Adhiparasakthi Engineering College

SOFTWARE REQUIREMENTS SPECIFICATION

For

Social Media Website And Application

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1. INTRODUCTION

1.1 Purpose

The main objective of this document is to illustrate the requirements of the project Social Media Website and Application. The document gives the detailed description of the both functional and non-functional requirements proposed by the client. One of the fundamental purposes of social media is to connect individuals and enable them to interact with friends, family, colleagues, and people with shared interests, regardless of geographical boundaries. he specific purpose of a social media platform can be highly diverse and can evolve over time based on user behavior and trends. Ultimately, social media platforms aim to facilitate digital social interaction and cater to the varied needs and preferences of their users. This project describes the hardware and software interface requirements using ERdiagrams and UML diagrams.

1.2 Scope

The platform will allow users to register and create personal profiles, enable users to customize their profiles with photos, bios, and personal information and provide options for user privacy settings, allowing users to control what information is visible to others. Offer suggestions for users to connect with people they may know based on mutual friends or interests, Enable users to create and share various types of content, including text posts, photos, videos, links, and documents, Provide private messaging features for one-on-one or group conversations. It Allow users to create and join communities or groups based on shared interests, hobbies, or causes, Send notifications for friend requests, messages, likes, comments, mentions, and group activity. The scope of a social media platform can evolve over time, driven by user feedback, technological advancements, and changes in user behavior. It's crucial to balance the platform's scope with its scalability, user experience, and the ability to meet the needs of its target audience effectively.

1.3 Definitions, Acronyms and Abbreviations

SPRING BOOT -> Java based Framework
JAVA -> Platform independence
MYSQL -> Structured query Language
ER -> Entity Relationship
UML -> Unified Modeling Language
SRS -> Software Requirement Specification

