ACME BANK TELLER SYSTEM

User Manual

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1. Introduction

1.1 Purpose

This user manual provides comprehensive guidance for bank tellers using the Acme Bank Teller System. The system is a Java-based command-line interface (CLI) application designed to manage customer accounts, process transactions, and perform essential banking operations.

1.2 Intended Audience

This manual is intended for authorised bank tellers and staff members who will use the system to serve customers at Acme Bank.

1.3 System Requirements

- Java Runtime Environment (JRE) 8 or higher
- SQLite database support
- Command-line terminal access
- Operating System: Windows, macOS, or Linux

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2. System Overview

2.1 Key Features

- **Secure Customer Authentication** - Find and verify customers using Customer ID
- **Multiple Account Types** - Personal, ISA, and Business accounts
- **Automated Account Number Generation** - Unique 8-digit account numbers
- **Automated Sort Code Assignment** - Based on account type
- **Transaction Processing** - Deposits, withdrawals, and transaction history
- **Direct Debits and Standing Orders** - For Personal accounts
- **ISA Interest Calculation** - 2.75% APR annual interest
- **Business Account Features** - Cheque book issuance, annual fees
- **Comprehensive Logging** - All operations logged for audit trail
- **Persistent Data Storage** - SQLite database ensures data continuity

2.2 Account Types Supported

1. **Personal Account** - Standard checking account with overdraft facility
2. **ISA Account** - Individual Savings Account with 2.75% annual interest
3. **Business Account** - Commercial account for Sole Traders and Ltd companies

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3. Getting Started

3.1 Launching the System

1. Open your command-line terminal (Terminal on Mac/Linux, Command Prompt on Windows)

2. Navigate to the application directory:

   `cd /path/to/Banking-app`

3. Run the application:

   `java CLIMenu`

4. The system will display:

   `== Acme Teller System ==`

3.2 System Initialization

Upon startup, the system automatically: - Connects to the SQLite database (`banking.db`) - Loads customer and account data - Initializes the logging system - Displays the Main Menu

3.3 First Time Setup

If this is your first time using the system: - The database will be created automatically if it doesn't exist - All tables (customers, accounts, transactions, direct_debits, standing_orders) are initialized - The system is ready to accept new customer registrations

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4. Main Menu Operations

4.1 Main Menu Overview

When you start the system, you will see:

```
=== Main Menu ===
1. Find Customer
2. Sign Up Customer
3. Switch Customer
4. Help
0. Exit
```

```
== Acme Teller System ==
=== Main Menu ===
1. Find Customer
2. Sign Up Customer
3. Switch Customer
4. Help
0. Exit


Select option:
```

4.2 Option Descriptions

Option 1: Find Customer

Purpose: Locate an existing customer to access their accounts and perform transactions.

When to Use: - Customer presents themselves for banking services - Need to access existing customer accounts - Perform transactions for registered customers

Process: 1. Select option 1 2. Enter the Customer ID when prompted 3. System validates customer existence 4. If found: Customer Portal opens 5. If not found: Options to retry or return to Main Menu

Purpose: Register a new customer in the banking system.

When to Use: - New customer wants to open an account - Customer has never banked with Acme before - All required identification documents are available

Process: 1. Select option 2 2. Follow the guided registration process 3. Provide all required customer information 4. System generates unique Customer ID 5. Option to immediately open an account

Option 3: Switch Customer

Purpose: Change from current customer session to another customer without restarting the application.

When to Use: - Serving multiple customers in sequence - Need to switch between customer sessions - Previous customer session complete

Process: 1. Select option 3 2. Current session ends 3. System returns to Main Menu 4. Use "Find Customer" to authenticate new customer

Option 4: Help

Purpose: Display context-sensitive help information.

Features: - Explains current menu options - Provides guidance on system navigation - Describes account rules and restrictions

Option 0: Exit

Purpose: Safely close the application.

What Happens: - All data is automatically saved to database - System logs shutdown event - Application closes gracefully

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5. Customer Management

5.1 Finding a Customer

Step-by-Step Process

1. From Main Menu, select option 1
2. System displays: `Enter CustomerID:`
3. Enter the Customer ID (format: CUST000001)
4. Press Enter

Customer ID Format

- **Format:** CUST followed by 6 digits

- **Examples:**
  - CUST000001
  - CUST000042
  - CUST000123
- **Case-Sensitive:** Must be entered exactly as shown
- **Auto-Generated:** System creates these IDs automatically

Successful Authentication

When customer is found:

```
Customer Found

=== Customer Portal ===
Customer: [Name]
Customer ID: [ID]
```

```
=== Find Customer ===
Enter CustomerID: CUST000001
Customer Found

-----------------
Customer ID: CUST000001
-----------------
Name: shashank
-----------------
National insurance number: GB123456C
-----------------
Photo Id: 123456789
-----------------
Address: 2131412
-----------------
Customer has been with us since: 2026-01-24 17:40:06
```

You are now in the Customer Portal with access to all customer accounts.

