Photo Gallery
Software Requirements Specification
Version <1.0>

Prepared By

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Software Requirements Specification

1. Introduction

In today's digital age, visual content plays a crucial role in capturing the attention of audiences and conveying messages effectively. A photo gallery website serves as a dynamic platform for individuals and businesses to save their visual content in an organized and aesthetically pleasing manner. This project aims to develop a user-friendly photo gallery website that allows users to upload, manage, and display their photos seamlessly.

1.1 Purpose

The primary objective of this project is to create an interactive and responsive photo gallery website that caters to photographers, artists, and enthusiasts who wish to save their work. The website will provide features for users to create profiles, upload photos, categorize them into albums, and share them with others. Users will have the ability to set privacy settings for their albums, allowing them to control who can view their content. Additionally, the platform will offer intuitive navigation and a visually appealing layout to ensure a seamless user experience.

Furthermore, the website will incorporate advanced search and filtering options to enhance usability, enabling users to quickly find specific photos or albums. The platform will support various photo formats, ensuring compatibility with a wide range of devices and cameras. Basic photo editing tools will be available, allowing users to make adjustments such as cropping, resizing etc. Social sharing features will also be integrated, enabling users to easily share their photos on popular social media platforms. By providing these comprehensive features, the photo gallery website aims to foster a vibrant community of visual storytellers, encouraging creativity and engagement.

1.2 Scope

The scope of this project includes the following key functionalities:

- **User Authentication:** Secure registration and login system.
- **Photo Upload and Management:** Users can upload, edit, and delete photos.
- **Album Creation:** Organize photos into albums for better navigation.
- **Search and Filter:** Advanced search and filtering options to find specific photos or albums.
- **User Profiles:** Personalized profiles where users can showcase their collections.
- **Responsive Design:** Ensure the website is accessible and visually appealing on all devices.

- **Social Sharing:** Integration with social media platforms to allow users to share their photos easily.

1.3 Target Audience

This photo gallery website is designed for:

- **Photographers:** To display their portfolios and attract potential clients.
- **Artists:** To showcase their creative work and gain recognition.
- **Hobbyists:** To share their photos with friends, family, and a wider audience.
- **Businesses:** To create visual catalogs or presentations for their products.

1.4 Overview

The photo gallery website project involves developing a comprehensive online platform that offers a seamless experience for both amateur and professional photographers to save their work. The project will focus on building a robust and scalable architecture to handle high volumes of photos and user traffic. Key components of the system will include secure user authentication, efficient photo storage and retrieval, and a responsive design to ensure accessibility across various devices.

The website will be built using modern web technologies and frameworks, ensuring high performance and maintainability. Emphasis will be placed on user experience design, making it easy for users to upload and manage their photos, create albums, and share their content with a wider audience. Additionally, the project will include features for user interaction, such as comments and likes, to foster a sense of community among users.

By combining functionality, aesthetics, and user-centric design, the photo gallery website aims to become a go-to platform for photographers and visual artists to display their creativity and connect with others who share their passion for photography.

2. Overall Description

2.1 Problem Statement

The current system for managing and displaying photos is inefficient and lacks the necessary features to support the company’s growth. Users face challenges in organizing, finding, and sharing their photos, which impacts overall user satisfaction and engagement.

2.2 Stakeholders and Users

- **Stakeholders**: Photographers, artists, hobbyists, businesses, website administrators, and developers.
- **Users**: Registered users (photographers, artists, hobbyists, business representatives), visitors, and administrators.

2.3 Stakeholders' Needs and Wants

- **Photographers and Artists**: Easy upload and management of photos, categorization into albums, privacy settings, and sharing options.
- **Hobbyists**: Simple interface, fun and interactive features, social sharing capabilities.
- **Businesses**: Professional presentation of photos, catalog creation etc.
- **Administrators**: Secure user management, efficient storage and retrieval of photos, and monitoring tools.

2.4 Major Features

The major features of the proposed system include:

- **User Authentication**: Secure registration and login system.
- **Photo Upload and Management**: Upload, edit, and delete photos.
- **Album Creation**: Organize photos into albums for better navigation.
- **Search and Filter**: Advanced search and filtering options to find specific photos or albums.
- **User Profiles**: Personalized profiles where users can showcase their collections.
- **Responsive Design**: Ensure the website is accessible and visually appealing on all devices.
- **Social Sharing**: Integration with social media platforms for easy sharing of photos.

