

**SE 3K04 (Fall 2009)**  
**Implementation of ABM Components**  
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November 13, 2009

***Description of operations and interfaces for the  
Simplified ABM Component Diagram***

***Simplifications:***

- The objective for the development activity of the ABM project is to implement the core functionalities of the ABM system.
- All the operations that include keeping track of date or time have been removed.
- The following operations and interfaces are in accordance with the provided “Simplified ABM Component Diagram” and “Simplified SRS Document”.

**User Interface Component:**

- Operations:
  - Acquire customer’s information through keyboard; accept card through card reader; display account balances for different accounts; print account statements; accept envelope through envelope slot.
  - Get the customer’s card and PIN and ask the Bank System Interface whether the PIN associated with card is valid or not.
  - If the customer’s PIN is valid then display all the accounts and balances associated with the customer and accept the customer’s transaction; otherwise delete all information of the customer in the UI, eject the customer’s card, and get ready for a new session.
  - Collect all the required information for the current transaction from the keyboard.
  - Cancel transaction by deleting the collected information for the current transaction and the customer’s information in the UI, eject the customer’s card, and get ready for a new session.
  - After receiving ALL information for a single transaction (deposit, withdraw, transfer, statement order, ...) invoke the corresponding service from the Transactions Component.
  - Update the new value of the money in the ABM stock entered by the Operator.
  - Override the authentication step for the Bank Operator after the current customer has been serviced. This is to allow the operator to re-stock money.
- Interface:
  - Override authentication(operatorModeON/OFF)

**Transactions Component:**

- Operations:
  - Keep track of the total money stock in the ABM system and alert Bank System Interface Component in the case of low-stock so that an operator prepares for re-stocking ABM.
  - For every single transaction invoked by the UI, get the balance(s) of the corresponding account(s), do the operation on the balance(s), and set the updated balance(s).
  - Cash withdraw. Check the money is available in the intended account and then withdraw the money, return the balance.
  - Transfer between two accounts. Check the money is available in the source account and then transfer it to the destination account.
  - Cash deposit. Deposit the money into the selected account.
  - Account balance inquiry. Get the money balance in the selected account.
  - If the amount of withdrawal is more than available balance or more than \$500 inform UI.
- Interface:
  - Cash withdraw (ID, account type, money)
  - Transfer (ID, accountType1, accountType2, money)
  - Cash deposit (ID, account type, money)
  - Account balance inquiry(ID, accountType)

**Staff Operations Component:**

- Operations:
  - Switch to operator-mode: checks to see if no customer is being serviced and go to operator mode. (operator can now restock money in the ABM). Operator restocks the amount through ABM keypad.
  - Switch to normal-mode to allow normal customer service.
- Interface:
  - No interface.

**Bank Sys Interface Component:**

- Operations:
  - Check the authentication of the customer PIN and return the result of the authentication immediately as the return value.
  - Send all the accounts associated with the customer ID to the UI Component.
  - Get the balance for the selected account of a PIN
  - Sets the new balance for the selected account of a PIN and return a Boolean value to indicate that the transaction has been completed successfully or not.

- Interface:
  - PIN\_Verify\_inquiry(card ID, PIN): Boolean (valid/not-valid)
  - Get-all-accounts-for-ID(record)
  - Get\_account\_balance(PIN, accountNumber)
  - Set\_account\_balance(PIN, accountNumber, balance)

**Bank System Database:**

- Represented as a linked-list (or simply an array) of customer's card number records, where each element of a record has fields for the required customer's accounts information.
- Sample customer's record fields: ID, PIN, active/disable, a record of accounts attached to this ID.
- Save the above arrays (as customers' account information) in a text file and save it when the bank system is shut down, for example at night.
- Retrieve the above arrays from the stored text file when the bank system is powered on, for example in the morning.