
Software Requirements Specification

for
Crawl Buds PetShop

Version 1.0 approved

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1. Introduction

1.1 Purpose

The product described in this SRS is the CrawlBuds PetShop Web Application, version 1.0. It is an online e-commerce website for selling pet products, where customers can browse items, manage a shopping cart, and place orders. This SRS covers the customer website and the admin panel (product management, order management, user management, and basic reports).

1.2 Project Scope and Product Features

The main purpose of the software is to make buying pet products easy, fast, and available 24/7. It also helps the company manage products, stock levels, and customer orders in a single system. This supports the business goal of increasing online sales, reaching more customers, and reducing manual work in order and inventory management.

1.3 References

1.3.1 Wiegers, Karl. Cafeteria Ordering System Software Requirements Specification (COS_SRS.doc)

1.3.2 CrawlBuds Project Team. CrawlBuds PetShop Vision and Scope Document, Internal project documentation

1.3.3 IEEE Computer Society. IEEE Std 830-1998: IEEE Recommended Practice for Software Requirements Specifications, IEEE Standards Association

1.3.4 Wiegers, Karl. Software Requirements Specification for Cafeteria Ordering System (COS_SRS.docx), <https://people.eecs.ku.edu/~saiedian/812/Project/Wiegers-Resources/Appendix%20C/COS%20SRS.docx>

2. Overall Description

2.1 Product Perspective

The product described in this SRS is a new, self-contained web application. It is not a follow-on release or part of a bigger software family. Before this system, product and order tracking were handled with simple tools (such as spreadsheets, messages, or basic website pages). The new CrawlBuds PetShop Web Application brings these tasks into a single integrated system, where customers can shop online and admins can manage products, stock, and orders through the same platform.

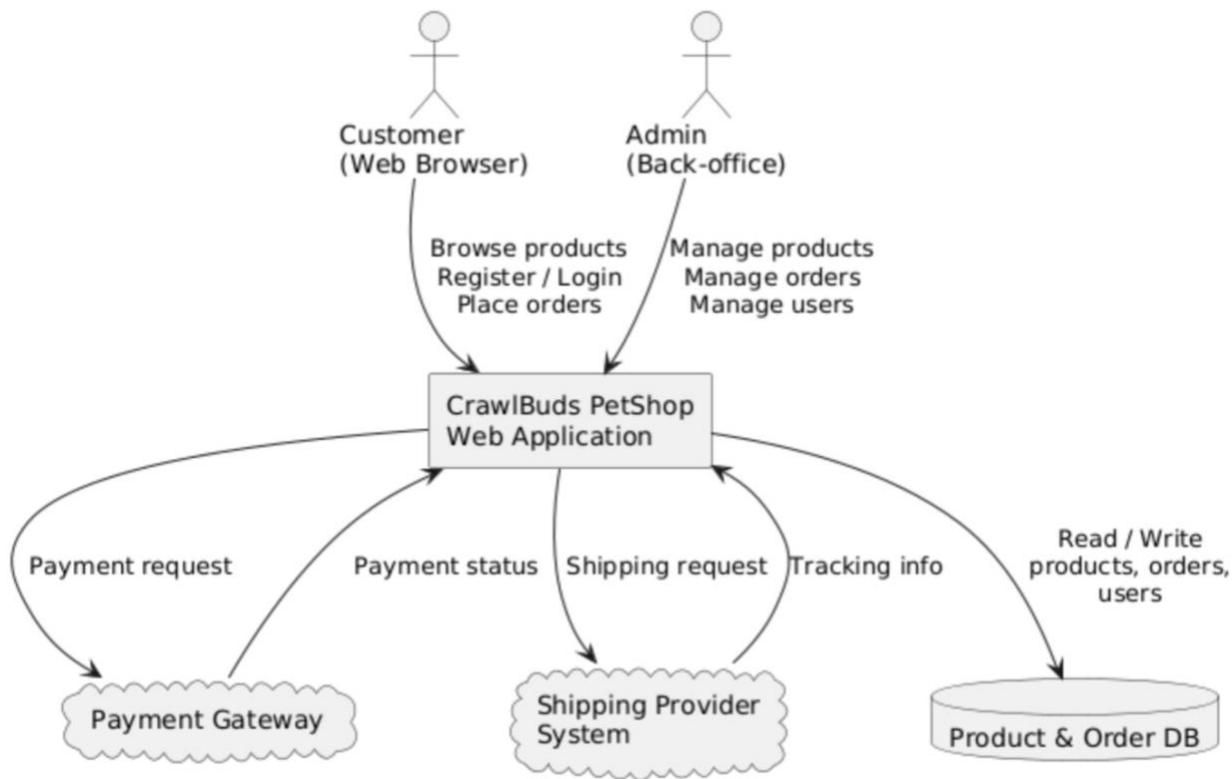


Figure 2.1.1. CrawlBuds Petshop Context Diagram

2.2 User Classes and Characteristics

User	A User is a customer who comes to the CrawlBuds PetShop website to buy pet products. Users can look at products, search, add items to the cart, and place orders. Most Users will use the site a few times each month from home on a phone or computer. They know how to use basic websites and online forms. This is the most important user group.
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Admin	An Admin is a CrawlBuds staff member who manages the online shop. Admins can add and change products, update stock, and see and update customer orders. There will be only a few Admins, and they may use the system every day. Admins need to log in to their accounts safely and have more rights than Users.
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2.3 Operating Environment

- OE-1: The CrawlBuds PetShop Web Application shall run on common modern web browsers, including current versions of Google Chrome, Mozilla Firefox, Microsoft Edge, and Safari on desktop and mobile devices.
- OE-2: The application shall run on a standard web server using a supported operating system (for example, Ubuntu Linux or Windows Server) with a relational database (for example, MySQL or PostgreSQL).
- OE-3: The system shall allow user access over the public Internet from home or mobile networks, using a normal web connection and browser.

2.4 Design and Implementation Constraints

- CO-1: The system's design, code, and documentation shall follow the course *Web Application Development* guidelines and coding style defined by the instructor.
- CO-2: The system shall use MySQL as the database engine for all product, user, and order data.
- CO-3: All server-side code shall be written in PHP and deployed on a standard PHP web server.
- CO-4: All web pages shall use valid HTML5 and CSS and be viewable on common modern web browsers without extra plugins.

2.5 User Documentation

- UD-1: No separate user manuals, online help, or tutorials are planned for this release.
- UD-2: Users and Admins will rely on the labels, messages, and buttons within the web pages themselves to understand how to use the system.

2.6 Assumptions and Dependencies

- AS-1: It is assumed that Users and Admins have a stable Internet connection and a modern web browser to access the system.
- AS-2: It is assumed that Admins will regularly update product information and stock levels so that the data in the system is correct.

DE-1: The operation of the system depends on the availability of the web server and MySQL database server used to host the application.

DE-2: The system depends on an external e-mail service (or server) to send order confirmation and other notification e-mails to Users.

3. System Features

Note: All features and requirements in this section below are defined for CrawlBuds PetShop Version 1.

3.1 User Registration & Authentication

3.1.1 Description and Priority

Customers can use this feature to register and use their login credentials to access the system.
Priority: High

3.1.2 Stimulus/Response Sequences

Stimulus	Response
User submits form for registration.	System generates a new user account after verifying the input.
User submits registration form with invalid data.	System denies the request and shows respective error message.
User submits form for login with valid credentials	Depending on the role, the system authenticates the user and initiates a session.
User submits form for login with invalid credentials	The login is rejected by the system, and an error message is displayed.
User clicks “Logout”	The system ends the session and reroutes it to the login or home page.