2.5 Product Perspective

The product perspective is viewed from different stakeholders:

- **Photographers and Artists**: A platform to showcase their work and attract potential clients.
- **Hobbyists**: A fun and engaging way to share their photos with friends and family.
- **Businesses**: A professional platform to present visual content and reach a wider audience.
- **Administrators**: Tools for managing users, photos, and maintaining the system's integrity.

2.6 Product Functions

The photo gallery website will offer the following functions:

- **User Registration and Login**: Secure methods for users to create accounts and log in.
- **Photo Uploading**: Users can upload photos in various formats.
- **Photo Management**: Features to edit, delete, and organize photos.
- **Album Creation and Management**: Tools for creating and managing photo albums.
- **Search and Filtering**: Options to search for and filter photos and albums.
- **Social Sharing**: Integrations with social media platforms for sharing photos.
- **User Profile Management**: Customizable user profiles to display collections.

2.7 User Characteristics

- **Photographers and Artists**: Technologically adept users seeking professional presentation tools.
- **Hobbyists**: Casual users looking for easy-to-use features.
- **Businesses**: Users focused on professional and marketing needs.
- **Administrators**: Technically skilled users managing the platform.

2.8 Permitted Constraints

- **Technical Constraints**: Compatibility with various devices and browsers, support for multiple photo formats.
- **Security Constraints**: Protection of user data and privacy.
- **Performance Constraints**: Efficient handling of large volumes of photos and user traffic.

2.9 Assumptions and Dependencies

- **Assumptions**: Users have access to the internet and modern web browsers; users are familiar with basic photo editing and management.
- **Dependencies**: The project relies on stable internet connections, reliable hosting services, and third-party social media integrations.

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3. Specific Requirements

The specific requirements are –

3.1 Functionality

3.1.1 User Authentication and Authorization.

User Registration: Users should be able to create an account by providing necessary details such as name, email, and password.

Login: Users should be able to log in to their accounts using their email and password.

Password Recovery: Users should have the option to recover their password through email verification.

3.1.2 Photo Upload and Management.

Upload Photos: Users should be able to upload photos from their device.

Edit Photos: Users should be able to edit their uploaded photos (crop, resize, apply filters).

Delete Photos: Users should be able to delete their uploaded photos.

Bulk Upload: Users should have the option to upload multiple photos at once.

3.1.3 Album Creation and Management

Create Albums: Users should be able to create albums to organize their photos.

Edit Albums: Users should be able to rename and update album details.

Delete Albums: Users should be able to delete entire albums.

Add/Remove Photos from Albums: Users should be able to add photos to or remove photos from specific albums.

3.1.4 Search and Filtering.

Search Photos: Users should be able to search for photos by keywords, tags, or album names.

Filter Photos: Users should be able to filter photos by date, album, or category.

3.1.5 User Profiles.

Profile Creation: Users should be able to create and customize their profiles with a profile picture and bio.

View Profiles: Users should be able to view other users' profiles and photo collections.

Follow/Unfollow Users: Users should be able to follow or unfollow other users to stay updated on their photo uploads.

3.1.6 Photo Sharing

Share Photos: Users should be able to share their photos on social media platforms.

Private/Public Sharing: Users should be able to set their photos or albums as private or public.

3.1.7 Responsive Design.

Mobile Compatibility: The website should be optimized for mobile devices.

Cross-Browser Support: The website should function correctly across different web browsers.

3.1.8 Security and Privacy.

Data Encryption: Ensure user data is encrypted for security.

Privacy Settings: Users should be able to adjust privacy settings for their photos and albums.

3.2 Usability

3.2.1 Graphical User Interface

Uniform Look and Feel: The system shall provide a consistent and aesthetically pleasing design across all web pages. This includes uniform color schemes, fonts, and layout structures to enhance user experience and navigation.

Photo Thumbnails: The system shall display thumbnail images for each photo in galleries and albums, allowing users to easily browse through visual content.

Interactive Icons and Toolbars: The system shall utilize intuitive icons and toolbars for actions such as uploading photos, editing, deleting, and creating albums. This will enhance usability and make it easy for users to perform tasks.

