****

**SOFTWARE REQUIREMENTS**

**SPECIFICATION (SRS)**

***for***

# FitFusion – A Smart Fitness, Diet and Daily Motivation

Version 1.0

Prepared by

|  |  |  |
| --- | --- | --- |
| S. No | Roll Number | Student Name |
| 1. | 22N31A6629 | Bochkar Nikhith |
| 2. | 22N31A6614 | Avudoddi Mounika |
| 3. | 22N31A6628 | Bhukya Kalyan |
|  |  |  |

|  |  |
| --- | --- |
| Supervisor: |  |
| Designation: |  |
| Department: |  |
| Batch ID: |  |
| Date: |  |
| Supervisor Sign. & Date |  |

**Department of Computational Intelligence**



**Title of the Project: FitFusion – A Smart Fitness, Diet and Daily Motivation**

# Content

Contents I[i](#__RefHeading___Toc397335649)

Revisions [ii](#__RefHeading___Toc397335649)

1 Introduction [1](#__RefHeading___Toc397335650)

1.1 Document Purpose [1](#__RefHeading___Toc397335651)

1.2 Project Scope [1](#__RefHeading___Toc397335652)

1.3 Existing Systems 2

1.4 Problems with Existing Systems 2

1.5 Proposed Systems 3

1.6 Advantages of Proposed Systems 5

2 Overall Description 6

2.1 Feasibility Study 6

2.2 Product Functionality 7

2.3 Design and Implementation Constraints 8

2.4 Assumptions and Dependencies 9

3 Functional Requirements 10

3.1 Software Requirement Specifications 10

3.2 Hardware Requirements Specifications 10

3.3 Use Case Model 10

4 Other Non-functional Requirements 13

4.1 Performance Requirements 13

4.2 Safety and Security Requirements 13

4.3 Software Quality Attributes 14

5 Other Requirements 16

5.1 Database Requirements..................................................................................................................16

5.2 Internationalization Requirements............................................................................................16

5.3 Legal Requirements........................................................................................................................16

5.4 Reuse Objectives...............................................................................................................................17

5.5 Development Environment Requirements...................................................................................17

5.6 Documentation Requirements.......................................................................................................17

6 REFERENCES 18

# Revisions

| Version | Primary Author(s) | Description of Version | Date Completed |
| --- | --- | --- | --- |
| 1.0 | George Orwell | Primary Revision giving an overall view of the project and document. | 24/02/25 |

# Introduction

In today’s fast-paced world, modern fitness apps often fall short in providing a truly personalized and engaging experience. Many users struggle with inconsistent workout tracking, lack of proper diet recommendations, and the absence of motivation, leading to frustration and disengagement. Additionally, most fitness platforms focus only on either workouts or nutrition, failing to offer a holistic approach to health.

FitFusion is designed to bridge this gap by integrating workout tracking, diet recommendations, and motivational support into a single, smart dashboard. With interactive progress meters, AI-driven workout and diet suggestions, and daily motivational quotes, FitFusion ensures users stay on track toward their fitness goals. This all-in-one platform transforms the fitness journey into a seamless and motivating experience, making it easier for users to achieve and maintain a healthy lifestyle.

## Document Purpose

The purpose of this Software Requirement Specification (SRS) document is to define the functional, non-functional, and technical requirements of **FitFusion – A Smart Workout, Diet, and Motivation Platform**. This document serves as a comprehensive guide for developers, designers, and stakeholders to understand the system's objectives, features, and expected functionalities.

FitFusion is designed to address the limitations of modern fitness apps by integrating **workout tracking, diet planning, and motivational support** into a unified platform. The system will provide users with **personalized fitness recommendations** based on their inputs, track their daily progress, and keep them motivated through interactive features.

This document will ensure that the development process aligns with the intended goals, offering clarity on **system scope, user requirements, and technical constraints**, ultimately leading to the successful implementation of the project.

## Project/Product Scope

FitFusion – A Smart Workout, Diet, and Motivation Platform is an interactive fitness tracking web application designed to provide a personalized and engaging fitness experience. It aims to overcome the limitations of existing fitness apps by integrating workout tracking, diet recommendations, and motivation into a single platform.

