much each individual should pay when we're going to buy them excitedly. It's troublesome to calculate the bills afterwards as well. So we'd like to provide a more user-friendly interface and automatically complete the calculations for users.

On the other hand, we want to take photos to keep more information about the events. At first, we wanted to use OCR to get the details of an invoice, but we found it's infeasible on Expo. However, we still can enable the users to attach a photo of items or invoice for an event, in case they forget some details.

We also get inspiration from the reviews of existing bill splitting applications, such as Splitwise, Sqlid, Tab, etc. Most of them provide extraordinary user experiences and interface for our reference. However, through analysis
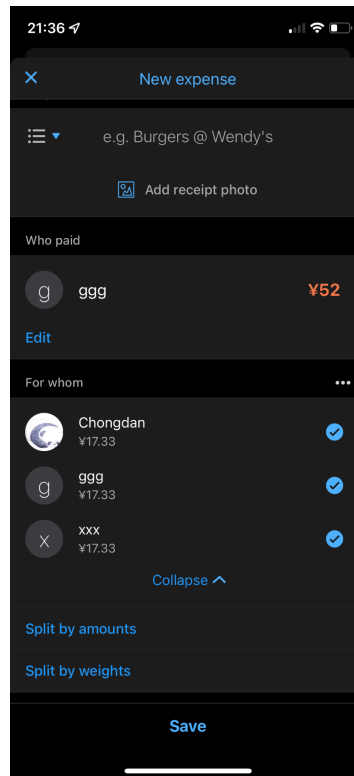

Figure 2: Settle-up UI

of the reviews and more experiments, we think there are a lot of aspects that can be improved. For example, the users must log in to use it, and sometimes it's hard for them to find the bills that they want. On the other hand, we think a monthly transaction summary will be useful for the user, but none of the applications provide this function. Therefore, we want to build a more user-friendly application that can solve some of these problems.

Complete Feature List

- **Bill splitting**

  Bill splitting is the key feature of the application, and it's what makes it different from our competitors. Users can create a payment by inputting the information about the item and who he or she wants to split the bill with. The user can also input the information for others as well. After everyone has accepted the item and input the total amount or proportion that he or she wants to pay, the payment will be stored and the buyer will get an amount that they need to pay. If there are multiple payments, the user can integrate them together so that he or she just needs to make the payment once.

- **Photo attachment**

  Sometimes people may forget what they actually bought or feel confused why they need to pay a certain amount of money. Therefore, we allow the users to attach text or photos as a reminder of an event.

- **Group partition**

  People usually make payments in groups together and the members don't change frequently. A persistent group partition can help payers conveniently find out who they need to engage with.

- **Transaction summary**

By the end of every week or every month, our application can provide a summary of the user's transaction history, so that users can have an overview about how much they pay and receive in a certain period.

- **Transaction removal**

    Sometimes, people may accidentally input an event or want to cancel an event, but this feature is currently not provided by applications from the App Store. We're going to realize this function by authorizing the receiver to cancel a transaction, and send notification to users in the same group.

- **Search function**

    Many users complain that it's hard to find a transaction or event when there are a lot of them, and most of the current applications don't support the search function. Therefore, we want to add a search bar at top so that users can quickly find a certain transaction through key words or dates.

- **User login/register**

    As users are creating groups, and the application will provide users' transaction summary, it will be necessary to let the users create accounts and login. We actually considered letting users join the groups without login, but after some research, we found that it will be difficult to identify users, as expo doesn't support functions like detecting device IMEI. Therefore, users will still need to login to join the groups, but we provide alternatives as an offline calculation component.

- **Offline calculation**

    All current applications require the users to register an account and log in to use the functions. Nevertheless, chances are that the users are out of signal or they don't want to share their emails. It'll be more user friendly if there is a separate offline and instant splitting calculator component. Reusing the normal bill splitting calculation component, it will be easier for us to develop. It will also improve the consistency, so that users will not be forced to learn new actions. However, as this operation is offline, it will be difficult to store the data. Thus, the application will suggest users to export the offline bill to a screenshot, which is also a feature of our application.