Responsive Design: The graphical user interface shall be responsive, ensuring optimal viewing and interaction across different devices, including desktops, tablets, and smartphones.

User-Friendly Navigation: The system shall provide clear and easy-to-use navigation menus, search bars, and filters to help users find and manage photos efficiently.

3.2.2 Accessibility

Multi-Language Support: The system shall provide multi-language support, allowing users to switch between different languages. This ensures that non-English speakers can use the platform comfortably.

Adjustable Text Size: Users should be able to adjust the text size on the website to suit their readability preferences.

Contrast Settings: The system shall offer adjustable contrast settings to aid users with visual impairments in reading text and viewing images clearly.

3.3 Reliability & Availability

3.3.1 Back-end Internal Computers

Redundant Database Storage: The system shall provide storage of all databases on redundant computers with automatic switchover to ensure continuous operation in case of hardware failure.

Off-site Database Replication: The system shall provide for replication of databases to off-site storage locations to safeguard against data loss due to local disasters or failures.

3.3.2 Internet Service Provider

High-Availability Internet Access: The system shall secure a contractual agreement with an internet service provider for high-speed (e.g., T3) access with 99.9999% uptime to ensure reliable connectivity for users.

Network Redundancy: The system shall secure a contractual agreement with an internet service provider capable of providing 99.999% availability through their network infrastructure to maintain continuous access to the photo gallery website.

3.4 Performance

Web-based Operation: The product shall be web-based and must operate from a web server to allow users to access the photo gallery website from any device with internet connectivity.

Initial Load Time: The initial load time of the website shall depend on the strength and speed of the user's internet connection, as well as the media from which the website is accessed.

Client-Side Performance: The performance of the website shall depend on the hardware components of the client's device (e.g., processor speed, memory, and graphics capabilities) to ensure smooth operation and user experience.

Scalability: The system shall be designed to handle increased loads, including a large number of concurrent users and extensive photo libraries, without compromising performance.

Optimization: The website shall be optimized for quick load times, efficient photo rendering, and minimal latency to ensure a positive user experience.

3.5 Security

3.5.1 Data Transfer

Secure Sockets: The system shall use secure sockets (SSL/TLS) in all transactions that include any confidential user information to ensure data is encrypted during transfer.

Automatic Logout: The system shall automatically log out all users after a period of inactivity to prevent unauthorized access.

Cookie Policy: The system shall not leave any cookies on the user's computer containing the user’s password or any other confidential information to enhance security.

3.5.2 Data Storage

Password Masking: The customer’s web browser shall never display a customer’s password. It shall always be echoed with special characters representing typed characters to prevent unauthorized viewing.

Server Password Policy: The system’s back-end servers shall never display a user’s password. Passwords may be reset but never shown in plain text.

Administrator Access: The system’s back-end servers shall only be accessible to authenticated administrators to ensure system integrity and security.

Database Encryption: The system’s back-end databases shall be encrypted to protect sensitive user data from unauthorized access and breaches.

3.6 Supportability

3.6.1 Configuration Management Tool

The source code for this system shall be maintained using Git. Git will track all changes, allowing for version control and collaborative development. Changes will be committed regularly with detailed messages to document updates. The repository will be hosted on a platform like GitHub, ensuring secure access and regular backups.

Branching and merging features will allow developers to work on new features and fixes independently, reducing conflicts. Continuous integration will be used to automate testing and deployment, ensuring code quality and stability. By utilizing Git, the project will benefit from efficient source code management and collaboration.

3.7 Design Constraints

3.7.1 Standard Development Tools

IBM's Common User Access (CUA) standards are a set of guidelines for user interfaces to operating systems and computer programs. They aim to create a consistent user experience across different applications and platforms by defining common elements and interaction techniques. For example, CUA specifies how menus, dialog boxes, and function keys should be used to ensure that users can easily navigate and operate different software.

3.7.2 Web Based Product

There are no memory requirements

There are no specific memory requirements for the system. The computers must be equipped with modern web browsers such as Google Chrome, Mozilla Firefox, Safari, or Microsoft Edge.

The product must be stored in such a way that allows clients easy access to it, such as cloud storage or a dedicated server.

