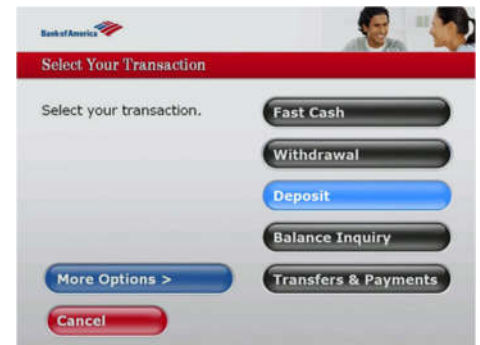# COP 2510 – Spring 2020

## Homework #3

## Title: The ATM Machine's GUI

Your ATM software is being rolled out to more and more sites in the Bank Of America ATm network and the best thing imaginable is happening – nobody is complaining! BoA would like to take the next step in their ATM upgrade process and they'd like to make you responsible for the ATM's graphical user interface.

The numeric keypad on a BoA ATM machine looks like this:



You are to graphically recreated this keypad as a part of your program. You only have to label that number, enter, clear, and cancel keys. You do not have to add the alphanumeric or "0 / 1 / x / + / - / _" symbols to the keys.

The user will still insert their ATM card to allow the machine to read their account number. However, to allow them to enter their PIN number you will present them with a screen shown above that displays both the keypad and a four digit window. This display will look like this:
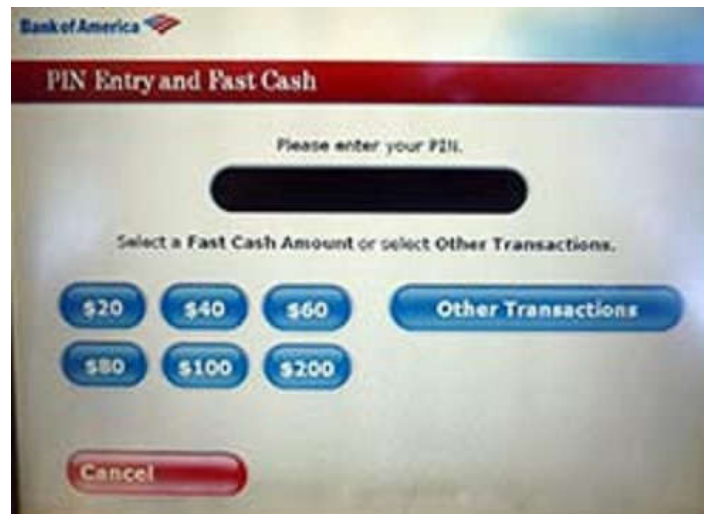
Every time they use the graphical keypad to enter a PIN digit, you will display a "*" in the PIN window. After they have entered a four-digit PIN, they need to select a "$20 / $40 / $60 / $80 / $100 / $200 / Other Transaction" option. If their PIN number is invalid, "Invalid PIN" will be displayed and the user can reenter their PIN.

If a fast cash amount is selected, then the money will be dispensed and the screen will say "$X dispensed, thank you" and the program will end.

If the user selected "Other Transaction", then the following screen will be displayed:
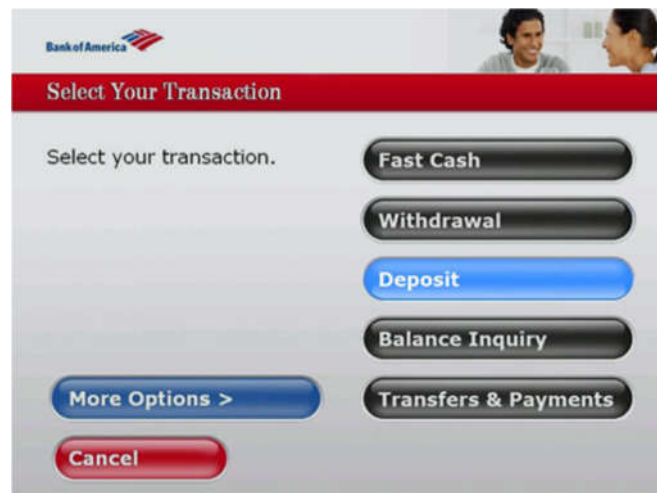


At this point in time, only the Cancel button needs to work, it will take you back to the Fast Cash screen.

very user has a predetermined amount of money in their checking and savings account. Obviously they cannot withdraw more money than they have in their account and the ATM machine must inform them of this if they try.

You can assume that the ATM has been loaded with $1,000 in the following denominations:  25 $20 bills, 25 $10 bills, 40 $5 bills, and 50 $1 bills. The ATM machine will attempt to provide every customer with money using the largest available bills assuming  that the machine still has enough money to fulfill the request – denominations don't matter (i.e. it could use all $1 if that's all that it had left)

The ATM machine should be programmed to display "Wrong PIN", "Unrecognized card", "Out of money – cannot complete transaction", "No account to transfer to", and "Insufficient funds for transfer". The machine should "eat" the ATM card if the PIN is entered incorrectly 4 times.

You can hard-code the card numbers and the PIN numbers into your program. However, you have to ask the user via the keyboard if they want to use their checking / savings account and how much they'd like to transfer between accounts.

Make sure that you inform the customer if their savings activity will cause them to incur an additional charge.

The machine will be preloaded to recognize the following ATM cards:

| Card Number | PIN | Owner |
|---|---|---|
| 123456789 | 1111 | Kyle Bustami |
| 135792468 | 2097 | Cory  Chambers |
| 019283746 | 6194 | Tanner Douglas |
| 675849302 | 0071 | Jordan Jones |
| 347821904 | 9871 | Jesse Pecar |

The following people have the following starting balances in their checking /savings accounts:

| Customer Name | Checking Balance | Savings Balance | # Savings Changes MadeThis Month |
|---|---|---|---|
| Kyle Bustami | $500 | $200 | 2 |
| Cory  Chambers | $100 | $700 | 3 |
| Tanner Douglas | $1,500 | $2,500 | 5 |
| Jordan Jones | $50 | -- | 0 |
| Jesse Pecar | $150 | $250 | 1 |

**Note**: Jordon Jones does not have a savings account

Once you've created your ATM machine, simulate the following transactions. Capture the results with screen shots and place the screen shots into a Word document:

1. Kyle Bustami has both a checking and a savings account with BoA. He uses the ATM with card 123456789 and enters PIN 1111. He then requests $100 from his checking account.

2. Cory  Chambers uses the ATM with card 135792468 and PIN 2097. He then requests $40 from his checking account.

3. Tanner Douglas uses the ATM with card 019283746 and enters PIN 6194. He then requests $20 from his checking account.

4. Jordan Jones uses the ATM with card 675849302. He enters a PIN number of 0000. He then enters a PIN number of 1111. He then enters a pin of 0071. He then requests $60 from his

checking account.

5. Jesse Pecar the ATM with card 347821904 and enters PIN 9871. He then requests $200 from his checking account

**Note:** You are only permitted to use the Java commands that we have covered in class so far. Yes, there are many more, but no, you can't use them in solving this homework!

→ **Homework Assignment: Submit an electronic copy of your program via the Canvas tool.**

## Assignment Requirements:

1. You are required to submit an electronic copy of your program online via the Canvas tool.

2. Before each method, put the following comment lines:
   ```
   //
   // Method Name: xxx
   // Description: xxx
   ```

3. Your code must contain the following comment header:
   ```
   //
   // COP 2510 – Spring Semester, 2020
   //
   // Homework #3: The ATM Machine's GUI
   //
   // (Your Name)
   //
   ```

4. **This homework is due at the start of class on Thursday, 03/26/20**