Module 1 – SE - Overview of IT Industry

Q-1 : Research different types of internet connections (e.g., broadband, fiber, satellite) and list their pros and cons.

A-1 : Fiber internet

Pros: The fastest and most reliable connection, with speeds up to 10 Gbps.

Cons: Often the most expensive option and not as widely available as cable or DSL.

-Cable internet

Pros: High speeds (up to 1 Gbps) suitable for streaming and business, and widely available in urban and sub urban areas.

Cons: Speeds can slow down during peak usage hours due to shared bandwidth.

-DSL (Digital Subscriber Line)

Pros: Moderately priced and suitable for general use, with speeds up to 100 Mbps. It is widely available in many areas.

Cons: Slower than cable and fiber, and speeds can vary depending on the distance from the provider's central office.

-Satellite internet

Pros: Provides internet access to remote or rural locations where other options are not available.

Cons: Slower speeds, higher latency, and is susceptible to weather-related disruptions.

-Fixed wireless

Pros: Can offer high speeds (up to 1.1 Gbps) and is a good option for areas with clear line-of-sight to a transmission tower.

Cons: Prone to weather disruptions and may have limited availability.

Q-2 : Identify and explain three common application security vulnerabilities. Suggest possible solutions.

A-2 : Three common application security vulnerabilities are injection attacks (like SQL injection), broken authentication, and security misconfigurations.

1. Injection attacks solution :
    - -Use prepared statements and parameterized queries.
    - -Perform strong input validation to reject any data that doesn't meet expected formats.
    - -Enforce output encoding to properly format data before it is displayed in a user interface.
2. broken authentication solution :

-Enforce multi-factor authentication.

-Implement a strong password policy that includes complexity requirements and periodic changes.

-Ensure secure session management with secure cookies and by invalidating sessions after a period of inactivity.

3.security misconfigurations :

-Remove unnecessary features, services, and accounts, especially default ones.

-Regularly patch and update all components, including the operating system, framework, and libraries.

-Ensure security settings are properly configured and security headers are set to secure values.

Q-3 : Identify and classify 5 applications you use daily as either system software or application software.

A-3 : Applications we use daily, classified as either system software or application software: Google Chrome (Application), Google Docs (Application), Windows 11 (System), Zoom (Application), and a PDF reader (Application).

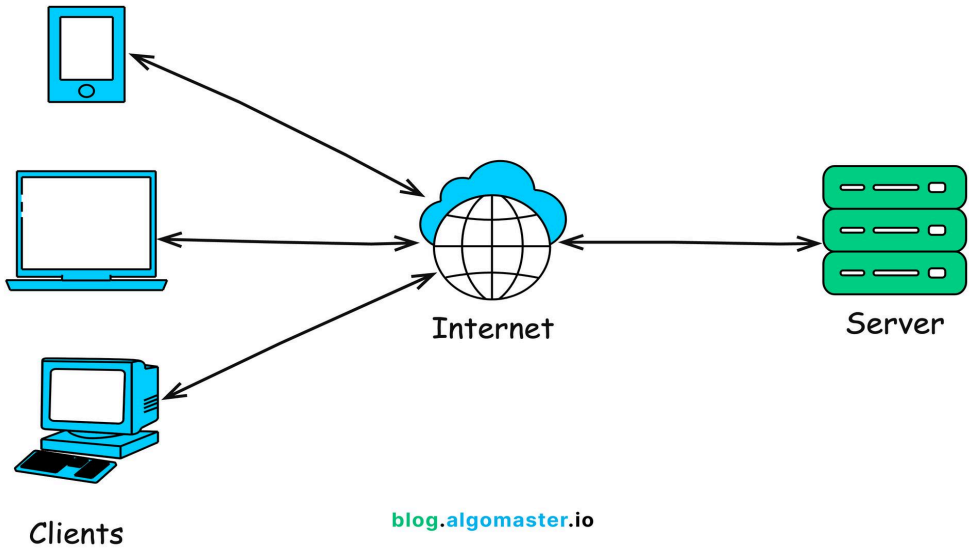
Q-4 : Write a report on the various types of application software and how they improve productivity.