Response time for loading the product should take no longer than five minutes.

A general knowledge of basic computer skills is required to use the product.

3.8 On-line User Documentation and Help System Requirements

To implement the online user help, the following features shall be provided:

Help Links: Dedicated help links on each page to guide users to relevant documentation.

Search Fields: Search functionality within the help system to allow users to find specific topics or instructions quickly.

Step-by-Step Guides: Detailed, step-by-step guides with screenshots to illustrate common tasks and features.

FAQs: A section for frequently asked questions to address common user queries.

Interactive Tutorials: Optional interactive tutorials for new users to help them get started with the website's features.

Contact Support: Information on how to contact customer support for additional help.

3.9 Purchased Components

1. Hosting Services:

Amazon Web Services (AWS): Cloud hosting and storage services.

or

Google Cloud Platform (GCP): Cloud services for hosting and data storage.

2. Database Management Systems:

MySQL: A popular open-source relational database management system.

or

PostgreSQL: An advanced open-source relational database.

3.10 Interfaces

There are many types of interfaces as such supported by the E-Store software system namely; User Interface, Software Interface and Hardware Interface.

The protocol used shall be HTTP.

The Port number used will be 80.

There shall be logical address of the system in IPv4 format.

3.10.1 User Interfaces

The user interface for the software shall be compatible with any modern browser such as Google Chrome, Mozilla Firefox, Safari, or Microsoft Edge. The user interface shall be implemented using tools and technologies like HTML5, CSS3, JavaScript, and modern frameworks such as React, Angular .

3.10.2 Hardware Interfaces

Since the application must run over the internet, all the hardware required to connect to the internet will be hardware interfaces for the system. This includes devices such as modems, routers, and network adapters, as well as LAN, WAN, and Ethernet cross-cables.

3.10.3 Software Interfaces

1. The photo gallery system shall communicate with the image processing service to handle tasks such as resizing, cropping, and applying filters to photos.

2. The system shall integrate with cloud storage services like AWS S3 or Google Cloud Storage for storing and retrieving photos.

3. The system shall communicate with a user authentication service (e.g., OAuth) to manage user logins and registrations securely.

4. The system shall integrate with social media APIs to allow users to share their photos directly on platforms like Facebook, Twitter, and Instagram.

5. The system shall communicate with an email service provider like SendGrid or Mailgun to send notifications and updates to users.

6. The system shall use a database management system like MySQL or PostgreSQL to store user data, photo metadata, and other relevant information.

7. The system shall communicate with analytics services like Google Analytics to track user interactions and website performance.

3.11 Licensing Requirements

Not Applicable

3.12 Applicable Standards

The photo gallery website shall adhere to industry standards to ensure quality, security, and compatibility. Given the use of **Spring Boot**, **React.js**, and **Tailwind CSS**, the project shall conform to the following standards:

Web Development Standards:

Spring Boot: Adhere to best practices for developing Java-based backend services, including proper use of Spring's dependency injection, annotations, and configuration. Follow the Java Programming Language standards and guidelines.

React.js: Follow the React.js best practices for component-based architecture, state management, and hooks. Ensure compliance with the latest ECMAScript (JavaScript) standards as defined by ECMA International.

Tailwind CSS: Utilize the utility-first CSS framework to build responsive and adaptive user interfaces. Follow best practices for writing maintainable and scalable styles.

Security Standards:

OWASP: Implement security measures to protect against common web vulnerabilities such as SQL injection, cross-site scripting (XSS), and cross-site request forgery (CSRF). Follow the OWASP Top Ten Security Risks guidelines.

HTTPS: Ensure secure data transfer using HTTPS to encrypt data between the client and server.

Accessibility Standards:

WCAG: Conform to the Web Content Accessibility Guidelines (WCAG) to ensure the website is accessible to users with disabilities. Implement features such as keyboard navigation, screen reader compatibility, and alternative text for images.