3.1.3 Functional Requirements

REQ-REGI-01: The system shall allow users to access the server at least submitting their name, surname, and email.

REQ-REGI-02: The system shall check and confirm that the email address is unique and properly formatted.

REQ-REGI-03: The system shall mandate that passwords adhere to a specified minimum.

REQ-REGI-04: The system shall hash all user passwords using a secure hashing function before storing.

REQ-REGI-05: The system shall allow users to log in using their registered credentials.

REQ-REGI-06: The system shall reject login attempts with incorrect credentials and display an error message without giving away which field is not suited.

REQ-REGI-07: The system shall hold an authenticated session for the user after a successful login.

REQ-REGI-08: The system shall allow users to log out and invalidate their session.

REQ-REGI-09: The system shall restrict access to features that are attained for admins to those entered as customers.

3.2 Product Catalog and Browsing

3.2.1 Description and Priority

This feature allows customers to browse available products, filter by categories, and view product details. Priority: High

3.2.2 Stimulus/Response Sequences

Stimulus	Response
User navigates among the product listings and categories.	System retrieves and displays all active products and categories.
User filters the products according to categories.	System displays only products belonging to the selected category.
User selects a sorting method.	System orders products based on the selected sorting criteria.
User clicks on a product box.	System shows product details of the given product.
The product is out of stock.	System displays an “Out of Stock” indicator on listing and detail pages.

3.2.3 Functional Requirements

REQ-PROD-1: The system shall show customers a list of all active products together with their categories.

REQ- PROD-2: The system shall allow customers to view products filtered by a selected category.

REQ- PROD -3: The system shall allow customers to sort the list of product as they chose from list of criteria.

REQ-PROD-4: The system shall show product details, including at least the name, description, price, image, and current stock quantity.

REQ-PROD-5: The system shall show an “Out of Stock” indication when a products stock quantity is zero.

REQ-PROD-6: The system hide inactive products from the public product catalog.

3.3 Shopping Cart Management

3.3.1 Description and Priority

This feature allows customers to add products to a shopping cart, update quantities, and remove items prior to checkout. Priority: High

3.3.2 Stimulus/Response Sequences

Stimulus	Response
User clicks “Add to Cart” button for a product.	System adds the product to the cart or increases its quantity if already there.
User increase or decrease the quantity of a cart item	System updates the quantity and cart total
User removes a product from the cart	System removes the item and recalculates the cart total.
User opens the shopping cart.	System displays all items in the cart with quantities and prices.
User adds a product with zero or insufficient stock	System displays an error and prevents the quantity from exceeding available stock.

3.3.3 Functional Requirements

REQ-CART-1: The system shall store cart data for non-authenticated users in a session or equivalent client context.

REQ-CART-2: The system shall store cart data for authenticated users in a persistent store so that the cart can be restored between sessions.

REQ-CART-3: The system shall allow users to increase or decrease the quantity of each item in the cart.

REQ-CART-4: The system shall update the subtotal and grand total whenever the quantity of any item in the cart changes.

REQ-CART-5: The system shall prevent customers from adding a product to the cart when its stock quantity is zero.

REQ-CART-6: The system shall prevent customers from setting a cart quantity that exceeds the available stock for that product.

REQ-CART-7: The system shall allow customers to remove an item from the cart completely

3.4 Checkout & Order Validation

3.4.1 Description and Priority

This feature takes action when customers want to convert their cart to order. Feature allows system to control data validation and sends errors respectively. Priority: High

3.4.2 Stimulus/Response Sequences

Stimulus	Response
User clicks "Checkout"	System displays checkout page with cart summary and needed information fields.
User submits checkout form.	System validates shipping/contact information and order data.
Validation fails due to missing/invalid data.	System displays validation errors and does not create the order.
Validation fails due to stock changed / insufficient	System displays a coupon error and removes the invalid discount.
Validation fails due to the coupon being invalid/expired	System displays an error and prevents the quantity from exceeding available stock.
Validation succeeds	System creates order and order items, updates stock, and displays confirmation.

3.4.3 Functional Requirements

REQ-ORD-1: The system shall allow checkout only when at least one item is present in the cart.

REQ-ORD-2: The system should allow a user to enter his or her shipping and contact information, which should include the full name, address, phone number, and email address.

REQ-ORD-3: The system shall validate all required checkout fields and present appropriate error messages in cases of missing or invalid data.

REQ-ORD-4: The system should recheck the product quantity in stock at checkout before creating the order.

REQ-ORD-5: The system shall prevent order creation if the quantity of any cart item exceeds available stock.

REQ-ORD-6: The system shall create an order record with its initial status set to "Pending" or some other equivalent initial status.

REQ-ORD-7: The system shall create an order item record including a product ID, unit price and quantity for every product in the cart,

REQ-ORD-8: The system shall decrease product stock levels by the quantities specified in the order created.

REQ-ORD-9: The system shall compute and store the total amount of the order, any applicable discounts, and taxes if configured.

REQ-ORD-10: The system shows an Order Confirmation page, indicating the order number and a summary of its details.

REQ-ORD-11: The system shall display at least one available payment option, either Cash on Delivery or a dummy payment method among its checkout processes.

REQ-ORD-12: The system shall allow the user to select exactly one payment option at checkout and store the selected method in the order record.

REQ-ORD-13: The system shall set the payment status of newly created orders as "Pending" or "Cash on Delivery" and shall not perform any real online payment gateway integration in Version 1.

REQ-ORD-14: The system shall display the selected payment method and payment status on both the order confirmation page and the customers order details view.

3.5 Customer Order Status & Order History

3.5.1 Description and Priority

This functionality allows customers to view their previous and current orders, as well as every detail about their orders. Priority: High

3.5.2 Stimulus / Response Sequences

Stimulus	Response
User clicks "My Orders"	The system retrieves and shows all orders that belong to that specific, authenticated user.
User filters orders by status, such as Pending, Shipped	The system updates the list to show only those with the required status.
User searches by Order ID	System shows matching order(s) or indicates that no such order can be found.
User selects an order	The system displays all of the order details including the products, quantities, shipping and order timeline.
User tries to cancel order	The system examines eligibility, and if approved, marks order as 'Cancellation Requested'.

3.5.3 Functional Requirements

REQ-ORD-01: The authenticated customers must be able to view all their previous and existing orders.

REQ-ORD-02: The order number, creation date, total price, and current status must at least be shown by the system.

REQ-ORD-03: Customers need to filter their orders by status, including "Pending," "Processing," "Shipped," "Delivered," and

REQ-ORD-04: Customers must be able to search for orders using Order ID on the system.

REQ-ORD-05: The system needs to provide customers with information about all the details of any order they placed, including item names, quantities, prices, subtotal, shipping address, and payment types.

REQ-ORD-06: Order status needs to include a status timeline, for example "Pending → Processing → Shipped → Delivered," provided by the system.

REQ-ORD-07: Customers can request for cancellation only via the system when they are in a state where they can cancel their orders, for example, "Pending" or "Processing."

REQ-ORD-08: The system must retain information about "Cancellation Requested" status.

REQ-ORD-09: The system should not allow customers to cancel orders that are already shipped or delivered.

3.6 Admin Product & Category Management

3.6.1 Description and Priority

It enables admins to manage catalog data such as products, categories, prices, and inventory.

