ATM Touch Interface Design Decisions

Michael Bitzos
Bitzosm
McMaster University
bitzosm@mcmaster.ca

Kathryn Brownlee
Brownlks
McMaster University
brownlks@mcmaster.ca

Sean McKay
Mckaysm
McMaster University
mckaysm@mcmaster.ca

Ben Petkovsek
Petkovb
McMaster University
petkovb@mcmaster.ca

ABSTRACT
UPDATED—27 November 2018. This paper describes the design decisions made whilst implementing the touch-screen user interface of a hypothetical bank ATM.

Author Keywords
Authors' choice; of terms; separated; by semicolons; commas, within terms only; this section is required.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION
The following paper will outline several key decisions for each component of the interface and the reasoning behind the choice of implementation.

DESIGN DECISIONS

Across All Functionality
For all number pads used in our application we made sure to put in the effort to visually show when inputs weren't allowed (disabling send transfers when no amounts were specified, etc.)

For all number pad inputs, the inputs ensure the users follow a specific format, constraining the user to entering the full amount including cents (i.e. always having cents populated first). This also prevents the user from making formatting mistakes, as they might if they were required to enter their own decimal places.

A visible "cancel" or return to "menu" is included button at the bottom of all our actions to clearly show how all actions are connected to the central main menu and can be reverted/returned. This ensures the conceptual model is clear and easy to remember for the user.

Colours are used to indicate what actions are available. Input buttons for entering account information or monetary values are greyed out until the appropriate values are entered, then the buttons change to green. Cancel buttons are marked in red, and backspace is marked in yellow.

The Login Screen
We decided to allow the users to immediately enter their account numbers as we felt it should not take additional navigation actions to allow the user to log in in via card swiping or account number. As such we made sure to show that both options were available to them. NOTE: The button in the bottom right is a DEBUG only button that simulates swiping a card.

Pin Pad Input Screen
We made sure to have the pin entering screen on its own viewing window to clearly show the navigation /completion of login. Additionally, we made sure to not display the password to protect the user's privacy but still provided the '*' input so that the user is provided feedback.

The Main Menu
We wanted the account balances to be easily accessible right from the main menu, so we allowed the user to view it and all their accounts easily. An important design choice we made was to not show account balances in an extremely overt way to ensure the privacy of the user. We made sure to have all functions of the application accessible from the main menu screen so that the user knows all possible options that are available to them. In addition to this, we insured the buttons were large and center-aligned to increase discoverability/usability for touch screen design.

Account Info Page
We decided to add an Accounts history page as an additional feature. A user may have many reasons to want a quick look at their past transactions for each account, especially if they think something looks amiss. Usually looking at account history will assuage them or let them know if they need to seek further assistance. Further additional account information may help a user make other financial decisions. At the top we have a large display of the currently selected accounts with the option to get more info on each account.

Further, some quick filtering options are available to the user, to help them narrow what they are looking for should they desire the option. All key information is displayed in large text. The user can easily navigate back to the menu for additional actions.

Deposit Function
The deposit window gives you the option to deposit cash or a cheque. Cash deposits are accomplished by entering an

amount in a number pad. For a real Bank Machine deposits would be done by inserting cash into a physical receptacle, this is supposed to simulate this functionality. Cheque deposits would be done similarly, but in this program, it is done by clicking a debug button that simulates depositing a $500 cheque. Feedback is given in the same manner as the withdraw window, allowing you to either Deposit more money, or return to the main menu.

Withdrawal Function

Common withdrawal amounts are displayed first, so the user can easily withdraw multiples of $20 up to $100. For other amounts a number pad is available. A confirmation dialog displays feedback for any withdrawal transaction and allows them to return to the main menu or complete another transaction.

Transfer Between Accounts Function

When the user attempts a transfer, the system is designed to ensure the user is given good feedback; the feedback is represented in the form of a dialog box. The dialog then alerts the user to the success/failure of the transfer. This dialog provides immediate feedback as it is displayed in the center “overlapping” all other controls.

E-Transfer Function

We decided to develop e-transfer functionality that allows users to transfer money from one of their accounts to an email address. Since most online banking applications do this, we believed it would be a beneficial feature to include in the design.

The e-transfer page is a single form application allowing users to both add contacts and make the transfer within the same page. This helps limit the scope of the e-transfer feature so that users do not get confused.