**PetsCare Management System: Pet Essentials Module**

**Project Overview**

The **PetsCare Management System** is designed to streamline pet care and essentials management. This document focuses on the **Pet Essentials Module**, which enables users to browse, purchase, and manage items necessary for their pets' well-being. The module includes features for managing pet essentials, shopping cart functionality, and order processing.

**System Features**

**1. Pet Essentials Management**

* **Browse Essentials**:
  + Users can view a list of available pet essentials categorized by type (e.g., food, grooming, toys).
  + Detailed information about each item, including name, price, description, and availability.
* **Search and Filter**:
  + Search bar for finding specific items by name or category.
  + Filters for sorting items by price, popularity, or availability.

**2. Shopping Cart Functionality**

* **Add to Cart**:
  + Users can add items to a shopping cart with quantity selection.
* **View Cart**:
  + Displays a summary of items in the cart with total price.
  + Option to update quantities or remove items.
* **Checkout**:
  + Collects user details (name, address, contact information).
  + Calculates final cost, including taxes and shipping.

**3. Order Management**

* **Order Confirmation**:
  + Displays a confirmation page with order details and expected delivery date.
* **Order History**:
  + Users can view past orders, including itemized details and status.

**Technical Implementation**

**1. Backend (Servlets)**

* **PetEssentialsServlet**:
  + Handles fetching, adding, and updating essential items.
* **ShoppingCartServlet**:
  + Manages cart operations such as adding/removing items and calculating totals.
* **OrderServlet**:
  + Processes user orders and stores them in a database.

**2. Frontend (JSP)**

* **essentials.jsp**:
  + Displays the list of pet essentials with search and filter options.
* **cart.jsp**:
  + Shows the shopping cart summary with options to update or proceed to checkout.
* **checkout.jsp**:
  + Collects user details and confirms the purchase.

**3. Database Schema**

* **Tables**:
  + **essentials**: Stores item details (id, name, category, price, stock).
  + **orders**: Stores user orders (id, user\_id, total\_price, date).
  + **order\_items**: Maps orders to items (order\_id, item\_id, quantity).

**User Roles**

* **Admin**:
  + Add, update, or delete items in the essentials catalog.
  + View sales reports.
* **User**:
  + Browse and purchase pet essentials.
  + Manage orders and view history.

**System Flow**

**1. User Journey**

1. **Login/Register**: Users authenticate to access features.
2. **Browse Essentials**: Users view items, apply filters, or search.
3. **Add to Cart**: Users select items and add them to the shopping cart.
4. **Checkout**: Users provide details and confirm the order.
5. **Order Confirmation**: The system generates a confirmation page and stores the order.

**2. Admin Workflow**

1. **Login**: Admins authenticate with higher privileges.
2. **Manage Essentials**: Add or update pet essentials.
3. **View Reports**: Analyze sales and stock levels.

**Technologies Used**

* **Frontend**:
  + HTML, CSS, JavaScript (for basic interactivity).
  + JSP for dynamic content rendering.
* **Backend**:
  + Java Servlets for handling business logic.
* **Database**:
  + MySQL for storing essentials and orders.

**Testing**

**Test Scenarios**

1. **Pet Essentials Display**:
   * Verify that all items are correctly displayed with proper details.
   * Test search and filter functionality.
2. **Shopping Cart**:
   * Add items to the cart and verify totals.
   * Update quantities and check calculations.
3. **Order Processing**:
   * Submit orders with valid and invalid data.
   * Verify order confirmation and database updates.
4. **Admin Operations**:
   * Add new items and validate their display.
   * Edit and delete items and ensure changes reflect in the user view.

**Future Enhancements**

* **Mobile App**: Develop a mobile-friendly version or native app for better accessibility.
* **Payment Integration**: Integrate with payment gateways for online transactions.
* **Personalized Recommendations**: Use machine learning to recommend items based on user history.
* **Inventory Alerts**: Notify admins of low stock levels.

**Conclusion**

The Pet Essentials Module of the PetsCare Management System provides a comprehensive solution for managing and purchasing pet care items. It ensures a seamless experience for users and efficient operations for administrators. With planned enhancements, this module has the potential to become a robust platform for pet care and management.