SE Practical 01

1. **Prepare an SRS document in line with the IEEE recommended standards for the specified Case Study. (Functional Requirements)**
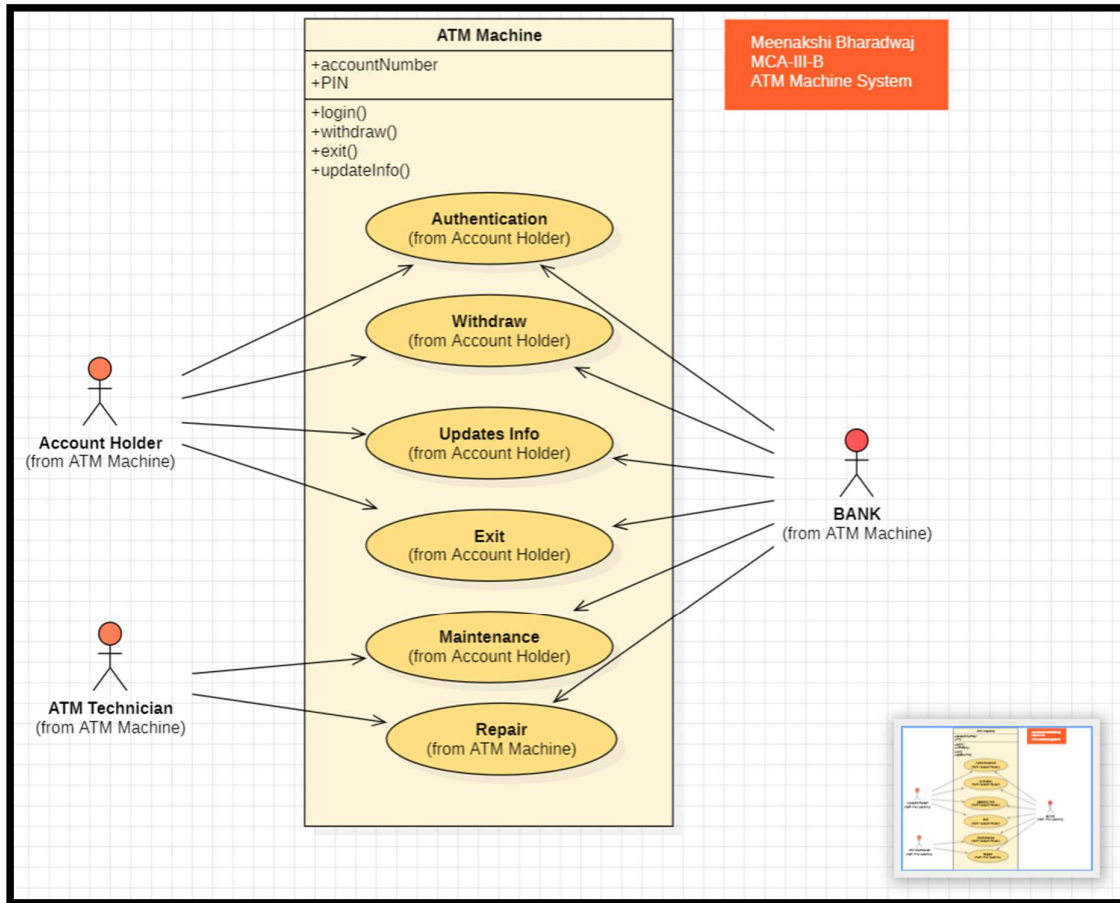
For ATM Machine:

Figure 1: ATM Machine System

Functional Requirements of ATM Machine System:

1. **Authentication:**
    a. **Priority:** High
    b. **Description:** The system must authenticate the user by verifying the card and PIN.
    c. **Functional Requirements:**
       The system shall –
         i. read the customer's card through the card reader.
         ii. prompt the customer to enter their 4-digit PIN.
         iii. verify the PIN by comparing it with the database records.

          iv. The system shall allow the customer three attempts to enter the correct PIN before locking the account.

