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**Module 6-3 Assignment: Interpreting UML Diagrams**

Both the UML diagrams are describing the Use Case of a user attempting “Withdraw Cash” from an ATM machine. Both the UML diagrams describe the process for the User to withdraw cash as below:

The UML Activity diagram displays these interactions between user and the ATM:

* The user **inserts their card**.
* The ATM is **prompted to enter their PIN.**
* The user **enters their PIN.**
* The ATM **verifies the PIN** with the bank system.
* If the PIN is incorrect, the ATM ended the transaction.
* If the PIN is correct, the ATM asks for the withdrawal amount.
* The user enters the amount, the ATM checks if the funds are available.
* If the fund is unavailable, the ATM **generates a receipt** and **prints it**
* If the fund is approved, the ATM **dispenses cash** and **generates and prints the receipt**.

The UML sequence diagram displays these interactions between the **User**, **ATM**, and **Bank** in a sequence:

* The User enter Card, ATM ask for PIN, User enter PIN, ATM verify PIN with BANK, Bank verified PIN is valid, User enter cash Amount, ATM dispense Cash.

The three main actors in the diagrams are the User, ATM, and Bank, and their interactions are the process of a person using their debit card at the ATM to request cash withdraw, The ATM and the Bank verify the person debit card, PIN, and fund account to dispense the cash amount requested. If the PIN and request is approved, the money is dispensed from the ATM, if the PIN and request is not approved, ATM will end the transaction and print the receipt for user.

From what the two diagrams displayed, there are three deficiencies that can be found in them. The first one is “PIN Validation” results, after the PIN Validation action, if PIN is invalid, the ATM shut down the transaction and print the receipt. The second is “Withdrawal Amount” input results, if there is insufficient fund, the ATM will print the receipt and ended the transaction. In the regular case of ATM withdrawal, the ATM would allow user a limited number of re-attempts for PIN validation, and display fund availability to let user re-select his withdrawal amount. The third deficiencies is the unavailability of the option to “End transaction” for the user if they changed their mind.

I would improve the UML Activity diagrams by adding the “re-attempts limit” to the PIN validation and “re-enter withdrawal amount” and add the “end transaction” option to the diagrams. The re-attempts limit is set to 3 tries, user is allowed 3 attempts, the ATM will end the transaction. The withdrawal action will be followed by a display screen of available funds if insufficient fund is found and allow user to re-enter the amount. If user does not want to continue with the transaction, use can end the transaction and take out their card.