A-4 : Application software includes a wide range of programs that help users perform specific tasks, such as word processors, spreadsheet programs, databases, and graphic design tools,

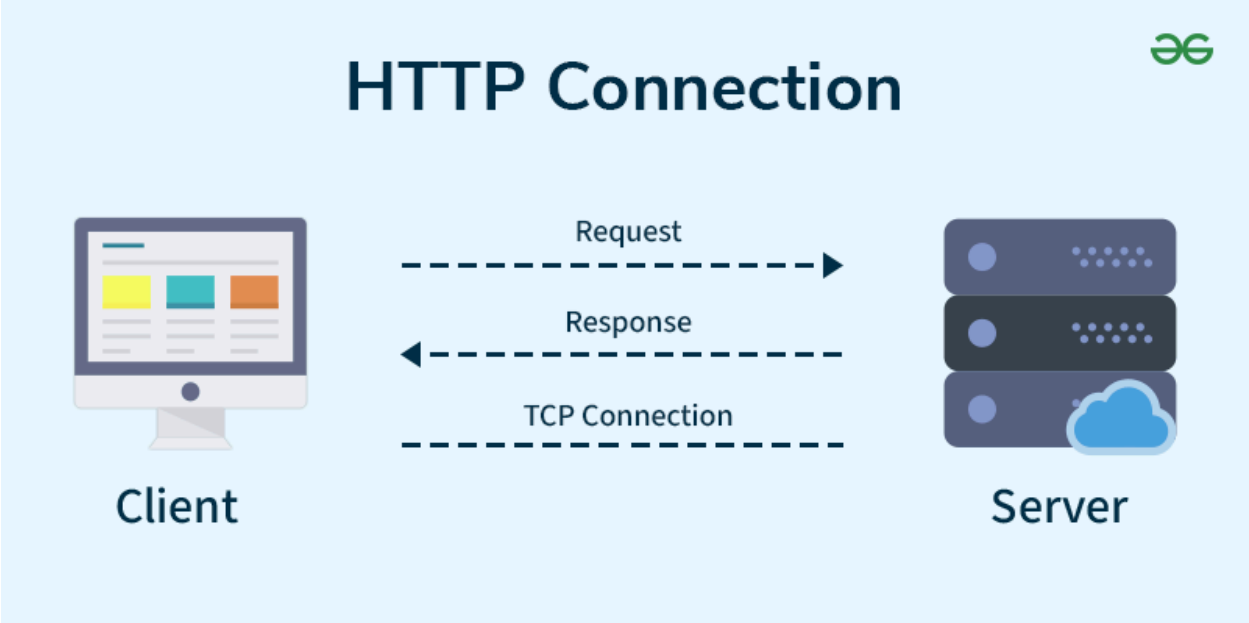
-They improve productivity by automating repetitive tasks, streamlining workflows, enabling real-time collaboration, and providing data analytics for better decision-making.

Q-5 : Research and create a diagram of how data is transmitted from a client to a server over the internet.

