

System Documentation

⚠️ IMPORTANT: This document contains all essential information needed to build the AidSync system. Focus on simplicity, speed, and reliability above all else.

1. System Overview

AidSync is a desktop application for Philippine LGUs and barangays to manage relief distribution during disasters. It replaces paper lists with a digital system that prevents duplication and speeds up the process.

Core Purpose: Ensure relief assistance reaches the right people at the right time without duplication or exclusion.

2. User Roles & Permissions

2.1 Admin

- Create staff accounts
- View all reports and system data
- Reset user passwords
- Backup and restore system data
- Configure system settings

2.2 Staff

- Register new beneficiaries
- Record relief distributions
- Search and view beneficiary information
- View basic reports
- Update beneficiary status

Note: Staff cannot delete records permanently. Deleted items go to recycle bin for 30 days.

3. Core System Features

3.1 Data Persistence

- All actions save immediately to database
- Data remains intact after: logout, restart, crash, or power outage
- No manual "Save" buttons needed for most operations
- Auto-backup feature available

3.2 Beneficiary Registration

Required Information:

Field	Type	Description
Beneficiary ID	Auto-generated	5-digit format (00001, 00002, etc.)
Full Name	Text field	Complete name of beneficiary
Birth Date	Date picker	Calendar selection
Gender	Dropdown	Male / Female / Prefer not to say
Contact Number	Text field	Optional phone number
Barangay	Dropdown only	26 pre-loaded options (cannot type)
Purok	Dropdown only	Dynamic based on selected barangay
Street Address	Text field	House number and street name
Family Size	Number (1-20)	Number of household members
Household Head	Checkbox	Yes/No
Special Conditions	Checkboxes	PWD / Senior Citizen / Pregnant / Solo Parent
Date Registered	Auto-filled	System timestamp
Status	Dropdown	Active / Inactive

4. Barangay & Purok System

RULE: Users **CANNOT TYPE** barangay or purok names. Must select from dropdowns only.

4.1 Complete Barangay List (26 Total)

1. BADAS

- Purok 1 – Riverside
- Purok 2 – Centro
- Purok 3 – Hillside
- Purok 4 – Seaside
- Purok 5 – Proper
- Purok 6 – San Roque
- Purok 7 – Upper Badas

2. BOBON

- Purok 1 – Baybayon
- Purok 2 – Kalubihan
- Purok 3 – Tabing-Dagat
- Purok 4 – Centro
- Purok 5 – Riverside

3. BUSO

- Purok 1 – Crossing
- Purok 2 – Lower Buso
- Purok 3 – Upper Buso
- Purok 4 – Proper

4. CABUAYA

- Purok 1 – Seaside
- Purok 2 – Riverside
- Purok 3 – Kabagian
- Purok 4 – Centro
- Purok 5 – Hillside

5. CENTRAL (POBLACION)

- Purok A – City Proper
- Purok B – Market Area
- Purok C – Plaza
- Purok D – Commercial Zone
- Purok E – Capitol Area
- Purok F – Seaside
- Purok G – Upper Poblacion

6. CULIAN

- Purok 1 – Crossing
- Purok 2 – Proper
- Purok 3 – Riverside
- Purok 4 – San Isidro

7. DAHICAN

- Purok 1 – Beachside
- Purok 2 – Highway
- Purok 3 – Tourism Zone
- Purok 4 – Uptown
- Purok 5 – Proper

8. DANAQ

- Purok 1 – Centro
- Purok 2 – Riverside
- Purok 3 – Mabini
- Purok 4 – Magsaysay

9. DAWAN

- Purok 1 – Proper
- Purok 2 – Seaside
- Purok 3 – Crossing
- Purok 4 – Upper Dawan

10. DON ENRIQUE LOPEZ

- Purok 1 – Proper
- Purok 2 – Hillside
- Purok 3 – Riverside
- Purok 4 – Lopez Extension

11. DON MARTIN MARUNDAN

- Purok 1 – Proper
- Purok 2 – Mabuhay
- Purok 3 – Mabini
- Purok 4 – Sto. Niño
- Purok 5 – Marundan Hills