Priority: High

3.6.2 Stimulus / Response Sequences

Stimulus	Response
Admin opens Product Management page	System displays all products with pagination, filters and actions.
Admin selects "Add Product"	The product creation form appears on the screen.
Admin creates and saves new product	The system verifies and adds the new product to the catalog.
Admin modifies product	The product record is updated by the system
Admin marks product inactive	System hides product from customer catalog.

3.6.3 Functional Requirements

REQ-ADM-PROD-01: Administrators must be able to add new products to the system by entering their names, descriptions, prices, brands, categories, quantities, and pictures.

REQ-ADM-PROD-02: Administrators should be able to change, modify the products that are already in the system.

REQ-ADM-PROD-03: It must be possible for admins to delete a product except when there is an existing order for that particular product. They would then need to make it inactive.

REQ-ADM-PROD-04: It must be possible to display all products using pagination, searches, and filters for administrators.

REQ-ADM-PROD-05: The requirement that the system must support activation/deactivation of

REQ-ADM-PROD-06: The system must support adjusting quantities for products.

REQ-ADM-PROD-07: It must be possible to create, rename, and delete product categories using this system.

REQ-ADM-PROD-08: It must not remove categories when products are assigned to them.

3.7 Admin Order Management

3.7.1 Description and Priority

Admins can view, filter, and update customer orders, including order statuses. Priority: High

3.7.2 Stimulus/Response Sequences

Stimulus	Response
Admin goes to Orders page	All orders in system with a filter displayed.
Admin changes order status	System analyzes transition and changes the order status.
Admin enters tracking information	Tracking details are stored by the system.
Admin approves cancellation request	System cancels the order and refunds inventory.

3.7.3 Functional Requirements

REQ-ADM-ORD-01: Administrators must be able to view all orders using searches, filters, and pagination.

REQ-ADM-ORD-02: It is essential for the system to include data about all orders, including products, units, prices, as well as data about customers and addresses.

REQ-ADM-ORD-03: The system must support the ability to change the status of orders, for example: Pending, Processing, Shipped, Delivered, Cancelled.

REQ-ADM-ORD-04: It must be possible to input and store the tracking number on shipments when marking the order as Shipped.

REQ-ADM-ORD-05: The system must allow administrators to validate cancellation requests and accept or reject them.

REQ-ADM-ORD-06: The change in the number of products is dependent on whether or not the cancellation has been approved.

REQ-ADM-ORD-07: The system must record what the administrator does when changing the order status.

3.8 Promotions & Coupon Management

3.8.1 Description and Priority

Administrators can create, manage, and disable coupon codes, these codes can be used by customers at the point of sale. Priority: Medium

3.8.2 Stimulus/Response Sequences

Stimulus	Response
Admin generates coupon	Coupon is stored after the system verifies the fields.
User enters coupon code at checkout	The system checks and if suitable it applies the discount.
User submits expired/invalid coupon	System returns with an error message.

3.8.3 Functional Requirements

REQ-COUP-01: It has to be possible for administrators to generate coupon codes with parameters like; discount amount, dates for start and finish, minimum ordering requirements, and usage limits.

REQ-COUP-02: The ability to modify and disable coupon codes must exist for administrators within the system.

REQ-COUP-03: Coupon usage during checkout needs to be validated on various parameters, such as active, minimum order, dates, and availability.

REQ-COUP-04: Coupon discount needs to be applied in situations where the coupon is validated.

REQ-COUP-05 : In situations where the coupon is invalid, has expired, or doesn't apply, error messages must be shown.

4. External Interface Requirements

4.1 User Interfaces

4.1.1 Customer Home & Product Catalog

Customer Home & Product Catalog page (see Figure 4.1.1 below) remains the major point for interaction with customers. It gives customers opportunities to explore, search, or filter pet products on offer, which customers can choose to cart instantly.

Main elements:

- Global Navigation Bar with Logo, Menu Items (Home, Shop, My Orders, Help), Access to User Profile, Cart Icon with Current Count.
- Hero section with a promotional headline, short description text, and "Shop Now" call to action that directs the user to the catalog page.
- Left-hand filter panel with product category, price, and availability filters, containing "Apply Filter" and "Clear" buttons.
- Catalog toolbar with product search box and sort by dropdown (for example, popularity, price).
- A product grid with each card containing product image, name, short description, product price, stock status whether its "In Stock" or "Out of Stock," and "Add to Cart" functionality.
- Pagination controls are present at the bottom of the grid (Previous, page numbers, Next).

Representative UI Requirements:

- It shall include displaying products on a paginated grid with features such as at least product image, name, price, and availability.
- It shall require the page to enable customers to filter their product listings based on categories, price, and availability.
- On the page, there shall be a search box, along with some options for sorting displayed products.
- It shall provide functionality to enable consumers to pick any product in stock into the shopping cart, with its functionality to increase or decrease the counter in the header accordingly.

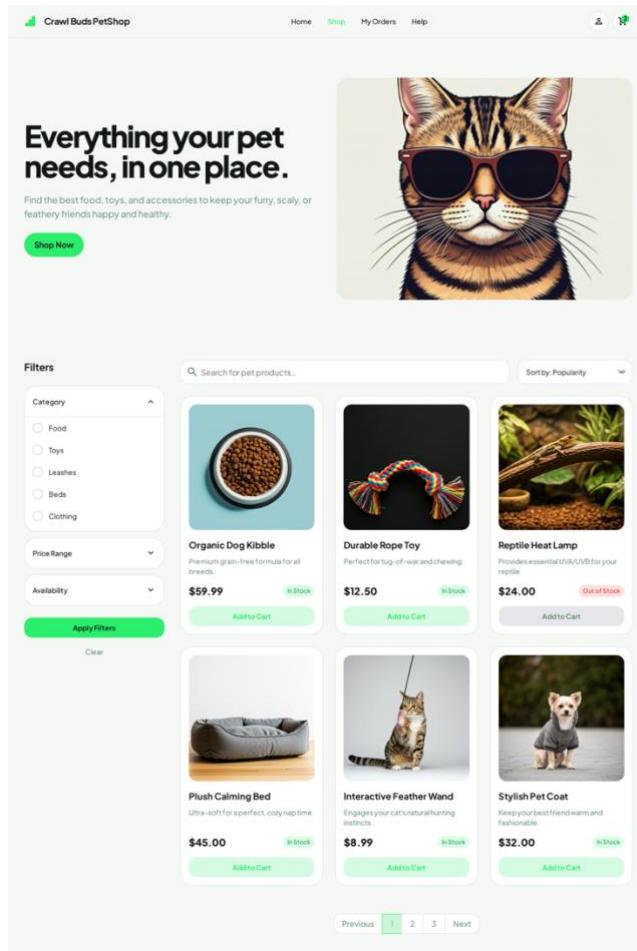


Figure 4.1.1 - Customer Home & Product Catalog Page

4.1.2 Product Detail Page

This page displays information about one product only, along with actions such as choosing quantities, adding to cart, or purchasing now. See Figure 4.1.2 below:

Main elements:

- Header containing logo, navigation menu (e.g., Dogs, Cats, Small Pets, Sale), search bar, favorites icon, cart icon, and profile icon.
- It displays product media with a large product image, along with several other small images, called thumbnails.
- Panel for product information, including category, name, star rating, major features in point form, price, and availability.
- Purchase controls with quantity selector (increment / decrement), Add to Cart button, and Buy Now button.
- Delivery/shipping information (for example, delivery date range, threshold for free shipping).
- Tabbed content section with Description, Ingredients & Materials, Usage Notes, and Reviews / Related Products.