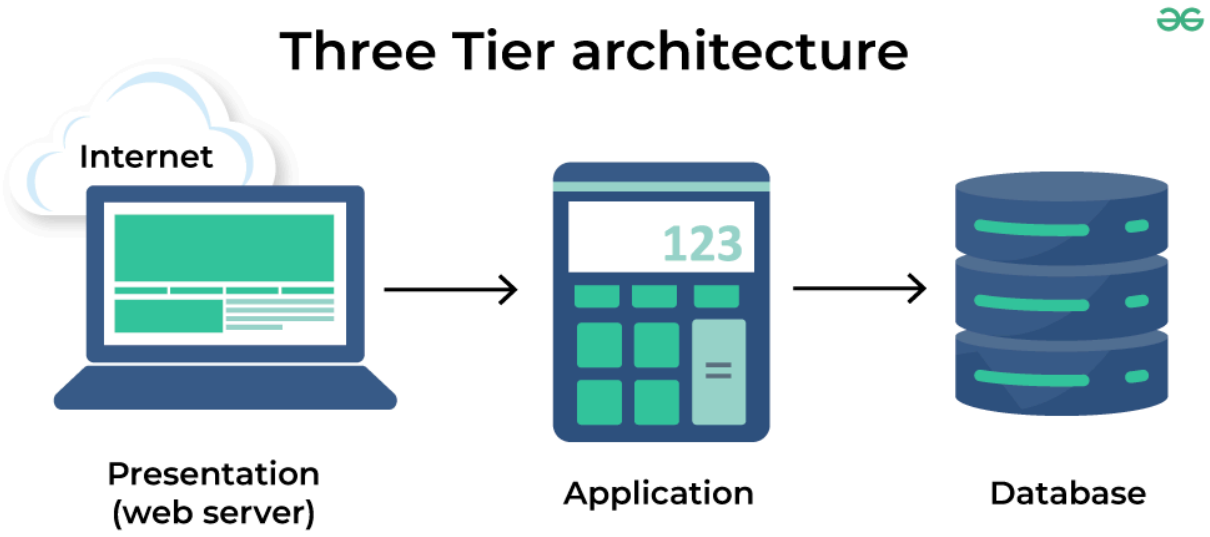
A-5 :



Q-6 :Design a simple HTTP client-server communication in any language.
A-6 :

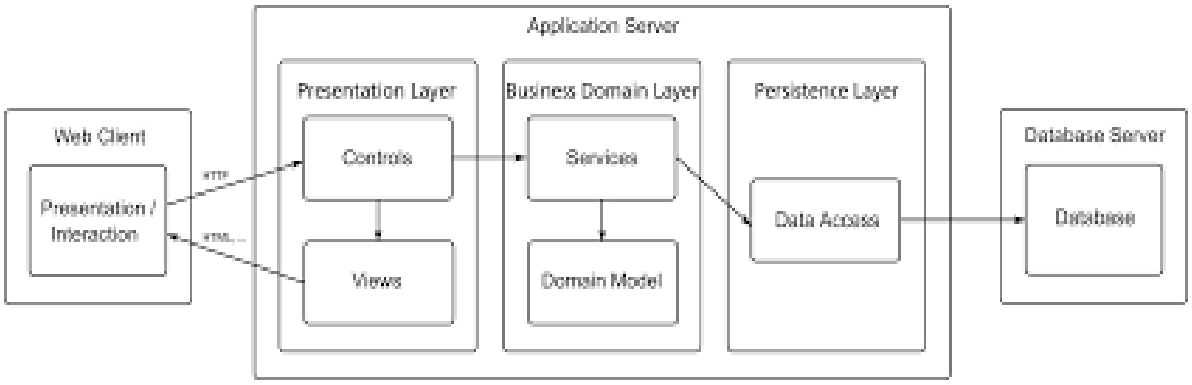


Q-7 : Design a basic three-tier software architecture diagram for a web application.
A-7 :



