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Title: Use Case A02: Depositing a Check into an ATM

Scope: System for ATM Deposit Transaction of User Bank Account

Level: User Goal

Primary Actor: Customer

Stakeholders and Interests:

- Customer: Desires a smooth, secure and time-efficient transaction(s) with no errors throughout the whole process.

- Bank: Offers services and has hired tellers/employees to provide immediate assistance.

- Bank Employees/Managers: Desires smooth processes for the customer to come back and use their service. Also, assigns themselves or their fellow employees to recovering any cash or receipt paper necessary for the ATM, and any questions the customer may have.

- ATM: Verifies and authenticates the customer, and processes the whole transaction(s).

- ATM Administrator/Operator: Ensures transactions can be properly executed, and is held accounted to be within reach for the back manager or customer to contact in case of an emergency.

Preconditions:

- ATM is ready and functioning properly for the customer to use.
- Customer is ready and able to interact with the ATM to be then identified and authenticated.
- Only one Customer can use the ATM at a given timeslot.
- Bank Tellers/Managers, and/or ATM operators are available to ready to be contacted for error purposes or questions, to provide alternate scenarios for the customer.

Success Guarentee (Postconditions):

- New information given by the customer for the ATM to process is recorded for future use.
- Payment authorization method is approved and recorded.
- Arithmetic and tax information are correctly calculated for the transaction.

- Inventory of cash is updated with each transaction.
- Receipt is generated successfully.
- Errors from the transaction are cleared for the next customer.

Main Success Scenario (Basic Flow of Functional Requirements):

1. The Customer arrives at the ATM with a check to deposit.

2. The ATM displays a transaction selection screen for the Customer to interact with.

3. The ATM identifies the Customer's bank account through the use of a card that is linked to the bank the ATM is operated by.

4. The Customer interacts with the ATM with their card by use of chip.

5. The ATM displays a screen for the Customer to be able to enter the 4 digit pin of their account to have access to the next option screen.

6. The Customer enters their 4 digit pin, and is successfully accepted by the ATM.

7. The ATM prompts the Customer to be able to receive their card.

8. If the Customer has more than one account associated with the bank that the ATM is a part of, such as a checking or savings account, the ATM must display a screen prompting the Customer to pick which account that they interact with.

9. The Customer picks either their checking or savings account.

10. The ATM gives the Customer an action screen to transfer, withdraw or deposit finances into their account.

11. The Customer picks deposit from the action screen for the ATM to perform.

12. The ATM displays the available amount of funds on the account the Customer picked that is able to be interacted with.

13. The ATM opens the receiving station for the Customer to insert the deposit. The form of deposit is a check, and is unique to the customer's account via signature on the back.

14. The ATM scans the check and verifies the Customer's signature. Once verified, display the check on screen with the amount written on the check.

15. The customer confirms that the amount on the check is correct.

16. The ATM displays a screen prompting the Customer if they wish to do an additional transaction.

17. The Customer picks “No”, wishing to not do another transaction.

18. The ATM displays a screen prompting if the Customer desires a receipt or not, and if so, what type of receipt the Customer wants, if electronic or paper.

19. The Customer requests a paper receipt.

20. ATM provides a physical copy from the receipt receiver listing the transactions made by the Customer, the date, and the final amount of finances in each account by the end of the process.

21. The ATM displays a closing screen stating to the Customer that the transaction has been completed and that they are free to leave the machine, with a message such as, “Thanks for stopping by!” or, “Thank you for using our service!”

22. Once completed, the ATM returns to the starting screen for the next Customer to be able to interact with it, and it repeats the entire listed process.

Extensions (Alternate Scenarios of success of failure):

- (1-22)a. At any moment during the transaction, the ATM system can fail, through either a reset or power loss.
    - (i) The system itself or its manager/technician should ensure that all sensitive information was not compromised, and that the Customer is reassured that the failure of the system would not negatively affect their transaction or alter it.
        - (ii) Once the system is restored, the customer is either:
            - (iii) (a) Sent back to the step they were at prior, as the system’s state was saved to the stack.
            - (iii) (b) Given an error and prompted accordingly to restart the transaction.
- (1-22)b.At any moment during the transaction, the customer should be able to cancel the process.
    - (i) If the customer requests the transaction to be cancelled during the actual deposit, and the amount has not been processed yet, the machine should re-dispense the check.
- 3a. If there is another form of credential that is being used at an ATM that does not support card functionality, then *skip steps 4-7.*
- 4a. If tap or swipe was used for the transaction, *step 7 and its extensions are ignored,* as the user will receive their card back immediately.
- 5a. The customer’s card is not recognized by the system.
- 6a. The system was given an incorrect PIN number by the customer, and asks the

