David Greene

Week 6 assignment

December 3rd 2023

**ATM Cash Withdrawal Use Case Analysis**

The provided UML diagrams offer a comprehensive overview of the ATM cash withdrawal process, showcasing intricate interactions between the user, the ATM, and the bank. Initiating with the insertion of the user's card, followed by PIN entry, selection of the withdrawal option, and inputting the desired withdrawal amount, the process emphasizes communication between the ATM and the bank to validate the card, PIN, and account balance before dispensing the requested amount.

**Design Analysis**

While the existing design adeptly captures the fundamental steps of the ATM cash withdrawal process, it exhibits certain limitations in handling specific scenarios, necessitating additional functionality to bolster its robustness. Two critical deficiencies are identified:

**Incorrect PIN Handling**:

* The current design lacks explicit provisions for addressing incorrect PIN entries. Ambiguity surrounds the number of permissible attempts, and there is an absence of indications regarding the consequences of exceeding the maximum attempts.

**ATM Cash Level Check:**

The design overlooks the integration of a mechanism to verify the ATM's cash level before dispensing the requested amount. This omission could potentially lead to a situation where the ATM runs out of cash, leaving the user in an unforeseen predicament.

**Proposed Improvements**

To rectify the identified deficiencies, the following enhancements are proposed:

**Incorrect PIN Handling:**

* Implement a limit on incorrect PIN attempts, allowing, for example, three unsuccessful entries. Upon reaching the limit, the ATM should display a user-friendly message, notifying the user that their card has been temporarily blocked for security reasons. Clear instructions should guide the user to contact their bank for further assistance in unblocking their card.

**ATM Cash Level Check:**

* Integrate a comprehensive cash level check into the withdrawal process. Prior to dispensing the requested amount, the ATM should initiate communication with the bank to verify the availability of sufficient funds. If the ATM's cash reserves are depleted, a well-crafted message should promptly appear on the screen, informing the user of the unavailability of funds and advising them to either enter a different amount or cancel the transaction.

A screenshot of a computer screen

Description automatically generated**Reconstructed UML Activity Diagram:**