- **Payment notification**

    When a payment is made by a certain user, a notification can be pushed to the receiver. On the other hand, if someone is in debt for a long time without any actions, the user will be notified too.

- **CSV/Screenshot export**

    Sometimes users might want to export the bills as csv or screenshots, so that they could save/print the bill or do analysis about the transaction.

- **Cloud storage**

    There is no doubt that the data needs to be stored persistently, because the information needs to be shared among multiple users. What's more, cloud storage can be used for more functions such as account analysis.
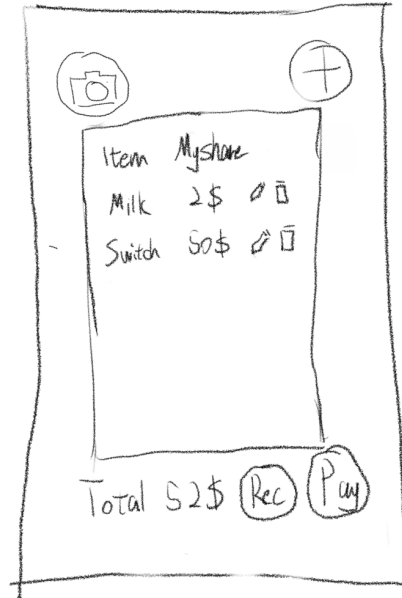
Refined Design

- **Event list sheet**

Figure 3: Event List Sheet

To support the key feature bill splitting, our application needs to include an event list sheet screen. Users could see the current bill, and could be navigated to detailed pages like attaching photos, payment, and add/edit items pages.