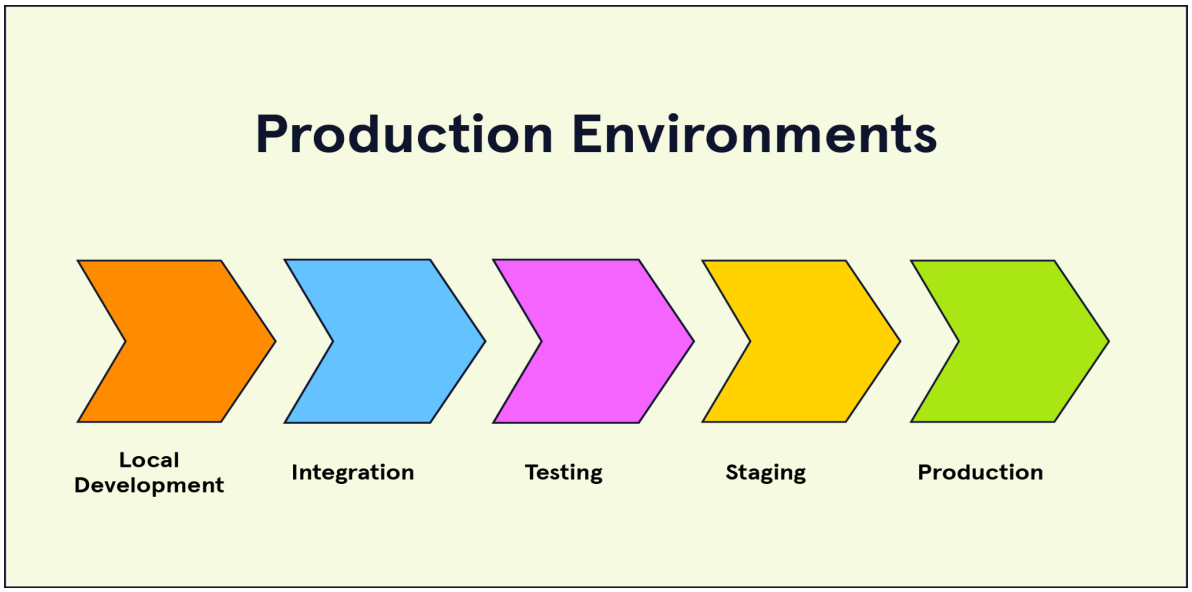
Q-8 Create a case study on the functionality of the presentation, business logic, and data access layers of a given software system.

A-8 :

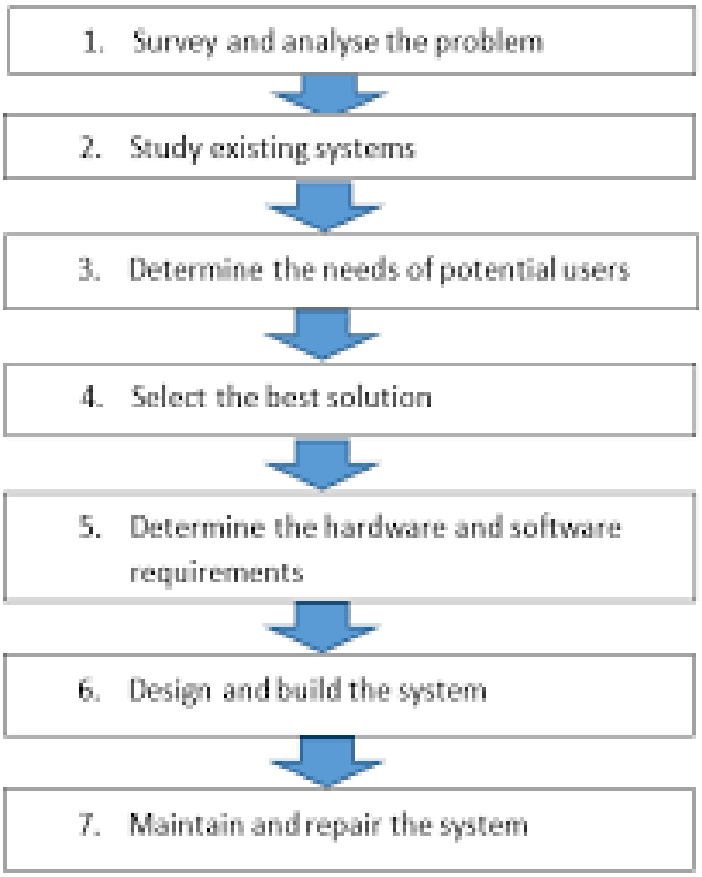


Q-9 : Explore different types of software environments (development, testing, production). Set up a basic environment in a virtual machine.

