A bank has several automated teller machines (ATMs), which are geographically distributed and connected via a wide area network to a central server. Each ATM machine has a card reader, a cash dispenser, a keyboard/display, and a receipt printer. By using the ATM machine, a customer can withdraw cash from either checking or savings account, query the balance of an account, or transfer funds from one account to another. A transaction is initiated when a customer inserts an ATM card into the card reader. Encoded on the magnetic strip on the back of the ATM card are the card number, the start date, and the expiration date. Assuming the card is recognized, the system validates the ATM card to determine that the expiration date has not passed, that the user-entered PIN (personal identification number) matches the PIN maintained by the system, and that the card is not lost or stolen. The customer is allowed three attempts to enter the correct PIN; the card is confiscated if the third attempt fails. Cards that have been reported lost or stolen are also confiscated.

If the PIN is validated satisfactorily, the customer is prompted for a withdrawal, query, or transfer transaction. Before withdrawal transaction can be approved, the system determines that sufficient funds exist in the requested account, that the maximum daily limit will not be exceeded, and that there are sufficient funds available at the local cash dispenser. If the transaction is approved, the requested amount of cash is dispensed, a receipt is printed containing information about the transaction, and the card is ejected. Before a transfer transaction can be approved, the system determines that the customer has at least two accounts and that there are sufficient funds in the account to be debited. For approved query and transfer requests, a receipt is printed and card ejected. A customer may cancel a transaction at any time; the transaction is terminated and the card is ejected. Customer records, account records, and debit card records are all maintained at the server.
An ATM operator may start up and close down the ATM to replenish the ATM cash dispenser and for routine maintenance. It is assumed that functionality to open and close accounts and to create, update, and delete customer and debit card records is provided by an existing system and is not part of this problem.

a. Perform 2 types of Robustness Analysis for the above scenario, based on the following rules:
   (1) only controller can communicate with entity and boundary.
   (2) entities are allowed to communicate with other entities.
b. Create activity diagrams for “Validate PIN” and “Withdraw Funds”.
c. Create sequence diagrams for “Validate PIN” and “Withdraw Funds”.
d. Create collaboration diagrams for “Validate PIN” and “Withdraw Funds”.

Important Note:

1. Date assigned: 21-10-2019. Last date of submission is 28-10-2019 2 PM.
2. Assignments will not be accepted after due date.
3. Students are required to submit the assignment individually.
4. Plagiarism, if detected, will result in zero marks.
5. Assignment must be submitted via slate.
6. Submit the assignment after making a single zip archive of the assignment files.
7. Folder hierarchy: MS Word document report in /doc folder (containing an assignment cover page and all the diagrams that are required), generated source code in /code folder (if any), all exported PNG diagrams in /dia folder and Papyrus models and project files in /model directory are required. Use only Papyrus for modeling and submit the project files.
8. Archive the assignment and name it “FASTAssign02YourRollNo.zip”
9. Cover Page of Assignment document must contain: Student name, Roll no, Date of submission.