Customer Not Found

If customer doesn't exist:

```
Customer Not Found

1. Try Again
0. Back to Main Menu
```

```
=== Find Customer ===
Enter CustomerID: CUST000002
Customer Not Found

1. Try Again
0. Back to Main Menu
```

Common Reasons: - Incorrect Customer ID entered - Typo in Customer ID - Customer not yet registered in system

5.2 Signing Up a New Customer

Required Information

Before starting, ensure customer has provided:

1. **Full Legal Name**
   - Minimum 2 characters
   - Maximum 60 characters
   - Letters, spaces, hyphens, and apostrophes only
   - No numbers or special characters
2. **National Insurance Number**
   - Format: 2 letters, 6 numbers, 1 letter
   - Example: AB123456C
   - Must be unique (not already registered)
3. **Photo ID** (Choose one):
   - **Passport:** 9-digit number
   - **Driving License:** 16 alphanumeric characters
4. **Address Verification** (Choose one):
   - **Utility Bill:** Recent gas, electricity, or water bill
   - **Council Tax Letter:** Current tax year statement

Registration Process

Step 1: Initiate Sign Up

```
=== Sign Up Customer ===
1. Continue with Sign Up
2. Help
0. Back to Main Menu
```

```
=== Sign Up Customer ===
To create a new customer account, please provide the following information.
1. Continue with Sign Up
2. Help
0. Back to Main Menu


Select an option:
```

Select option 1 to continue.

Step 2: Enter Full Name

```
Full Name: [Enter customer's full legal name]
```

```
Select an option: 1
Creating new customer...
=== Create New Customer===
Please enter the following information:


Full Name:  John Doe
```

Validation: - Cannot be empty - Must be 2-60 characters - Only letters, spaces, hyphens, apostrophes allowed

Examples: - ✓ John Smith - ✓ Mary O'Brien - ✓ Sarah-Jane Williams - ✗ John123 (contains numbers) - ✗ J (too short)

Step 3: Enter National Insurance Number

```
National ID Number: [Enter NI number]
```

Format: AB123456C (2 letters, 6 digits, 1 letter)

Validation: - Must match format exactly - Must be unique (not already in database) - Automatically converted to uppercase

Step 4: Select Photo ID Type

```
--- Photo Identification ---
1. Passport
2. Driving License
3. Help
0. Cancel Operation
```

Option 1: Passport - Enter 9-digit passport number - Example: 123456789 - Numbers only

Option 2: Driving License - Enter 16-character license number - Example: MORGA7531162M9IJ - Alphanumeric characters

Step 5: Select Address Verification Type

```
--- Address Information ---
1. Utility Bill (gas, electricity, water)
2. Council Tax Letter
3. Help
0. Cancel Operation
```

Step 6: Enter Reference Number

```
[Document Type] Reference Number: [Enter reference]
```

Validation: - Minimum 3 characters - Maximum 30 characters - Cannot be empty

Step 7: Confirm Details

System displays all entered information:

```
=== Confirm Customer Details ===
Name: John Smith
National ID: AB123456C
Photo ID Type: Passport
Photo ID: 123456789
Address Document Type: Utility Bill
Address Reference Number: UB12345

1. Confirm and Create Customer
2. Edit Details
3. Help
0. Cancel Operation
```


Options: - **1:** Create customer with provided details - **2:** Start over and re-enter information - **0:** Cancel and return to Main Menu

Step 8: Customer Created

Upon successful creation:

```
Customer created successfully!
Customer details have been saved to the database.

Customer added with ID: CUST000042
```

Step 9: Open Account Prompt

```
Would you like to open an account for this customer?
1. Yes, open an account now
2. No, return to customer portal
3. Help
0. Cancel and exit
```

Recommendation: Select option 1 to immediately open an account for the new customer.

5.3 Switching Customers

When to Use

- Finished serving current customer
- Need to serve a different customer
- Multiple customers waiting in queue

Process

1. Select option 3 from Main Menu

2. System displays:

   ```
   === Switch Customer ===
   This option allows you to switch to another customer session.

   1. Find Customer to Switch To
   2. Help
   0. Back to Main Menu
   ```

3. Select option 1

4. Enter new Customer ID

5. Access new customer's accounts

Important Notes

- Current customer session ends immediately
- No data is lost when switching
- Previous customer can be accessed again by finding them
- Useful for managing multiple customer queues

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6. Account Management

6.1 Customer Portal

After authenticating a customer, the Customer Portal displays:

```
=== Customer Portal ===
Customer: [Name]
Customer ID: [ID]

1. View Accounts
2. Open Account
3. Switch Customer
4. Help
0. Back to Main Menu
```

```
----------------
Customer ID: CUST000002
----------------
Name: John Doe
----------------
National insurance number: GB123456A
----------------
Photo Id: 123456789
----------------
Address: 1234455
----------------
Customer has been with us since: 2026-01-24 17:49:02

1. View Accounts
2. Open Account
3. Switch Customer
4. Help
0. Back to Main Menu
```

6.2 Viewing Customer Accounts

Purpose

Display all accounts belonging to the current customer.

Process

1. Select option 1 from Customer Portal
2. System displays all accounts in table format

Information Displayed

```
No | Type              | Account Number | Sort Code | Balance
--------------------------------------------------------------------
1  | Personal          | 12345678       | 60-60-60  | £1,250.50
2  | ISA               | 87654321       | 60-60-70  | £5,000.00
3  | Business (Ltd)    | 11223344       | 60-70-70  | £10,500.00
```

```
=== John Doe (CUST000002) Accounts ===
No | Type              | Account Number | Sort Code | Balance

--------------------------------------------------------------------
1   | Personal          | 16187610      | 60-60-60  | £5.00
2   | ISA               | 10613224      | 60-60-70  | £10.00
3   | Business (Ltd)    | 10801069      | 60-70-70  | £-120.00
```

Columns: - **No:** Selection number for choosing account - **Type:** Account type (Personal, ISA, Business) - **Account Number:** Unique 8-digit identifier - **Sort Code:** Bank routing code (format: XX-XX-XX) - **Balance:** Current account balance
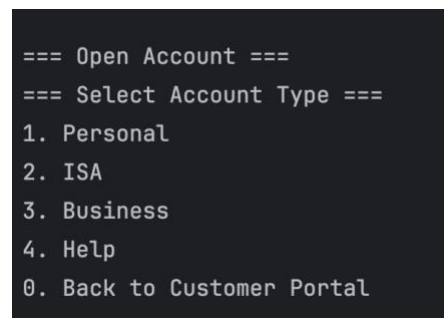
Next Steps

```
1. Select Account
2. Help
0. Back
```

Select option 1 and enter the account number to perform operations.

