

Use Case Specification Document

Smart Transaction Sorter and Analytics System

Rida Eman & Mahhin Shahzad

Contents

1 User Access & Authentication	2
1.1 Use Case 1.1: User Registration	2
1.2 Use Case 1.2: Secure Login	3
2 Core Configuration	4
2.1 Use Case 2.1: Manage Spending Categories	4
3 Data Processing (The AI Core)	5
3.1 Use Case 3.1: Upload Transaction CSV	5
3.2 Use Case 3.2: Process Transactions (AI Sorting)	6
4 Analytics & Maintenance	7
4.1 Use Case 4.1: View Analytics Dashboard	7
4.2 Use Case 4.2: Delete Transaction Data	8
5 Administration	9
5.1 Use Case 5.1: Admin User Management	9
6 Use Case Diagram	10

1 User Access & Authentication

1.1 Use Case 1.1: User Registration

Use Case ID:	1.1	Date Created:	16-OCT-2025
Use Case Name:	User Registration	Date Last Updated:	24-NOV-2025
Created By:	Rida Eman & Mahhin Shahzad	Last Updated By:	Rida Eman & Mahhin Shahzad

Actor	User
Description	A new user creates a secure account to access the system features.
Preconditions	User has a valid email address and internet access.
Postconditions	A new user account is created in the database, and the user is redirected to the login page.
Priority	High
Frequency of Use	Once per user
Normal Course of Events	<ol style="list-style-type: none">1. User navigates to the application landing page.2. User selects “Register”.3. System displays the registration form.4. User enters Name, Email, and Password (twice).5. System validates the input format.6. System hashes the password and saves the new user record.7. System displays a success message.
Alternative Courses	5a. Weak Password: <ol style="list-style-type: none">i. System detects password does not meet security complexity requirements.ii. System prompts user to choose a stronger password. 6a. Email Already Exists: <ol style="list-style-type: none">i. Database check confirms the email is already registered.ii. System displays error: “Account already exists”.iii. System prompts user for Login.
Exceptions	Database connection failure prevents account creation.
Includes	None
Special Requirements	Passwords must be hashed using a strong algorithm (e.g., PBKDF2 or Argon2) before storage (NFR-S.1).
Assumptions	None
Notes and Issues	None

1.2 Use Case 1.2: Secure Login

Use Case ID:	1.2	Date Created:	16-OCT-2025
Use Case Name:	Secure Login	Date Last Updated:	24-NOV-2025
Created By:	Rida Eman & Mahhin Shahzad	Last Updated By:	Rida Eman & Mahhin Shahzad

Actor	User, System Administrator
Description	Users or Admins log in to access their respective dashboards.
Preconditions	User/Admin must have a registered account.
Postconditions	Actor is authenticated, a session is established, and they are redirected to their authorized dashboard.
Priority	High
Frequency of Use	Every Session
Normal Course of Events	<ol style="list-style-type: none"> 1. Actor navigates to the Login page. 2. Actor enters Email and Password. 3. System verifies credentials against the database. 4. System generates a secure session token. 5. System identifies the role (User or Admin) and redirects to the appropriate Dashboard.
Alternative Courses	<p>3a. Invalid Credentials:</p> <ol style="list-style-type: none"> i. System detects email/password do not match. ii. System displays “Invalid Login” error. iii. System allows retry (limit 5 attempts).
Exceptions	Account is locked due to too many failed attempts.
Includes	None
Special Requirements	Communication must occur over HTTPS (NFR-S.2).
Assumptions	None
Notes and Issues	None

2 Core Configuration

2.1 Use Case 2.1: Manage Spending Categories

Use Case ID:	2.1	Date Created:	30-OCT-2025
Use Case Name:	Manage Spending Categories	Date Last Updated:	24-NOV-2025
Created By:	Rida Eman & Mahhin Shahzad	Last Updated By:	Rida Eman & Mahhin Shahzad

Actor	User
Description	User defines the custom labels (e.g., “Gym”, “Groceries”) that the AI will use for sorting.
Preconditions	User is logged in.
Postconditions	The list of categories is updated in the database and ready for the AI engine.
Priority	High
Frequency of Use	Low (Setup phase)
Normal Course of Events	<ol style="list-style-type: none">1. User navigates to “Manage Categories”.2. System displays current list of categories.3. User clicks “Add New Category”.4. User types a label name.5. System saves the category.6. System confirms update.
Alternative Courses	2a. Delete Category: <ol style="list-style-type: none">i. User selects “Delete” on an existing category.ii. System removes the category from the list. 5a. Duplicate Category: <ol style="list-style-type: none">i. User tries to add a category that already exists.ii. System prevents save and shows a duplicate error.
Exceptions	None
Includes	None
Special Requirements	Categories must be unique per user.
Assumptions	User understands their own spending habits.
Notes and Issues	None