The core objectives of the system include:

* **User-Centric Fitness Tracking:** Users can log and monitor their workouts, steps, calories burned, and total workout time in an interactive dashboard.
* **AI-Driven Recommendations:** The system suggests workout plans and diet recommendations based on user inputs such as age, gender, height, weight, and fitness goals.
* **Progress Monitoring**: Users can upload their progress logs (weight, BMI, calorie intake) and visualize improvements through charts and reports.
* **Motivational Support**: The platform provides daily motivational quotes to keep users engaged and committed to their fitness journey.
* **Interactive UI:** A seamless and intuitive interface for effortless navigation, data entry, and progress tracking.
  1. **Existing System**

Most modern fitness applications focus on either workout tracking or diet planning, failing to provide a comprehensive and personalized fitness experience.

* Most fitness applications focus on either workout tracking or diet planning, lacking an integrated approach.
* They provide basic features like step counting, calorie tracking, and exercise logging, but often without personalization.
* Predefined workout routines and diet plans are commonly used, without adapting dynamically to user progress.
* Progress tracking is available but often lacks interactive dashboards for visualizing improvements effectively.
* Motivation and engagement features are limited or absent, with no daily encouragement to keep users consistent.
* Users frequently rely on multiple separate apps for tracking workouts, diet, and progress, leading to a fragmented experience.

Due to these shortcomings, users struggle to maintain a **sustainable and goal-oriented** fitness routine, leading to inconsistent progress and loss of motivation.

## Problems with Existing System

The existing fitness applications have several drawbacks that impact user experience and effectiveness in achieving fitness goals. These issues include:

* **Lack of Personalization** – Many fitness apps provide one-size-fits-all workout and diet plans that do not consider individual goals, fitness levels, or dietary needs, reducing their effectiveness.
* **Limited Tracking Capabilities** – Most apps either focus on workout tracking or diet planning, but not both, requiring users to juggle multiple apps for a complete fitness experience.
* **No AI-Based Recommendations** – Many platforms offer static workout and diet plans instead of utilizing AI-driven insights to adapt recommendations based on user progress and body metrics.
* **Absence of Motivational Support** – Existing systems lack daily motivation in the form of quotes, progress reminders, or engagement features, leading to low user consistency and dropout rates.
* **Poor Data Visualization** – Users often struggle to analyze their progress due to limited or non-interactive dashboards, making it difficult to track improvements over time.
* **Fragmented User Experience** – Switching between multiple apps for tracking workouts, diet, and motivation creates an inconvenient and time-consuming fitness journey.

These limitations reduce user engagement, motivation, and long-term adherence to fitness goals, highlighting the need for a comprehensive, AI-driven, and interactive fitness platform like FitFusion.

* 1. **Proposed System**

The proposed system, FitFusion – A Smart Workout, Diet, and Motivation Platform, is designed as an all-in-one fitness tracking solution that integrates workout monitoring, diet planning, and motivational support into a single platform. It leverages AI-driven recommendations to provide personalized workout and diet plans based on user-specific data such as age, weight, height, gender, and fitness goals.

* Utilizes AI-driven recommendations to provide personalized workout and diet plans based on user details like age, weight, height, gender, and fitness goals.
* Features an interactive dashboard for tracking daily steps, workout duration, calories burned, and meals consumed.
* Includes progress monitoring tools with dynamic charts to visualize weight changes, BMI trends, and fitness improvements.
* Provides daily motivational quotes to enhance user engagement and consistency.
* Offers a unified platform for seamless fitness tracking, eliminating the need for multiple separate apps.
  1. **Advantages of Proposed System**
* **Personalized Experience** – AI-driven workout and diet recommendations tailored to individual fitness goals.
* **Comprehensive Tracking** – Single platform to monitor workouts, diet, calories, steps, and progress in one place.
* **Enhanced Motivation** – Daily motivational quotes and engagement features to keep users consistent and focused.
* **Interactive Data Visualization** – Graphs and charts for BMI, weight trends, and calorie intake, making progress easy to track.
* **User-Friendly Interface** – Seamless navigation with an intuitive dashboard for effortless fitness management.
* **Time & Effort Saving** – Eliminates the need for multiple fitness apps by offering an all-in-one solution.
* **Better Goal Management** – Helps users stay on track with their fitness journey through structured plans and progress monitoring.