A-9

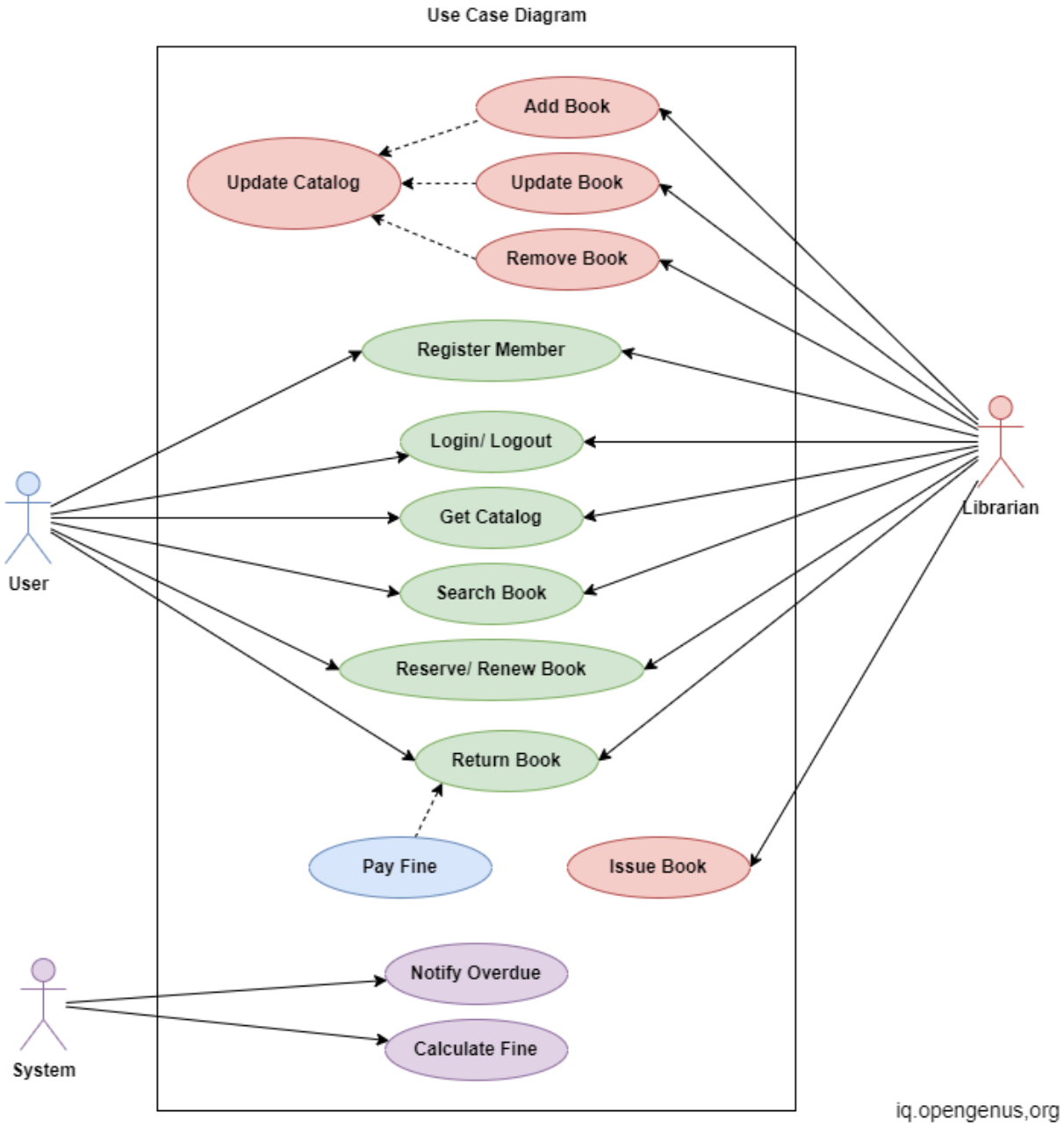


Q-10 : Create a flowchart representing the Software Development Life Cycle (SDLC).
A-10 :