2. **Cash Withdrawal:**
   a. **Priority:** High
   b. **Description:** Customers should be able to withdraw cash from their account.
   c. **Functional Requirements:**
   The system shall –
      i. allow the customer to select the "Withdraw Cash" option.
      ii. prompt the customer to enter the amount to withdraw.
      iii. check if the customer's account balance is sufficient for the requested amount.
      iv. dispense cash if the balance is sufficient and update the account balance accordingly.
      v. generate and print a receipt after the transaction is complete.

3. **Update PIN:**
   a. **Priority:** Medium
   b. **Description:** The user can update their ATM PIN.
   c. **Functional Requirements**:
      i. The user should select the "Update PIN" option from the main menu.
      ii. The system must prompt the user to enter their current PIN for verification.
      iii. The user should be prompted to enter a new PIN.
      iv. The system must check if the new PIN meets security criteria (e.g., length, complexity).
      v. The user should confirm the new PIN by entering it again.
      vi. Once confirmed, the system updates the user's PIN in the bank's database.

4. **Check Account Balance**
   a. **Priority:** Medium
   b. **Description**: Users can check their current account balance, which should be displayed on the screen or printed as a receipt.
   c. **Functional Requirements**:
      i. User selects the "Check Balance" option.
      ii. System retrieves and displays the current balance from the user's account.

5. **Exit Function**
   a. **Priority:** High
   b. **Description**: The user can safely exit the ATM system.
   c. **Functional Requirements**:
      i. The user should be able to select the "Exit" option from the main menu.
      ii. The system must terminate the session, eject the ATM card, and display a "Thank you" message.
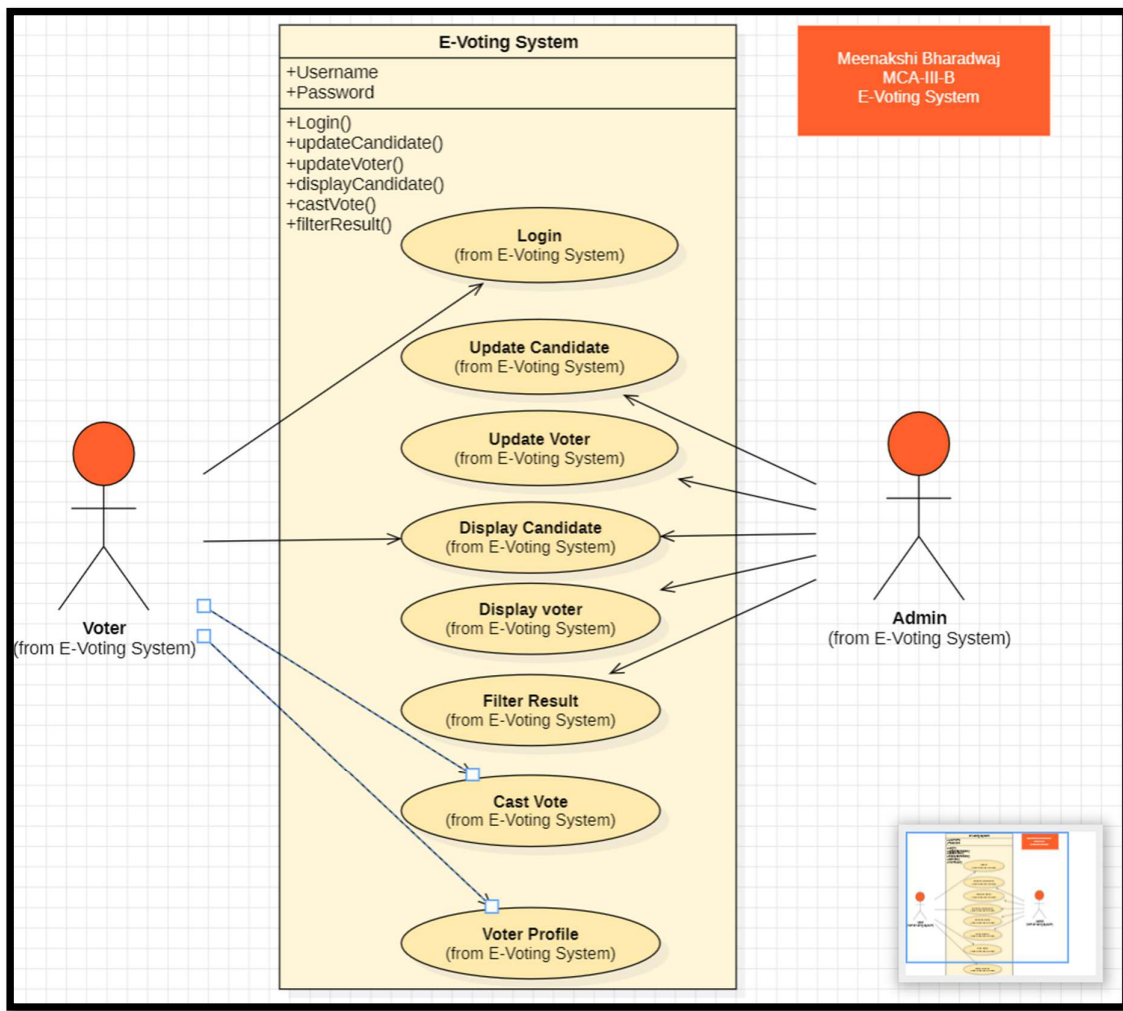   iii. The system should clear any session data after the user exits.