6.3 Creating an Account

Account Type Selection

```
=== Open Account ===
=== Select Account Type ===
1. Personal
2. ISA
3. Business
4. Help
0. Back to Customer Portal
```


6.4 Personal Account Creation

Sort Code: 60-60-60

Requirements

- Minimum opening balance: £1.00
- Customer can have unlimited Personal accounts
- Two forms of ID (verified during customer signup)

Features

- Overdraft facility: £500.00
- Direct debits supported
- Standing orders supported
- Standard transaction history

Creation Steps

Step 1: Select option 1 (Personal) from account type menu

Step 2: Set initial balance

```
--- Account Setup ---
1. Set Initial Balance
2. Help
0. Cancel

Select an option: 1
Enter initial deposit amount: £[amount]
```

Validation: - Must be at least £1.00 - Cannot be negative - Maximum 2 decimal places

Examples: - ✓ £1.00 (minimum) - ✓ £500.00 - ✓ £1,234.56 - ✗ £0.50 (below minimum) - ✗ -£100.00 (negative)

Step 3: Confirm creation

```
Creating Personal account with opening balance: £500.00
1. Confirm
0. Cancel
```

Step 4: Account created

```
Account created: 12345678 (Sort Code: 60-60-60)
Personal Account Created Successfully!
```

```
Account created: 77605954 (Sort Code: 60-60-60)
Personal Account Created Successfully!
```

What Happens: - Unique 8-digit account number generated automatically - Sort code 60-60-60 assigned - Opening balance recorded - Account saved to database - Transaction logged

6.5 ISA Account Creation

Sort Code: 60-60-70

Requirements

- **Limit:** ONE ISA per customer (strictly enforced)
- Minimum opening balance: £1.00
- Annual interest rate: 2.75% APR

Restrictions

- No direct debits allowed
- No standing orders allowed
- No overdraft facility
- One ISA per customer maximum

Creation Steps

Step 1: Select option 2 (ISA) from account type menu

Step 2: System checks ISA eligibility

```
Checking if customer already has an ISA account...
```

If customer already has ISA:

```
Error: Customer already has an ISA Account. Limit is one per customer.

Press Enter to return...
```

Account creation blocked. Customer cannot have multiple ISAs.

If eligible: Proceed to balance setup

Step 3: Set initial balance

```
Enter initial deposit amount: £[amount]
```

Step 4: Confirm and create

Step 5: Account created

```
Account created: 87654321 (Sort Code: 60-60-70)
ISA Account Created Successfully!
```

```
Account created: 10613224 (Sort Code: 60-60-70)
ISA Account Created Successfully!
```

Interest Calculation
- **Rate:** 2.75% APR
- **Calculation:** Interest = Current Balance × 0.0275
- **Application:** Manually applied through Account Operations menu
- **Frequency:** Can be applied once per day

6.6 Business Account Creation
Sort Code: 60-70-70
Requirements
- **Limit:** ONE Business account per customer
- Minimum opening balance: £1.00
- Annual fee: £120.00 (deducted automatically)
- Valid business type required

Eligible Business Types

- ✓ Sole Trader
- ✓ Ltd (Limited Company)
- ✓ Partnership

Excluded Business Types

- ✗ Enterprise
- ✗ PLC (Public Limited Company)
- ✗ Charity
- ✗ Public Sector

Features

- Overdraft facility: £1,000.00
- Cheque book issuance available
- Annual fee: £120.00 (applied at creation)

Creation Steps

Step 1: Select option 3 (Business) from account type menu

Step 2: System checks Business account eligibility

```
Checking if customer already has a Business account...
```

If customer already has Business account:

```
Error: Customer already has a Business Account. Limit is one per customer.

Press Enter to return...
```

Step 3: Select business type

```
Please select Business Type:
1. Sole Trader
2. Ltd
0. Cancel

Selection: [1 or 2]
```

```
=== Create BUSINESS Account ===

Please select Business Type:
1. Sole Trader
2. Ltd
0. Cancel
Selection: 2
```

Step 4: Set initial balance

```
Enter initial deposit amount: £[amount]
```

Important: The £120.00 annual fee will be deducted from this amount.

Example: - Opening balance entered: £500.00 - Annual fee deducted: £120.00 - **Actual starting balance: £380.00**

Step 5: Fee application

```
Annual fee of £120.00 applied.
```

If insufficient funds:

```
Warning: Opening balance insufficient for annual fee.
```

Account will have negative balance after fee deduction.

Step 6: Confirm and create

Step 7: Account created

```
Account created: 11223344 (Sort Code: 60-70-70)
Business (Ltd) Account Created Successfully!
```

```
Account created: 10801069 (Sort Code: 60-70-70)
Business (Ltd) Account Created Successfully!
```

---

7. Transaction Operations

7.1 Account Operations Menu

After selecting an account from the account list, you access the Account Operations menu.

