# SWP302 Blood Donation Management System - Demonstration Scenarios

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## 🏥 System Overview

### What is SWP302?

SWP302 is a comprehensive Blood Donation Management System designed to streamline the entire blood donation process from donor registration to blood distribution. The system supports multiple user roles and provides real-time inventory management, request processing, and compatibility checking.

### Key Features Demonstrated:

* **Multi-role User Management** (Admin, Staff, Medical Center, Donor)
* **Real-time Blood Inventory Management**
* **Blood Compatibility Checking**
* **Emergency Request Processing**
* **Advanced Search and Sort Capabilities**
* **Internationalization Support** (English/Vietnamese)
* **Responsive Design** (Mobile/Desktop)
* **Role-based Access Control**

## 👥 User Roles and Access Control

### Scenario 1: Role-based Navigation

**Objective**: Demonstrate how different user roles see different navigation options

**Steps**: 1. **Admin Login** - Login as admin user - Verify access to: Dashboard, Users, Staff, Medical Centers, Inventory, Requests, Schedule, Settings - Confirm NO access to Medical Center dashboard

1. **Staff Login**
   * Login as staff user
   * Verify access to: Dashboard, Donors, Emergency, Inventory, Requests, Schedule, Profile
   * Confirm NO access to Admin features or Medical Center dashboard
2. **Medical Center Login**
   * Login as medical center user
   * Verify access to: Dashboard, Receivers, Requests
   * Confirm NO access to Admin or Staff features
3. **Donor Login**
   * Login as donor user
   * Verify access to: Dashboard, Profile
   * Confirm limited access to donation-related features only

**Expected Results**: - Each role sees only relevant navigation items - No unauthorized access to other role dashboards - Clean, role-appropriate user interface

## 🔐 Authentication Scenarios

### Scenario 2: User Registration and Login

**Objective**: Demonstrate the complete authentication flow

**Steps**: 1. **New User Registration** - Navigate to Register page - Fill in required fields: Name, Email, Password, Blood Type, Role - Submit registration - Verify success message and automatic login

1. **Existing User Login**
   * Navigate to Login page
   * Enter valid credentials
   * Verify successful login and role-based redirect
2. **Invalid Login Attempts**
   * Try login with wrong password
   * Try login with non-existent email
   * Verify appropriate error messages
3. **Password Validation**
   * Try registration with weak password
   * Verify password strength requirements

**Expected Results**: - Smooth registration process - Proper validation and error handling - Role-based redirects after login - Secure authentication flow

## 🏛️ Admin Dashboard Scenarios

### Scenario 3: Admin System Overview

**Objective**: Demonstrate admin’s comprehensive system management capabilities

**Steps**: 1. **Dashboard Overview** - Login as admin - Review dashboard statistics: Total users, blood requests, inventory levels - Check recent activities and alerts

1. **User Management**
   * Navigate to Users page
   * View all registered users with their roles
   * Search for specific users
   * Sort users by different criteria
2. **Staff Management**
   * Navigate to Staff page
   * View all staff members
   * Add new staff member
   * Edit existing staff information
3. **Medical Center Management**
   * Navigate to Medical Centers page
   * View all registered medical centers
   * Add new medical center
   * Manage center information

**Expected Results**: - Complete overview of system status - Efficient user and staff management - Proper data organization and display

## 👨‍⚕️ Staff Management Scenarios

### Scenario 4: Staff Daily Operations

**Objective**: Demonstrate staff’s day-to-day operational tasks

**Steps**: 1. **Donor Management** - Navigate to Donors page - View all registered donors - Search for specific donor - Update donor information - Check donor donation history

1. **Emergency Blood Requests**
   * Navigate to Emergency page
   * View urgent blood requests
   * Process emergency requests
   * Update request status
2. **Inventory Management**
   * Navigate to Inventory page
   * View current blood inventory levels
   * Update blood quantities
   * Add new blood types
   * Check expiration dates
3. **Request Processing**
   * Navigate to Requests page
   * View pending blood requests
   * Process requests based on availability
   * Update request status
   * Use search and filter features

**Expected Results**: - Efficient donor and request management - Real-time inventory updates - Proper emergency handling

## 🏥 Medical Center Scenarios

### Scenario 5: Medical Center Operations

**Objective**: Demonstrate medical center’s blood request and patient management

**Steps**: 1. **Patient Registration** - Navigate to Receivers page - Register new blood recipient - Enter patient details and blood requirements - Submit blood request

1. **Request Management**
   * Navigate to Requests page
   * View all blood requests from the center
   * Check request status
   * Update patient information
   * Cancel or modify requests
2. **Emergency Requests**
   * Create urgent blood request
   * Specify emergency level
   * Track request processing
   * Receive notifications

**Expected Results**: - Smooth patient registration process - Efficient request tracking - Proper emergency handling

## 🩸 Donor Management Scenarios

### Scenario 6: Donor Experience

**Objective**: Demonstrate the complete donor journey

**Steps**: 1. **Donor Registration** - Register as new donor - Complete health questionnaire - Provide contact information - Set donation preferences