12. DON SALVADOR LOPEZ SR.

- Purok 1 – Proper
- Purok 2 – Upper Lopez
- Purok 3 – Riverside
- Purok 4 – Lopez Extension

13. LANGKA

- Purok 1 – Proper
- Purok 2 – Riverside
- Purok 3 – Hillside
- Purok 4 – Langka Center

14. LAWIGAN

- Purok 1 – Seaside
- Purok 2 – Proper
- Purok 3 – Lawigan Beach
- Purok 4 – Upper Lawigan

15. LIBUDON

- Purok 1 – Proper
- Purok 2 – Crossing
- Purok 3 – Hillside
- Purok 4 – San Roque

16. LUBAN

- Purok 1 – Centro
- Purok 2 – Riverside
- Purok 3 – Luban Proper
- Purok 4 – Luban Extension

17. MACAMBOL

- Purok 1 – Seaside
- Purok 2 – Proper
- Purok 3 – Kabukiran
- Purok 4 – Forestline
- Purok 5 – Macambol Hills

18. MAMALI

- Purok 1 – Proper
- Purok 2 – San Miguel
- Purok 3 – Crossing
- Purok 4 – Upper Mamali

19. MATIAO

- Purok 1 – Proper
- Purok 2 – Commercial Area
- Purok 3 – Barangay Hall Zone
- Purok 4 – Highway
- Purok 5 – Sitio Corner

20. MAYO

- Purok 1 – Seaside
- Purok 2 – Market Area
- Purok 3 – Proper
- Purok 4 – Riverside
- Purok 5 – Upper Mayo

21. SAINZ

- Purok 1 – Crossing
- Purok 2 – Proper
- Purok 3 – Hillside
- Purok 4 – Sainz Extension

22. SANGHAY

- Purok 1 – Proper
- Purok 2 – Riverside
- Purok 3 – Kabatian
- Purok 4 – San Pedro

23. TAGABAKID

- Purok 1 – Proper
- Purok 2 – Tabing-Dagat
- Purok 3 – Crossing
- Purok 4 – Upper Tagabakid
- Purok 5 – Riverside

24. TAGBINONGA

- Purok 1 – Proper
- Purok 2 – Seaside
- Purok 3 – Marquez
- Purok 4 – Mangga
- Purok 5 – Riverside

25. TAGUIBO

- Purok 1 – Centro
- Purok 2 – Proper
- Purok 3 – Riverside
- Purok 4 – Taguibo Hills

26. TAMISAN

- Purok 1 – Beachside
- Purok 2 – Proper
- Purok 3 – Riverside
- Purok 4 – Upper Tamisan

4.2 How Barangay/Purok Selection Works

1. User selects barangay from dropdown (26 options)
2. Purok field becomes enabled (was disabled)
3. System shows only puroks for selected barangay
4. User selects purok from dropdown
5. Cannot type in either field - selection only

Example:

Select "Badas" → Purok options: Riverside, Centro, Hillside, Seaside, Proper, San Roque, Upper Badas

Select "Bobon" → Purok options: Baybayon, Kalubihan, Tabing-Dagat, Centro, Riverside

5. Distribution Management

5.1 Distribution Process

1. **Search Beneficiary** by name or ID (case-insensitive)
2. **Select Aid Packages** (multiple selection allowed)
3. **Enter Distribution Venue** (text field)
4. **Select Distribution Date** (calendar picker)
5. **Click "Save Distribution"**

5.2 Key Features

- Window stays open after saving for continuous distribution
- Auto-saves to recent distributions list
- Real-time stock quantity deduction
- Search past distributions by: beneficiary, date, venue
- Print receipt option

5.3 Inventory Management

Aid Package Types:

- Food Pack
- Hygiene Kit
- Medical Kit
- Clothing Pack
- Cash Assistance

Inventory Features:

- Track stock quantities
- Low stock alerts (below 10%)
- Search aid packages by name or type
- Right-click to edit/delete/view history
- Simple add/remove functionality

6. Search & Filter System

6.1 Search Features

- Not case-sensitive ("maria" finds "Maria")
- Search by: Name, ID number
- Instant results as you type
- Search across all beneficiary fields

6.2 Filter Options

- **By Barangay:** Show only beneficiaries from specific barangay
- **By Purok:** Filter within selected barangay
- **By Family Size:** Filter by number of members
- **By Special Conditions:** PWD, Senior, etc.
- **By Status:** Active/Inactive

6.3 Sort Options

- **Date Added:** Newest or oldest first
- **Alphabetical:** A-Z or Z-A by name
- **ID Number:** 00001 to 99999 or reverse

Tip: Frequently used filters can be saved for quick access.