Personal Account Menu

```
=== [Customer Name] ([Customer ID]) Accounts ===
Account Number: 12345678
Type: Personal
Sort Code: 60-60-60
Balance: £1,250.50

1. Deposit
2. Withdraw
3. View Transactions
4. Set Up Direct Debit
5. Set Up Standing Order
```

6. View Scheduled Payments
7. Help
0. Back to Accounts List

```
=== John Doe (CUST000002) Accounts ===
Account #4 (Personal) | Account Number: 16187610 | Sort Code: 60-60-60 | Balance: £5.00
1. Deposit
2. Withdraw
3. View Transactions
4. Set Up Direct Debit
5. Set Up Standing Order
6. View Scheduled Payments
7. Help
0. Back to Accounts List
```

ISA Account Menu

1. Deposit
2. Withdraw
3. View Transactions
4. Apply Annual Interest
5. Help
0. Back to Accounts List

```
=== John Doe (CUST000002) Accounts ===
Account #5 (ISA) | Account Number: 10613224 | Sort Code: 60-60-70 | Balance: £10.00
1. Deposit
2. Withdraw
3. View Transactions
4. Apply Annual Interest
5. Help
0. Back to Accounts List
```

Business Account Menu

1. Deposit
2. Withdraw
3. View Transactions
4. Issue Cheque Book
5. Help
0. Back to Accounts List

```
=== John Doe (CUST000002) Accounts ===
Account #6 (Business (Ltd)) | Account Number: 10801069 | Sort Code: 60-70-70 | Balance: £-120.00
1. Deposit
2. Withdraw
3. View Transactions
4. Issue Cheque Book
5. Help
0. Back to Accounts List
```

7.2 Making a Deposit

Purpose

Add funds to the selected account.

Process

Step 1: Select option 1 (Deposit)

Step 2: Enter deposit amount

```
=== Deposit ===
Enter the amount you wish to deposit into the account
Enter deposit amount: £[amount]
```

Step 3: System validates amount - Must be greater than £0.00 - Maximum 2 decimal places - No negative values

Step 4: Deposit processed

```
Depositing: £500.00
Deposited: £500.00 | New Balance: £1,750.50
```

```
Enter deposit amount: £400
Depositing: £400.0
Deposited: £400.0 | New Balance: £280.0
```

What Happens

- Balance updated immediately
- Transaction recorded in database
- Transaction history updated
- New balance displayed
- Operation logged for audit

Examples

Valid Deposits: - £0.01 (minimum) - £500.00 - £1,234.56 - £10,000.00

Invalid Deposits: - £0.00 (must be positive) - -£100.00 (negative) - abc (not a number)

7.3 Making a Withdrawal

Purpose

Remove funds from the selected account.

Process

Step 1: Select option 2 (Withdraw)

Step 2: Enter withdrawal amount

```
=== Withdraw ===
Enter the amount you wish to withdraw from the account.
Enter withdrawal amount: £[amount]
```

Step 3: System validates withdrawal

Validation Checks: 1. Amount must be positive 2. Sufficient funds available (balance + overdraft) 3. Account type restrictions

Step 4: Withdrawal processed

```
Withdrawing: £200.00
Withdrawn: £200.00 | New Balance: £1,550.50
```

```
Enter withdrawal amount: £500
Withdrawing: £500.0
Withdrawn: £500.0 | New Balance: £-220.0
```

Overdraft Limits

Personal Account: - Overdraft limit: £500.00 - Available funds = Balance + £500.00

Example:

```
Current balance: £200.00
Overdraft limit: £500.00
Available funds: £700.00
Maximum withdrawal: £700.00
```

Business Account: - Overdraft limit: £1,000.00 - Available funds = Balance + £1,000.00

ISA Account: - No overdraft facility - Can only withdraw up to current balance

Withdrawal Scenarios

Scenario 1: Sufficient Funds

```
Balance: £1,000.00
Withdrawal: £500.00
New balance: £500.00
```

Scenario 2: Using Overdraft (Personal)

```
Balance: £200.00
Withdrawal: £600.00
Overdraft limit: £500.00
New balance: -£400.00 (within overdraft)
```

Scenario 3: Exceeding Overdraft

```
Balance: £200.00
Withdrawal: £800.00
Overdraft limit: £500.00
Available: £700.00
Message: "Error: Insufficient funds."
```

Scenario 4: ISA Withdrawal

```
Balance: £500.00
Withdrawal: £600.00
Overdraft: Not available
Message: "Error: Insufficient funds."
```

7.4 Viewing Transaction History

Purpose

Display all transactions for the selected account.

Process

Step 1: Select option 3 (View Transactions)

Step 2: System displays transaction history

```
=== View Transactions ===

Transaction History for Account: 12345678

ID  | Date/Time           | Type       | Amount   | Balance After | Descript
ion
--------------------------------------------------------------------------
------
1   | 2026-01-20 10:30:00 | Deposit    | £500.00  | £500.00       | Deposit t
o account
2   | 2026-01-21 14:15:00 | Withdrawal | £100.00  | £400.00       | Withdrawa
l from account
3   | 2026-01-22 09:45:00 | Deposit    | £250.00  | £650.00       | Deposit t
o account
4   | 2026-01-23 11:20:00 | Withdrawal | £50.00   | £600.00       | Withdrawa
l from account
```

```
=== View Transactions ===

=== Transaction History ===
- Jan 24, 2026 | Deposit - £500.00 - Balance: £1318.00 - Deposit to account
- Jan 24, 2026 | Withdrawal - £40.00 - Balance: £818.00 - Withdrawal from account
- Jan 24, 2026 | Deposit - £3.00 - Balance: £858.00 - Deposit to account
- Jan 24, 2026 | Deposit - £50.00 - Balance: £855.00 - Deposit to account
- Jan 24, 2026 | Deposit - £800.00 - Balance: £805.00 - Deposit to account
0. Back to Customer Portal
```

Information Displayed

- **Transaction ID:** Unique identifier for each transaction
- **Date/Time:** When transaction occurred (YYYY-MM-DD HH:MM:SS)
- **Type:** Deposit, Withdrawal, or Transfer
- **Amount:** Transaction amount
- **Balance After:** Account balance after transaction
- **Description:** Transaction details

Features

- Transactions displayed in chronological order (oldest first)
- Complete history since account creation
- Running balance shown for each transaction
- Useful for account reconciliation

Step 3: Return to menu

```
0. Back to Customer Portal

Select an option: 0
```

7.5 ISA Interest Application

Available For: ISA Accounts Only

Purpose

Calculate and apply 2.75% annual interest to ISA account.