Representative UI Requirements:

- It shall include displaying the primary image, thumbnails, product name, category, rating, price, and status for the chosen product.
- The page shall enable the customer to modify the quantity, thereby placing the product in their shopping cart or purchase it instantly via the action Buy Now.
- The page shall provide essential text information about description, ingredients, materials, or other information in a distinct, sectioned-off fashion with tabs.

- It shall display information about prospective delivery times, together with any necessary shipping conditions for the product.

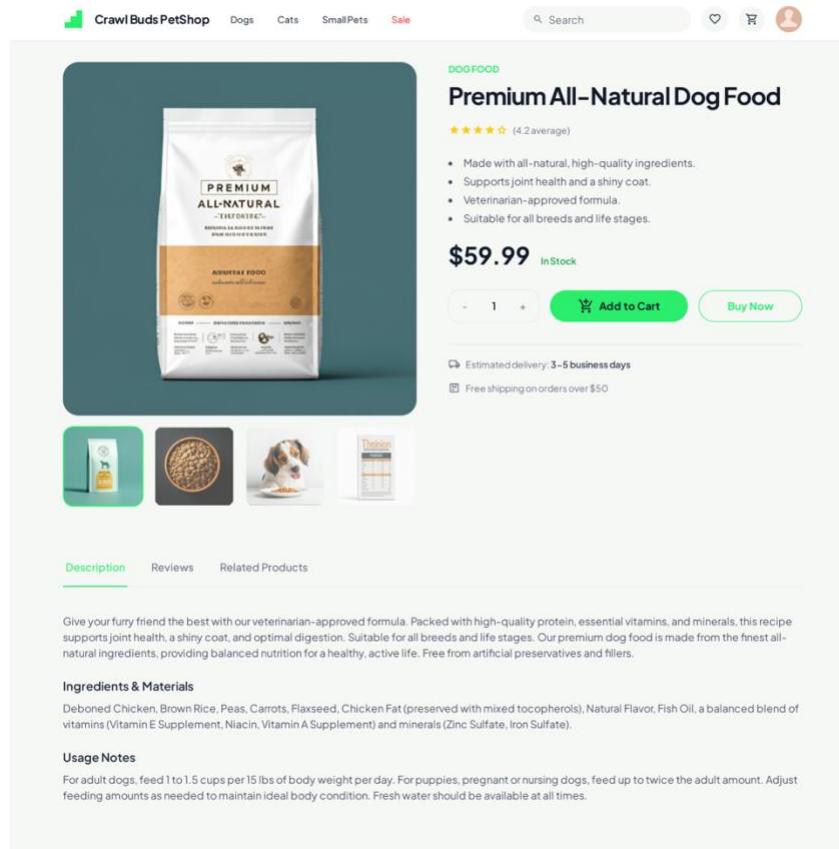


Figure 4.1.2 – Product Detail Page

4.1.3 Customer & Admin Login / Registration Page

It is primarily used by customers, as well as administrators, to login, while new customers create their accounts with their contact/shipping information. See Figure 4.1.3 below.

Main elements:

- Header containing logo, with "Back to shop" link.
- Left panel with Customer/Admin switch, input fields for email/username and password, "Remember me" checkbox, "Forgot password?" link, and Log In button.
- Right panel with the Create a Customer Account form consisting of full name, email, password/confirm password, phone number, address line, city, postal code, country selector, default shipping checkbox, and Create Account button.
- Footer note for data protection and secure connection.

Representative UI Requirements:

- It shall have login functionality for customers, admins, and shall have support for different types of users through a toggle switch.
- The login page shall have email/username and password fields, with Remember me and Forgot password? functionality.
- The page shall enable viewers to fill out a registration form. On successfully submitting it, it shall create a new customer account.
- The page shall provide information on a security warning page regarding the security of connections and information about users.

The screenshot shows a web-based login and registration interface for 'Crawl Buds PetShop'. At the top left is the shop logo and name. At the top right is a 'Back to shop' link. The main area is divided into two sections: 'Welcome Back, Pet Parent!' on the left and 'Create a Customer Account' on the right.

Welcome Back, Pet Parent!
Login to see your orders.

Customer Admin

Email or Username
Enter your email or username

Password
Enter your password

Remember me [Forgot password?](#)

Create a Customer Account
Join the Crawl Buds family to track orders and save your details.

Full Name
e.g., Alex Doe

Email
you@example.com

Password Confirm Password
***** *****

Phone Number
+1(555) 000-0000

Address Line
123 PetStreet

City
Critterville

Postal Code
12345

Country
United States

Use this as my default shipping address

Create Account

We protect your data. Your connection is secure.

Figure 4.1.3 – Customer & Admin Login / Registration Page

4.1.4 Shopping Cart Page

A Shopping Cart page (see Figure 4.1.4) displays all products selected for purchase, allowing customers to check on quantities, modify cart contents, or move on to checkout.

Main elements:

- Global header containing the logo, category links (Dogs, Cats, Small Pets, Sale), profile icon, and cart icon.
- Breadcrumb trail showing checkout process flow (Cart → Checkout → Order Complete).
- Cart items table listing each product with its thumbnail image, name, variant information (for example, brand, color, size), unit price, quantity selector (-, value, +), subtotal, and delete/remove button.
- "Clear Cart" action to remove all items from cart.
- "Order Summary" section containing subtotal, shipping cost, total, "Coupon code" box with "Apply" button, "Proceed to Checkout" primary button, plus "Or Continue Shopping" text link.

Representative UI Requirements:

- The page shall include all items in the cart, with product information, pricing, editable quantity, and subtotal for each.
- It shall provide functionality for customers to be able to increase or reduce quantities, modify sub-totals, delete individual items, or delete entire carts.
- It shall contain functionality to display an ordering summary with information on subtotal, shipping, and overall costs, along with functionality to apply a discount code, thereby allowing the process to move to checkout.

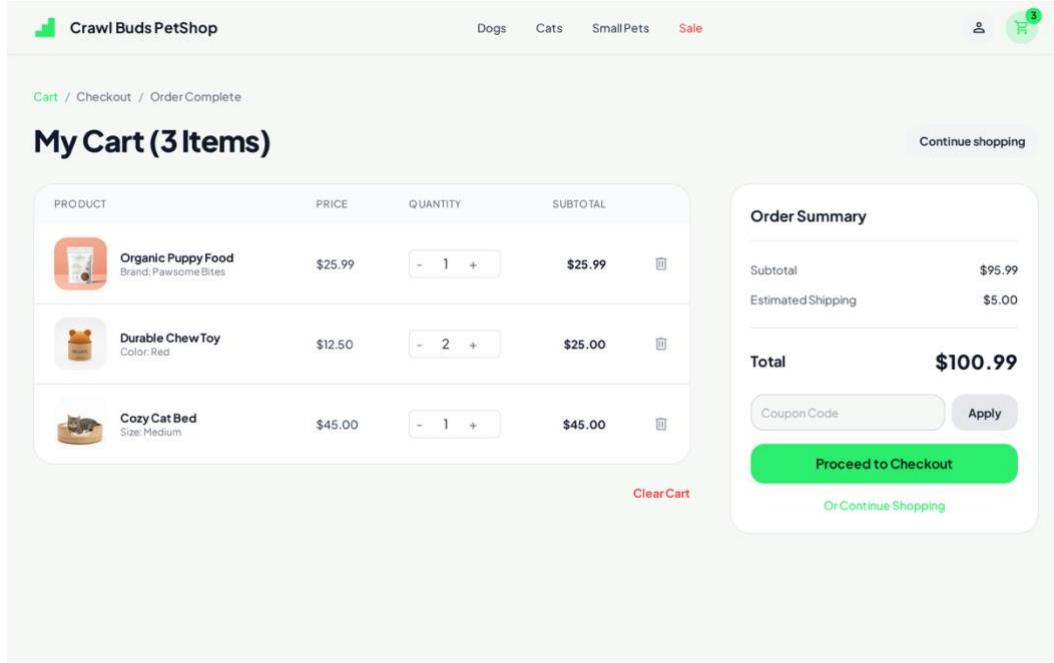


Figure 4.1.4 – Shopping Cart Page

4.1.5 Checkout Page

Checkout Page (see Figure 4.1.5): Here, shipping information and financial information are gathered, along with an ordering summary.