3 Data Processing (The AI Core)

3.1 Use Case 3.1: Upload Transaction CSV

Use Case ID:	3.1	Date Created:	30-OCT-2025
Use Case Name:	Upload Transaction CSV	Date Last Updated:	24-NOV-2025
Created By:	Rida Eman & Mahhin Shahzad	Last Updated By:	Rida Eman & Mahhin Shahzad

Actor	User
Description	User uploads a raw CSV file from their bank/wallet for processing.
Preconditions	User is logged in and has a valid CSV file.
Postconditions	File is uploaded, validated, and temporarily stored for AI processing.
Priority	High
Frequency of Use	Frequent (Monthly/Weekly)
Normal Course of Events	<ol style="list-style-type: none">1. User navigates to “Upload” section.2. User selects a file from local device.3. System scans file type.4. System validates required columns (Date, Description, Amount).5. System confirms successful upload.
Alternative Courses	<p>3a. Invalid File Format:</p> <ul style="list-style-type: none">i. System detects file extension is not .csv.ii. System rejects the file. <p>4a. Missing Columns:</p> <ul style="list-style-type: none">i. System validation fails (missing “Amount” column).ii. System rejects file.iii. System tells User exactly which column is missing.
Exceptions	File size exceeds server limit (e.g., >10MB).
Includes	None
Special Requirements	Validation must happen immediately before any processing.
Assumptions	User banks provide CSV export options.
Notes and Issues	None

3.2 Use Case 3.2: Process Transactions (AI Sorting)

Use Case ID:	3.2	Date Created:	30-OCT-2025
Use Case Name:	Process Transactions (AI)	Date Last Updated:	24-NOV-2025
Created By:	Rida Eman & Mahhin Shahzad	Last Updated By:	Rida Eman & Mahhin Shahzad

Actor	System (Triggered by User)
Description	The AI engine analyzes transaction descriptions and assigns them to User's custom categories.
Preconditions	Valid CSV uploaded (UC-3.1) and Categories exist (UC-2.1).
Postconditions	All transactions are categorized and saved to the database.
Priority	High
Frequency of Use	Frequent
Normal Course of Events	<ol style="list-style-type: none"> 1. User initiates “Process”. 2. System retrieves User’s Category List. 3. System feeds text descriptions into the AI Classification Engine. 4. AI determines best category match for each row. 5. System saves classified data to database. 6. System notifies User of completion.
Alternative Courses	<p>4a. Low Confidence:</p> <ol style="list-style-type: none"> i. AI model confidence score is below threshold. ii. System assigns a default “Uncategorized” label. iii. System flags transaction for manual review.
Exceptions	AI Service timeout.
Includes	None
Special Requirements	Processing 500 records must take < 60 seconds (NFR-P.1).
Assumptions	Pre-trained model is available.
Notes and Issues	None

4 Analytics & Maintenance

4.1 Use Case 4.1: View Analytics Dashboard

Use Case ID:	4.1	Date Created:	30-OCT-2025
Use Case Name:	View Analytics Dashboard	Date Last Updated:	24-NOV-2025
Created By:	Rida Eman & Mahhin Shahzad	Last Updated By:	Rida Eman & Mahhin Shahzad

Actor	User
Description	User views interactive charts summarizing their financial data.
Preconditions	Data has been processed (UC-3.2).
Postconditions	User gains insight into spending habits.
Priority	High
Frequency of Use	High
Normal Course of Events	<ol style="list-style-type: none">1. User clicks “Dashboard”.2. System aggregates total spending per category.3. System renders charts (Pie/Bar) using plotting libraries.4. User filters view by Date Range (optional).
Alternative Courses	2a. No Data: <ol style="list-style-type: none">i. Database query returns no records.ii. System displays “Upload data to see insights” prompt.
Exceptions	None
Includes	None
Special Requirements	Dashboard must be mobile responsive.
Assumptions	None
Notes and Issues	None

4.2 Use Case 4.2: Delete Transaction Data

Use Case ID:	4.2	Date Created:	13-NOV-2025
Use Case Name:	Delete Transaction Data	Date Last Updated:	24-NOV-2025
Created By:	Rida Eman & Mahhin Shahzad	Last Updated By:	Rida Eman & Mahhin Shahzad

Actor	User
Description	User permanently removes uploaded data from the system.
Preconditions	User has existing data.
Postconditions	Data is permanently erased from database.
Priority	Medium
Frequency of Use	Low
Normal Course of Events	<ol style="list-style-type: none"> 1. User navigates to “Data Management”. 2. User selects a file batch or “Delete All”. 3. System displays “Are you sure?” confirmation warning. 4. User confirms. 5. System performs hard delete of records. 6. Dashboard updates to show empty state.
Alternative Courses	<p>4a. Cancel Delete:</p> <ol style="list-style-type: none"> i. User clicks “Cancel” at confirmation. ii. System retains data and cancels the operation.
Exceptions	None
Includes	None
Special Requirements	Data must be unrecoverable after deletion (Privacy Rule).
Assumptions	None
Notes and Issues	None