Process

Step 1: Select option 4 (Apply Annual Interest)

Step 2: System calculates interest

```
=== Apply ISA Interest ===

Current Balance: £10,000.00
Interest Rate: 2.75% APR
```

```
Interest Amount: £275.00
New Balance: £10,275.00
```

Calculation:

```
Interest = Current Balance × 0.0275
Interest = £10,000.00 × 0.0275
Interest = £275.00
```

Step 3: Interest applied

```
Interest applied successfully!
Deposited: £275.00 | New Balance: £10,275.00
```

```
Annual Interest Rate of 2.75% applied.
Interest Calculated: £0.28
New Balance: £10.28
```

What Happens

- Interest calculated based on current balance
- Interest amount added to account
- Transaction recorded as "Deposit"
- Description: "ISA Annual Interest Applied"
- Operation logged

Important Notes

- Can be applied once per day
- Based on current balance at time of application
- Interest compounds if applied multiple times
- Manual application by teller (not automatic)

Examples

Example 1:

```
Balance: £5,000.00
Interest: £5,000.00 × 0.0275 = £137.50
New Balance: £5,137.50
```

Example 2:

```
Balance: £15,000.00
Interest: £15,000.00 × 0.0275 = £412.50
New Balance: £15,412.50
```

Example 3:

```
Balance: £100.00
Interest: £100.00 × 0.0275 = £2.75
New Balance: £102.75
```

7.6 Business Cheque Book Issuance

Available For: Business Accounts Only

Purpose

Issue cheque book to business account holder.

Process

Step 1: Select option 4 (Issue Cheque Book)

Step 2: System checks if already issued

```
Cheque book issued for account 11223344
```

```
Select an option: 4
Success: Cheque book issued.
```

If already issued:

```
Error: Cheque book already issued.
```

What Happens
- Cheque book status updated in database
- Prevents duplicate issuance
- Operation logged
- Teller provides physical cheque book to customer

Important Notes
- One cheque book per business account
- Cannot issue duplicate
- System tracks issuance status
- No fee for cheque book

---

9. Direct Debits and Standing Orders

9.1 Overview

Available For: Personal Accounts Only

Purpose: - Direct Debits: Set up recurring payments to recipients - **Standing Orders:** Schedule regular payments with specific frequency

9.2 Setting Up a Direct Debit

Process

Step 1: From Personal Account menu, select option 4 (Set Up Direct Debit)

Step 2: Enter recipient details

```
Enter Recipient Name: [Name of recipient]
```

Example: British Gas, Council Tax, Netflix

Step 3: Enter payment amount

```
Enter Amount: £[amount]
```

Example: £45.50

Step 4: Direct debit created

```
Direct Debit set up successfully!
Recipient: British Gas
Amount: £45.50
```

```
Select an option: 4
Enter Recipient Name: testing
Enter Amount: £40
Success: Direct Debit set up for testing (£40.0)
```

What Happens

- Direct debit saved to database
- Linked to account ID
- Creation timestamp recorded
- Can be viewed in Scheduled Payments

Important Notes

- Direct debits are stored but not automatically processed
- Teller must manually process payments when due
- Multiple direct debits can be set up per account
- No limit on number of direct debits

9.3 Setting Up a Standing Order

Process

Step 1: From Personal Account menu, select option 5 (Set Up Standing Order)

Step 2: Enter recipient details

```
Enter Recipient Name: [Name of recipient]
```

Example: Rent Payment, Savings Transfer

Step 3: Enter payment amount

```
Enter Amount: £[amount]
```

Example: £850.00

Step 4: Enter frequency

```
Enter Frequency (e.g. Monthly): [frequency]
```

Common Frequencies: - Weekly - Fortnightly - Monthly - Quarterly - Annually

Step 5: Standing order created

```
Standing Order set up successfully!
Recipient: Rent Payment
Amount: £850.00
Frequency: Monthly
```

```
Select an option: 5
Enter Recipient Name: shashank
Enter Amount: £5
Enter Frequency (e.g. Monthly): monthly
Success: Standing Order set up for shashank (£5.0 monthly)
```

What Happens

- Standing order saved to database
- Linked to account ID
- Frequency and amount recorded
- Creation timestamp saved
- Can be viewed in Scheduled Payments

9.4 Viewing Scheduled Payments

Purpose

Display all direct debits and standing orders for the account.