Main elements:

- Header containing page logo, primary navigation (Home, Shop, About Us, Contact Us), and actions for users/cart.
- Provides a step indicator illustrating stages for checkout (Shipping details → Payment → Review & Confirm) with a progress bar.
- Shipping Details fields, such as full name, phone, email, address line, city, postal code, country, shipping method.
- Payment Method section with radio buttons (Credit/Debit Card, Cash on Delivery) and, depending on whether its Credit/Debit Card, there'll be text boxes for Card Holders Name, Card Number, Expiration Date, CVV, with an option to Remember Info for next purchase.
- Action buttons: "Back to cart" and primary "Continue to review" buttons.
- Order Summary panel with lists containing items, quantities, subtotals, shipping charges, total sum, estimated date of delivery, and Secure Checkout.

Representative UI Requirements

- The page shall provide a checkout process in which customers are allowed to enter their shipping information in order to enable shipping.
- The page shall provide ways for choosing the method to charge, as well as, in bank transactions, for entering obligatory information in validated input fields.
- The page shall contain an order summary box with elements such as order items, subtotal, shipping, total, and est. delivery date, alongside links to either return to cart or continue to review order.

Crawl Buds PetShop

Home Shop About Us Contact

Checkout

1. Shipping details > 2. Payment > 3. Review & Confirm

Shipping Details

Full name: John Doe

Phone: +1(555)123-4567

Email: john.doe@example.com

Address line: 456 Pawsitive Street

City: Metropawlis

Postalcode: 90210

Country: United States

Shipping method: Express (1-2 business days)

Order Summary

	Crested Gecko Qty: 1	\$150.00
	Terrarium Starter Kit Qty: 1	\$89.99
Subtotal		\$239.99
Shipping		\$15.00
Total		\$254.99

Estimated delivery: June 28, 2024

Secure Checkout

Credit/Debit Card

Cash on Delivery

Cardholder name: Enter name as it appears on card

Cardnumber: 0000 0000 0000 0000

Expiry date: MM/YY

CVV: 123

Save this information for next time

[← Back to cart](#) [Continue to review](#)

Figure 4.1.5 – Checkout Page

4.1.6 My Orders & Order Detail Page

The My Orders & Order Detail Page (see Figure 4.1.6) enables consumers to view their previous and ongoing orders, sort their orders based on their status, and view information.

Main elements:

- Left panel with search bar titled "Search by Order ID," status filter chips (All, Pending, Shipped, Delivered, Cancelled), and vertical list with ID, date, status indicator, and total value for each order.
- Right panel with Order Details heading, displaying selected order ID, with horizontal status/progress tracker (Processing, Shipped, Delivered).
- Shipping Address Section and Payment Method Section, with the Customers Stored Shipping Address and Masked Payment Information.
- Items List showing each products thumbnail, name, quantity, and line price, followed by a cost breakdown (subtotal, shipping, total).
- Cancel Order button, with status information if cancellation is no longer possible (for example, after delivery).

Representative UI requirements:

- The page shall provide lists of orders for customers, with search-able Order IDs, and enable filtering based on different statuses.
- It shall contain information about the status transitions in the chosen order, shipment destination, means of payment, products, and financial information. It shall furnish functionality to cancel an order if allowed, along with an explanation for not being able to cancel the order.

The screenshot shows the 'My Orders' section on the left and the 'Order Details' section on the right. The 'My Orders' section lists several recent orders with details like ID, date, status, and total amount. The 'Order Details' section shows a single order (#CB11032) with a status timeline from 'Processing' to 'Shipped' to 'Delivered'. It includes shipping address information (Alex Doe, 123 Pawsome Lane, Petville, PV 54321, United States), payment method (Visa ending in **** 1234), items ordered (Premium Dog Food, Durable Chew Toy, Organic Catnip (3-pack)), and financial summary (Subtotal \$105.00, Shipping \$7.50, Total \$112.50). A 'Cancel Order' button is present at the bottom.

Figure 4.1.6 - My Orders & Order Detail Page

4.1.7 Admin Dashboard Overview Page

The Admin Dashboard Overview Page, Figure 4.1.7, offers administrators in stores an overall view on operational data such as orders, sales, and warning notifications related to stock, while also offering convenient shortcuts to views on orders processed recently and on management functions.

Main elements:

- Links in the left sidebar for navigating to Dashboard, Products, Orders, Customers, Settings, and Logout.
- Top header with "Admin Dashboard" title, logged in admins name, and their profile picture.
- Summary cards displaying information like Todays Orders, Pending Orders, Revenue This Month, Low-Stock Products.
- Analytics panel for Last 7 Days, consisting of overall orders, comparison with previous period, and line/area chart for each weekday.

- Table showing orders, with some orders marked with Completed, Pending, Shipped, or Cancelled badges, next to a column to View orders.

Representative UI requirements:

- It shall provide information about major orders, sales, low stock, and other statistics in Cards, to be displayed on top on pages.
- The page shall provide a visual representation of orders in the last seven days, including comparison with orders from the previous period.
- The page shall have some orders displayed with the orders displayed in columns such as ID, Customer, Date, Total, Status, and View Orders. It needs to contain links to manage products, orders, and customers on the sidebar.