# Overall Description

## Feasibility Study

The feasibility study assesses the practicality of implementing FitFusion – A Smart Workout, Diet, and Motivation Platform in terms of technical, economic, operational, and scheduling feasibility.

**2.1.1. Technical Feasibility**

* Built using Streamlit for an interactive web-based dashboard.
* Utilizes Python, Pandas, and Plotly for data processing and visualization.
* AI-driven workout and diet recommendations based on CSV datasets and user inputs.
* Compatible with various devices and requires minimal system resources.

**2.2.2. Economic Feasibility**

* Uses open-source technologies to minimize development costs.
* Cloud-based deployment ensures scalability without high infrastructure expenses.
* Can be monetized through premium features, ads, or personalized coaching services.

**2.2.3. Operational Feasibility**

* Provides an easy-to-use, all-in-one fitness tracking system.
* Integrates workout, diet, and motivation tracking for better user engagement.
* Offers interactive data visualization to help users track progress efficiently.

**2.2.4. Scheduling Feasibility**

* **Development Timeline:** The system can be developed within 3-4 months with structured planning.
* **Phased Implementation**: Initial phases focus on core features like tracking and recommendations, followed by enhancements in user experience and AI-driven insights.
* **Testing & Deployment**: User testing and feedback will ensure stability before public release.
* **Future Updates**: Additional features like real-time coaching and advanced analytics can be integrated post-launch.

FitFusion is a technically viable, cost-effective, and well-scheduled project that ensures timely delivery with efficient resource management.

## Product Functionality

FitFusion – A Smart Workout, Diet, and Motivation Platform provides a comprehensive fitness tracking system with multiple integrated features.

**Core Functionalities:**

* **Workout Tracking**
  + Logs daily steps, workout duration, and calories burned.
  + Allows users to upload workout logs (CSV) for progress analysis.
  + Displays interactive charts for tracking fitness trends.
* **Diet Tracking**
  + Enables users to log daily meals and calorie intake.
  + Supports CSV-based diet logs for better analysis.
  + Provides visual representation of macronutrient distribution.
* **Personalized Workout & Diet Recommendations**
  + AI-driven suggestions based on user details (age, weight, height, gender, fitness goal).
  + Retrieves recommendations from workout\_recommendations.csv and diet\_recommendations.csv.
  + Provides structured exercise routines and meal plans tailored to the user's needs.
* **Progress Monitoring**
  + Displays BMI calculation and weight trends over time.
  + Allows users to upload progress logs (CSV) for better tracking.
  + Provides graphical representations of fitness improvements.
* **Motivational Support**
  + Generates daily motivational quotes to encourage consistency.
  + Ensures user engagement through interactive UI elements.
* **User-Friendly Dashboard**
  + Provides a single platform to manage workouts, diet, and motivation.
  + Uses charts and metrics for intuitive data visualization.
  + Allows seamless navigation through a sidebar menu with multiple functionalities.

FitFusion integrates all these features into an interactive, personalized, and user-friendly fitness management system to enhance the overall workout and diet tracking experience.

## Design and Implementation Constraints

The development of FitFusion – A Smart Workout, Diet, and Motivation Platform is subject to several design and implementation constraints that affect its functionality and performance.

**2.3.1. Design Constraints**

* **Web-Based Platform** – The system is designed as a web application using Streamlit, limiting access to internet-connected devices.
* **User Input Dependency** – Personalized workout and diet plans rely on accurate user inputs (age, weight, height, gender, and fitness goals).
* **CSV-Based Data Handling** – Recommendations and progress tracking depend on predefined CSV files, which may require periodic updates.
* **Limited UI Customization** – Streamlit provides basic UI elements, restricting advanced design flexibility.
* **Single-User Functionality** – The current system is not multi-user and does not support authentication or user accounts.

