SOFTWARE REQUIREMENTS SPECIFICATION

for

BurnLab

Version 1.0

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CSE — Intro to SE

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1 Introduction

1.1 Purpose

This Software Requirements Specification (SRS) describes the BurnLab web platform (Version 1.0). It defines the scope, features, constraints, and quality attributes required to design, implement, test, and operate BurnLab. This SRS covers the full system rather than a single subsystem.

1.2 Document Conventions

This SRS follows IEEE conventions for requirements documents (ISO/IEC/IEEE 29148:2018). Section numbering is hierarchical. Plain text conveys narrative descriptions; **bold** emphasizes key terms and priorities. Functional requirements are uniquely identified using the prefix **REQ-#** (e.g., REQ-1). Unless explicitly stated otherwise, feature-level priorities are inherited by their detailed requirements. All requirement statements are complete, unambiguous sentences.

1.3 Intended Audience and Reading

Developers and testers should focus on **Chapter 3 (System Features)** for implementable behavior and test design. Project managers can use **Chapters 2–4** to track scope, priorities, and quality targets. Administrators and support staff can reference expected behaviors and constraints throughout. A suggested order is: **Chapter 1** (scope), **Chapter 2** (context), **Chapter 3** (functional details), then **Chapters 4–5** (nonfunctional qualities and other constraints).

1.4 Product Scope

BurnLab provides personalized fitness and nutrition planning alongside a marketplace for expert-created programs. Users receive adaptive workout and meal plans based on profile data and progress, can track activity over time, and purchase plans from verified sellers. Administrators manage users, moderate content, and ensure platform security. The system aims to deliver accessible wellness planning, trustworthy content commerce, and reliable operations.

1.5 References

This SRS was prepared in accordance with IEEE requirements engineering guidance (ISO/IEC/IEEE 29148:2018). These standards informed the organization, terminology, and conventions used herein.

2 Overall Description

2.1 Product Perspective

BurnLab is a new, self-contained web application that intermediates between buyers and sellers of digital fitness and nutrition content. It employs interconnected relational data models and presents a simple, intuitive interface suitable for a wide range of users.

2.2 Product Functions

Major functions include:

- User onboarding and profile management (collecting age, weight, height, goals).

- Generation of personalized workout and meal plans that adapt over time.

- Progress logging and performance tracking with evolving recommendations.

- Marketplace for experts (trainers, nutritionists) to publish and sell programs.

- Secure browsing, comparison, and purchase of offerings by buyers.

- Administrative user/content management, moderation, and security oversight.

- Limited guest previews to encourage registration.

2.3 User Classes and Characteristics

- **Buyer:** Authenticates with email/password; browses, searches, purchases content; tracks progress.

- **Seller:** Manages product listings; views order artifacts for fulfillment.

- **Admin:** Superuser for user management, content moderation, dispute handling, and platform health.

2.4 Operating Environment

BurnLab targets modern desktop and mobile browsers (Chrome, Firefox, Edge, Safari) and shall be responsive across device sizes.

2.5 Design and Implementation Constraints

Initial deployment uses small-scale servers, limiting concurrency compared with large e-commerce sites. The stack includes Django, HTML, and CSS; Firebase provides cloud-hosted database services. Communications use HTTPS with TLS; passwords are stored with industry-standard hashing. Sellers must provide allergen information for applicable content.

3 System Features

*The functional requirements are organized by feature. Each feature includes a description, stimulus/response sequences, and verifiable requirements labeled **REQ-#**.*

3.1 Profile Registry

3.1.1 Description and priority

Enables account creation and profile maintenance using email and password. **Priority: High.**

3.1.2 Stimulus/Response Sequences

Profile as Admin

- Admin opens "Profile" in the Admin Console.

- System loads stored details; admin edits and saves.

- System validates input, updates profile, and confirms success.

Profile Request as Seller

- User opens "Apply as Seller."

- User provides business name, address, tax ID, and documents.

- System validates and sets status to **Pending Review**; user is notified.

Seller Profile Denied — False Information

- Admin detects misleading information and clicks "Deny" with reason.

- System sets status to **Denied** and notifies the seller.

Seller Profile Denied — Business Not Found

- Admin cannot verify business; denies with reason "Business not found."

- System sets status to **Denied** and notifies the seller.

Profile as Buyer

- Buyer opens "My Profile," edits details, and saves.

- System validates and confirms update.

3.1.3 Functional Requirements

REQ-1: When email and password meet required standards, the system shall create the user account.
REQ-2: If email or password is invalid, the system shall display an error message.
REQ-3: The system shall associate each account with one role: Buyer, Seller, or Admin.

3.2 Login and Logout System

3.2.1 Description and priority

Authenticates users and establishes sessions; provides logout and inactivity timeouts. **Priority: High.**

3.2.2 Stimulus/Response Sequences

Login as Seller

- Seller selects "Login as Seller," enters credentials.

- If valid, system redirects to **Seller Dashboard**; otherwise shows error.

Login as Buyer

- Buyer selects "Login as Buyer," enters credentials.

- If valid, system redirects to **Homepage**; otherwise shows error.

Login as Admin

- Admin selects "Login as Admin," enters email/username and password.

- System validates against admin directory; on success redirects to **Admin Console**; otherwise shows error.

- Non-admin attempts are blocked and redirected to the **Homepage**.

Logout

- Any authenticated user clicks "Logout."

- System ends session, clears tokens, and redirects to the Login page.

- After 15 minutes of inactivity, the system auto-logs out with "Session expired."

3.2.3 Functional Requirements

REQ-4: On valid credentials, the system shall authenticate and redirect to the appropriate landing page.
REQ-5: On invalid credentials, the system shall display an informative error message.