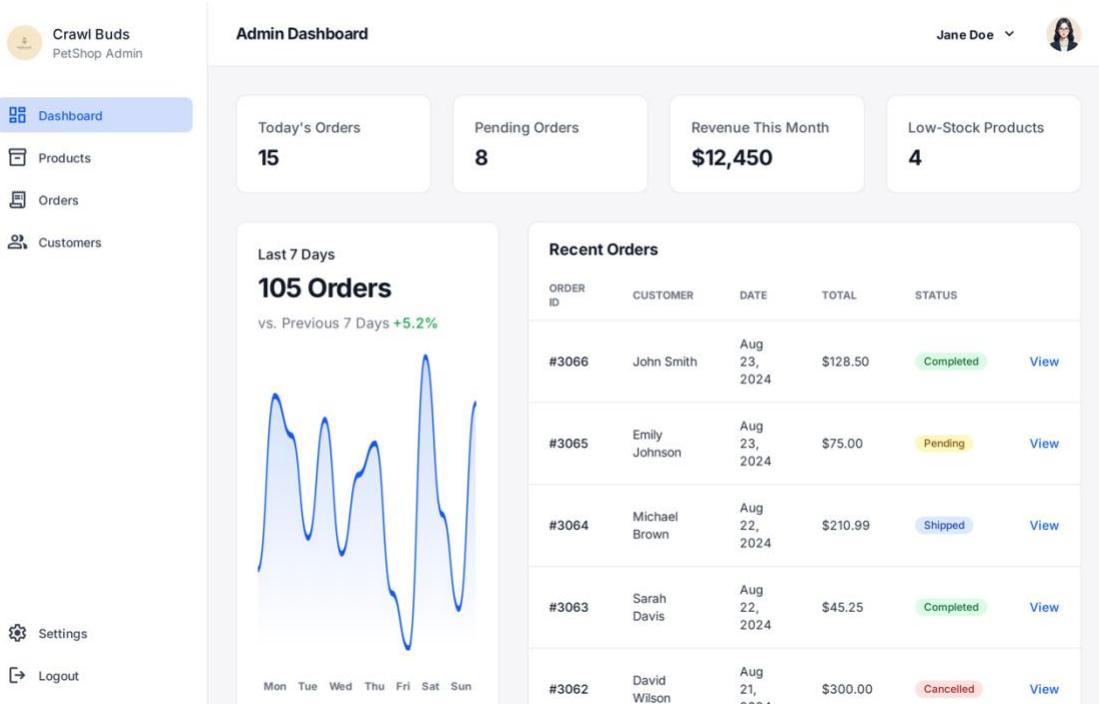


Figure 4.1.7 – Admin Dashboard Overview Page

4.1.8 Admin Product Management Page

The Admin Product Management Page (see Figure 4.1.8 below) allows administrators to search, segregate, examine, and manage all products in the catalog for updating their records, status, etc.

Main elements:

- Left sidebar menu with links to Dashboard, Orders, Products, Customers, Settings, and Logout, with Products being highlighted due to being in the active section.
- Header containing the page title (“Products”) and an Add New Product button.
- Filter bar with product search box (“Search products by name....”), Category, and Status filters.
- List of products in table format with columns for: thumbnail, product, type, price, quantity, status (Active, Low stock, or Inactive), and actions (icons for Edit and Delete).
- Pagination controls, along with "Showing X–Y of N" text displayed below the table.

Representative UI requirements:

- The page shall showcase information about products in table format consisting, in any case, of Product Name, Category, Price, Stock, Status.
- The page shall enable administrators to search for products by their names, while the listing shall be filtered via categories and status.
- It shall contain page actions for creating a new product, as well as for deleting or modifying products in the catalog.
- The page shall support pagination to enable browsing through product lists, showing what range of products is being viewed out of how many.

The screenshot shows the 'Products' section of the admin panel. The left sidebar has links for Dashboard, Orders (active), Products (selected), Customers, Settings, and Logout. The main area has a search bar, filters for Category and Status, and a table with four rows of product data. The table columns are PRODUCT NAME, CATEGORY, PRICE, STOCK, STATUS, and ACTIONS. The products listed are Premium Dog Leash (Accessories, \$19.99, 120, Active), Organic Dog Food (Food, \$45.50, 8, Low stock), Squeaky Chew Toy (Toys, \$9.99, 250, Active), and Cozy Pet Bed (Furniture, \$79.00, 0, Inactive). At the bottom, it says 'Showing 1-4 of 100' and has a pagination bar with links for Previous, 1, 2, 3 (highlighted), ..., Next.

PRODUCT NAME	CATEGORY	PRICE	STOCK	STATUS	ACTIONS
Premium Dog Leash	Accessories	\$19.99	120	Active	
Organic Dog Food	Food	\$45.50	8	Low stock	
Squeaky Chew Toy	Toys	\$9.99	250	Active	
Cozy Pet Bed	Furniture	\$79.00	0	Inactive	

Figure 4.1.8 – Admin Product Management Page

4.1.9 Admin Order Management Page

The Admin Order Management Page (see Figure 4.1.9 below) enables administrators to search, refine, view, and manage all orders submitted to their websites by their customers.

Main elements:

- Left sidebar menu options: Dashboard, Orders (active), Products, Customers, Settings, Logout.
- Contains page header with title (“Orders”) with action buttons for Export and Create Order.
- Status filter bar with quick filters: All, Pending, Processing, Shipped, Delivered, Cancelled.
- "Search field (Search by Order ID, Customer...)" and date range picker.
- Orders table showing each order with checkbox, Order ID, Customer, Date, Total, Payment Status, Order Status, and View action.
- Footer section indicating "Showing X to Y of N results" with respective pagination links.

Representative UI requirements:

- The page shall display all orders in a table format with at least the following information: order ID, customers name, date, total, status, and payment status.
- The page shall enable administrators to filter orders based on their status in orders lifecycle, as well as to search orders by their IDs or customers names.
- It shall provide functionality on the page for filtering orders for any given date range chosen.
- On the page, mechanisms for exporting an ongoing list of orders, as well as generating an order record, will be provided. It shall provide support for pagination, with indications for the range and total number of orders in the result set.

The screenshot shows the 'Orders' section of the 'Admin Panel' for 'Crawl Buds PetShop'. The left sidebar includes links for Dashboard, Orders (which is selected and highlighted in blue), Products, Customers, Settings, and Logout. The main content area has a title 'Orders' with a 'Export' button and a 'Create Order' button. Below this are tabs for All, Pending, Processing, Shipped, Delivered, and Cancelled. There are search and date range filters. A table lists six orders with columns for Order ID, Customer, Date, Total, Payment Status, Order Status, and Actions. The orders are: #10524 (Eleanor Pena, Mar 8, 2024, \$112.50, Paid, Delivered, View); #10523 (Cody Fisher, Mar 8, 2024, \$45.00, Paid, Shipped, View); #10522 (Jenny Wilson, Mar 7, 2024, \$89.90, Paid, Processing, View); #10521 (Jacob Jones, Mar 7, 2024, \$25.00, Pending, Pending, View); and #10520 (Ralph Edwards, Mar 6, 2024, \$64.75, Refunded, Cancelled, View). At the bottom, it says 'Showing 1 to 5 of 20 results' with a page navigation bar showing pages 1, 2, 3, and 4.

Order ID	Customer	Date	Total	Payment Status	Order Status	Actions
#10524	Eleanor Pena	Mar 8, 2024	\$112.50	Paid	Delivered	View
#10523	Cody Fisher	Mar 8, 2024	\$45.00	Paid	Shipped	View
#10522	Jenny Wilson	Mar 7, 2024	\$89.90	Paid	Processing	View
#10521	Jacob Jones	Mar 7, 2024	\$25.00	Pending	Pending	View
#10520	Ralph Edwards	Mar 6, 2024	\$64.75	Refunded	Cancelled	View

Figure 4.1.9 – Admin Order Management Page

4.2 Hardware Interfaces

The system does not require any special-purpose hardware interfaces for Release 1.0. It is intended to run on standard server hardware and client devices (desktop, laptop, tablet, or smartphone) capable of using a modern web browser and Internet connection. No dedicated peripherals (e.g., barcode scanners, POS terminals, or card readers) are directly integrated with the system in this release.

4.3 Software Interfaces

SI-1: CrawlBuds PetShop Database

SI-1.1: It shall be obligatory for storing/retrieving all kinds of persistent data (users, products, categories, orders, order items, administrative accounts, etc.) in a relational database management system, with access via some kind of computer interface (for example, ORM, SQL driver/gateway, etc.).

SI-1.2: The database schema shall enforce relationships, such as primary keys and foreign keys, to maintain referential integrity between major entities like: users to orders, orders to order items, products to order items, such that no inconsistent records are allowed to be maintained in any entity.

SI-1.3: The job of the application server shall be to perform all CRUD operations on the database, while browsers shall not have any direct interaction with the database.

SI-2: External Software Services

SI-2.1: In Version 1, the system shall not integrate with real third-party payment gateways, shipping companies, or external inventory management systems. Payment options will all be done in the application itself, such as ‘Cash on Delivery’ or dummy payments.