7. Right-Click Context Menu

Available Actions on Beneficiary Names:

Action	Description	Permission
Edit	Modify beneficiary information	Staff/Admin
Delete	Move to recycle bin (30-day recovery)	Staff/Admin
Highlight	Change background color for marking	Staff/Admin
View Details	Show complete beneficiary profile	All users
Generate ID	Create printable ID card	Staff/Admin

LOCKED RECORDS: Beneficiary data cannot be edited directly in the list. Must right-click and select "Edit" to modify. This prevents accidental changes.

8. Reports System

8.1 Basic Reports

Report Type	Contents	Export Format
Beneficiary List	Complete list with all details, filterable	PDF, Excel
Distribution Summary	Daily/Weekly/Monthly distribution statistics	PDF, Excel
Inventory Report	Current stock levels, low stock alerts	PDF, Excel
Barangay Coverage	Distribution coverage by barangay/purok	PDF, Excel

8.2 Report Features

- Filter by date range, barangay, aid type
- Print-ready professional formatting
- One-click generation
- Auto-include: date generated, page numbers
- Option to print selected records only

9. Settings & Customization

9.1 Theme Settings

- **Light Mode:** Bright interface for daytime use
- **Dark Mode:** Dark interface for reduced eye strain
- Theme applies system-wide immediately
- Settings saved per user

9.2 Display Settings

- **Font Size:** Small, Medium, Large, Extra Large
- Applies to all text in application
- Settings persist between sessions
- Useful for users with visual impairments

Note: All settings are automatically saved and loaded when user logs in.

10. Database Structure (Essential Tables)

10.1 Core Tables

```
-- Users Table CREATE TABLE users ( user_id INT PRIMARY KEY AUTO_INCREMENT, username VARCHAR(50) UNIQUE NOT NULL, password_hash VARCHAR(255) NOT NULL, role ENUM('admin', 'staff') NOT NULL, created_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP ); --
Beneficiaries Table CREATE TABLE beneficiaries ( beneficiary_id VARCHAR(5) PRIMARY KEY, -- 00001 format full_name VARCHAR(100) NOT NULL, birth_date DATE, gender ENUM('Male', 'Female', 'Prefer not to say'), contact_number VARCHAR(20), barangay_id INT NOT NULL, purok_id INT NOT NULL, street_address VARCHAR(200), family_size INT CHECK (family_size BETWEEN 1 AND 20), is_household_head BOOLEAN DEFAULT FALSE, special_conditions VARCHAR(100), date_registered TIMESTAMP DEFAULT CURRENT_TIMESTAMP, status ENUM('Active', 'Inactive') DEFAULT 'Active', created_by INT, created_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP, FOREIGN KEY (barangay_id) REFERENCES barangays(barangay_id), FOREIGN KEY (purok_id) REFERENCES puroks(purok_id), FOREIGN KEY (created_by) REFERENCES users(user_id) ); -- Barangays Table (Pre-loaded) CREATE TABLE barangays ( barangay_id INT PRIMARY KEY AUTO_INCREMENT, barangay_name VARCHAR(50) UNIQUE NOT NULL ); -- Puroks Table (Pre-loaded with relationships) CREATE TABLE puroks ( purok_id INT PRIMARY KEY AUTO_INCREMENT, barangay_id INT NOT NULL, purok_name VARCHAR(50) NOT NULL, FOREIGN KEY (barangay_id) REFERENCES barangays(barangay_id), UNIQUE(barangay_id, purok_name) );
);
```

```
-- AidPackages Table CREATE TABLE aid_packages ( package_id INT PRIMARY KEY AUTO_INCREMENT, package_name VARCHAR(100) NOT NULL, package_type VARCHAR(50), description TEXT, stock_quantity INT DEFAULT 0, min_stock_level INT DEFAULT 10, unit_of_measure VARCHAR(20), created_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP ); -- Distributions Table CREATE TABLE distributions ( distribution_id INT PRIMARY KEY AUTO_INCREMENT, beneficiary_id VARCHAR(5) NOT NULL, distribution_date DATE NOT NULL, venue VARCHAR(200), distributed_by INT, status ENUM('Completed') DEFAULT 'Completed', created_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP, FOREIGN KEY (beneficiary_id) REFERENCES beneficiaries(beneficiary_id), FOREIGN KEY (distributed_by) REFERENCES users(user_id) ); -- DistributionItems Table CREATE TABLE distribution_items ( item_id INT PRIMARY KEY AUTO_INCREMENT, distribution_id INT NOT NULL, package_id INT NOT NULL, quantity INT NOT NULL, FOREIGN KEY (distribution_id) REFERENCES distributions(distribution_id), FOREIGN KEY (package_id) REFERENCES aid_packages(package_id) ); -- DeletedRecords Table (30-day recovery) CREATE TABLE deleted_records ( record_id INT PRIMARY KEY AUTO_INCREMENT, table_name VARCHAR(50) NOT NULL, data_json TEXT NOT NULL, deleted_by INT, deleted_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP, restore_until DATE, FOREIGN KEY (deleted_by) REFERENCES users(user_id) ); -- UserPreferences Table CREATE TABLE user_preferences ( user_id INT PRIMARY KEY, theme ENUM('light', 'dark') DEFAULT 'light', font_size ENUM('small', 'medium', 'large', 'xlarge') DEFAULT 'medium', last_updated TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP, FOREIGN KEY (user_id) REFERENCES users(user_id) );
```