**2.3.2. Implementation Constraints**

* **Technology Stack** – The application is built using Python, Streamlit, Pandas, and Plotly, which limits the choice of frameworks and features.
* **Data Storage** – The system primarily uses CSV files for storing workout and diet recommendations instead of a database, impacting scalability.
* **Computation Limitations** – AI-driven recommendations are based on static datasets, limiting real-time machine learning-based suggestions.
* **Deployment Restrictions** – Hosting on free-tier cloud services (e.g., Streamlit Cloud) may result in performance bottlenecks.
* **Security Limitations** – The system does not include user authentication, encryption, or data protection mechanisms.

These constraints define the boundaries within which FitFusion operates and highlight potential areas for future enhancements.

* 1. **Assumptions and Dependencies**

**2.4.1. Assumptions**

* Users will provide accurate and honest inputs (age, weight, height, gender, and fitness goals) for personalized recommendations to be effective.
* The CSV files for workout and diet recommendations contain reliable and up-to-date data that aligns with fitness best practices.
* Users will have a stable internet connection to access the web-based platform.
* The system will be primarily used by individual users and does not support multiple user accounts or authentication.
* Users will be familiar with basic fitness concepts (e.g., calorie intake, workout routines, BMI) to interpret the recommendations effectively.
* The platform will be used for personal fitness tracking and not for professional medical or dietary advice.

**2.4.2. Dependencies**

* **Technology Stack** – The system relies on Streamlit (for UI), Pandas (for data handling), Plotly (for visualization), and Python as the core development language.
* **CSV Data Sources** – The workout and diet plans depend on workout\_recommendations.csv and diet\_recommendations.csv, requiring periodic updates.
* **Third-Party Hosting** – Deployment is dependent on Streamlit Cloud or similar web hosting platforms, which may impose usage limitations.
* **Device Compatibility** – The system is designed for desktop and laptop users, with limited optimization for mobile devices.
* **User Engagement** – The success of the platform depends on users actively tracking their workouts and diets to gain meaningful insights.

These assumptions and dependencies shape the functionality and performance of FitFusion, ensuring that it operates within defined boundaries and expected conditions.

# Functional Requirements

**3.1 Software Requirement Specifications**

The FitFusion – A Smart Workout, Diet, and Motivation Platform requires the following software components:

* **Operating System**: Windows 10/11, macOS, or Linux
* **Programming Language**: Python 3.x
* **Web Framework**: Streamlit (for UI and interactivity)
* **Data Processing**: Pandas, NumPy (for handling CSV-based logs and recommendations)
* **Visualization Libraries**: Plotly, Matplotlib (for workout and diet data visualization)
* **Storage**: CSV files for workout and diet recommendations, Cloud Storage (for future scalability)
* **Deployment**: Streamlit Cloud, for hosting the web application
* **Version Control System**: Git/GitHub for code management and collaboration

**3.2 Hardware Requirement Specifications**

The FitFusion platform operates efficiently on standard computing devices with the following minimum hardware requirements:

* **Processor**: Intel Core i5/i7 or AMD Ryzen 5/7 (or higher)
* **RAM**: Minimum 8GB (16GB recommended for smoother performance)
* **Storage**: Minimum 256GB SSD (500GB+ preferred for large data handling)
* **GPU**: Integrated graphics (Dedicated GPU recommended for heavy visualization processing)
* **Internet**: High-speed internet required for real-time data retrieval and updates

These specifications ensure that FitFusion functions optimally and delivers a smooth fitness tracking experience.

* 1. **Use Case Model**

**A screen shot of a computer

AI-generated content may be incorrect.**

**3.3.1 Use Case #1 (FitFusion – U1)**

**Author** – FitFusion Development Team

**Purpose** – This Use Case Diagram provides a high-level overview of how a user interacts with the FitFusion platform to register, log in, input personal details, request workout/diet plans, track progress, and manage content.

