SOFTWARE REQUIREMENTS SPECIFICATION

for

BurnLab

Version 1.0

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CSE — Intro to SE

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Contents

1 Introduction

1.1 Purpose

This Software Requirements Specification (SRS) provides a detailed description of the features, constraints, and quality attributes of the BurnLab web platform. It is intended for project stakeholders and developers to guide design, implementation, verification, and validation activities.

1.2 Document Conventions

This document follows a consistent structure aligned to IEEE SRS conventions. Section headings are numbered hierarchically, with subsections used to enumerate specific requirements.

Plain text is used for general descriptions. **Bold text** is used to emphasize key terms or priorities.

All functional requirements are labeled with the prefix **REQ-** followed by a number (e.g., REQ-1, REQ-2) to provide unique identifiers for traceability. Unless otherwise specified, priorities defined at the feature level are inherited by their detailed requirements.

Fonts and styles are applied consistently, and all requirement statements are written as complete, unambiguous sentences.

1.3 Intended Audience and Reading

This SRS serves all stakeholders of the BurnLab platform. Developers should focus on **Chapter 3: System Features** and the **functional requirements** for implementation detail. Testers should use the same sections to derive test cases. Project managers can utilize the overall organization to track feature scope and priorities. Administrators and support staff can reference behavior expectations throughout. Marketing staff may use **Chapter 2: Overall Description** to understand product positioning and core functions.

A recommended sequence is: **Introduction (Chapter 1)** for scope, **Overall Description (Chapter 2)** for context, **System Features (Chapter 3)** for detailed behaviors, and **Other Nonfunctional Requirements (Chapter 4)** and **Other Requirements (Chapter 5)** for operational qualities, constraints, and compliance.

1.4 Product Scope

BurnLab provides meal and workout planning to support a healthy lifestyle. Plans are adaptable based on user preferences and characteristics, enabling personalized, goal-driven experiences.

1.5 References

This Software Requirements Specification was prepared in accordance with the IEEE standards for software requirements (ISO/IEC/IEEE 29148:2018). These standards guided the organization, terminology, and formatting conventions used throughout this document.

1.6 Product Perspective

BurnLab is a self-contained web application that intermediates between sellers and buyers of digital fitness and nutrition content. The platform employs interconnected relational databases and provides simple, intuitive interfaces suitable for users with a wide range of technical skills.

1.7 Product Functions

BurnLab enables users to create personalized fitness and nutrition experiences by collecting essential profile information (e.g., age, weight, height, and fitness goals) and generating tailored workout and meal plans that adapt over time. Users can log activity, track performance, and receive updated recommendations.

The platform includes a marketplace where trainers, nutritionists, and other experts can upload and sell programs, recipes, and plans. Buyers can explore offerings, compare options, and complete secure purchases.

Administrative functions include user management, content moderation, and platform security oversight. Guest visitors may preview limited content to encourage registration.

Together, these capabilities—personalized planning, a content marketplace, and administrative oversight—define BurnLab's essential services.

1.8 User Classes and Characteristics

The initial user classes are **Buyer**, **Seller**, and **Admin**.

- **Buyer:** Authenticates with email and password to access marketplace content and purchase plans.
- **Seller:** Manages product listings (add, update, remove) and views order-related information for fulfillment.

- **Admin:** Acts as a superuser to manage users and content, moderate submissions, resolve disputes, and monitor system health.

1.9 Operating Environment

BurnLab targets modern desktop and mobile web browsers, including Chrome, Firefox, Edge, and Safari. The application shall be responsive to various device sizes and input modalities.

1.10 Design and Implementation Constraints

BurnLab will initially operate on small-scale servers, limiting supported concurrent user counts relative to large-scale e-commerce platforms. The technology stack includes Django, HTML, and CSS. Firebase will be used as a cloud-hosted database. All communications will use HTTPS with TLS. Passwords will be protected via industry-standard hashing. Sellers must provide allergen information for applicable content to help users avoid harmful ingredients.

2 System Features

2.1 Profile Registry

2.1.1 Description and Priority

This feature allows users to create and maintain accounts using an email address and password. It is **High Priority** because it is required for core interactions.

2.1.2 Stimulus/Response Sequences

Profile as Admin

- Admin navigates to "Profile" in the Admin Console.
- The system loads stored details.
- Admin edits fields and saves changes.
- The system validates input and updates the profile.
- The system displays "Profile updated successfully."

Profile Request as Seller

- User navigates to "Apply as Seller."
- User enters business name, address, and tax ID.
- User uploads verification documents.
- The system validates required information.
- The application status is set to **Pending Review**.
- The system notifies the user: "Your seller request is under review."

Seller Profile Denied — False Information

- Admin reviews the application and detects false or misleading information.
- Admin clicks "Deny" and records a reason.
- The system updates the status to **Denied**.
- The system notifies the seller: "Your application was denied due to false information."