11. Key Functionalities

11.1 Auto-Generated IDs

- Start at 00001
- Auto-increment by 1
- Always display as 5-digit format
- Never reuse deleted IDs

11.2 Duplicate Prevention

- Check combination: name + barangay + purok
- Warn user if potential duplicate found
- Allow review before proceeding
- Prevent exact matches from being saved

11.3 Stay-Open Windows

- **Add Beneficiary:** Stays open after save until Cancel clicked
- **Record Distribution:** Stays open after save until Cancel clicked
- Enables fast workflow for multiple entries
- Reduces clicks and navigation time

11.4 Recycle Bin System

- Deleted records move to DeletedRecords table
- Available for restore for 30 days
- After 30 days: auto-purged permanently
- Restore function in admin panel

11.5 Low Stock Alerts

- Visual indicator when stock < 10% of original
- Color-coded warnings (yellow/red)
- Dashboard notification
- Can set different thresholds per item type

12. Technical Requirements

12.1 Minimum System Requirements

Component	Requirement
Operating System	Windows 10 or later
Memory (RAM)	4GB minimum, 8GB recommended
Storage	500MB free disk space
Java Runtime	JRE 11 or later
Database	MySQL 5.7+ or SQLite
Display	1024x768 minimum resolution

12.2 Development Requirements

- Java JDK 11 or later
- JavaFX SDK
- MySQL Connector/J or SQLite JDBC driver
- IDE: VS Code, IntelliJ IDEA, or Eclipse
- Build tool: Maven or Gradle (optional)

13. Implementation Priority

Phase 1: Core System (Week 1-2)

1. Database setup with auto-persistence
2. Login system with create account
3. Beneficiary CRUD with barangay/purok dropdowns
4. Basic search and filter functionality

Phase 2: Distribution Features (Week 3-4)

1. Distribution recording with auto-save
2. Inventory management with low stock alerts
3. Basic reporting system
4. Right-click context menus

Phase 3: Polish & Settings (Week 5-6)

1. Theme settings (light/dark mode)
2. Font size adjustment
3. Enhanced search features
4. Emergency mode
5. Final testing and bug fixes

14. Error Handling & Validation

14.1 Error Messages

- User-friendly language (no technical jargon)
- Clear instructions for resolution
- Consistent formatting and placement
- Activity logging for troubleshooting