1. **Donation Scheduling**
   * Navigate to Schedule page
   * View available donation slots
   * Book donation appointment
   * Receive confirmation
2. **Donation History**
   * View past donations
   * Check donation impact
   * Track health metrics
   * Update personal information
3. **Donation Locations**
   * View nearby donation centers
   * Check center availability
   * Get directions and contact info

**Expected Results**: - User-friendly donor experience - Clear donation scheduling process - Comprehensive donation tracking

## 📦 Blood Inventory Management

### Scenario 7: Inventory Operations

**Objective**: Demonstrate comprehensive inventory management

**Steps**: 1. **Current Inventory View** - Navigate to Inventory page - View all blood types and quantities - Check expiration dates - Monitor critical levels

1. **Inventory Updates**
   * Add new blood donations
   * Update existing quantities
   * Remove expired blood
   * Adjust for usage
2. **Inventory Alerts**
   * Check low stock alerts
   * Review expiration warnings
   * Monitor critical blood types
   * Take action on alerts
3. **Inventory Reports**
   * Generate inventory reports
   * Export data for analysis
   * Track inventory trends
   * Plan future donations

**Expected Results**: - Real-time inventory tracking - Proper stock management - Effective alert system

## 🚨 Blood Request Management

### Scenario 8: Request Processing Workflow

**Objective**: Demonstrate the complete blood request lifecycle

**Steps**: 1. **Request Creation** - Create new blood request - Specify blood type and quantity - Set urgency level - Add patient information

1. **Request Processing**
   * Staff reviews request
   * Check blood availability
   * Use compatibility checker
   * Update request status
2. **Request Approval/Rejection**
   * Approve available requests
   * Reject unavailable requests
   * Provide alternative suggestions
   * Notify medical center
3. **Request Tracking**
   * Track request status
   * Monitor processing time
   * Update patient information
   * Complete request fulfillment

**Expected Results**: - Efficient request processing - Clear status tracking - Proper communication flow

## 🚑 Emergency Blood Requests

### Scenario 9: Emergency Response

**Objective**: Demonstrate emergency blood request handling

**Steps**: 1. **Emergency Request Creation** - Create urgent blood request - Set highest priority level - Specify immediate need - Provide emergency contact

1. **Emergency Processing**
   * Staff receives emergency alert
   * Immediately check inventory
   * Use compatibility checker
   * Expedite processing
2. **Emergency Fulfillment**
   * Prioritize emergency over regular requests
   * Coordinate with medical center
   * Track delivery status
   * Confirm receipt
3. **Emergency Documentation**
   * Record emergency details
   * Document response time
   * Update patient status
   * Generate emergency report

**Expected Results**: - Rapid emergency response - Proper prioritization - Complete documentation

## 🩸 Blood Compatibility Features

### Scenario 10: Compatibility Checking

**Objective**: Demonstrate blood compatibility checking system

**Steps**: 1. **Basic Compatibility Check** - Request blood type A+ - Check if A+ is available - If not, view compatible alternatives - Understand compatibility matrix

1. **Advanced Compatibility**
   * Request rare blood type (O-)
   * Check all compatible options
   * View priority order
   * Select best alternative
2. **Compatibility Information**
   * Click info button on request
   * View detailed compatibility data
   * See available quantities
   * Understand medical implications
3. **Compatibility Education**
   * Review compatibility rules
   * Understand universal donor/recipient
   * Learn about Rh factor
   * Check medical guidelines

**Expected Results**: - Accurate compatibility information - Clear alternative suggestions - Educational content - Medical safety compliance

## 🔍 Search and Sort Features

### Scenario 11: Advanced Data Management

**Objective**: Demonstrate search, filter, and sort capabilities

**Steps**: 1. **Search Functionality** - Search requests by patient name - Search by blood type - Search by request ID - Search by medical center

1. **Status Filtering**
   * Filter by request status (Pending, Confirmed, etc.)
   * Filter by urgency level
   * Filter by date range
   * Combine multiple filters
2. **Sorting Options**
   * Sort by date (newest/oldest)
   * Sort by patient name (A-Z/Z-A)
   * Sort by blood type
   * Sort by quantity needed
3. **Advanced Filtering**
   * Filter by medical center
   * Filter by donor information
   * Filter by inventory levels
   * Export filtered results

**Expected Results**: - Fast and accurate search - Flexible filtering options - Efficient data organization - User-friendly interface

## 🌐 Internationalization (i18n)

### Scenario 12: Multi-language Support

**Objective**: Demonstrate internationalization features

**Steps**: 1. **Language Switching** - Switch between English and Vietnamese - Verify all text changes - Check date/time formats - Confirm currency display

1. **Content Translation**
   * Navigate through all pages
   * Verify proper translation
   * Check form labels
   * Confirm error messages
2. **Cultural Adaptation**
   * Check appropriate date formats
   * Verify number formatting
   * Confirm address formats
   * Test phone number formats
3. **Language Persistence**
   * Change language setting
   * Refresh page
   * Verify language persists
   * Test across different sessions

**Expected Results**: - Complete language support - Proper cultural adaptation - Persistent language settings - Professional translation quality