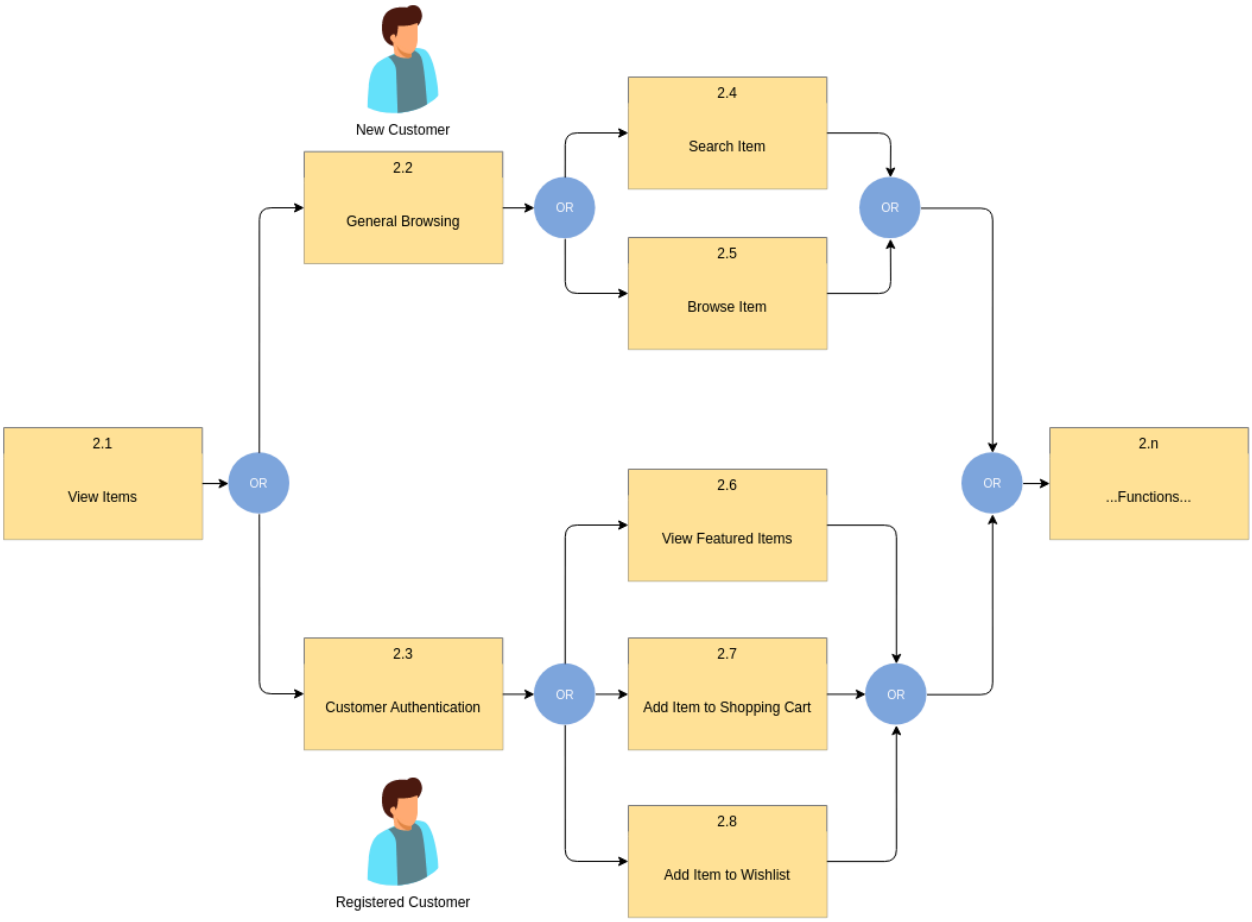
Q-11 : Write a requirement specification for a simple library management system.