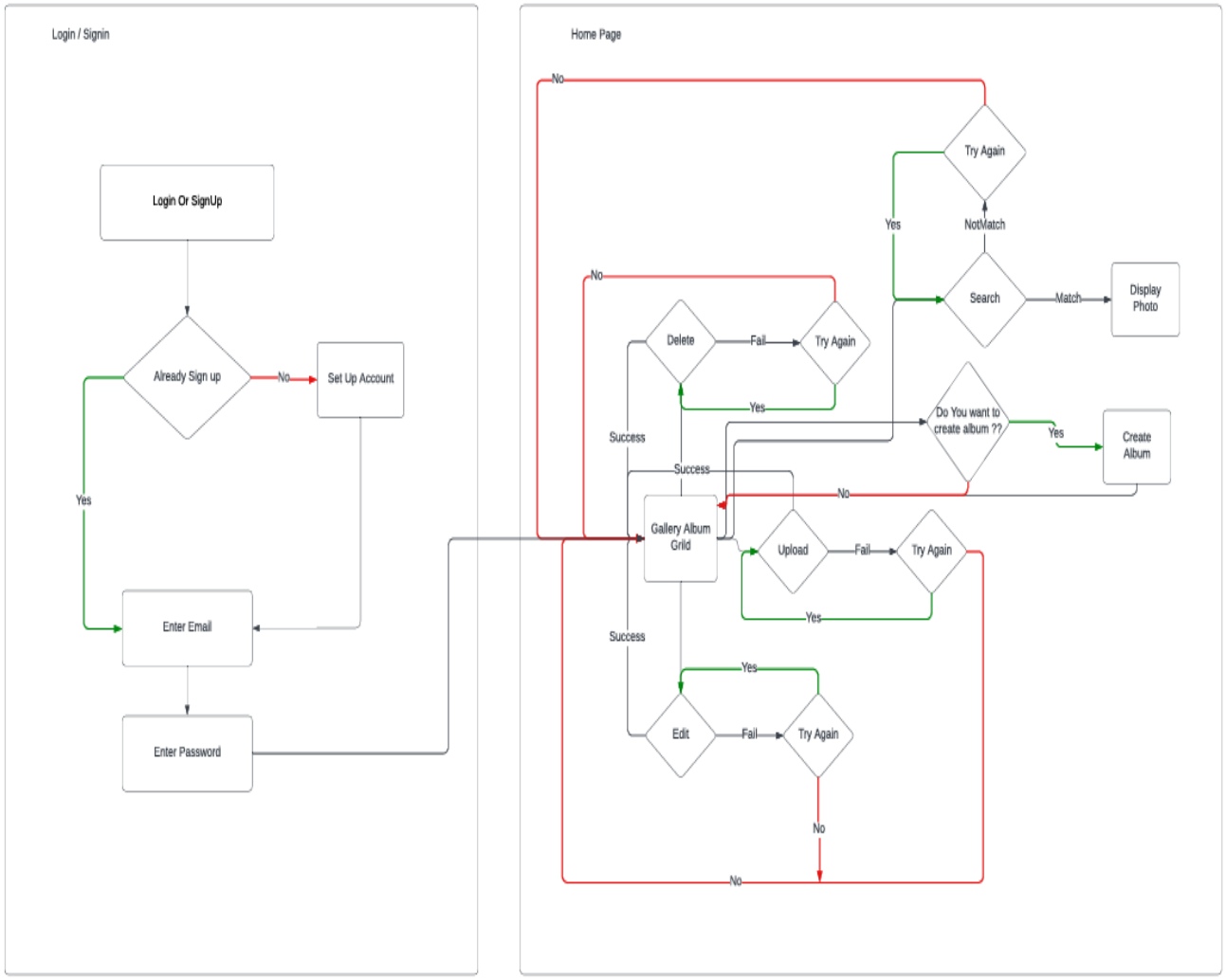
Data Protection Standards:

GDPR Compliance: Ensure the website complies with the General Data Protection Regulation (GDPR) to protect user privacy and data. Implement features like user consent for data collection and secure data storage practices.