3.3 Marketplace

3.3.1 Description and priority

Allows browsing, filtering, and purchasing of products; manages publication workflow.
Priority: High.

3.3.2 Stimulus/Response Sequences

Seller Requests to Publish a Product

- Seller submits title, description, price, stock, and images.

- System validates inputs and sets status **Pending Admin Approval**; seller is notified.

Admin Approves Product

- Admin approves compliant products; system sets status **Active** and publishes.

Admin Denies Product

- Admin denies with reason; system sets status **Denied** and notifies seller.

Marketplace Quantity Updates

- Buyer adds item to cart; system decrements stock and marks **Sold Out** when zero.

Navigate to Marketplace Page

- User opens Marketplace via navigation; system shows items with pagination and filters.

3.3.3 Functional Requirements

REQ-6: The system shall allow adding items to the cart from Marketplace listings.
REQ-7: The system shall provide pagination for browsing inventory.
REQ-8: The system shall allow navigation from Marketplace to Shopping Cart.
REQ-9: The system shall allow returning from Marketplace to the Homepage.

3.4 Order History

3.4.1 Description and priority

Provides access to past orders and related artifacts (invoice, receipt) for buyers and sellers. **Priority: High.**

3.4.2 Stimulus/Response Sequences

Buyer Views Receipt Documentation

- Buyer selects an **OrderID**; system shows links to receipt (PDF) and invoice.

Seller Views Order Invoices

- Seller opens recent orders, iterates through **OrderIDs**, and opens documents for fulfillment.

- If session idles past threshold, system logs out automatically.

3.4.3 Functional Requirements

REQ-10: The system shall allow navigation from the Homepage to Order History.
REQ-11: The system shall allow navigation from Order History back to the Homepage.
REQ-12: The system shall display each OrderID and provide access to invoice and receipt files.

3.5 Shopping Cart

3.5.1 Description and priority

Lists selected items, quantities, and totals; supports checkout. **Priority: High.**

3.5.2 Stimulus/Response Sequences

User Enters Payment and Shipping Information

- Buyer enters card details and address; system enables payment when fields are valid.

User Makes Purchase

- System verifies inputs, inventory, and authorization.

- On invalid card or missing address, system prompts for correction.

- On insufficient funds or out-of-stock items, system informs buyer and halts checkout.

- On success, system confirms order, generates **OrderID**, and issues receipt/invoice.

3.5.3 Functional Requirements

REQ-13: The system shall complete checkout when valid payment and shipping information are provided.
REQ-14: The system shall allow removing items from the cart.
REQ-15: The system shall allow navigation from the Cart back to the Homepage.

3.6 Homepage

3.6.1 Description and priority

Primary navigation hub; provides global logout entry point. **Priority: High.**

3.6.2 Stimulus/Response Sequences

User Navigation

- Guest selects **Login**; authenticated users navigate to Marketplace, Order History, or Cart.

- User may search for items from the Homepage.

Guest Access Restrictions

- If a guest attempts protected pages or search, system displays: "User must be logged in."

3.6.3 Functional Requirements

REQ-16: The Homepage shall provide visible navigation to Marketplace, Shopping Cart, and Order History.
REQ-17: The system shall allow users to log out via an icon or link on the Homepage.

3.7 Search Toolbar

3.7.1 Description and priority

Improves discovery across large catalogs and artifacts. **Priority: Medium.**

3.7.2 Stimulus/Response Sequences

Buyer Searches for a Plan

- Buyer enters a query; system returns matches; buyer may add items to cart.

Admin Updates Product via Search

- Admin searches by **ItemID** to open an item page and remove it if appropriate.

3.7.3 Functional Requirements

REQ-18: The search bar shall support queries by **ItemID** and product nomenclature.
REQ-19: The search bar shall support authorized queries by **OrderID**.

4 Other Nonfunctional Requirements

4.1 Performance Requirements

- Primary interface shall load in < 2 seconds under nominal conditions.

- The system should support ≥ 75 concurrent users.

- The system should support at least 1,000 registered users.

- Target uptime is $\geq 99\%$.

4.2 Safety Requirements

- BurnLab shall display a medical disclaimer and encourage consultation with a physician before starting plans.

- Allergy/dietary filters shall help prevent exposure to harmful ingredients.

- Financial and order processing shall include validation to prevent erroneous charges.

- On failures, users shall be redirected to a safe recovery page (retry/cancel) to avoid data corruption.

4.3 Security Requirements

- All communications shall use HTTPS with TLS.

- Authentication shall require strong passwords (min 8 chars, numbers, special characters, mixed case).

- Passwords shall be stored using industry-standard hashing (e.g., bcrypt or SHA-256 with salt).

- Sessions shall auto-expire after 15 minutes of inactivity.

- Payment data shall never be stored in plain text and processing shall comply with PCI DSS.

- Only authorized administrators shall access buyer/seller data (least privilege).

4.4 Software Quality Attributes

- **Usability:** Clean, intuitive interface enabling quick onboarding.

- **Reliability:** Target 99% uptime with backup/recovery procedures.

- **Maintainability:** Modular codebase with documentation standards.

- **Scalability:** Scales from hundreds to thousands of users with minimal degradation.

- **Portability:** Works across major browsers; responsive on desktop and mobile.

- **Testability:** Automated unit and integration tests verify correctness.

5 Other Requirements

Database Requirements: Maintain user accounts, profiles, order histories, and product listings in a secure relational database.

Legal Requirements: Comply with applicable data privacy regulations (e.g., GDPR for EU users, CCPA for California users).