customer to enter the pin again.
    - (i) If the customer enters the PIN incorrectly, then, after a certain amount of attempts, the customer's card is locked and unable to use the ATM, as the system determines the possibility of a stolen card or secondary use.
- 7a. The card cannot be received, and an error signal is sent to the bank/operator.
- 7b. This step, depending on the machine, could also be at the very end of the whole transaction, *between steps 17 and 18.*
- 9a. A third account that the Customer may have, is not displayed in the set of account options, and there is not a prompt that lets the Customer communicate this or back out.
- 9b. The ATM displays an account that is no longer active.
- 11a. The customer picks either withdrawal or transfer.
- 11b. If the Action is to Withdraw, *(Listed for future purposes. It's own extensions are omitted for now)*
    - (i) The ATM must display a screen asking the Customer how much money they wish to take out of their account.
    - (ii) The Customer must be able to enter in the amount needed
    - (iii) The ATM must be able to provide the necessary funds the Customer requests from the money receiver.
    - (iv) The amount the Customer wishes to take out must be greater than or equal to twenty, and also divisible by twenty.
- 11c. If the Action is to transfer, *(Listed for future purposes. It's own extensions are omitted for now)*
    - (i) The ATM prompts the user to display the amount to transfer, and which accounts to exchange with.
    - (ii)Customer provides ATM with transfer information.
    - (iii) ATM shows the customer the new amounts of the account before finalizing the transaction.
- 13a. The receiving station is jammed, either from a previous customer's use or a malfunction in the mechanism, and the deposit cannot be transacted.
- 13b. The Customer deposits in the form of cash. *(Listed for future purposes. It's own extensions are omitted for now)*
- 14a. If a form of payment is not able to be read by the ATM, the ATM must return a screen that states that the payment is not able to be verified, and return the payment to the Customer to either fix themselves, or try another form of payment.
- 14b. The ATM eats the check, not confirming the added amount, which then the customer should call the bank, credit union or ATM operator.
- 14c. The signature is not legible, and the ATM spits the check back out for the customer to redo the signature.
- 15a. The amount written on the check does not match the amount displayed by the ATM.
    - (i) The customer must then be able to request for the check back, as it would be illegal to alter the check to try and match the price displayed. The customer should then contact the bank/ATM operator, or choose to not use the ATM entirely and have it approved through a teller.
- 17b. If the action is "Yes", *return to step 9 and repeat.*

- 18a. The Customer requests no receipt, and *goes to step 20.*
- 18b. ATM does not display the option the customer desires, and is forced to pick one of the available options.
- 19a. If electronic, the ATM fetches the email or phone number associated with the Customer's account, and send the receipt to the appropriate location with details of the transaction.
- 20a. ATM receipt printer is out of paper/ink
    - (i) The system can detect an error, and signals the problem to a bank teller or operator.
    - (ii) Paper/Ink is replaced and the Customer's receipt is ejected after approval from the operator's fix, as a form of an interrupt handler held it from being removed from memory upon catching the error.
- 20b. The receipt receiver is jammed.
    - (i) Customer must be able to request immediate assistance, so that if the following customer's transaction would work, they would get the previous owner's receipt and any personal information that can be misused.
- 20c. The amount or information on the receipt is incorrect.

Special Requirements(Non-Functional):

- Fast and Efficient Transaction for the following processes:
    - The time it takes to load each screen prompt for the Customer to interact with.
    - The time it takes for the ATM to gather information on the user's account from the method of interaction with the Customer's card.
    - The time it takes for the ATM to process and add up the amount of money deposited.
    - The time it takes for the ATM to fetch the user's email address or phone number.
    - The time it takes for the ATM to print the physical receipt.
    - The time it takes for the ATM to send the electronic receipt.
- The screen and interface of the ATM must be easy and accessible for any Customer to self-manage.
- The ATM should have a privacy screen, preventing passersby and vehicles behind the user to be able to view the user's account information and balances.
- Security of the transactions, making sure that the user's card information and identity are not compromised whilst and after the Customer has made the transaction.
    - The Customer must be allowed only a certain number of attempts to enter their 4-digit pin.
- The ATM can be opened by an operator and refilled with cash and/or receipt paper.
- When depositing, the ATM displays a screen showing the Customer which direction the deposit must face.
- The ATM should not allow for a transaction of $0.00.

    - Depending on the transaction, the ATM should make it clear what amounts of money are allowed, such as no cents for deposit/withdrawal, or anything > $20 for a withdrawal.
- If there is no detected activity for a certain time after a user has been authenticated, any pending actions are cancelled and the user is logged out automatically for security.
- The ATM can be recovered from within the bank or another location that is associated with the machine, in case of a malfunction or error signal, for example, in extension 20b.

Technology and Data Variations List:

(Base variations of Withdrawal and Transfer are listed in Extensions for fluidity, if desired here otherwise.)

- *a. Any confirmation by the customer is made via touch panel or physical keyboard.
- *b. It is becoming more common for the customer to not want or require a physical check or receipt.
- *c. Manager or operator can override the machine via swipe of a card or number.
- *d. Depending on the country or state, some bank services that provide ATM's may charge additional processing fees.
- 4a. ATM scans magnetic stripe on the chip for retrieving customer's information about their card and their own personal information.
- 6a. ATM displays a digital keypad in case the physical buttons on the actual device do not work.
- 14a. ATM scans check via camera and Optical Character recognition software to capture the characters written.
- 20a. ATM uses thermal printing for receipts.

Frequency of Occurence:

- Technically, it is continuous as long as the customer requests another transaction.
    - It is not realistic to assume that the customer will spend more than ten minutes at the ATM, but it is possible regardless.
        - Given an average steady flow of transactions, across multiple and actively responsive customers, ten minutes should process greater than or equal to five transactions successfully.

Open Issues (Misc.):

- The ATM cannot guarantee the one processing the transaction is the same person who owns the card, as it does not ask for a physical ID to scan.
    - As long as someone has the card and knows the PIN attached to the owner's account, they can retrieve as much money as they can get.
        - The bank probably doesn't have a signal showing the system that there has been an unusual amount of transactions within a given time, but there is no real way to authenticate that before the thief is on their way.
- Many places have caught external malicious mechanisms on ATM's like card skimmers

and shimmers, especially in public places, that are placed over the card reader, that copies that cards information and the PIN that is entered usually via bluetooth, without the customer or bank knowing.

- Depositing checks remotely is becoming more and more common, rendering ATM's only useful for cash, which is a far more easy form of currency to steal.