14.2 Data Validation Rules

Field	Validation Rule
Name	Required, minimum 2 characters
Barangay/Purok	Required, must select from dropdown
Family Size	Required, 1-20 only
Contact Number	Valid Philippine format if provided
Birth Date	Not in future, reasonable age range
Duplicate Check	Name + Barangay + Purok combination
Stock Quantities	Cannot go below zero

15. Emergency Mode

15.1 When to Use

- Major disaster situations
- Need for maximum speed
- Large numbers of people to serve quickly
- Limited time for detailed registration

15.2 Features

- **Simplified Interface:** Large buttons, minimal fields
- **Quick Registration:** Name + Family Size + Barangay only
- **Bulk Distribution:** Group distribution by family size
- **Basic Tracking:** Minimum data for later completion
- **One-Click Activation:** Switch from normal mode instantly

Note: Emergency mode data should be converted to full beneficiary records when situation stabilizes.

16. User Interface Components

16.1 Login Screen

- AidSync logo prominently displayed
- Username and password fields
- Login button
- Create Account button (admin only)
- Remember me checkbox
- Forgot password link

16.2 Main Dashboard

- Welcome message with user role
- Quick statistics display
- Quick action buttons
- Recent activities feed
- Notifications area (alerts, messages)

16.3 Beneficiary Management Screen

- Search bar with quick filters
- Beneficiary list table with sorting
- Action toolbar (Add, Edit, Delete, Print, Export)
- Right-click context menu support
- Pagination controls for large datasets
- Status indicators (Active/Inactive)

16.4 Distribution Screen

- Beneficiary search with real-time results
- Aid package selection with checkboxes
- Distribution details form
- Save and continue workflow
- Recent distributions list
- Quick summary statistics

17. Data Flow & Persistence

17.1 Data Flow Diagram

Registration Flow:

User Input → Form Validation → Duplicate Check → Database Save → ID Generation → Confirmation

Distribution Flow:

Search Beneficiary → Verify Eligibility → Select Packages → Record Details → Update Inventory → Save Distribution → Generate Receipt

17.2 Persistence Guarantee

- All database operations use transactions
- Auto-commit enabled for immediate saving
- Connection pooling for reliability
- Automatic reconnection on failure
- Regular backup reminders

18. Testing Checklist

18.1 Core Functionality Tests

Test Area	What to Verify	Expected Result
Login System	Correct credentials, wrong credentials	Proper access or error message
Beneficiary Registration	All required fields, duplicate check	Successful save with ID generation
Barangay/Purok Selection	Dropdown functionality, no typing allowed	Proper dynamic loading, data integrity
Search Function	Case-insensitive, filters, speed	Instant results, accurate filtering
Distribution Recording	Complete workflow, inventory update	Successful save, correct stock deduction
Data Persistence	Logout/login, restart, crash recovery	All data intact and accessible

18.2 User Interface Tests

- All buttons respond correctly
- Forms validate input properly
- Right-click menus work consistently
- Theme switching functions correctly
- Font size adjustment works system-wide
- Reports generate and print correctly

19. Deployment Checklist

19.1 Pre-Deployment

1. Verify all requirements are met
2. Test on target hardware
3. Create installation package
4. Prepare user documentation
5. Set up backup procedures

19.2 Installation Steps

1. Run installer on target computer
2. Follow setup wizard instructions
3. Create administrator account
4. Verify database connection
5. Test basic functionality
6. Create initial staff accounts

19.3 Post-Deployment

1. User training session (30 minutes)
2. Test with real data (sample beneficiaries)
3. Verify backup system works
4. Provide support contact information
5. Schedule follow-up check

20. Support & Maintenance

20.1 Common Issues & Solutions

Issue	Possible Cause	Solution
Cannot login	Wrong password, account locked	Admin reset password, check caps lock
Slow performance	Large database, low memory	Add more RAM, optimize database
Search not finding	Case sensitivity, spelling	Use partial names, check filters
Print not working	Printer not set up, driver issues	Check printer connection, reinstall driver
Data missing	Filter applied, deleted records	Clear filters, check recycle bin

20.2 Maintenance Schedule

- **Daily:** Verify auto-backup completed
- **Weekly:** Check disk space, review logs
- **Monthly:** Database optimization, update checks
- **Quarterly:** Full system review, user feedback
- **Annually:** Major update consideration, hardware check