SI-2.2: Future versions could provide interfaces to other payment or shipping providers; such interfaces are beyond the scope of this version of the SRS document and will be described in future revisions.

4.4 Communications Interfaces

All communication between client-side browsers and the application server shall take place over standard TCP/IP using HTTPS (HTTP over TLS on port 443).

The communication between the application server and the relational database server shall occur on the internal network via the native database engine communication protocol (e.g., MySQL/PostgreSQL); the database shall not be directly reachable from the public Internet.

The system shall not require any additional communication protocols such as FTP, message queuing, or external web service APIs in Version 1.0.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

PRF-1

Under normal usage conditions, the system shall respond to user requests over the internet in under 2 seconds. This ensures a fast, smooth, and satisfying experience for users without waiting.

PRF-2

The system shall be able to handle CRUD/database operations (product search, add to cart) for at least 50 customers simultaneously without any performance degradation. This is important to prevent system crashes during busy periods. It is also valuable to prevent user loss in scenarios where many customers are processing transactions simultaneously.

PRF-3

Operations such as catalog queries and filtering options shall be performed in an optimized manner on the database side, and query times shall be as low as possible.

PRF-4

The system shall be able to display up to 100 items on a single page in any paginated list without any significant change in response time.

PRF-5

The application shall not consume excessive CPU and memory when running under the settings of a standard web application using PHP. Priority should be given to solutions that use data structures with as little space complexity as possible.

5.2 Safety Requirements

SAF-1

The system should have a "Transaction" structure for database operations, particularly regarding data integrity. If an order cannot be completed for any reason (for example, a stock reduction failed), no transaction record should be created. Data integrity should be maintained by a rollback to the previous state.

SAF-2

Inventory and orders must be consistent, so product stock quantities never become negative, even in cases of replenishment, consecutive orders, or multiple orders at once.

SAF-3

When the database encounters a problem or a critical error in the code, the system shall display understandable and well-guiding error messages for the standard user, rather than technical blocks like stack traces. The comprehensiveness of this section is critical; if error messages related to unexpected edge cases are not handled properly, the SEC-2 requirement may not be fully met.

SAF-4

The database administrator should regularly save and create backups of the MySQL database. This is crucial to prevent catastrophic scenarios in the event of a major crash or server failure.

SAF-5

The system should avoid creating duplicate orders in cases where the user accidentally submits an order more than once (for example, by disabling the submit button after the first click).

5.3 Security Requirements

SEC-1

All communication between the application server and client browsers should occur over HTTPS to ensure that sensitive information, such as login and credentials, is encrypted during transmission.

SEC-2

The system must grant role-based access to pages. Only authenticated users should be able to navigate to pages they are authorized to access. All other direct URL access attempts should be denied and disallowed.

SEC-3

All user passwords should be stored in the database using PHP's own hash functions or equivalent modern solutions. Clear passwords should never be stored in the database or log files.

SEC-4

The system must validate all user input on the server side and use prepared statements for all database interactions. This is critical for protection against attacks such as SQL injections.

SEC-5

After five consecutive failed login attempts from the same account or IP address within 10 minutes, the system should block further login attempts from that account or IP address for at least five minutes. This is a simple yet effective method for slowing down brute-force attacks.

SEC-6

The system must log the following events with user IDs and timestamps:

Both successful and unsuccessful logins, password changes, product creation/modification/deletion, and order status changes.

5.4 Software Quality Attributes

5.4.1 Usability

QAL-USE-1

The pages presented to customers (Home, Product Catalog, Product Detail, Cart, Checkout, My Orders) shall maintain a layout, color palette and navigation design allowing users to effortlessly navigate from one page to another.

QAL-USE-2

Every form (registration, login, checkout, admin product/order forms) shall offer: distinct field labels, validation messages displayed inline beside fields and a consolidated error message positioned near the top of the form when validation does not pass.

QAL-USE-3

The website must be functional on both desktop and mobile platforms with a viewport width small as roughly 375 px and essential activities (viewing products adding items to the cart completing checkout) must not involve horizontal scrolling, on mobile.

5.4.2 Availability & Reliability

QAL-REL-1

Throughout demonstration sessions and evaluation intervals for the course the system must remain accessible for at least 95% of the duration (allowing no more than a single brief downtime lasting, up to 15 minutes every 5 hours of intended operation).

QAL-REL-2

For user inputs (that meet established validation criteria) the system must not fail or generate unhandled PHP errors. Any unforeseen internal problems shall be intercepted, recorded and communicated to the user through a general error notification.

QAL-REL-3

Operations related to orders (such as creating orders modifying order status cancelling orders) must be atomic within the database to prevent updates (for instance an order being created without updating stock).

5.4.3 Maintainability & Extensibility

QAL-MAINT-1

The codebase must adhere to an organization that divides: presentation (HTML/CSS) business logic (PHP scripts) and data access (database-related functions) ensuring that modifications in one layer necessitate adjustments, in the others.

QAL-MAINT-2

Settings information, like database connection details, base URLs and site-wide constants must be kept in a configuration file instead of being embedded directly in numerous PHP files.

QAL-MAINT-3

PHP modules and functions that carry out logic (such as checkout handling order status changes, coupon checks) must include brief comments describing their intent, inputs and outputs enabling future developers to comprehend and update them effortlessly.

QAL-MAINT-4

The system shall be implemented using only standard PHP and MySQL features, without depending on server-specific extensions, so that it can be deployed on any standard LAMP/WAMP/XAMPP stack that satisfies the course constraints.

5.4.4 Portability

QAL-PORT-01

The software shall operate properly, on least one standard LAMP (Linux, Apache, MySQL, PHP) or WAMP/XAMPP setup found in the university laboratory without needing OS-specific components or specialized web server plugins.

QAL-PORT-02

The front-end shall conform to HTML5 and CSS standards as already stated in the SRS, so that the site renders correctly on the supported browsers and operating environments defined in Section 2.4.

Appendix A: Glossary

user (customer) = user ID

username

e-mail

password

phone number

address

user ID = *unique number or code for each registered user; internal use only*

user name = *name of the customer; max 50 characters*

e-mail = *e-mail address of the customer; used for login and notifications; max 100 characters*

password = *secret string chosen by the user to log in*

phone number = *contact phone number of the user; country code + number*
address = *shipping / billing address of the user; street, city, postal code, country*

admin = admin ID
 admin name
 admin e-mail
 password
 role

admin ID = *unique number or code for each admin user*
role = *type of admin rights, for example “product manager” or “order manager”*

product = product ID
 product name
 product description
 price
 stock quantity
 category
 product image URL

product ID = *unique number or code for each product*
product name = *short name of the product; max 100 characters*
product description = *text describing the product; max 1000 characters*
price = *unit price of the product in local currency; stored with two decimals*
stock quantity = *number of units available to sell; integer ≥ 0*
category = *group of similar products, such as “Dog Food” or “Cat Toys”*
product image URL = *link to the main image file for this product*

shopping cart = cart ID
 user ID
 cart total

cart item =	product quantity item total
quantity =	<i>number of units of a product in the cart; integer ≥ 1</i>
item total =	<i>price \times quantity for a single cart item</i>
cart total =	<i>sum of all item totals in the cart</i>
order =	order ID user ID order date payment method shipping address order total order status
order ID =	<i>unique number the system assigns to each placed order</i>
order date =	<i>date and time when the user confirmed the order</i>
payment method =	<i>method selected by the user, for example “Credit Card” or “Cash on Delivery”</i>
shipping address =	<i>delivery address for the order; copied from the user’s address data</i>
order total =	<i>final total amount of the order, including all items and discounts</i>
order status =	<i>[pending confirmed shipped delivered cancelled]</i>
order item =	product quantity unit price line total
unit price =	<i>price of one unit of the product at the time of order</i>
line total =	<i>unit price \times quantity for one order item</i>

