UML Diagrams

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1. Write a short, paragraph-length response **interpreting the diagrams**. Be sure to address the following questions:
   * What use case is being described by these diagrams?
   * What interactions are involved in this use case? What information is being passed back and forth?

The diagrams are a visual representation of an ATM system where the customer is attempting to withdraw cash from their account. The use cases are initiated by the customer interacting with the ATM by inserting their card into the card reader. The customer is prompted and enters their PIN number. If they enter an invalid PIN number, the system ends. If they enter a valid PIN number, they are prompted to enter the amount they wish to withdraw. The system checks for sufficient funds and if available dispenses the cash to the customer, if there are not sufficient funds for the amount asked the system generates a receipt for the customer. In each diagram, the customer actor is interacting directly with the ATM but in the UML Sequence Diagram, the Bank actor is added to the system for PIN verification.

1. These diagrams describe one basic design for this use case. **Analyze the design** by identifying *at least two* deficiencies in the logic or functionality of the current design. Think about ways that you could address these deficiencies to improve the logic or functionality of the design.

In both diagrams, there are a couple of deficiencies. The first thing I noticed was neither diagram included the logic of allowing a customer to retry after entering an invalid PIN number. In the activity diagram, an invalid PIN results in a generated receipt and the system ends. In the sequence diagram, there is only logic for a correct PIN input. Another deficiency that I noticed is that the activity diagram does not include a retry option for withdrawing a different amount if there are insufficient funds for the first amount. In the sequence diagram, the step for checking for sufficient funds is completely missing. Adding these two functionalities to the system would greatly improve the customer experience and security of funds.

1. Choose *one* of the deficiencies that you identified. Then **reconstruct a UML activity *or* sequence diagram** to improve functionality. Use the CASE tool Lucidchart to reconstruct the diagram. Be sure to use **proper UML notation and diagram flow**.

I added the verifying PIN and verifying sufficient funds functions to the activity diagram as well as a cancel transaction option.

