# 1) Login Feature

## Goal

Allow users to securely access the system using valid credentials.

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## Functional Requirements

### FR1 – User Credential Validation

The system must validate email/username and password.

### FR2 – Error Messages

System must show clear error messages such as:

- Invalid email/password

- Account not found

### FR3 – Successful Login

On success, create user session/token and redirect to Home/Dashboard.

### FR4 – Remember Me

If selected, system stores login session for extended time.

### FR5 – Forgot Password

Provide link to reset password through email/OTP.

### FR6 – Rate Limiting access

After 5 failed login attempts, the system must temporarily block login attempts for 5 minutes."

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## Non-Functional Requirements

### Performance

Login process must complete in < 1 second.

### Security

Passwords must be encrypted; protect against brute-force attacks.

### Usability

Clear fields, proper error placement, support "Enter" to submit.

### Reliability

System must reject incomplete/invalid inputs consistently.

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# 2) Create Account Feature

## Goal

Allow users to create accounts easily and securely.

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## Functional Requirements

### FR1 – Required Fields

User must enter: Name, Email, Password, Confirm Password.

### FR2 – Validation Rules

- Email must be unique

- Password min length 8

- Password must match confirm password

### FR3 – Account Creation

System creates the user account and shows success message.

### FR4 – Error Handling

Show appropriate messages such as:

- Email already exists

- Weak password

### FR5 – Email Verification (Optional)

System may send verification link/code.

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# Non-Functional Requirements

### Performance

Registration must be completed within 2 seconds.

### Usability

Clear instructions, error highlighting, field auto-focus.

### Availability

Feature must be available 24/7.

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# 3) Equipment Management Feature

## Goal

Manage all equipment with accurate tracking of status, location, and ownership.

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# Functional Requirements:

**Equipment refers to a single sensor's reading entry**:

## FR1 – Add Equipment

- **The Serial Number must be unique across the entire system.**

- **Model**

- **Status** (Under Maintenance, Available, Out of Service,)

- **ReadingTypeId (SoilTemperature , SoilMoisture, SoilPH , AmbientHumidity )**

- **Zone  (optional )
  You can assign or change its zone later from the equipment edit page.
  Useful when sensors are added before installation or before knowing their
  location.**

## FR2 – Edit Equipment

User can edit equipment data; system must log changes.

## FR3 – Delete Equipment

Equipment can be deleted only

## FR4 – Equipment List

List must show all equipment with  values of (

EQUIPMENT   ZONE   TYPE   STATUS   VALUE   ACTION

),

Filter by (zone , status ), and

## FR5 – Status Change (Action Button)

Action buttons update status (Under Maintenance, Available, Out of Service).

## FR6 – Equipment Details

Details page shows full information + status history.

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# Non-Functional Requirements

## Performance

Equipment list loads in < 2 seconds even with large data.

## Security

Only authorized users can add/edit/delete/change status.

## Usability

Status colors:

- Green: Available

- Yellow: Maintenance

- Red: Out of Service

## Availability

Feature must work 24/7.

## Accuracy

Data must be accurate and synced with logs