**Bank Management System Documentation**

**Class Descriptions with Method Parameters and Return Types**

**Transaction**

* ***Purpose:*** Manages financial transactions.
* ***Attributes and Methods:***
* transactionId: String
* account: Account
* transactionAmount: double
* recipientId: int
* employeeId: int
* transactionId: int
* transactionType: String
* transactionDescription: String
* transactionDate: String
* customerId: int
* **set...()** / **get...()**: Methods to set or get attributes. Return types vary based on attribute.
  + **toString()**: Converts transaction information to a string. Returns String.

**Account (Abstract)**

* ***Purpose:*** Base class for different types of bank accounts.
* ***Attributes and Methods:***
  + accountNumber: int
  + balance: double
  + counter: static int
  + **Account(double balance, String accountNumber)**: Constructor to initialize an account. No return.
  + **makeTransaction(ArrayList<Transaction> transactions, ArrayList<Client> clients)**: Processes a transaction. No return.
  + **checkSufficientBalance(double amount)**: Checks if the balance is sufficient for a transaction. Returns boolean.
  + **equals(Object obj)**: Compares with another object for equality. Returns boolean.
  + **display()**: Displays account details. No return.
  + **updateBalance(double amount)**: Updates the account balance. No return.

**SavingsAccount**

* ***Inherits From:*** Account
* ***Methods:***
  + **calculateInterest()**: Calculates interest for the savings account. No return.

**CurrentAccount**

* ***Inherits From:*** Account
* ***Methods:***
  + **checkMinimumBalance()**: Checks if the current account has met the minimum balance requirement. Returns boolean.

**Client**

* ***Purpose:*** Manages information about bank clients.
* ***Attributes and Methods:***
  + id: String
  + firstName: String
  + lastName: String
  + username: String
  + telephoneNumber: long
  + myAccounts: ArrayList<Account>
  + **displayAccountNumber()**: Displays the client's account numbers. No return.
  + **editPersonalInformation()**: Allows editing of client's personal information. No return.
  + **readClient(ArrayList<Client> clients)**: Reads and displays client information. No return.
  + **passClient(ArrayList<Client> clients, ArrayList<Account> accounts)**: Passes client information for account creation. No return.

**Employee**

* ***Purpose:*** Manages employees within the bank system.
* ***Attributes and Methods:***
  + id: String
  + firstName: String
  + lastName: String
  + position: String
  + password : String
  + Total grade : String
  + Graduation collage : String
  + Year of graduation : Int
  + Status : Boolean
  + Address : String
  + **Employee(String password, String firstName, String lastName,** String address, String position, String graduatedCollage, int **yearOfGraduation, String totalGrade):**constructor used to create a new employee object
  + **EmployeeEditInfo():** This method is used when the employee wants to edit there address or position.
  + **EmployeeCreatingAccount(Arraylist<Client>clients2 , Int ID):** This method is used when the employee wants to create an account for a client.
  + **clientUPAuthentication(ArrayList<Client> clients, int id)**: Authenticates a client. Returns an object of client if the ID and password are correct otherwise null is returned.
  + **employeeSearchClient(ArrayList<Client> clients)**: Searches for a client and display there information.
  + **toString()**: Converts employee information to a string. Returns String.
  + **employeeGetInfo()**: Retrieves employee information. Returns String.
  + **createAClient(ArrayList<Client> clients)**: Creates a new client profile and adds this object to the clients array.
  + **readEmployee(ArrayList<Employee> employees)**: Reads employee information. No return.
  + **employeeDeletingAccount(ArrayList<Client> clients)**: Deletes a client account after getting his ID and password.
  + **EmployeeEditClient(ArrayList<Client>clients2 , int ID)**: This method is used when the employee wants to edit the username or password of a client , after getting his ID and password.
  + **EmployeeMakingTransaction(ArrayList<Client>clients , ArrayList<transaction>allTransaction)**: This method is used when the employee wants to transfer money from one account to another after making sure that the sender ID and password are correct.
  + **Save()** : returns a multiple line string used to write the data in the files in a certain format.
  + **SaveEmp(ArrayList<Employee>emps)** : This method loops on the array list of employees and calls the save method for each employee and writes the returned strings to the Employee file.
  + **readEmp(ArrayList<Employee>emps)**: This method is used to read the employees data from the files to the array list used in the program.
  + **Employee(String password,int id , String firstName, String lastName,** String address, String position, String graduatedCollage, int yearOfGradution , String totalGrade , Boolean status) : This constructor is used create an object employee and add it to the employee array list when reading from files.
  + **toString():** overriding the toString() method to print the data of each employee.

**Loan**

* ***Purpose:*** Manages loans given to clients.
* ***Attributes and Methods:***
  + **loan(double amount, double balance)**: Constructor to initialize a loan. No return.
  + **clientBalance()**: Retrieves the balance of the client who took the loan. Returns double.
  + **displayLoanHistory()**: Displays the loan payment history. No return.
  + **payInstallment(int, boolean)**: Records a loan installment payment. No return.
  + **calculateInstallmentAmount()**: Calculates the amount for each installment. Returns double.
  + **initializeInstallments()**: Initializes the installment structure. No return.

**Installment**

* ***Purpose:*** Represents a single installment payment.
* ***Attributes and Methods:***
  + installmentNumber: int
  + installmentAmount: double
  + paid: boolean
  + **Installment(int number, double amount, boolean paid)**: Constructor to initialize an installment. No return.
  + **paidInstallment()**: Marks the installment as paid. No return.

**Admin**

* ***Purpose:*** Manages administrative tasks.
* ***Methods:***
  + **displayClients(ArrayList<Client> clients)**: Displays a list of clients. No return.
  + **displayEmployees(ArrayList<Employee> employees)**: Displays a list of employees. No return.

**Main**

* ***Purpose:*** The entry point for the bank management system.
* ***Methods:***
  + **main(String[] args)**: The main method to start the application. No return.

**TransactionException**

* ***Purpose:*** Custom exception class to handle transaction-related errors.