Process

Step 1: From Personal Account menu, select option 6 (View Scheduled Payments)

Step 2: System displays all scheduled payments

```
=== Scheduled Payments for Account 12345678 ===

--- Direct Debits ---
ID | Recipient        | Amount   | Created At
--------------------------------------------------------
```

```
1   | British Gas      | £45.50    | 2026-01-15 10:30:00
2   | Council Tax      | £120.00   | 2026-01-16 14:20:00
3   | Netflix          | £15.99    | 2026-01-18 09:15:00

--- Standing Orders ---
ID  | Recipient        | Amount    | Frequency | Created At
----------------------------------------------------------------
1   | Rent Payment     | £850.00   | Monthly   | 2026-01-10 11:00:00
2   | Savings Transfer | £200.00   | Weekly    | 2026-01-12 15:30:00
```

```
Select an option: 6

=== Scheduled Payments ===
--- Direct Debits ---
- Recipient: testing | Amount: £40.0

--- Standing Orders ---
- Recipient: shashank | Amount: £5.0 | Freq: monthly
```

Information Displayed

Direct Debits: - ID number - Recipient name - Payment amount - Creation date/time

Standing Orders: - ID number - Recipient name - Payment amount - Payment frequency - Creation date/time

---

8. Account Types and Rules

8.1 Sort Code Reference

Account Type	Sort Code	Description
Personal	60-60-60	Standard personal account
ISA	60-60-70	Individual Savings Account
Business	60-70-70	Business/Commercial account

8.2 Account Comparison Table

Feature	Personal	ISA	Business
Sort Code	60-60-60	60-60-70	60-70-70
Min Opening Balance	£1.00	£1.00	£1.00
Accounts per Customer	Unlimited	1 Maximum	1 Maximum
Overdraft Limit	£500.00	None	£1,000.00
Annual Fee	None	None	£120.00

Feature	Personal	ISA	Business
Interest Rate	None	2.75% APR	None
Direct Debits	✓ Yes	✗ No	✓ Yes
Standing Orders	✓ Yes	✗ No	✓ Yes
Cheque Book	✗ No	✗ No	✓ Yes

8.3 Personal Account Rules

Opening Requirements: - Minimum balance: £1.00 - Two forms of ID (verified at customer signup)

Limits: - No maximum number of accounts - Overdraft: £500.00

Features: - Deposits: Unlimited - Withdrawals: Up to balance + overdraft - Direct debits: Supported - Standing orders: Supported - Transaction history: Full history maintained

Fees: - No monthly fees - No transaction fees - No overdraft fees (simplified)

8.4 ISA Account Rules

Opening Requirements: - Minimum balance: £1.00 - Customer must not already have an ISA

Restrictions: - **ONE ISA per customer** (strictly enforced) - No overdraft facility - No direct debits - No standing orders

Features: - Interest: 2.75% APR - Interest application: Manual, once per day - Deposits: Unlimited - Withdrawals: Up to current balance only - Transaction history: Full history maintained

Interest Calculation:

```
Annual Interest = Current Balance × 0.0275
```

Example: - Balance: £10,000.00 - Interest: £10,000.00 × 0.0275 = £275.00

8.5 Business Account Rules

Opening Requirements: - Minimum balance: £1.00 - Valid business type (Sole Trader or Ltd) - Customer must not already have a Business account

Eligible Business Types: - Sole Trader - Ltd (Limited Company) - Partnership

Excluded Business Types: - Enterprise - PLC (Public Limited Company) - Charity - Public Sector

Restrictions: - **ONE Business account per customer** - Annual fee: £120.00 (deducted at account creation)

Limits: - Overdraft: £1,000.00

Features: - Deposits: Unlimited - Withdrawals: Up to balance + overdraft - Cheque book: Available (one per account) - Transaction history: Full history maintained

Annual Fee: - Amount: £120.00 - Applied: At account creation - Deducted from opening balance

Example:

```
Opening deposit: £500.00
Annual fee: -£120.00
Starting balance: £380.00
```

8.6 Account Number Format

Format: - Length: 8 digits - Type: Numeric only - Example: 12345678

Generation: - Automatic and unique - System prevents duplicates - Generated by AccountNumberGenerator class - Cannot be manually entered

Validation: - Uniqueness checked against all existing accounts - Collision handling built-in - Sequential or random generation

---

10. Help System

10.1 Accessing Help

From Any Menu: - Look for the "Help" option (usually option 4 or 7) - Select the Help option number - Context-sensitive help is displayed - Information relevant to current menu shown

10.2 Help Contexts

Main Menu Help

```
--- Main Menu Help ---
1. Find Customer - Search for an existing customer by Customer ID
2. Sign Up Customer - Register a new customer in the system
3. Switch Customer - Change to another customer's session
4. Help - Display this help information
0. Exit - Close the Acme Teller System
```

```
=== Help ===
--- Main Menu Help ---
1. Find Customer - Search for an existing customer by Customer ID
2. Sign Up Customer - Register a new customer in the system
3. Switch Customer - Change to another customer's session
4. Help - Display this help information
0. Exit - Close the Acme Teller System
```

Customer Portal Help

```
--- Customer Portal Help ---
1. View Accounts - See all accounts associated with this customer
2. Open Account - Create a new account for this customer
3. Switch Customer - Change to another customer's session
4. Help - Display this help information
0. Back to Main Menu - Return to the main menu
```

Personal Account Help

```
--- Personal Account Help ---
Standard banking account for daily use.

Rules & Fees:
- Minimum Balance: £1.00 (Account cannot be empty).
- Overdraft: Up to £500.00 available.
- Fees: None.

Operations:
1. Deposit: Add funds.
2. Withdraw: Remove funds (subject to balance/overdraft).
3. View Transactions: See history.
4. Set Up Direct Debit: Schedule a payment to a recipient.
5. Set Up Standing Order: Schedule regular payments (e.g. Monthly).
6. View Scheduled Payments: List all active Direct Debits & Standing Orders.
```

