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CS 255

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

The presented examples represent a customer withdrawing cash from an ATM. The Activity diagram depicts all activity from the standpoint of the ATM. The user, ATM, and bank interactions are represented in the sequence diagram. Both diagrams illustrate the same situation with a few minor differences. The activity diagram depicts a scenario where a participant attempts to withdraw cash from an ATM using a card. The decision nodes depict the two alternative paths, and most stages depict tasks and requests from the ATM. The sequence diagram depicts the same procedure by adding actions from the actor and the Bank. This graphic provides more information about which item performs which function but lacks information on printing the receipt and alternative system pathways and decisions. Customers make withdrawals by inserting their cards, inputting their PINs, selecting an amount, and obtaining cash or a receipt. ATMs accept cards, request PINs, verify PINs with banks, request withdrawal amounts, check account balances, provide cash if available, and print receipts. The Bank will verify the PIN after receiving it from the ATM.

A fault in the design of the ATM is that it does not show you how much money is currently in your account. If the system could check the user's balance after the user has entered their PIN, any question regarding whether or not their withdrawal request would be refused would be eliminated. Another one of the transaction's flaws is that there isn't a feedback loop in the part where it says "amount not available." Customers who are unaware of their withdrawal limits may find that they continually attempt withdrawal operations but are unsuccessful, at which point they must print out receipts and begin the procedure again. If the ATM were to enter a loop at this stage of the procedure, the user would be alerted that there is insufficient money (and, ideally, the quantity), and they would be brought back to the step of the process where they query for the amount of money. The verification of the PIN suffers from the same flaw as previously mentioned. In the event that the user enters an incorrect PIN, a loop can be used to prompt them to retry entering it. In order to avoid creating an infinite loop in which the customer's transaction is left unfinished, these selections would require counters that put an end to the procedure once a certain limit is reached.

Both diagrams essentially describe the same case, with a couple of variations. The activity diagram shows the case of an actor attempting to withdraw money from an ATM using a card. The decision nodes show the 2 alternate paths, and all steps primarily show tasks and requests from the ATM. The sequence diagram shows the same process but includes actions from the actor and the additional component of the Bank. This diagram shows a little more detail of which object is doing what but lacks details such as printing the receipt and alternate paths and decisions in the system.