- **Edit/add item, Edit/add group**

Event Detail

← Event ✏️🗑️

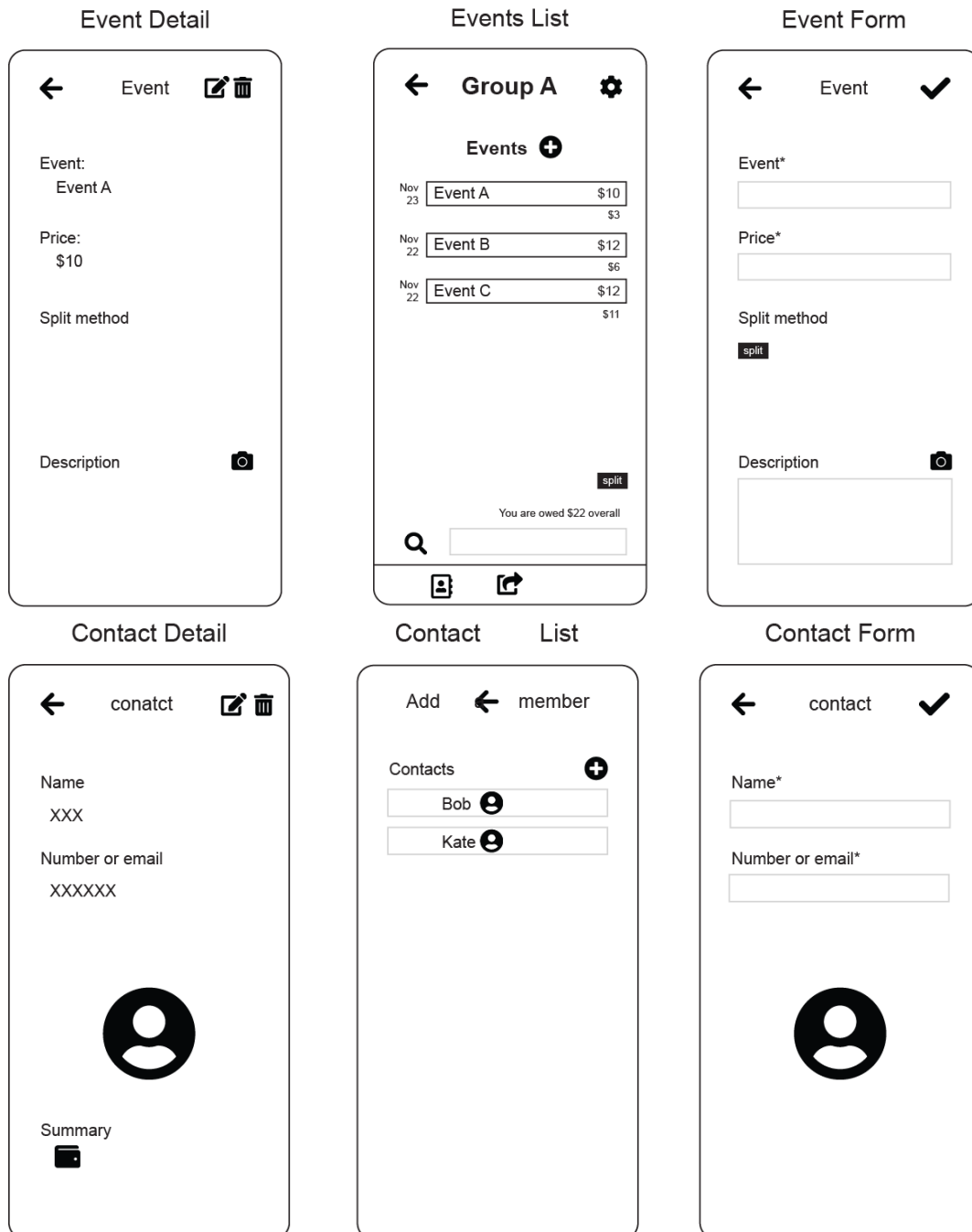Event:
  Event A

Price:
  $10

Split method

Description 📷

Events List

← **Group A** ⚙️

Events ➕

Nov 23 | Event A | $10
  $3
Nov 22 | Event B | $12
  $6
Nov 22 | Event C | $12
  $11

split

You are owed $22 overall

🔍 [＿＿＿＿]

📇 ↱

Event Form

← Event ✔️

Event*
[＿＿＿＿＿]

Price*
[＿＿＿＿＿]

Split method

split

Description 📷
[＿＿＿＿＿]

Contact Detail

← conatct ✏️🗑️

Name
  XXX

Number or email
  XXXXXX

👤

Summary
💳

Contact List

Add ← member

Contacts ➕
Bob 👤
Kate 👤

Contact Form

← contact ✔️

Name*
[＿＿＿＿＿]

Number or email*
[＿＿＿＿＿]

👤

Figure 4: Edit/Add Item/group

As an important detailed page of the previous event list sheet page, edit/add item/group pages are used to collect user inputs. The CRUD are implemented for groups, events as well as contacts. Users could enter or edit the purchased items, and add or edit a group of users that are involved in a specific bill that needs to be split.

Split method:

Split Method

Users can assign the items to specific members, split it by percentage, split it equally, split it by specific amount. The method can be specified for all items in one group from the event list page, or specified for per items from event detail page.
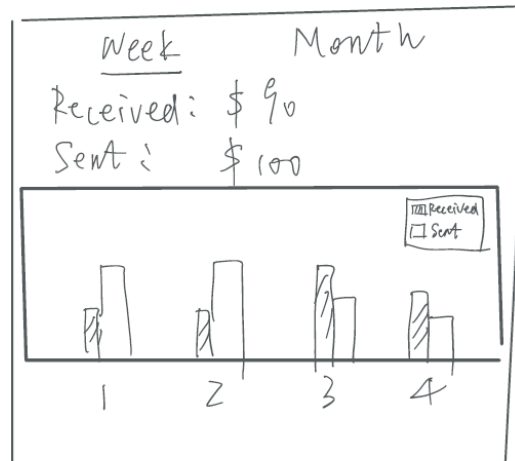
- **Account summary**

Figure 5: Account Summary

To support the feature of offering an account analysis for the users, the summary page demonstrates visualizations of how much users have sent/received on a weekly/monthly basis.

- **Registration/login screen**

Figure 6: Login screen

← Sign up

Username

Email

Password

Sign up

Existing user? LOGIN now

Figure 7: Registration screen

Figure 8: Flow diagram

A registration screen and a login screen are shown in Figure 6 and 7 separately. They are used to identify users when creating user groups and providing account summary. Hence, if a user is logged in, they will not be shown, but if a user is logged out, the login/registration screen will be shown in the place of the profile page, as is shown in the flow diagram in Figure 8.