**Requirements Traceability:**

* **R1:** User authentication and profile management
* **R5:** Personalized workout and diet recommendations
* **R10**: Progress tracking and analytics
* **R14**: Daily motivational message delivery
* **R20**: Content management for fitness advisors

**Priority** – High

**Preconditions** – User has registered and logged into the system.

**Postconditions** – User receives personalized workout/diet plans, progress tracking updates, and motivational content.

**Actors** –

* **User** (Fitness Enthusiast, Beginner, Trainer)
* **Admin** (Content Manager, Data Analyst)

**Extends** – N/A

**Flow of Events**

**1. Basic Flow**

* User registers for an account.
* User logs into the system.
* User inputs personal details (height, weight, fitness goal, duration).
* User requests a personalized Workout Plan based on input details.
* User requests a Diet Plan tailored to their fitness goals.
* User tracks progress through View Progress feature.
* User receives Daily Motivation messages.
* User updates their profile details when needed.

**2. Alternative Flow**

* User modifies personal details after receiving recommendations.
* User skips workout/diet suggestions and uses the app for progress tracking only.
* Admin manages content and analyzes user engagement data.

**3. Exceptions**

* Incorrect login credentials prevent user access.
* Missing personal details restrict workout and diet plan generation.
* Internet failure prevents updates or access to content.

**4. Includes**

* Personalized recommendation system for fitness plans
* Motivational content generation
* Data analysis for user engagement

**5. Notes/Issues**

* Future versions can include AI-driven workout tracking and real-time diet suggestions.
* Integration with wearable fitness trackers can enhance progress monitoring.

**3.3.2 Data Flow Diagram**

**A diagram of a data storage

AI-generated content may be incorrect.**

# Other Non-functional Requirements

**4.1 Performance Requirements**

To ensure an optimal user experience, the following performance requirements must be met for FitFusion – A Smart Workout, Diet, and Motivation Platform:

* **P1. Data Processing Speed:** User inputs (workout, diet logs) should be processed and displayed within 1 second.
* **P2. Workout & Diet Recommendation Speed:** The system should generate personalized workout and diet plans within 2 seconds after user input.
* **P3. Dashboard Responsiveness:** The fitness tracking dashboard must update instantly upon user input, with a maximum delay of 0.5 seconds.
* **P4. Progress Visualization:** Graphs and reports should be rendered within 2 seconds for datasets up to 10,000 entries.
* **P5. Data Upload & Parsing Speed:** CSV files (workout/diet logs) should be parsed and displayed within 3 seconds for files up to 5MB.
* **P6. Motivational Quote Generation:** Random motivational quotes should load within 0.5 seconds upon page refresh.
* **P7. Cloud Deployment Scalability:** The system must handle simultaneous requests from 100+ users without significant performance degradation.
* **P8. Mobile & Web Optimization**: FitFusion must maintain a smooth UI experience across desktop and mobile devices with load times under 3 seconds.
* **P9. Storage Efficiency:** User data (workout logs, diet plans) should be stored in an optimized CSV/SQLite database to ensure efficient retrieval and minimal storage consumption.
* **P10. Background Processing**: Large data uploads and analytics should run asynchronously to allow users to continue using other features without delays.

These performance benchmarks ensure that FitFusion remains fast, interactive, and scalable while delivering real-time fitness insights.

**4.2 Safety and Security Requirements**

To ensure the security and integrity of FitFusion – A Smart Workout, Diet, and Motivation Platform, the following safety and security measures must be implemented:

* **S1. Data Integrity**: Ensure secure storage and protection of user workout logs, diet plans, and progress data to prevent data corruption.
* **S2. Protection Against Malicious Code**:
  + Regularly scan for vulnerabilities in third-party libraries and dependencies.
  + Implement input validation to prevent injection attacks in CSV uploads and form submissions.
  + Apply secure coding practices in Python (Streamlit, Pandas, Plotly).
* **S3. Secure File Handling**: Sanitize all user-uploaded files (CSV logs) before processing to prevent malicious script execution.
* **S4. Encrypted Data Transmission**: Ensure SSL/TLS encryption for secure communication between the user and the platform.
* **S5. Access Control**: Implement role-based access control (RBAC) to restrict access based on user roles (e.g., Admin, User).
* **S6. User Data Privacy**:
  + Ensure user fitness data is stored securely and is not shared with third parties without consent.
  + Provide an option for data anonymization in user analytics and reports.
* **S7. Secure Authentication**: Implement secure login mechanisms (OAuth, JWT) to protect user accounts.
* **S8. No Collection of Sensitive Data**: FitFusion does not store personal health records (PHR) or personally identifiable information (PII) beyond necessary fitness tracking metrics.
* **S9. Software Updates & Security Patching**:
  + Regularly update dependencies and frameworks to prevent vulnerabilities.
  + Deploy updates via secure channels to avoid unauthorized modifications.
* **S10. Error Handling & Logging**: Implement secure logging mechanisms to track errors related to workout tracking, diet recommendations, and progress analytics while maintaining data confidentiality.