ISA Account Help

```
--- ISA Account Help ---
Tax-free savings account with interest benefits.

Rules & Fees:
- Limit: Only ONE ISA allowed per customer.
- Interest: 2.75% Annual Interest Rate.
- Overdraft: Not available for ISAs.

Operations:
4. Apply Annual Interest: Calculates 2.75% of current balance
   and adds it to the account (Can only be done once per day).
```

```
--- Business Account Help ---
Account for registered Sole Traders, Ltd Companies, and Partnerships.

Rules & Fees:
- Annual Fee: £120.00 (Deducted automatically).
- Overdraft: Up to £1000.00 available.
- Cheque Book: Available upon request.

Operations:
4. Issue Cheque Book: Registers a cheque book for this account.
   (System prevents duplicate issuance).
```

10.3 Using Help Effectively

Best Practices: - Access help when unsure about options - Read account-specific rules before creating accounts - Review help for validation requirements - Use help to understand error messages

Navigation: - Help displays and waits for Enter key - Press Enter to return to previous menu - Help does not change system state - Can access help multiple times

---

11. Troubleshooting

11.1 Common Issues and Solutions

Issue 1: Customer Not Found

Symptoms:

```
Customer Not Found

1. Try Again
0. Back to Main Menu
```

Possible Causes: - Incorrect Customer ID entered - Typo in Customer ID - Customer not registered in system - Extra spaces in input

Solutions: 1. Verify Customer ID format (CUST000001) 2. Check for typos or extra spaces 3. Confirm customer exists in database 4. Try searching again with correct ID 5. If new customer, use "Sign Up Customer" option

Prevention: - Double-check Customer ID before entering - Copy Customer ID from customer documentation - Keep customer records organized

---

Issue 2: Invalid Input Error

Symptoms:

```
Invalid input. Please enter a number.
```

Possible Causes: - Entered letters instead of numbers - Entered special characters - Pressed Enter without input - Input format incorrect

Solutions: 1. Enter only numeric values in number fields 2. Do not enter letters in menu selections 3. Press Enter after each input 4. Follow format requirements shown in prompts

Examples: - ✓ Enter: 1 for menu option - ✓ Enter: 500.00 for amount - ✗ Enter: one for menu option - ✗ Enter: £500 for amount (no currency symbol)

Issue 3: Cannot Create ISA Account

Symptoms:

```
Error: Customer already has an ISA Account. Limit is one per customer.
```

Cause: - Customer already has an ISA account - System enforces one ISA per customer rule

Solutions: 1. Use "View Accounts" to verify existing ISA 2. Explain ISA limit to customer 3. Suggest Personal Account as alternative 4. Consider deposits to existing ISA

Verification:

```
1. View Accounts
2. Check for ISA in account list
3. Confirm account type
```

Issue 4: Withdrawal Declined - Insufficient Funds

Symptoms:

```
Error: Insufficient funds.
```

Possible Causes: - Withdrawal amount exceeds available balance - Withdrawal exceeds balance + overdraft - ISA account has no overdraft - Negative balance not permitted

Solutions:

For Personal/Business Accounts: 1. Check current balance 2. Calculate available funds (balance + overdraft) 3. Reduce withdrawal amount 4. Consider depositing funds first

Example:

```
Balance: £200.00
Overdraft: £500.00
Available: £700.00
Withdrawal request: £800.00
Solution: Reduce to £700.00 or less
```

For ISA Accounts: 1. Check current balance 2. ISA has no overdraft 3. Can only withdraw up to current balance 4. Reduce withdrawal amount

Example:

```
Balance: £500.00
Overdraft: None
Available: £500.00
Withdrawal request: £600.00
Solution: Reduce to £500.00 or less
```

Issue 5: Cannot Create Business Account

Symptoms:

```
Error: Business type '[type]' is not eligible.
```

Cause: - Business type is excluded - Invalid business category

Excluded Types: - Enterprise - PLC - Charity - Public Sector

Solutions: 1. Verify business type with customer 2. Check if business qualifies as Sole Trader or Ltd 3. Explain eligible business types 4. Suggest Personal Account if business not eligible

Eligible Types: - Sole Trader ✓ - Ltd ✓ - Partnership ✓

Issue 6: Duplicate Account Restriction

Symptoms:

```
Error: Customer already has a Business Account. Limit is one per customer.
```

Cause: - Customer already has maximum allowed accounts - ISA: 1 per customer - Business: 1 per customer

Solutions: 1. Use "View Accounts" to verify existing accounts 2. Explain account limits to customer 3. Suggest using existing account 4. Consider Personal Account (unlimited)

Account Limits: - Personal: Unlimited ✓ - ISA: 1 Maximum - Business: 1 Maximum

---

Issue 7: National Insurance Number Already Registered

Symptoms:

`Error: This National ID is already registered.`

Cause: - Customer already exists in system - Duplicate registration attempt - NI number belongs to another customer

Solutions: 1. Search for customer using "Find Customer" 2. Verify customer doesn't already have account 3. Check for data entry error in NI number 4. Confirm customer identity 5. Use existing customer record if found

---

Issue 8: Invalid National Insurance Format

Symptoms:

`Error: Invalid National ID format. Expected format: 2 letters, 6 numbers, 1 letter (e.g, AB123456C)`

Cause: - Incorrect NI number format - Missing characters - Wrong character types

Solution: Enter NI number in correct format: - 2 letters - 6 numbers - 1 letter - No spaces or hyphens

Examples: - ✓ AB123456C - ✓ XY987654Z - ✗ AB 12 34 56 C (spaces) - ✗ AB-123456-C (hyphens) - ✗ 123456ABC (wrong order)

11.2 Error Messages Reference

Error Message	Meaning	Action Required
"Customer Not Found"	Customer ID doesn't exist	Verify ID or create new customer
"Invalid input"	Wrong data type entered	Enter correct format (number/text)
"Insufficient funds"	Balance too low for withdrawal	Reduce amount or deposit funds
"Customer already has an ISA Account"	ISA limit reached	Cannot create second ISA
"Customer already has a Business Account"	Business account limit reached	Cannot create second Business account