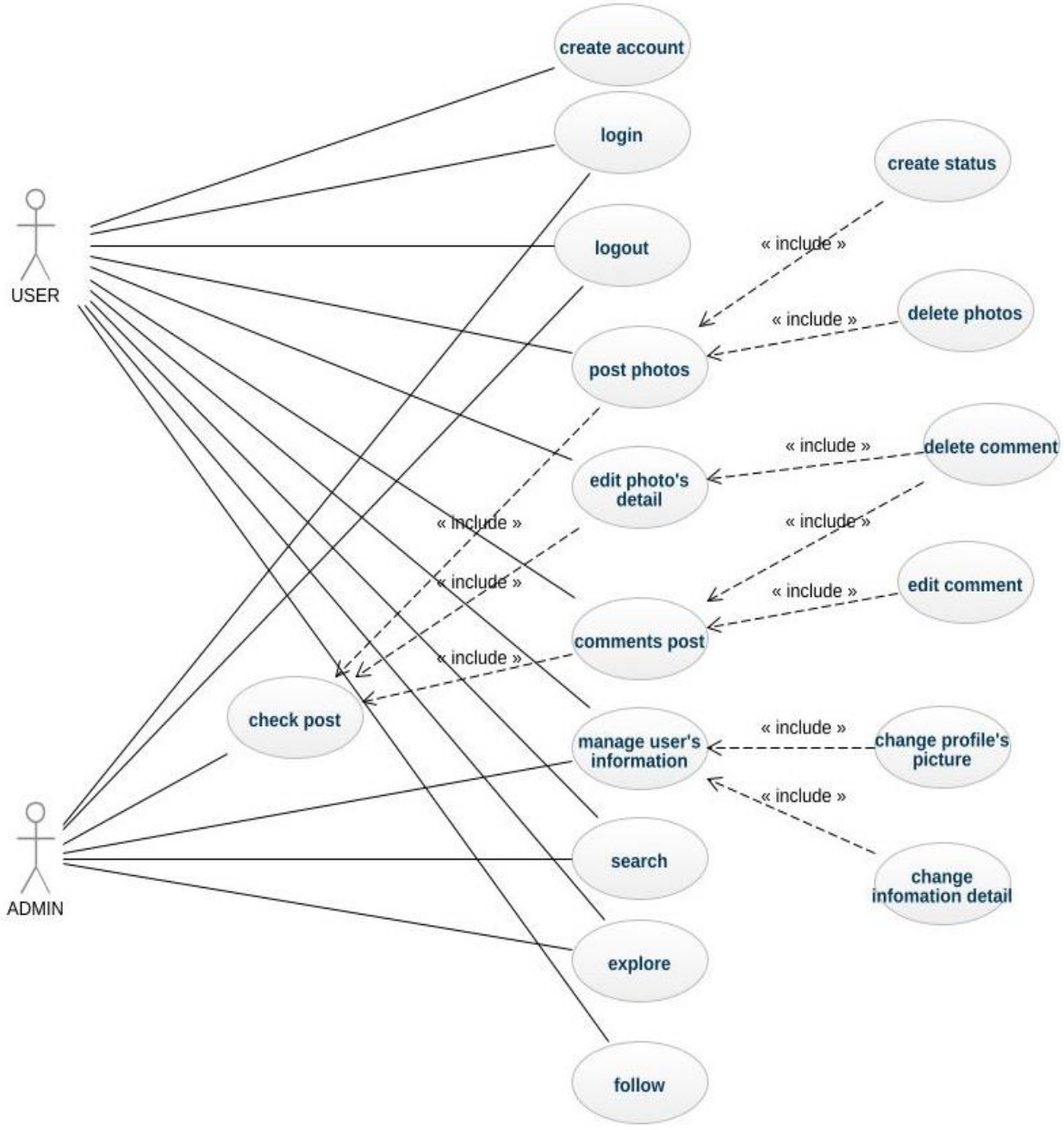
1.4 References

- Social Networking By Matthew N. O. Sadiku, Adedamola A. Omotoso, Sarhan M. Musa.
- A Review of Social Network Sites By Yili LIU, Xiangxiang YING
- A Social Media Application Development By Ankit Bawane, Akshay Bhave, Ravishta Amin, Abhijeet Bhise, S. K. Gabhane

2. OVERALL DESCRIPTION

2.1 Product Perspective

Use case diagram:



A use case is a specific scenario or interaction that illustrates how a user, or actor, interacts with the platform to achieve a particular goal. Use cases help in understanding the functionality of the site from a user's perspective and serve as a foundation for designing, developing, and testing the system.

- Users must be able to create accounts with unique usernames and passwords.
- Users must be able to create and customize their profiles with personal information, profile pictures, and cover photos.
- Users must be able to create text-based posts.
- Users should be able to send text, images, videos, and files in messages.
- Users must be able to send and accept friend requests.
- Administrators should have the ability to manage user accounts, including suspension and banning.
- The platform should implement content moderation to detect and remove inappropriate or offensive content.

2.2 Product Function

Entity Relationship Diagram(ERD);

An Entity-Relationship Diagram (ERD) is a graphical representation used in database design and modeling to illustrate the relationships between entities (data objects or concepts). ERDs are particularly useful for visualizing how data is structured within a database and how different entities relate to one another.

An entity represents a real-world object or concept that can be uniquely identified and about which data needs to be stored. In an ERD, entities are typically represented by rectangles.

Attributes are properties or characteristics that describe an entity. They provide more detailed information about the entity. Attributes are usually represented within ellipses connected to the entity rectangle.

A relationship defines how two or more entities are related to each other. It represents how data from one entity is associated with data from another entity. Relationships are typically represented by lines connecting entities.

- UserID (Primary Key), Username, Email, Password, First Name, Last Name, Date of Birth, Profile Picture, etc.
- PostID (Primary Key), Content, Media (Images or Videos), Timestamp, Likes, Comments, etc.
- FollowingID (Primary Key), Status (Accepted, Pending, Declined), Timestamp, etc.
- CommentID (Primary Key), Content, Timestamp, Likes, etc.
- LikeID (Primary Keys), Timestamp, etc.,