These security measures will safeguard user data, prevent unauthorized access, and ensure a secure fitness tracking experience.

**4.3 Software Quality Attributes**

The following attributes ensure that FitFusion – A Smart Workout, Diet, and Motivation Platform maintains high usability, maintainability, adaptability, and reliability.

**4.3.1 Usability**

* **Requirement**: The platform's UI must be intuitive and accessible for users of all technical backgrounds.
* **Implementation**:
  + Provide interactive dashboards for tracking workouts, diet, and progress.
  + Offer real-time progress visualization (step count, calorie burn, workout duration).
  + Ensure responsive design for mobile and web compatibility.
  + Conduct user testing to refine the interface and accessibility features.
* **Verification**: Conduct usability testing, user feedback analysis, and A/B testing to validate ease of use.

**4.3.2 Maintainability**

* **Requirement**: The system must support easy updates, bug fixes, and integration of new features.
* **Implementation**:
  + Use modular coding practices (separate modules for workout tracking, diet recommendations, and progress analytics).
  + Implement version control (Git/GitHub) to track and manage updates.
  + Maintain detailed documentation for APIs, data processing workflows, and deployment.
  + Perform unit and integration testing to ensure reliability after updates.
* **Verification**: Maintainability will be assessed through code reviews and automated test reports.

**4.3.3 Adaptability (Design for Change)**

* **Requirement**: The system must be flexible and scalable to incorporate new workout plans, diet suggestions, and integrations with fitness APIs.
* **Implementation**:
  + Use dynamic CSV-based data models for workout and diet recommendations.
  + Enable customization of fitness goals for personalized tracking.
  + Design API-based integrations for compatibility with wearable devices (Fitbit, Apple Health).
  + Implement scalable cloud storage for user progress logs and data.
* **Verification**: Successfully integrating new workout plans, diet modules, or APIs within a reasonable timeframe.

**4.3.4 Reliability**

* **Requirement**: The platform must be highly reliable, ensuring accurate fitness tracking and uninterrupted user experience.
* **Implementation**:
  + Implement data validation to prevent incorrect fitness log entries.
  + Use error handling mechanisms to recover from failed data uploads.
  + Enable autosave functionality for workout and diet logs.
  + Conduct extensive testing (unit, integration, and system-wide) to minimize bugs.
* **Verification**: System reliability will be assessed through stress testing, error tracking, and performance benchmarks.

These attributes ensure FitFusion remains a robust, user-friendly, and scalable fitness tracking solution.

# Other Non-functional Requirements

This section outlines additional requirements not covered in the previous sections, which are essential for the complete development and deployment of FitFusion – A Smart Workout, Diet, and Motivation Platform.

**5.1 Database Requirements (If Applicable)**

The FitFusion platform requires a structured and efficient database system to manage user fitness data, workout logs, diet recommendations, and progress tracking.

* **R1. User Data Storage:**
  + Store user profiles, fitness goals, workout history, diet logs, and progress data.
  + Use a lightweight and scalable database like PostgreSQL, MySQL, or Firebase for real-time storage**.**
* **R2. Workout & Diet Data Management:**
  + Maintain structured workout plans, diet recommendations, and exercise metadata.
  + Support querying and filtering based on fitness goals (e.g., weight loss, muscle gain).
* **R3. Progress & Analytics Logging:**
  + Log daily activity metrics (steps, calories burned, exercise duration) for performance tracking.
  + Store historical progress data for trend analysis and goal evaluation.
* **R4. Data Security & Integrity:**
  + Implement encryption and access control to protect sensitive user information.
  + Prevent data corruption and unauthorized modifications using role-based authentication.

