Scenario 1: Loan Management System

Class: `LoanApplication`

Attributes (Private Fields)

- `private String customerName` → Stores the applicant's name.
- `private double loanAmount` → Total loan amount.
- `private double interestRate` → Interest rate on the loan.
- `private int loanTerm` → Loan duration in years.
- `private double outstandingBalance` → Remaining loan balance.

Constructor

- A **parameterized constructor** to initialize all attributes when a loan is applied.
- Displays **"Loan Application Submitted"** after creation.

Methods

1. **Getters and Setters**
   - Provide methods to get and set values for all attributes, ensuring controlled access.
2. **`makePayment(double amount)`**
   - Deducts the amount from `outstandingBalance`.
   - Edge Cases:
     - If the payment is **negative or zero**, print **"Invalid payment amount"**.
     - If the amount **exceeds the balance**, print **"Payment exceeds loan balance"**.
3. **`calculateEMI()`**
   - Computes the **monthly EMI** based on the loan formula.
4. **`displayLoanDetails()`**
   - Displays total loan, interest rate, EMI, and remaining balance.

Scenario 2: Fixed Deposit Account

Class: `FixedDepositAccount`

Attributes (Private Fields)

- `private String customerName`
- `private double principalAmount` → The deposited amount.
- `private double interestRate` → Annual interest rate.
- `private int duration` → Duration in years.
- `private double maturityAmount` → Final amount after interest.

Constructor

- A **parameterized constructor** to initialize all fields.
- Displays **"Fixed Deposit Created Successfully"** after creation.

Methods

1. **Getters and Setters**
   - Get and set values for all attributes.
2. **`calculateMaturityAmount()`**

   - Uses **compound interest formula** to compute the final amount at maturity.

3. **`withdrawBeforeMaturity()`**
   - If the withdrawal happens **before maturity**, impose a **penalty of 2%**.
   - Edge Case: If **duration < 1 year**, print **"Cannot withdraw before one year"**.

Scenario 3: Credit Card System

Class: `CreditCardAccount`

Attributes (Private Fields)

- `private String customerName`
- `private double creditLimit`
- `private double currentDebt`
- `private double interestRate`

Constructor

- A **parameterized constructor** to initialize all attributes when a credit card account is created.

Methods

1. **Getters and Setters**
   - Methods to access and modify all attributes safely.
2. **`swipeCard(double amount)`**
   - If the amount exceeds the **credit limit**, print **"Transaction declined: Limit exceeded"**.
   - Otherwise, increase `currentDebt`.
3. **`makePayment(double amount)`**
   - Reduces the `currentDebt`.
   - Edge Case: If the payment **exceeds the current debt**, print **"Excess payment not allowed"**.
4. **`applyInterest()`**
   - Applies interest to the **outstanding debt**.
