# Farm IT - Detailed System Documentation

## 1. Introduction

Farm IT is a digital platform designed to bridge the gap between farmers seeking financial assistance and investors willing to provide funds. The platform securely manages loans, investments, and repayments while allowing administrators to configure financial settings.

## 2. User Roles & Features

### 2.1 Farmers

Farmers can:

* - Register/Login to the platform.
* - Add farm details.
* - Upload farm ownership documents.
* - Request loans with interest rates and repayment plans.
* - View and manage their loans.
* - Check loan schedules and repayment options.
* - Repay loans when due.

### 2.2 Investors

Investors can:

* - Register/Login to the platform.
* - Browse available farm projects.
* - Invest in loans requested by farmers.
* - Track their investments and earnings.
* - View repayment schedules.

### 2.3 Admin

Admins can:

* - Manage users (Farmers & Investors).
* - Approve or reject user verification.
* - Set and update loan limits and interest rates.
* - Track all transactions, loans, and repayments.
* - Manage farms and monitor investments.

## 3. System Flow - From Start to Exit

### 3.1 User Authentication

* - Users register via `POST /auth/register`.
* - Users log in via `POST /auth/login`.
* - Based on user type (Farmer, Investor, or Admin), they are redirected to respective dashboards.

### 3.2 Farmer Workflow

1. \*\*Farm Creation\*\* (`POST /farms/`) - Farmers submit farm details.

2. \*\*Document Upload\*\* (`POST /documents/upload`) - Farmers upload proof of ownership.

3. \*\*Loan Request\*\* (`POST /loans/`) - Farmers request loans for investment.

4. \*\*View My Loans\*\* (`GET /loans/my-loans`) - Farmers track their loan status.

5. \*\*Loan Repayment Schedule\*\* (`GET /loans/:id/schedule`) - Farmers view repayment timelines.

6. \*\*Repay Loan\*\* (`POST /loans/:id/repay`) - Farmers make repayments when due.

### 3.3 Investor Workflow

1. \*\*View Available Loans\*\* (`GET /loans/available`) - Investors explore farm projects needing funds.

2. \*\*Invest in a Loan\*\* (`POST /loans/:id/invest`) - Investors select a loan and invest.

3. \*\*Track My Investments\*\* (`GET /loans/my-investments`) - Investors monitor their invested projects.

4. \*\*View Repayment Schedules\*\* (`GET /loans/:id/schedule`) - Investors track when they will receive repayments.

5. \*\*Investment Tracking\*\* (`GET /investments/tracking`) - Investors analyze how their investments are performing.

### 3.4 Admin Workflow

1. \*\*Manage Users\*\* (`GET /admin/users`) - Admins can view all users.

2. \*\*Verify Users\*\* (`PUT /admin/users/:id/verify`) - Admins approve/reject user verification.

3. \*\*View All Loans\*\* (`GET /admin/loans`) - Admins monitor loan activity.

4. \*\*View All Farms\*\* (`GET /admin/farms`) - Admins oversee registered farms.

## 4. Backend Implementation Details

### 4.1 Authentication

- Uses JWT-based authentication for secure login and authorization.

- Middleware ensures only authenticated users access resources.

### 4.2 Transactions

- Transactions are recorded in the `Transaction` model.

- Each transaction contains details like `amount`, `from (investor)`, `to (farmer)`, and `type (investment/repayment)`.

### 4.3 Investment Management

- The `Investment` model tracks funds allocated by investors.

- The `Farm` model links investments to farm projects.

### 4.4 Error Handling & Logging

- Errors are logged for debugging.

- Proper validation is implemented for secure transactions.

## 5. Application Exit

- Users log out, and their session is cleared.

- System ensures data integrity before closing the app.

## 6. Conclusion

Farm IT provides a structured digital financial ecosystem for farmers and investors while giving admins control over key financial aspects. The backend securely manages transactions, user authentication, and role-based functionalities.