For E-Voting System:

Figure 2: E-Voting System

Functional Requirements of E-Voting System:

1. **Login**
   a. **Priority:** High
   b. **Description**: The system must authenticate voters to ensure that only registered individuals can access the voting process.
   c. **Functional Requirements**:
      i. The voter must enter their credentials (such as voter ID and password or use biometric authentication like fingerprint/face recognition).
      ii. The system should validate the voter's credentials against the voter database.
      iii. If the credentials are incorrect, the system should deny access and allow three retry attempts.
      iv. After three failed attempts, the system should lock the voter's account for security purposes.

     v.   If the credentials are correct, the voter is granted access to the voting system.

2. Cast Vote

   a. Priority: High

   b. Description: The primary function of the system is to allow authenticated voters to cast their vote securely.

   c. Functional Requirements:

     i.   Once logged in, the voter should be presented with a list of candidates for the relevant election.

     ii.   The voter can select one candidate from the list.

     iii.   The system should confirm the voter's choice and ask for confirmation before submitting the vote.

     iv.   Once confirmed, the vote is securely stored in the system and cannot be modified or re-cast.

     v.   The system should log the time and unique ID associated with the voter, ensuring no duplicate votes are cast.

     vi.   After voting, the voter should be logged out automatically to prevent tampering.

3. Voter Profile

   a. Priority: Medium

   b. Description: The voter can view and update their personal details (excluding the ability to change eligibility criteria such as citizenship).

   c. Functional Requirements:

     i.   The voter can view their personal information (name, address, age, voter ID, etc.) after logging in.

     ii.   The voter can update specific details like contact information (phone number, email address).

     iii.   Any changes made by the voter should be verified (e.g., by sending a confirmation code via email or SMS).

     iv.   The system must ensure that changes do not affect eligibility for voting in the current election.

4. Display Candidates

   a. Priority: Medium

   b. Description: The system must display a list of candidates running in the current election for which the voter is eligible.

   c. Functional Requirements:

     i.   The system should retrieve the list of candidates for the relevant election district or constituency based on the voter's profile.

     ii.   The candidates should be displayed with their names, party affiliation (if any), and a brief bio or manifesto.

     iii.   The voter can view the candidates before making a decision.

     iv.   The system must ensure that the correct list of candidates is displayed based on the voter's district.