	Misr International University
	Faculty of Engineering
	Department of Electronics and Communication
	Course: ECE583 Advanced Embedded Systems Fall 2024
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ATM based system

Project objective

1. Basic C programming syntax
2. Logical thinking
3. File handling
4. Using algorithms like sorting and searching
5. Using data structures like linked lists
6. Error Handling

Project Description:

- The project will be an ATM machine that takes the username and PIN code to enter
- The ATM will display a menu for the user to choose an operation from
- The ATM will hold the data in CSV format for all users according to the type of operation or the type of data (Transaction data, user data, ...)
- The Objective of phase 1 is to create a console application that mimics this behavior which will be implemented in phase 2 on an ARM-based system

Project Deliverables

The Teams will be 1 to 2 per team
Deadline :14/11/2024 (after midterms)
Discussion : During office hours first week after midterms

1. Organized project according to the following
   - User.c & User.h
   - Transaction.c &Transaction.h
   - util.c (has the encryption and decryption and any helper function)
   - main.c (the main application)
2. Technical report to "just document the code" for the assessment and revision of the code for phase 2 and phase 1 marking
3. Screenshots of testing the code

Assessment Criteria

1. Files Organized (5 marks)
2. Code Documentation (2 marks)
3. Screenshots of testing the code (3 marks)
4. Writing clean Code application (1 bonus mark)
5. Submitting on Github (or any version control provider) (1 bonus mark)

Functions:

1. **User Authentication:** The system will prompt the user for an account number and PIN to ensure secure access to individual accounts.
2. **Balance Inquiry:** Users can check their current account balance.
3. **Deposit Funds:** The system will allow users to deposit money into their account, updating the balance accordingly.
4. **Withdraw Funds:** Users can withdraw money, provided they have sufficient balance.
5. **Transaction History:** Every transaction (deposit or withdrawal) will be recorded in a CSV file for future reference. The system will also allow users to view a statement of their recent transactions.
6. **Simple Encryption**: use hill chiper 2x2
7. Read from CSV to Linked List function.

- The application must run continuously even after the user ends their session
- Map each function from above to it's corresponding file to ease the development of the application

Data Architecture:

1. Users table :
   a. user_id
   b. username
   c. password
   d. current_balance
2. Transactions table:
   a. transaction_id
   b. Transaction_type (deposit or withdraw)
   c. amount
   d. user_id