## 📱 Responsive Design Testing

### Scenario 13: Cross-Device Compatibility

**Objective**: Demonstrate responsive design across devices

**Steps**: 1. **Desktop Testing** - Test on large screens (1920x1080+) - Verify full navigation menu - Check table layouts - Confirm all features accessible

1. **Tablet Testing**
   * Test on medium screens (768px-1024px)
   * Verify responsive navigation
   * Check form layouts
   * Confirm touch-friendly interface
2. **Mobile Testing**
   * Test on small screens (<768px)
   * Verify mobile navigation
   * Check touch targets
   * Confirm readable text
3. **Orientation Testing**
   * Test portrait and landscape modes
   * Verify layout adjustments
   * Check navigation behavior
   * Confirm functionality

**Expected Results**: - Consistent experience across devices - Touch-friendly mobile interface - Proper layout adaptation - Fast loading times

## ⚠️ Error Handling Scenarios

### Scenario 14: System Error Management

**Objective**: Demonstrate robust error handling

**Steps**: 1. **Network Error Handling** - Simulate network disconnection - Try to submit forms - Verify error messages - Test retry functionality

1. **Validation Errors**
   * Submit forms with invalid data
   * Test required field validation
   * Check format validation
   * Verify helpful error messages
2. **Server Error Handling**
   * Simulate server errors
   * Test error boundaries
   * Verify graceful degradation
   * Check user feedback
3. **Data Loading Errors**
   * Test slow network conditions
   * Verify loading states
   * Check timeout handling
   * Confirm retry options

**Expected Results**: - Clear error messages - Graceful error handling - User-friendly feedback - Recovery options available

## ⚡ Performance Testing Scenarios

### Scenario 15: System Performance

**Objective**: Demonstrate system performance and scalability

**Steps**: 1. **Page Load Performance** - Measure initial page load time - Test navigation speed - Check image loading - Verify smooth animations

1. **Data Loading Performance**
   * Load large datasets
   * Test search performance
   * Check filter speed
   * Verify sort performance
2. **Form Submission Performance**
   * Test form submission speed
   * Check validation performance
   * Verify success feedback
   * Test error handling speed
3. **Real-time Updates**
   * Test live data updates
   * Check notification speed
   * Verify inventory updates
   * Test request status changes

**Expected Results**: - Fast page loading - Responsive user interface - Efficient data handling - Smooth user experience

## 🎯 Demonstration Tips

### Before the Demo:

1. **Prepare Test Data**
   * Create sample users for each role
   * Set up blood inventory with various levels
   * Create pending blood requests
   * Prepare emergency scenarios
2. **Test Environment Setup**
   * Ensure all features are working
   * Test on different devices
   * Prepare backup scenarios
   * Have sample data ready
3. **Demo Script Preparation**
   * Plan the flow of demonstrations
   * Prepare talking points for each feature
   * Have answers ready for common questions
   * Practice timing and transitions

### During the Demo:

1. **Start with Overview**
   * Explain the system purpose
   * Show the main dashboard
   * Highlight key features
   * Demonstrate user roles
2. **Feature-by-Feature Walkthrough**
   * Show each major feature
   * Explain the business value
   * Demonstrate real-world usage
   * Highlight technical achievements
3. **Interactive Elements**
   * Let audience ask questions
   * Show unexpected scenarios
   * Demonstrate error handling
   * Show responsive design

### After the Demo:

1. **Q&A Session**
   * Be prepared for technical questions
   * Explain design decisions
   * Discuss future enhancements
   * Address concerns
2. **Feedback Collection**
   * Gather audience feedback
   * Note improvement suggestions
   * Document questions for follow-up
   * Plan next steps

## 📊 Success Metrics

### Technical Metrics:

* **Page Load Time**: < 3 seconds
* **Search Response Time**: < 1 second
* **Form Submission**: < 2 seconds
* **Mobile Performance**: 90+ Lighthouse score

### User Experience Metrics:

* **Navigation Clarity**: Intuitive menu structure
* **Error Recovery**: Clear error messages and recovery paths
* **Accessibility**: WCAG 2.1 AA compliance
* **Responsive Design**: Consistent experience across devices

### Business Metrics:

* **Request Processing Time**: Reduced by 50%
* **Inventory Accuracy**: 99%+ accuracy
* **User Satisfaction**: 4.5+ rating
* **System Uptime**: 99.9% availability

## 🔮 Future Enhancements

### Planned Features:

1. **Mobile App Development**
   * Native iOS/Android apps
   * Push notifications
   * Offline capabilities
2. **AI/ML Integration**
   * Predictive analytics
   * Demand forecasting
   * Automated inventory management
3. **Advanced Reporting**
   * Custom dashboards
   * Advanced analytics
   * Export capabilities
4. **Integration Capabilities**
   * Hospital management systems
   * Laboratory information systems
   * Government health databases

*This demonstration guide covers the comprehensive features of the SWP302 Blood Donation Management System. Each scenario is designed to showcase the system’s capabilities while highlighting the technical achievements and business value.*