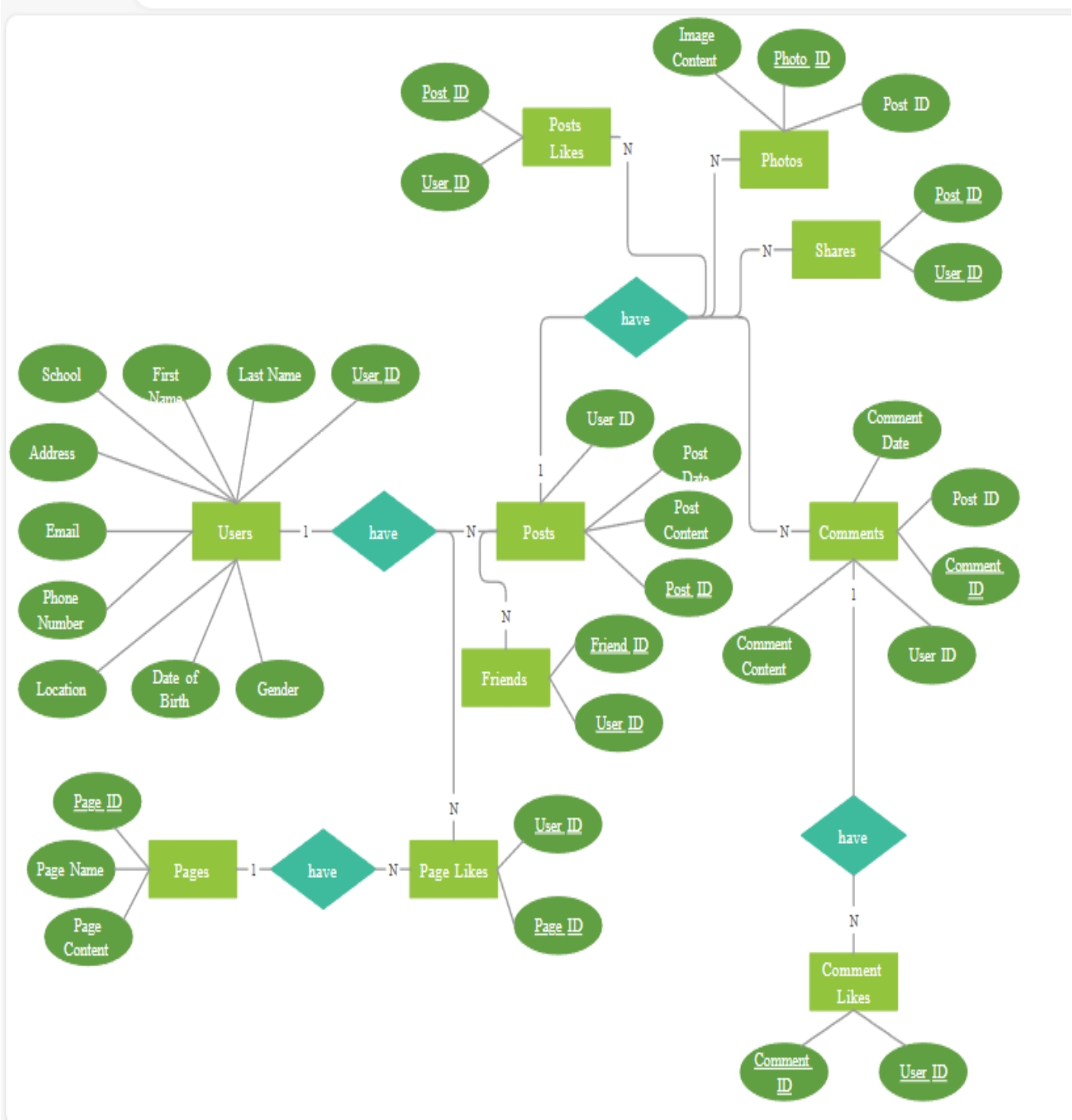


Image Content
Photo ID
Post ID
Post ID
User ID
Posts Likes
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Photos
Post ID
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First Name
Last Name
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Post Content
N
Comments
Post ID
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Comment Content
User ID
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Location
Date of Birth
Gender
Friends
Friend ID
User ID
Page ID
User ID
N
have
Page Name
Pages
1
have
N
Page Likes
N
Page Content
Page ID
Comment Likes
Comment ID
User ID

2.3 Use Cases and its Characteristics

The features that are available to the users:

- a new user can create an account on the social media site. It typically includes providing personal information, choosing a username and password, and verifying the account through email or phone.
- Registered users log in to their accounts using their credentials.
- Users create and share various types of content, such as text posts, images, videos, links, or status updates.
- Users can express their approval or emotions by liking or reacting to posts.
- Users can engage with posts by leaving comments. They may include text, emojis, and sometimes multimedia content like images or GIFs.
- Users can send and accept friend requests, which establish connections between profiles.

