**Gherkin tasks 1 & 8**

Task 1: Gherkin feature files produced as per the requirements

**Customers.cs**

Feature: Bank Customer Management

Scenario: Create a new Staff Customer

Given the user provides an Id, Name, and Contact Details

When a new Staff object is created with the provided details

Then the Staff object should have a unique Id, Name, Contact Details, a Fee of 50.0, and an empty List of Accounts

Scenario: Create a new Client Customer

Given the user provides an Id, Name, and Contact Details

When a new Client object is created with the provided details

Then the Client object should have a unique Id, Name, Contact Details, a Fee of 0.0, and an empty List of Accounts

Scenario: Display Staff object as string

Given a Staff object exists

When the ToString() method is called on the Staff object

Then the method should return the Staff's Name followed by "(Staff)"

Scenario: Display Client object as string

Given a Client object exists

When the ToString() method is called on the Client object

Then the method should return the Client's Name followed by "(Customer)"

**Accounts.cs**

Feature: Account

Scenario: Create a new account

Given a new account is created with an ID

When the account is initialized with default values

Then the account should have a zero balance, a default overdraft limit, and default interest rate

Scenario: Deposit money into an account

Given an existing account with a balance

When money is deposited into the account

Then the account balance should increase by the deposited amount

Scenario: Withdraw money from an account

Given an existing account with a balance

When money is withdrawn from the account

Then the account balance should decrease by the withdrawn amount

Scenario: Calculate interest on an account

Given an existing account with a balance

When the interest is calculated for the account

Then the account balance should increase by the interest amount

**Omni Account class**

Feature: Omni Account

Scenario: Deposit money into an Omni account

Given an Omni account with id "123"

When I deposit "$1000" into the account

Then the account balance should be "$1000"

Scenario: Withdraw money from an Omni account with sufficient balance

Given an Omni account with id "456" and balance "$2000"

When I withdraw "$1000" from the account

Then the account balance should be "$1000"

Scenario: Withdraw money from an Omni account with insufficient balance

Given an Omni account with id "789" and balance "$500"

When I withdraw "$1000" from the account

Then a FailedWithdrawalException should be thrown with message "Omni 789 ; withdrawal $1000; transaction failed; fee $10; balance $490.00."

Scenario: Calculate interest on an Omni account

Given an Omni account with id "987" and balance "$2000"

When I calculate the interest on the account

Then the account balance should be "$2080" (interest of 4% applied on balance above $1000)

Scenario: Calculate interest on an Omni account with balance below $1000

Given an Omni account with id "654" and balance "$500"

When I calculate the interest on the account

Then the account balance should be "$500" (interest not applied on balance below $1000)

**Everyday Account Class**

Feature: Everyday Account

Scenario: Deposit into an Everyday Account

Given an Everyday account with ID 1234

When I deposit $100 into the account

Then the balance of the account should be $100

Scenario: Withdraw from an Everyday Account with sufficient balance

Given an Everyday account with ID 1234 and balance of $200

When I withdraw $50 from the account

Then the balance of the account should be $150

Scenario: Withdraw from an Everyday Account with insufficient balance

Given an Everyday account with ID 1234 and balance of $50

When I withdraw $100 from the account

Then the withdrawal should fail with an InsufficientFundsException

Scenario: Calculate interest on an Everyday Account

Given an Everyday account with ID 1234 and balance of $1000

When interest is calculated for the account

Then the balance of the account should increase by $40 (4% interest on $1000)

**Investment Account Class**

Feature: Investment account

Scenario: Initialize an Investment account

Given I have an Investment account with ID 123

Then the Investment account balance should be 0.00

And the Investment account overdraft should be 0.00

And the Investment account fee should be 10.00

And the Investment account interest rate should be 4.00%

Scenario: Deposit into an Investment account

Given I have an Investment account with ID 123 and balance 100.00

When I deposit 50.00 into the Investment account

Then the Investment account balance should be 150.00

Scenario: Withdraw from an Investment account successfully

Given I have an Investment account with ID 123 and balance 100.00

When I withdraw 50.00 from the Investment account

Then the Investment account balance should be 54.00

And the Investment account interest rate should be updated

And no exception should be thrown

Scenario: Withdraw from an Investment account with insufficient balance

Given I have an Investment account with ID 123 and balance 50.00

When I withdraw 100.00 from the Investment account

Then the Investment account balance should be 39.00

And an exception "FailedWithdrawalException" should be thrown

And the Investment account fee should be charged

Scenario: Calculate interest on an Investment account

Given I have an Investment account with ID 123 and balance 1000.00

When I calculate interest on the Investment account

Then the Investment account balance should be 1040.00

**Accounts Controller**

**Feature: Bank Account Management**

As a customer, I want to be able to manage my bank accounts so that I can keep track of my finances.

Scenario: Create an account Given a customer has an existing account When the customer creates a new account Then the account should be added to the customer's account list

Scenario: Remove an account Given a customer has an existing account When the customer removes an account with a zero balance Then the account should be removed from the customer's account list

Scenario: Display account information Given a customer has an existing account When the customer selects an account Then the system should display the account information

Scenario: Deposit into an account Given a customer has an existing account When the customer selects an account and deposits an amount Then the account balance should be updated

Scenario: Withdraw from an account Given a customer has an existing account When the customer selects an account and withdraws an amount Then the account balance should be updated

Scenario: Transfer between accounts Given a customer has multiple accounts When the customer selects two accounts and transfers an amount Then the account balances should be updated

Scenario: List customer accounts Given a customer has multiple accounts When the customer selects the "List Accounts" option Then the system should display a list of the customer's accounts.

**Customer Controller**

Feature: Bank Customer Management

As a bank administrator, I want to be able to manage the bank customers so that I can keep track of the bank's customer base.

Scenario: Add a customer Given the bank administrator wants to add a customer When the bank administrator provides the customer information Then the new customer should be added to the bank's customer list

Scenario: Remove a customer Given the bank administrator wants to remove a customer When the bank administrator selects a customer with no associated accounts Then the customer should be removed from the bank's customer list

Scenario: List customers Given the bank administrator wants to view a list of customers When the bank administrator selects the "List Customers" option Then the system should display a list of all the bank's customers

Scenario: List accounts from a customer Given the bank administrator wants to view a customer's accounts When the bank administrator selects a customer from the customer list Then the system should display a list of the customer's accounts

**Task 8**

**Tests** are in the Solution. BankAppTest