4. Supporting Information

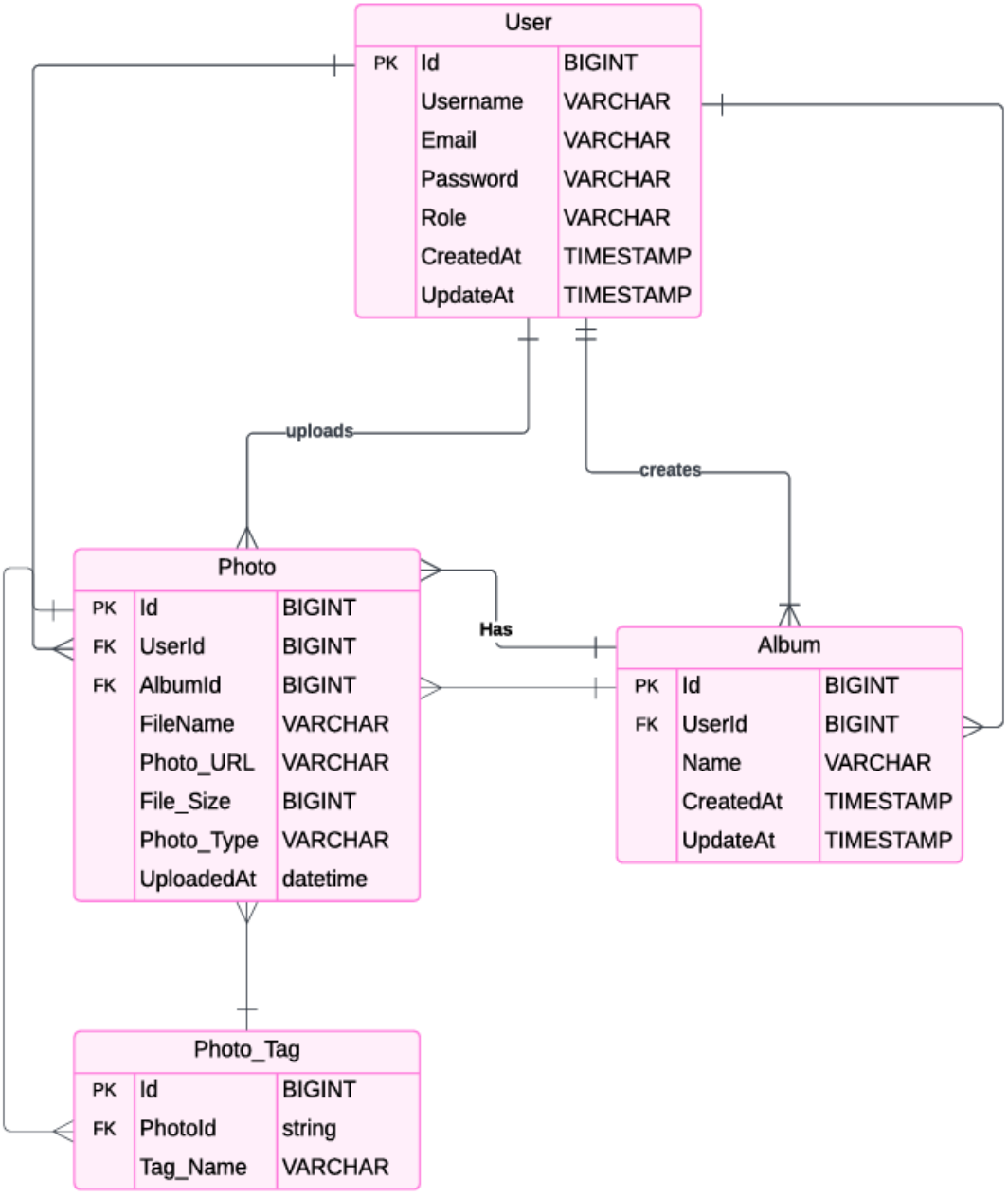
4.1 Flow Chart

Visual representations of the system's processes, including user interactions, data flow, and overall system workflow.



4.2 **Database Schema**

Provides the detailed entity-relationship diagram (ERD) and table schemas, including relationships, primary keys, foreign keys, and data types.