Appendix B: Analysis Models

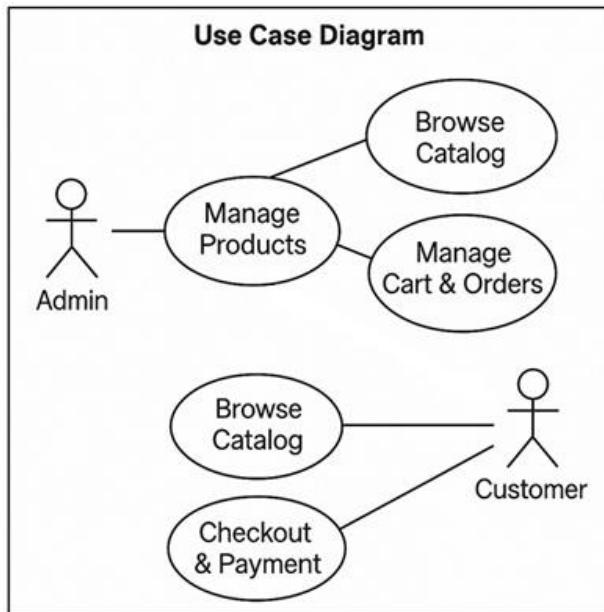


Figure B-1: Use Case Diagram

PetShop

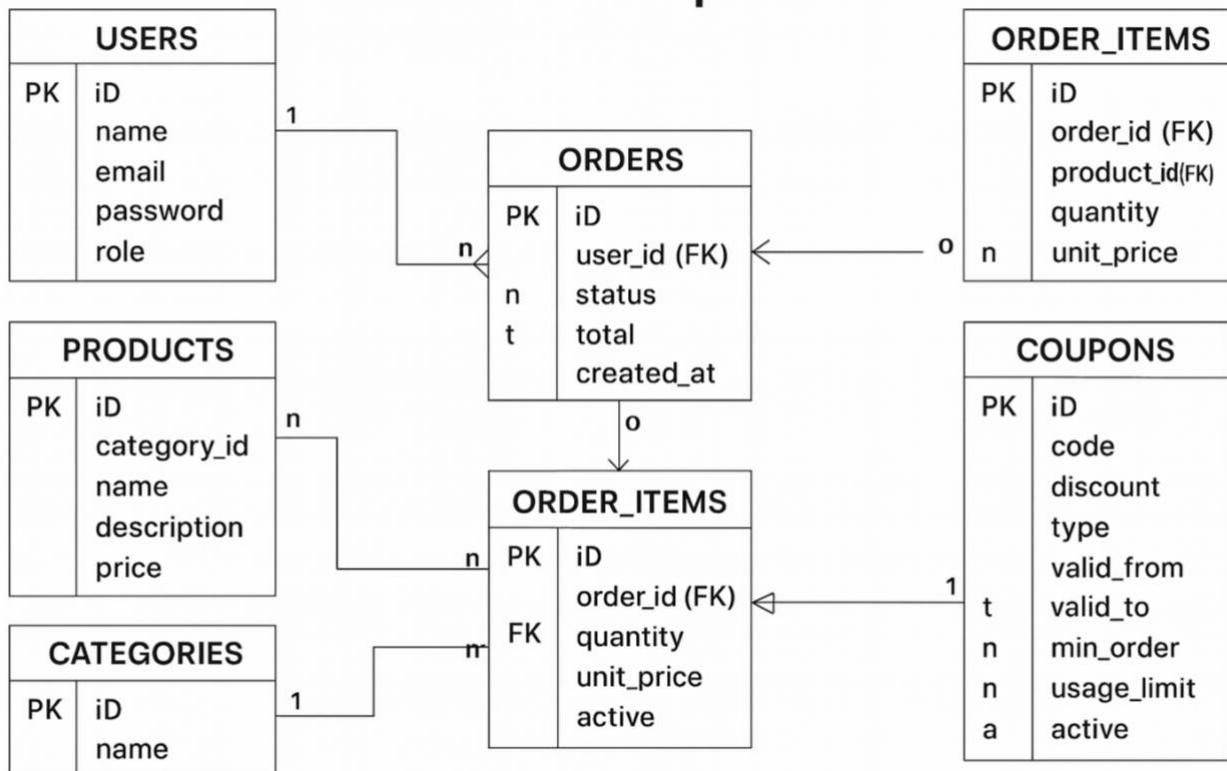


Figure B-2: ER Diagram

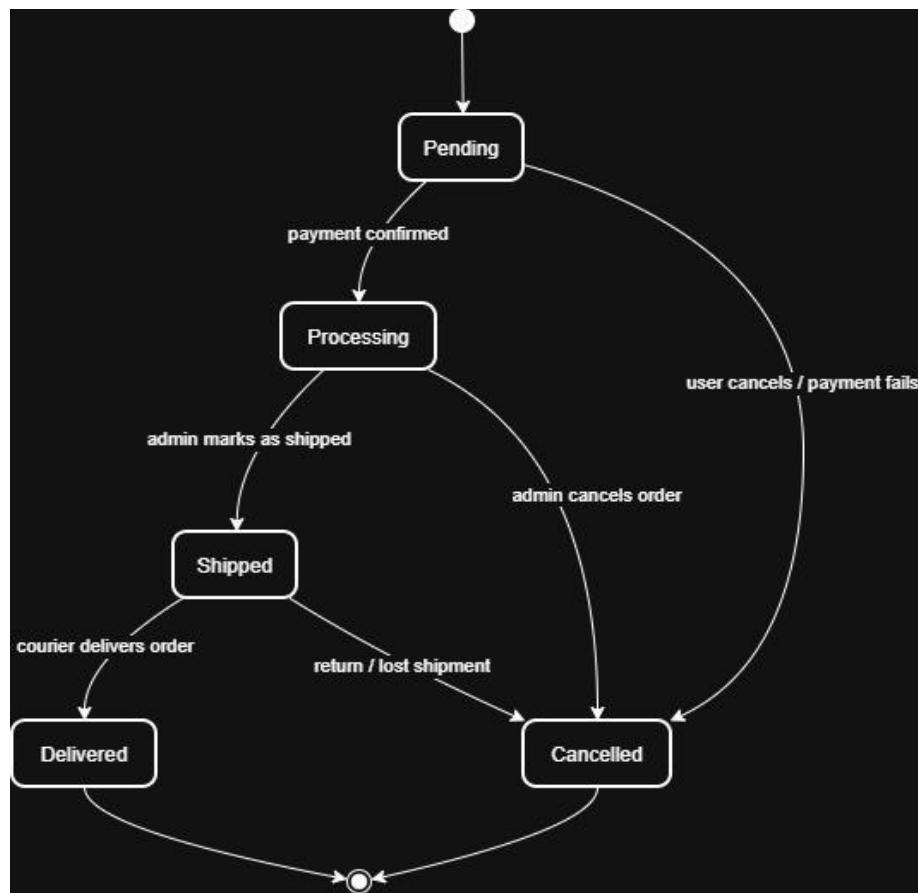


Figure B-3: State Diagram