A-11 :



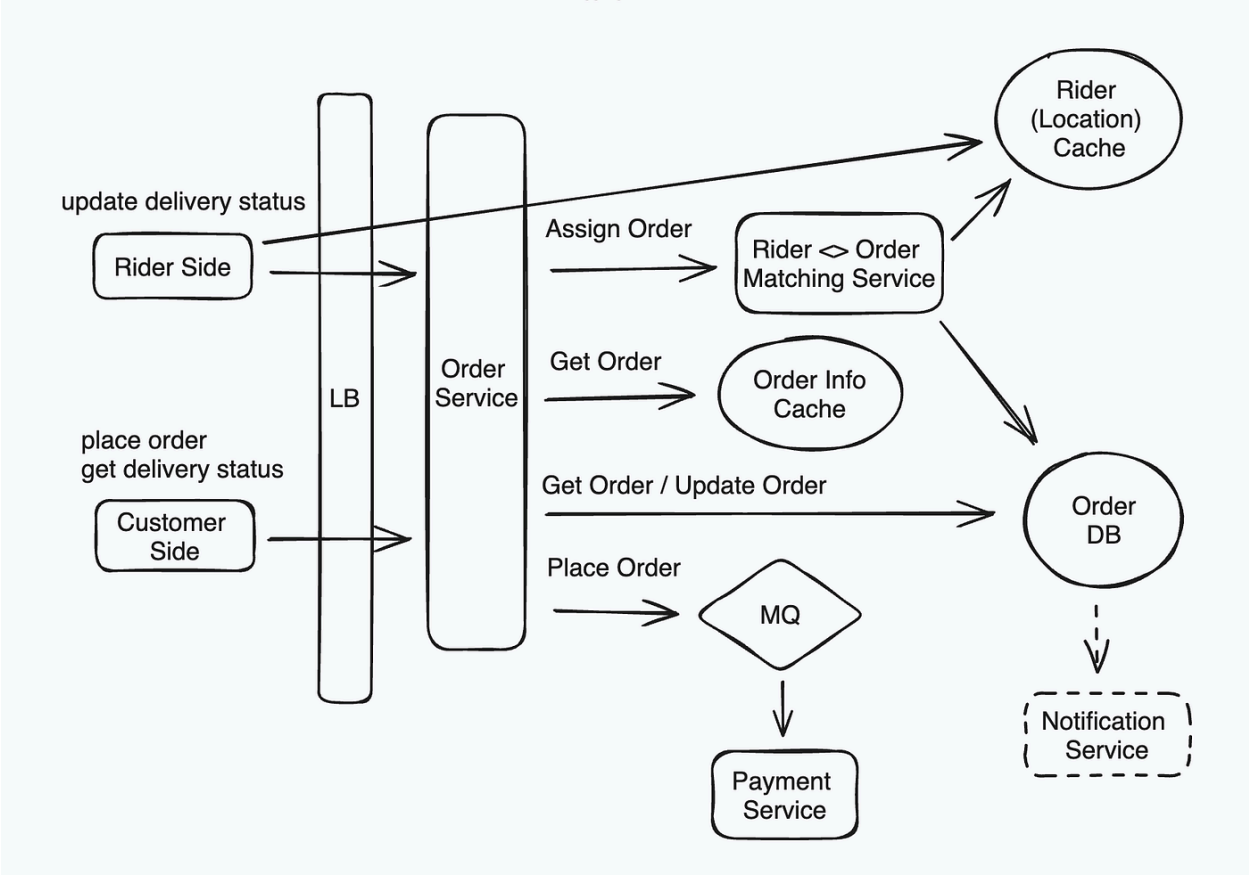
Q-12 : Perform a functional analysis for an online shopping system.