Error Message	Meaning	Action Required
"Business type not eligible"	Excluded business category	Choose Sole Trader or Ltd
"Minimum balance not met"	Opening balance < £1.00	Increase opening balance to £1.00+
"Deposit amount must be positive"	Zero or negative deposit	Enter positive amount
"Withdrawal amount must be positive"	Zero or negative withdrawal	Enter positive amount
"This National ID is already registered"	Duplicate NI number	Find existing customer or verify NI
"Invalid National ID format"	NI number format incorrect	Use format: AB123456C
"Cheque book already issued"	Duplicate cheque book request	Cheque book already provided
"Name cannot be empty"	No name entered	Enter customer's full name
"Invalid Passport number"	Passport format incorrect	Enter 9-digit number
"Invalid Driving License number"	License format incorrect	Enter 16 alphanumeric characters

11.3 System Performance Issues

Slow Response

Symptoms: - Menus load slowly - Transactions take long time to process - Database queries delayed

Possible Causes: - Database connection issues - Insufficient system resources - Large transaction history - Multiple users accessing database

Solutions: 1. Check database connection 2. Verify sufficient RAM available 3. Close unnecessary applications 4. Restart application if needed 5. Contact technical support if persists

12. Appendix

12.1 Glossary of Terms

Account Number - Unique 8-digit identifier for each account - Automatically generated by system - Example: 12345678

Account Type - Category of account (Personal, ISA, Business) - Determines features and restrictions - Assigned at account creation

APR (Annual Percentage Rate) - Interest rate applied annually - ISA accounts: 2.75% APR - Calculated on current balance

CLI (Command Line Interface) - Text-based user interface - Keyboard input only - No graphical elements

Customer ID - Unique identifier for each customer - Format: CUST followed by 6 digits - Example: CUST000001 - Auto-generated at customer creation

Direct Debit - Recurring payment authorization - Recipient can collect payments - Amount may vary - Personal accounts only

ISA (Individual Savings Account) - Tax-advantaged savings account - 2.75% annual interest - One per customer maximum - No overdraft facility

National Insurance Number - UK government-issued identifier - Format: 2 letters, 6 digits, 1 letter - Example: AB123456C - Must be unique in system

Overdraft - Authorized negative balance - Personal: £500.00 limit - Business: £1,000.00 limit - ISA: Not available

Sort Code - 6-digit bank branch identifier - Format: XX-XX-XX - Personal: 60-60-60 - ISA: 60-60-70 - Business: 60-70-70

Standing Order - Regular scheduled payment - Fixed amount - Specified frequency (weekly, monthly, etc.) - Personal accounts only

Transaction - Any deposit, withdrawal, or transfer - Recorded in transaction history - Includes timestamp and balance

12.2 Quick Reference Guide

Account Creation Minimums

Account Type	Minimum Opening Balance
Personal	£1.00
ISA	£1.00
Business	£1.00 (£120 fee deducted)

Account Type	Overdraft Limit
Personal	£500.00
ISA	None (£0.00)
Business	£1,000.00

Sort Codes

Account Type	Sort Code
Personal	60-60-60
ISA	60-60-70
Business	60-70-70

Account Limits per Customer

Account Type	Maximum Accounts
Personal	Unlimited
ISA	1
Business	1

ID Format Requirements

ID Type	Format	Example
Customer ID	CUST + 6 digits	CUST000001
Account Number	8 digits	12345678
National Insurance	2 letters + 6 digits + 1 letter	AB123456C
Passport	9 digits	123456789
Driving License	16 alphanumeric	MORGA7531162M9IJ

12.3 System Logs and Audit Trail

Log Location

System maintains logs in the application directory: - File: `system.log` or similar - Format: Text file - Timestamped entries

Logged Events

Customer Operations: - Customer authentication attempts (success/failure) - Customer creation - Customer ID searches

Account Operations: - Account creation (all types) - Account selection - Account type validation

Transactions: - All deposits (amount, account, timestamp) - All withdrawals (amount, account, timestamp) - ISA interest applications - Direct debit setup - Standing order setup - Cheque book issuance

System Events: - Program start - Program shutdown - Menu selections - Help access - Errors and warnings

Log Format Example

```
2026-01-23 10:30:15 | Program started
2026-01-23 10:30:20 | 1. Find Customer
2026-01-23 10:30:25 | CustomerID inserted: CUST000001
2026-01-23 10:30:26 | Customer Found
2026-01-23 10:31:00 | 1. View Accounts
2026-01-23 10:31:30 | User Selected:1. Deposit
2026-01-23 10:31:45 | Depositing: £500.00
2026-01-23 10:31:46 | Deposited: £500.00 | New Balance: £1500.00
```

12.4 Security Best Practices

Customer Authentication

Best Practices: - Always verify Customer ID before operations - Confirm customer identity using provided ID documents - Log all authentication attempts - Never share customer information - Verify customer is present during transactions

Transaction Security

Best Practices: - Verify transaction amounts before confirmation - Double-check account numbers for transfers - Review transaction history for discrepancies - Confirm large transactions with customer - Report suspicious activity to supervisor

Data Protection

Best Practices: - Never share customer information - Log out between customer sessions - Use "Switch Customer" to change sessions - Exit system properly to save data - Do not leave terminal unattended - Secure physical workspace

Session Management

Best Practices: - One customer session at a time - Use "Switch Customer" to change customers - Always exit properly (option 0) - Do not force-close application - Verify correct customer before transactions

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Document End

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