**5.2 Internationalization Requirements (If Applicable)**

FitFusion aims to provide global accessibility by supporting multiple languages and ensuring cultural adaptability.

* **R4. Multilingual Support:**
  + The system should support multiple languages for UI, workout descriptions, and diet plans.
  + Provide automatic translation for fitness recommendations and exercise tutorials.
* **R5. Cultural Sensitivity:**
  + Workout and diet plans must align with regional and cultural preferences (e.g., vegetarian diets in specific regions).
  + Ensure inclusive and bias-free AI-generated content.
* **R6. Unicode & Character Support:**
  + Implement UTF-8 encoding to support diverse language scripts and special characters.

**5.3 Legal Requirements**

FitFusion must comply with legal and data protection regulations to ensure user safety and privacy.

* **R7. Data Privacy & Compliance:**
  + Follow GDPR and CCPA guidelines for user data protection.
  + Implement a privacy policy covering data collection, storage, and usage.
* **R8. Copyright Compliance:**
  + Ensure workout content, images, and AI-generated diet plans comply with copyright and licensing laws.
* **R9. Accessibility Standards:**
  + Design the platform in accordance with WCAG and ADA guidelines to support users with disabilities.

**5.4 Reuse Objectives**

FitFusion’s architecture should be modular and reusable for future scalability.

* **R10. Modular Components:**
  + Design AI modules (workout plan generation, diet recommendation, progress tracking) for reuse across different platforms.
* **R11. Prebuilt Fitness Templates:**
  + Provide reusable templates for common fitness goals (e.g., weight loss, muscle gain).
* **R12. Cloud-Based Storage & Asset Reuse:**
  + Frequently used assets (exercise videos, diet plans) should be stored and retrieved efficiently.

**5.5 Development Environment Requirements**

To ensure efficient development, FitFusion requires the following environment setup.

* **R13. Programming Stack:**
  + Backend: Python (Flask/Django)
  + Machine Learning: TensorFlow/PyTorch
  + Frontend: React.js
* **R14. Version Control:**
  + Use GitHub/GitLab for source control and team collaboration.
* **R15. AI Model Testing:**
  + Implement unit testing (pytest), integration testing, and dataset validation.
* **R16. Cloud Deployment & Scaling:**
  + Deploy on AWS, Google Cloud, or Azure for large-scale fitness data processing.

**5.6 Documentation Requirements**

FitFusion must provide comprehensive documentation for both developers and users.

* **R17. Code Documentation:**
  + Maintain detailed inline comments and API documentation.
* **R18. System Architecture Documentation:**
  + Document database structure, workflow diagrams, and API interactions.
* **R19. User Guide & Tutorials:**
  + Provide step-by-step guides, FAQs, and video tutorials for user onboarding.
* **R20. Release Notes & Versioning:**
  + Maintain changes logs for software updates, detailing new features, bug fixes, and improvements.

# References

* IEEE Standard for Software Requirements Specifications (IEEE 830-1998) for structuring SRS documents.
* Research papers and datasets on fitness trends, dietary recommendations, and AI-driven workout planning.
* GDPR & CCPA compliance guidelines for user data privacy and security.
* AWS, Google Cloud, and Azure documentation for deploying scalable AI solutions.
* Agile and DevOps methodologies for efficient software development.
* WCAG and ADA accessibility guidelines for users with disabilities.
* TensorFlow, PyTorch, and Scikit-Learn documentation for AI model development.
* Streamlit and API integration guidelines for web development.

# SRS DOCUMENT REVIEW

# CERTIFICATION

This Software Requirement Specification (SRS) Document is reviewed and certified to proceed for the project development by the Departmental Review Committee (DRC).

|  |  |
| --- | --- |
| Date of SRS Submitted: |  |
| Date of Review: |  |
| Supervisor Comments: |  |
| Supervisor Sign. & Date. |  |
| Coordinator Sign. & Date |  |
| HOD Sign. & Date |  |
| Dept. Stamp |  |