

# Use Case Specification Document

## *Smart Transaction Sorter and Analytics System*

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# 1 User Access & Authentication

## 1.1 Use Case 1.1: User Registration

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

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

## 1.2 Use Case 1.2: Secure Login

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

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

## 2 Core Configuration

### 2.1 Use Case 2.1: Manage Spending Categories

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

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

### 3 Data Processing (The AI Core)

#### 3.1 Use Case 3.1: Upload Transaction CSV

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

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

### 3.2 Use Case 3.2: Process Transactions (AI Sorting)

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

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

## 4 Analytics & Maintenance

### 4.1 Use Case 4.1: View Analytics Dashboard

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

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

## 4.2 Use Case 4.2: Delete Transaction Data

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

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



## 5 Administration

### 5.1 Use Case 5.1: Admin User Management

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

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

## 6 Use Case Diagram

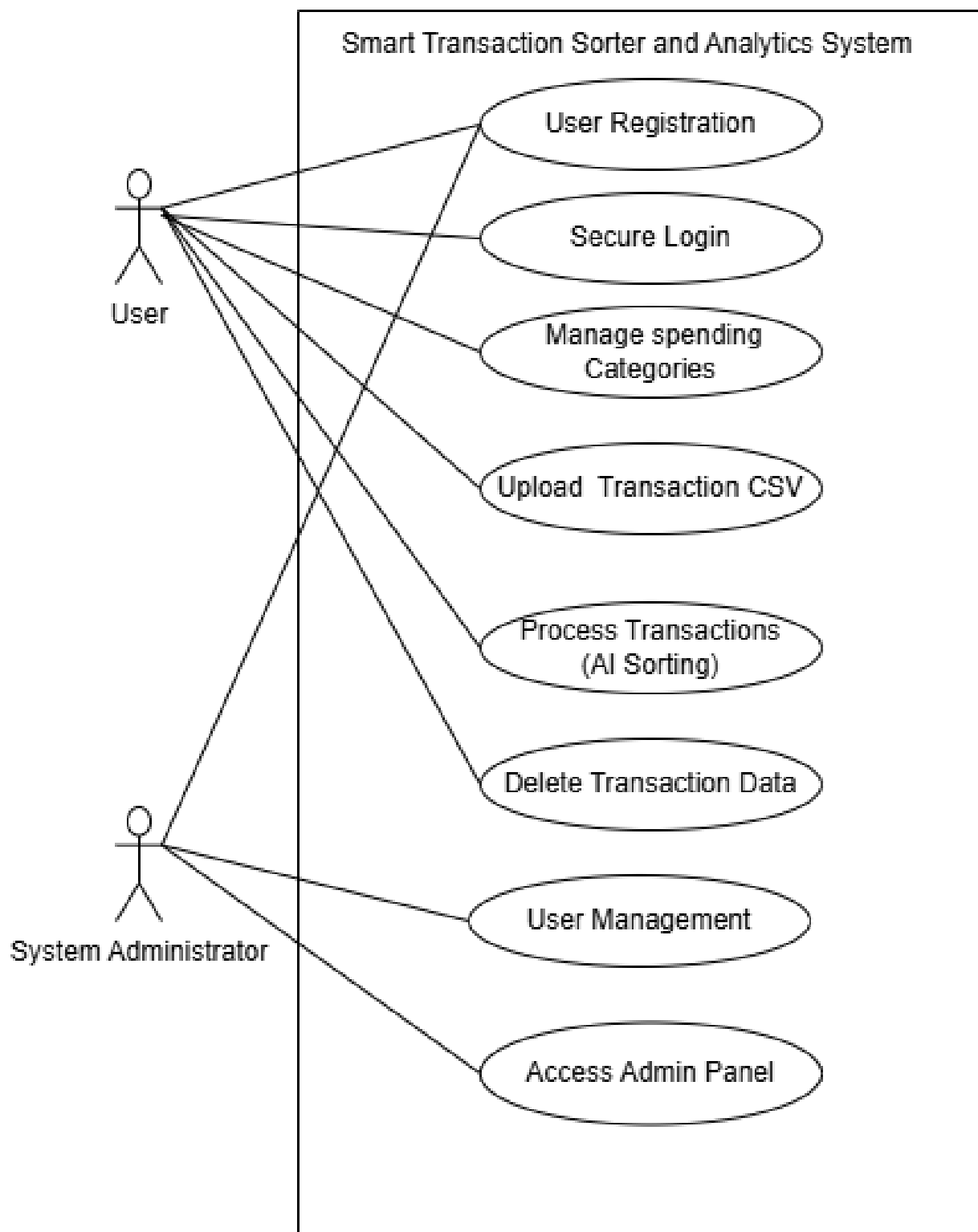


Figure 1: Use Case Diagram for Smart Transaction Sorter