Home-task: Identifying functions

Dated: 6-4-2020

Identify the variables and functions from the following requirements document. Report the role of each function that you identify, separately.

e.g.

Variable: account_number (int type variable)

Function: Display balance

- Role: (print user's balance to the screen)

A local bank intends to install a new automated teller machine (ATM) to allow users (i.e. bank customers) to perform basic financial transactions. Each user can have only one account at the bank. ATM users should be able to view their account balance, withdraw cash (i.e. take money out of their account), and deposit funds (i.e. place money into an account). The user interface of the ATM contains the following components:

- a screen that displays messages to the user a keypad that receives numeric input from the user
- a cash dispenser that dispenses cash to the user
- a deposit slot that receives deposit envelopes from the user.

The cash dispenser begins each day loaded with 500 $20 bills. The bank wants you to develop software to perform the financial transactions initiated by bank customers through the ATM. The bank will integrate the software with the ATM's hardware at a later date. The software should encapsulate the functionality of the hardware devices (e.g. cash dispenser, deposit slot) within software components, but it doesn't need to be concerned with how these devices actually work. The ATM hardware has not yet been developed, so instead of writing your program to run on the ATM, you will develop a first version of the software that will run on a PC. This version should use the monitor to simulate the ATM's screen, and the computer's keyboard to simulate the ATM's keypad. An ATM session consists of authenticating a user (i.e. proving the user's identity) based on an account number and personal identification number

(PIN), followed by creating and executing financial transactions. To authenticate a user and perform transactions, the ATM must interact with the bank's account information database. For each bank account, the database stores an account number, a PIN, and a balance indicating the amount of money in the account. We will assume that the bank only plans to build one ATM, so don't worry about multiple ATM's accessing the database at the same time. Yes, we're oversimplifying what the "real world" experience would be like, because we don't have time to build a full application such as would be needed.

Upon first approaching the ATM (assuming no one is currently using it), the user should experience the following sequence of events:

- The screen displays a welcome message and prompts the user to enter an account number
- The user enters a five digit account number using the keypad
- The screen prompts the user to enter the PIN associated with the account
- The user enters a five digit PIN using the keypad
- If the user enters a valid account number and the correct PIN for that account, the screen displays the main menu If the user enters an invalid account number or PIN, the screen displays an appropriate message and returns to step 1 to restart the authentication process

After the ATM authenticates the user, the main menu should contain a numbered option for each of the three types of transactions: balance inquiry (option 1), withdrawal (option 2), and deposit (option 3). The main menu should also contain an option for the user to exit the system (option 4). The user then chooses either to perform a transaction (by entering 1, 2, or 3) or to exit the system (by entering 4).