Seller Profile Denied — Business Not Found

- Admin reviews the application and cannot verify business existence.
- Admin clicks "Deny" with reason "Business not found."
- The system updates the status to **Denied**.
- The system notifies the seller: "Your application was denied because the business could not be verified."

Profile as Buyer

- Buyer navigates to "My Profile."
- The system loads stored information.
- Buyer edits personal details and clicks "Save."
- The system validates input and updates the record.
- The system confirms: "Profile updated."

2.1.3 Functional Requirements

REQ-1: When both email and password meet required standards, the system shall accept the new user account.
REQ-2: If the email or password is invalid, the system shall display an error message to the user.
REQ-3: The system shall associate each account with one of the roles: **User (Buyer)**, **Seller**, or **Admin**.

2.2 Login and Logout System

2.2.1 Description and Priority

This feature validates user credentials and establishes authenticated sessions. It is **High Priority** because it gates access to core functionality.

2.2.2 Stimulus/Response Sequences

Login as Seller

- Seller navigates to the BurnLab login page and selects "Login as Seller."
- Seller enters email and password.
- The system validates the credentials.

- If valid, the system redirects to the **Seller Dashboard**.
- If invalid, the system displays: "Invalid login credentials."

Login as Buyer

- Buyer navigates to the BurnLab login page and selects "Login as Buyer."
- Buyer enters email and password.
- The system validates the credentials.
- If valid, the system redirects to the **Homepage**.
- If invalid, the system displays: "Email or password not recognized."

Login as Admin

- Admin navigates to the BurnLab login page and selects "Login as Admin."
- Admin enters email/username and password.
- The system validates credentials against the Admin directory.
- If valid, the system redirects to the **Admin Console**.
- If invalid, the system displays: "Login failed."
- If a non-admin attempts admin login, the system blocks access and redirects to the **Homepage**.

Logout

- Any authenticated user clicks "Logout."
- The system ends the session and clears authentication tokens.
- The system redirects the user to the **Login** page.
- If a session is inactive for 15 minutes, the system automatically logs out the user and displays: "Session expired."

2.2.3 Functional Requirements

REQ-4: If the user provides a valid email–password combination, the system shall authenticate the user and redirect to the appropriate landing page.
REQ-5: If the email or password is incorrect, the system shall display an error message.

2.3 Marketplace

2.3.1 Description and Priority

The Marketplace allows users to view available products and add items to a shopping cart for purchase. It is **High Priority** due to its centrality to platform value.

2.3.2 Stimulus/Response Sequences

Seller Requests to Publish a Product

- Seller navigates to "Add Product."
- Seller enters title, description, price, and stock, and uploads images.
- Seller submits the product for review.
- The system validates inputs and sets status to **Pending Admin Approval**.
- The system notifies the seller: "Your product has been submitted for review."

Admin Approves Product

- Admin reviews pending products.
- If compliant, Admin clicks "Approve."
- The system changes status to **Active** and publishes the product to the Marketplace.
- The system notifies the seller: "Your product has been approved."

Admin Denies Product

- Admin reviews a pending product and identifies a violation or issue.
- Admin clicks "Deny" and enters a reason.
- The system updates status to **Denied**.
- The system notifies the seller, including the denial reason.

Marketplace Quantity Updates

- Buyer views a product listing.
- The system displays current stock quantity.
- Buyer adds an item to the cart.
- The system reduces available quantity accordingly.
- If stock reaches zero, the system marks the item **Sold Out**.

Navigate to Marketplace Page

- User clicks "Marketplace" in site navigation.
- The system loads the Marketplace page with pagination and filters.
- The user can return to the **Homepage** at any time.

2.3.3 Functional Requirements

REQ-6: The system shall allow users to add items to the cart from the Marketplace.
REQ-7: The system shall provide pagination to browse additional inventory.
REQ-8: The system shall allow users to navigate from the Marketplace to the Shopping Cart.
REQ-9: The system shall allow users to return to the Homepage from the Marketplace.

2.4 Order History

2.4.1 Description and Priority

Order History records purchases and sales made through BurnLab. It is **High Priority** because it supports dispute resolution and record keeping.

2.4.2 Stimulus/Response Sequences

Buyer Views Receipt Documentation

- Buyer selects an **OrderID** from the list of orders.
- The system displays links to the receipt (PDF) and invoice.
- Buyer opens the receipt PDF.
- Buyer optionally uses the search toolbar to find another product of interest.

Seller Views Order Invoices

- Seller navigates to recent orders.
- Seller iterates through **OrderID** entries to process purchases.
- Seller opens invoice and receipt documents for fulfillment.
- Seller returns to the Homepage after completing work. If the session is left idle, the system logs the seller out after the inactivity threshold.

2.4.3 Functional Requirements

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

2.5 Shopping Cart

2.5.1 Description and Priority

The Shopping Cart lists selected items with their identifiers and aggregated pricing. It is **High Priority** because it is the primary location for users to review and modify purchase selections.