3. API Planning

4.3. API Planning

Part 1 : User Authentication API'S

Tasks

1.Register : POST /API/AUTH/REGISTER For new User

2.Login : POST / API/AUTH /LOGIN For Already Existing user in DB

3. Logout: POST/API/AUTH/LOGOUT Exit from account

Part 2 : Photo Management API'S

Tasks

1.All Photo : GET /API/Photo

2.Photo by ID : GET / API/Photo /{id}

3. Upload Photo: POST/API/Photo

4.Delete Photo : Delete / API / Photo /{ID}

5.Update Photo Details

Part 3 : Album Management API'S

Tasks

1.Reterive Album : GET /API/Album

2.Search Album by ID : GET / API/Album /{id}

3. Upload Album: POST/API/Album

4.Delete Album: Delete / API / Album /{ID}

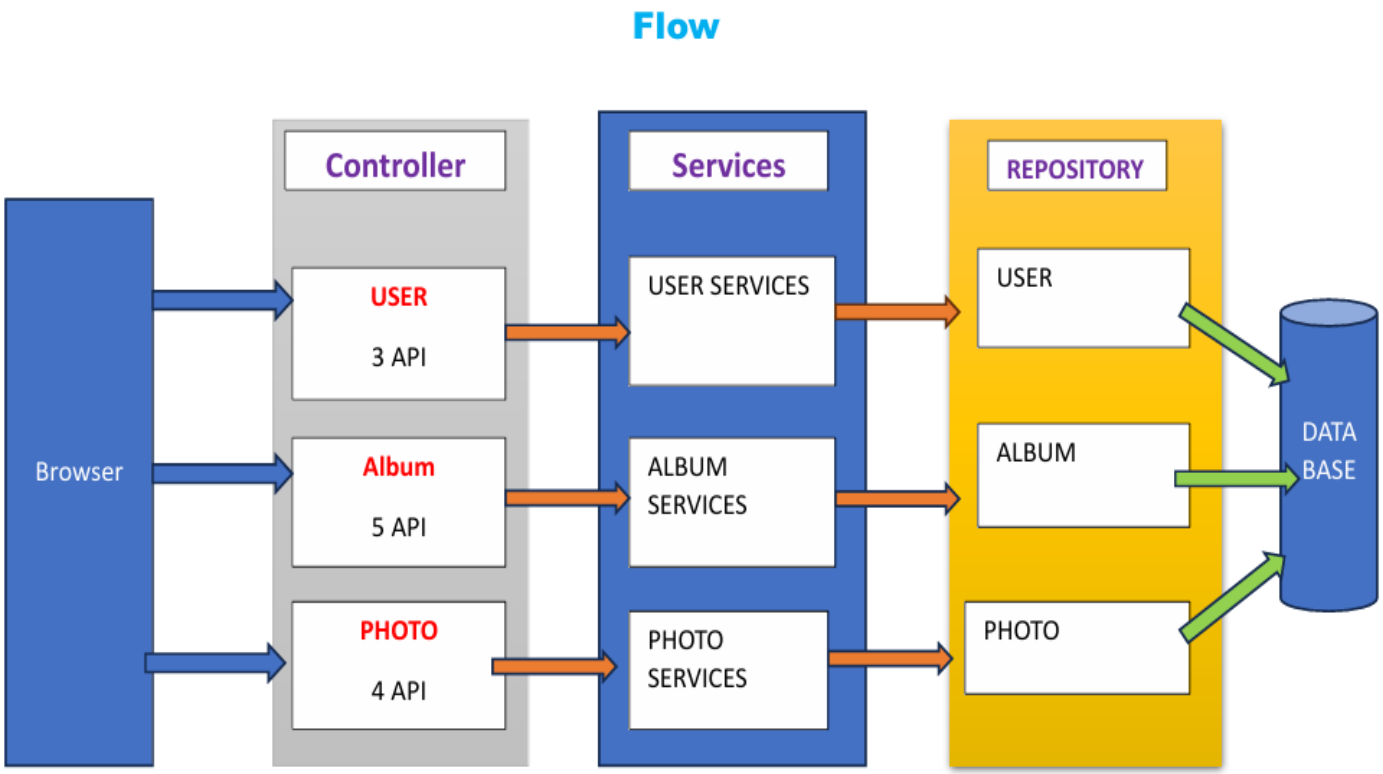
5.Share a Album Tasks

Part 4: Searching By Filter API'S

1.Search : GET /API/Search ----------> By title etc .

2.Filters : GET / API/Photo /Filter ----------> Based On date , year , month

4.4. Flow


Flow
Controller
Services
REPOSITORY
Browser
USER
3 API
Album
5 API
PHOTO
4 API
USER SERVICES
ALBUM SERVICES
PHOTO SERVICES
USER
ALBUM
PHOTO
DATA BASE