A-12 :



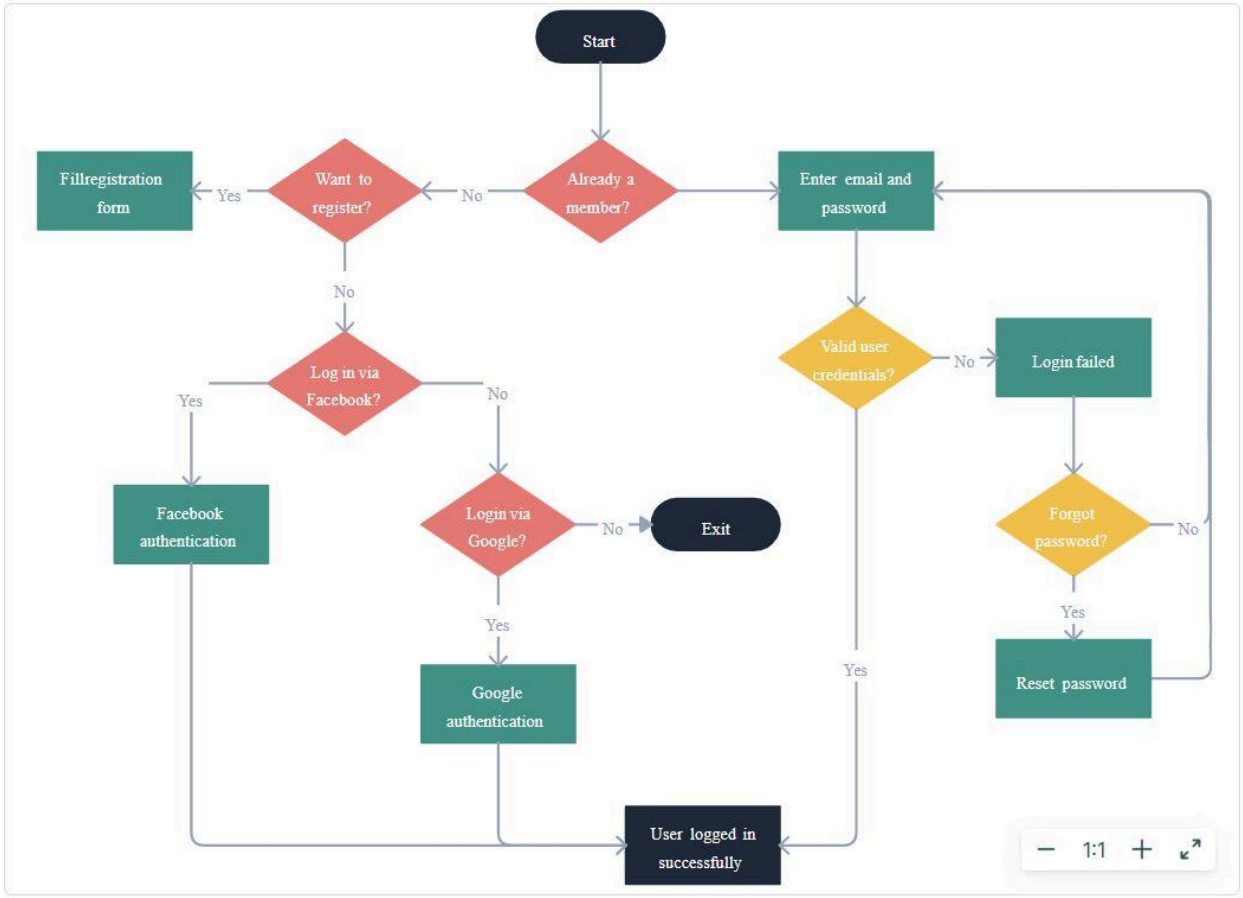
Q-13 :Design a basic system architecture for a food delivery app.

A-13 :



Q-14 : Draw a flowchart representing the logic of a basic online registration system.

A-14


Start
Already a member?
Yes
Want to register?
Yes
Fillregistration form
No
No
Log in via Facebook?
Yes
Facebook authentication
No
Login via Google?
No
Exit
Yes
Google authentication
Enter email and password
Valid user credentials?
No
Login failed
Forgot password?
No
Yes
Reset password
Yes
User logged in successfully
1:1