2.5.2 Stimulus/Response Sequences

User Enters Payment and Shipping Information

- Buyer enters payment card information and shipping address in the provided fields.
- The system enables the "Pay" action once required fields are valid.

User Makes Purchase

- Buyer clicks the purchase button.
- The system displays the total price and prompts for any missing required information.
- If card information is invalid, the system requests valid details.
- If the address is missing, the system requires an address.
- Upon valid inputs, the system verifies inventory and funds authorization.
- If funds are insufficient, the system declines the card and informs the buyer.
- If any items are out of stock, the system informs the buyer and halts checkout.
- If all checks pass, the system confirms: "Your order has been placed." An **OrderID** is generated, and receipts/invoices are issued to both buyer and relevant sellers.

2.5.3 Functional Requirements

REQ-13: The system shall allow users to complete checkout and purchase all items in the cart after providing valid payment and shipping information.
REQ-14: The system shall allow users to remove any item from the cart.
REQ-15: The system shall allow users to navigate back to the Homepage from the Shopping Cart.

2.6 Homepage

2.6.1 Description and Priority

The Homepage serves as the primary navigation hub and provides the only global logout entry point. It is **High Priority**.

2.6.2 Stimulus/Response Sequences

User Navigation from Homepage

- Guest user clicks the **Login** icon and is taken to the Login page.
- Authenticated user navigates to **Marketplace**, **Order History**, or **Shopping Cart** via icons or links.
- User searches for an item and is taken to the corresponding item page.

Guest Access Restrictions

- If a guest attempts to access Marketplace, Shopping Cart, Order History, or search capabilities, the system displays: "User must be logged in."

2.6.3 Functional Requirements

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

2.7 Search Toolbar

2.7.1 Description and Priority

The Search Toolbar improves user experience for large catalogs by enabling quick discovery. It is **Medium Priority**.

2.7.2 Stimulus/Response Sequences

Buyer Searches for a Popular Fitness Plan

- Buyer clicks the search bar and enters a query.
- Buyer submits the search.
- The system returns matching results; the buyer may add an item to the cart and proceed to purchase.

Admin Updates Product via Search

- Admin receives a request to remove a product from the website.
- Admin searches by **ItemID** and navigates to the item page.
- Admin removes the item from the Marketplace as appropriate.

2.7.3 Functional Requirements

REQ-18: The search bar shall support queries by **ItemID** and product **nomenclature** in the Marketplace.
REQ-19: The search bar shall support queries by **OrderID** to locate order-related artifacts when authorized.

3 Other Nonfunctional Requirements

3.1 Performance Requirements

- The website shall load its primary interface in less than 2 seconds under nominal conditions.
- The website should support up to 75 concurrent users.
- The website should support at least 1,000 registered users.
- The website should maintain at least 99% uptime.

3.2 Safety Requirements

- BurnLab shall display a disclaimer stating it is not a substitute for medical or professional healthcare advice. Users are encouraged to consult a physician before starting any fitness or nutrition plan.
- The platform shall provide allergy and dietary restriction filtering to help prevent exposure to harmful ingredients.
- The system shall implement validation checks to reduce errors in financial transactions and order processing, ensuring users are not mistakenly charged.
- In case of system failures, the platform shall redirect users to an error page with safe recovery options (e.g., retry or cancel) to prevent data corruption.

3.3 Security Requirements

- All communications between client and server shall use HTTPS with TLS encryption.
- User authentication shall require strong passwords (minimum 8 characters, including numbers, special characters, and mixed case).
- Passwords shall be stored using industry-standard hashing (e.g., bcrypt or SHA-256 with salt).
- The system shall enforce automatic logout after a defined period of inactivity (e.g., 15 minutes).

- Sensitive payment data shall never be stored in plain text, and payment processing shall comply with PCI DSS.
- Only authorized administrators shall have access to seller and buyer data in accordance with least-privilege principles.

3.4 Software Quality Attributes

- **Usability:** The platform shall provide a clean and intuitive interface enabling new users to navigate with minimal instruction.
- **Reliability:** The platform shall target 99% uptime and provide backup and recovery procedures for unexpected failures.
- **Maintainability:** The codebase shall follow modular design and documentation standards to facilitate updates and fixes.
- **Scalability:** The architecture shall scale from hundreds to thousands of users without significant performance degradation.
- **Portability:** The platform shall function on major browsers (Chrome, Firefox, Edge, Safari) and be responsive on desktop and mobile devices.
- **Testability:** Features shall include automated unit and integration tests to verify correctness.

4 Other Requirements

Database Requirements: The system shall maintain user accounts, profiles, order histories, and product listings in a secure relational database.

Legal Requirements: The platform shall comply with applicable data privacy regulations, including GDPR (for EU users) and CCPA (for California users).