5 Administration

5.1 Use Case 5.1: Admin User Management

Use Case ID:	5.1	Date Created:	16-OCT-2025
Use Case Name:	Admin User Management	Date Last Updated:	24-NOV-2025
Created By:	Rida Eman & Mahhin Shahzad	Last Updated By:	Rida Eman & Mahhin Shahzad

Actor	System Administrator
Description	Admin manages user accounts and views system usage stats.
Preconditions	Admin is logged in and authorized.
Postconditions	User account status is updated.
Priority	Low
Frequency of Use	Low
Normal Course of Events	<ol style="list-style-type: none">1. Admin navigates to the Administrative Panel.2. Admin searches for a User by email.3. System displays User details.4. Admin selects “Edit” or “Delete”.5. System processes the administrative action.
Alternative Courses	3a. Audit View: <ol style="list-style-type: none">i. Admin selects “View Details”.ii. System displays read-only list of User’s categories for support purposes.
Exceptions	Admin cannot view User’s raw passwords (hashed).
Includes	None
Special Requirements	Admin actions must be logged.
Assumptions	Admin is a trusted internal actor.
Notes and Issues	None

6 Use Case Diagram

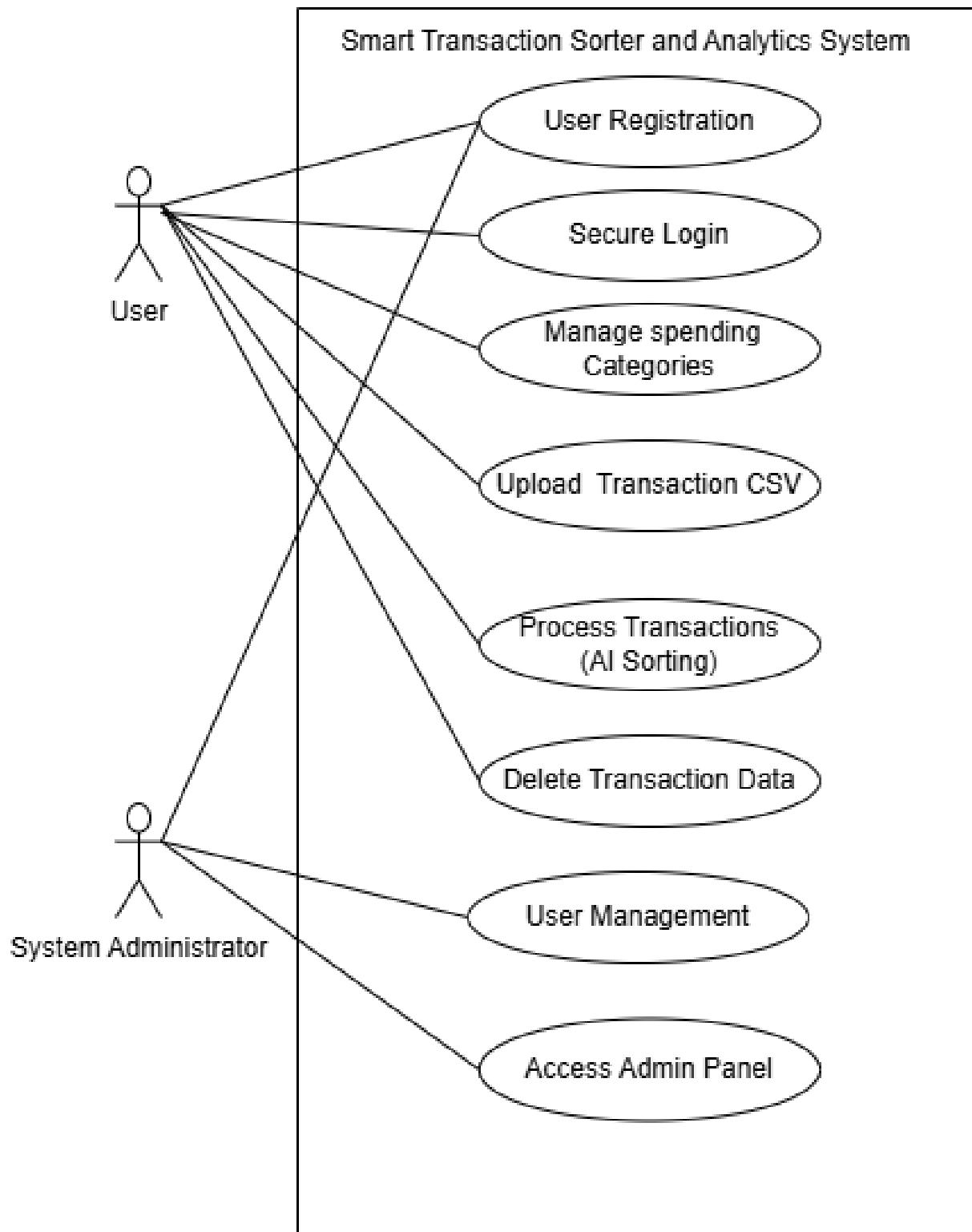


Figure 1: Use Case Diagram for Smart Transaction Sorter