The features that are available to the Administrators:

- Moderators/administrators review reported content or user behavior and take appropriate actions, such as warning, suspending, or banning users or removing content.

2.4 Operating Environment

The servers run on a specific operating system (e.g., Linux, Windows) that supports the web server software, database management systems, and other software components. Popular web server software includes Apache, Nginx, and Microsoft IIS, which handle HTTP requests and responses. DBMS software like MySQL is used to manage and query the site's relational databases. High-speed internet connections are essential to ensure that the site is accessible to users worldwide without significant latency. CDNs may be used to distribute content across multiple geographic locations, reducing the distance between users and the site's servers. Social networking sites often use analytics platforms to gain insights into user behavior, engagement, and trends, which can inform site improvements and content recommendations.

2.5 Assumptions and Dependencies

The Assumptions are,

- Users have reliable internet access to use the social media site effectively. The platform relies on internet connectivity for users to access content, upload data, and interact with others.
- Users have access to devices (smartphones, tablets, laptops, desktops) capable of running web browsers and mobile apps that support the social media site's features and functionalities.
- Users provide accurate information during registration and authentication processes.
- Assumption that the hosting infrastructure and servers are reliable, well-maintained, and capable of handling user traffic, ensuring minimal downtime.
- Assumption that users understand and accept the platform's terms of service regarding content ownership and copyright.

The Dependencies are,

- Social media sites often depend on third-party services for various functionalities, such as authentication (using Google or Facebook accounts), content delivery (Content Delivery Networks or CDNs), and analytics tools.
- Integration with external APIs may be necessary for features like location services (e.g., Google Maps), multimedia sharing (e.g., YouTube videos), or login via social media platforms (e.g., Facebook Login).
- The site's success depends on users creating and sharing content. A lack of user-generated content can impact user engagement and site activity.
- Changes in data protection laws and regulations can impact how user data is collected, stored, and used. The platform must adapt to remain compliant.
- Social media sites depend on hosting providers and server infrastructure. The reliability, scalability, and performance of these providers are critical.

2.6 Requirements

Software Requirements

Operating System: Windows
Database: MySQL
Front End: React
Spring Boot
Tailwind CSS

Hardware Requirements:

Servers (4GB to 8GB)
Database Servers (8GB to 16GB)
Storage

2.7 Data Requirements

The data requirements for a media site can be extensive and varied, as these platforms typically involve the collection, storage, and management of various types of data to provide a seamless user experience. Here are the key data requirements for a social networking site,

- Store user profiles with information such as name, username, profile picture, bio, location, and contact details.
- Store user-generated content, including text posts, images, videos, and links.
- If your social media site includes messaging features, store chat messages, attachments, and message histories.
- Collect data on user interactions, such as page views, clicks, and session duration.

3. EXTERNAL INTERFACE REQUIREMENTS

- Collect data on user interactions, such as page views, clicks, and session duration.
- Developers often need to integrate login functionality, allowing users to sign in to their applications using their credentials.
- Access user profile information, including username, bio, profile picture, and follower counts, to personalize user experiences.
- Businesses can integrate Shopping features to tag products in posts and enable users to make purchases directly through the platform.

4. SYSTEM FEATURES

- User Registration and Profiles:
  - User registration with personal information.
  - Customizable privacy settings for profile information.
- Friend/Follower System:
  - The ability to send and accept friend/follow requests.
  - Categorization of connections into lists or groups.
- Messaging and Chat:
  - Real-time chat and messaging features.
  - Group chat functionality.
- Search and Discovery:
  - Powerful search functionality to find users, content, and pages.
  - Recommendations for users to follow or content to engage with.

5. OTHER NON FUNCTIONAL REQUIRMENTS

5.1 Performance Requirements

Performance requirements are crucial for social media sites to ensure that they operate smoothly, provide a positive user experience, and handle high traffic loads efficiently. Here are some key performance requirements for social media sites:

- Ensure that pages and content load quickly to keep users engaged. Establish specific response time targets for various operations (e.g., loading a user's news feed, posting a comment).
- Optimize database queries and indexing to ensure fast data retrieval. Cache frequently accessed data to reduce database load.

5.2 Safety Requirements

Ensuring the safety and security of users on social networking sites is paramount. Safety requirements are essential to protect users from various risks, including cyber bullying, harassment, identity theft, scams, and the spread of harmful content. Here are some safety requirements for social media sites:

- Implement robust user authentication methods to prevent unauthorized access.
- Provide users with comprehensive privacy settings to control who can view their content and interact with them.
- Clearly communicate data privacy policies and obtain user consent for data collection and usage.

5.3 Security Requirements

Security is a critical aspect of social networking sites to protect user data, privacy, and the overall integrity of the platform. Here are essential security requirements for social media sites:

- Implement strong user authentication mechanisms, including password complexity requirements and multi-factor authentication (MFA) options.
- Encrypt data in transit using secure protocols (e.g., HTTPS) to protect information transmitted between users and the server.
- Secure APIs with proper authentication and authorization mechanisms

5.4 Requirements Attributes

Requirements attributes help specify the characteristics, qualities, and constraints of social media sites. These attributes provide additional information about the requirements, making them more detailed and actionable. Here are some common requirements attributes for social media sites:

- Define key performance indicators (KPIs) or metrics to measure the success of the requirement, such as response times or throughput.
- An estimate of the amount of time, resources, or effort required to implement the requirement.

5.5 Business Rules

Business rules for social media sites are essential guidelines and regulations that help govern the behavior of users, maintain the integrity of the platform, and ensure legal and ethical compliance. These rules contribute to creating a safe, respectful, and engaging environment for users. Here are some common business rules for social media sites:

- Prohibit the posting of illegal content, including hate speech, harassment, and threats. Ban explicit, violent, or graphic content that violates community standards. Enforce copyright and intellectual property rights to prevent unauthorized content sharing.
- Clearly communicate data privacy policies and obtain user consent for data collection and usage.
- Encourage users to report inappropriate or harmful content, users, or behavior. Provide mechanisms for users to report emergencies or threats to authorities.

5.6 User Requirements

User requirements for social media sites are critical for designing platforms that meet the needs and expectations of the user base. These requirements reflect what users want and value in a social networking experience. Here are some common user requirements for social media sites:

- Users should be able to create and customize their profiles with personal information, profile pictures, and cover photos.
- Users should be able to send and accept friend/follower requests.
- Allow users to create and share various types of content, including text posts, images, videos, links, and status updates.
- Users should be able to interact with posts by liking, commenting, and using various reaction emojis.

6. OTHER REQUIREMENTS

6.1 Data and category Requirements

Creating a social networking site involves various data and category requirements to ensure the site functions properly and meets the needs of its users. Here are some essential data and category requirements for social networking sites:

- User Profiles
- Authentication and Security
- Content Posting
- Messaging and Communication
- Search and Discovery
- Scalability and Performance

6.2 Appendix

A: Admin, Abbreviation, Acronym, Assumptions; B: Books, Business rules; C: Class, Client, Conventions; D: Data requirement, Dependencies; N: Non-functional Requirement; O: Operating environment; P: Performance, Perspective, Purpose; R: Requirement, Requirement attributes; S: Safety, Scope, Security, System features; U: User, User cases and characteristics, User requirement;

6.3 Glossary

The following are the list of conventions and acronyms used in this document and the project as well:

- Administrator: A login id representing a user with user administration privileges to the software.
- User: A general login id assigned to most users
- Client: Intended users for the software
- SQL: Structured Query Language; used to retrieve information from a database
- SQL Server: A server used to store data in an organized format
- Layer: Represents a section of the project
- User Interface Layer: The section of the assignment referring to what the user interacts with directly
- Application Logic Layer: The section of the assignment referring to the Web Server. This is where all computations are completed
- Data Storage Layer: The section of the assignment referring to where all data is recorded
- Use Case: A broad level diagram of the project showing a basic overview
- Class diagram: It is a type of static structure diagram that describes the structure of a system by showing the system's cases, their attributes, and the relationships between the classes
- Interface: Something used to communicate across different mediums

6.4 Class Diagram

A class diagram is a type of structural diagram in the Unified Modeling Language (UML), which is used in software engineering and design to visualize the structure of a system or software application. Class diagrams are particularly useful for modeling the static aspects of a system, focusing on the classes, objects, attributes, methods, and their relationships within the system. They are a fundamental tool for designing and understanding the architecture of object-oriented software systems.