Unit I

Introduction to Web Systems

Topic Outline

- History and evolution of the web
- Internet protocols and web architecture
- Web browsers and web servers

- The World Wide Web, as we know it today, is a product of decades of technological advancement and innovation.
- Its roots can be traced back to the early days of the internet, when researchers and scientists were developing interconnected networks to share information and resources.

Key milestones in the evolution of the web

1960s

The ARPANET (Advanced Research Projects Agency Network) is established, laying the groundwork for the internet.

1989

Tim Berners-Lee develops the Hypertext Markup Language (HTML), a language for creating structured documents.

1990

Berners-Lee proposes the concept of the World Wide Web, a global information system based on HTML and the Hypertext Transfer Protocol (HTTP).

Early 1990s

The first web browsers (such as Mosaic) and web servers emerge, making it possible for people to access and create web content.

Late 1990s and early 2000s

The dot-com boom and the rise of e-commerce drive rapid growth in the web.

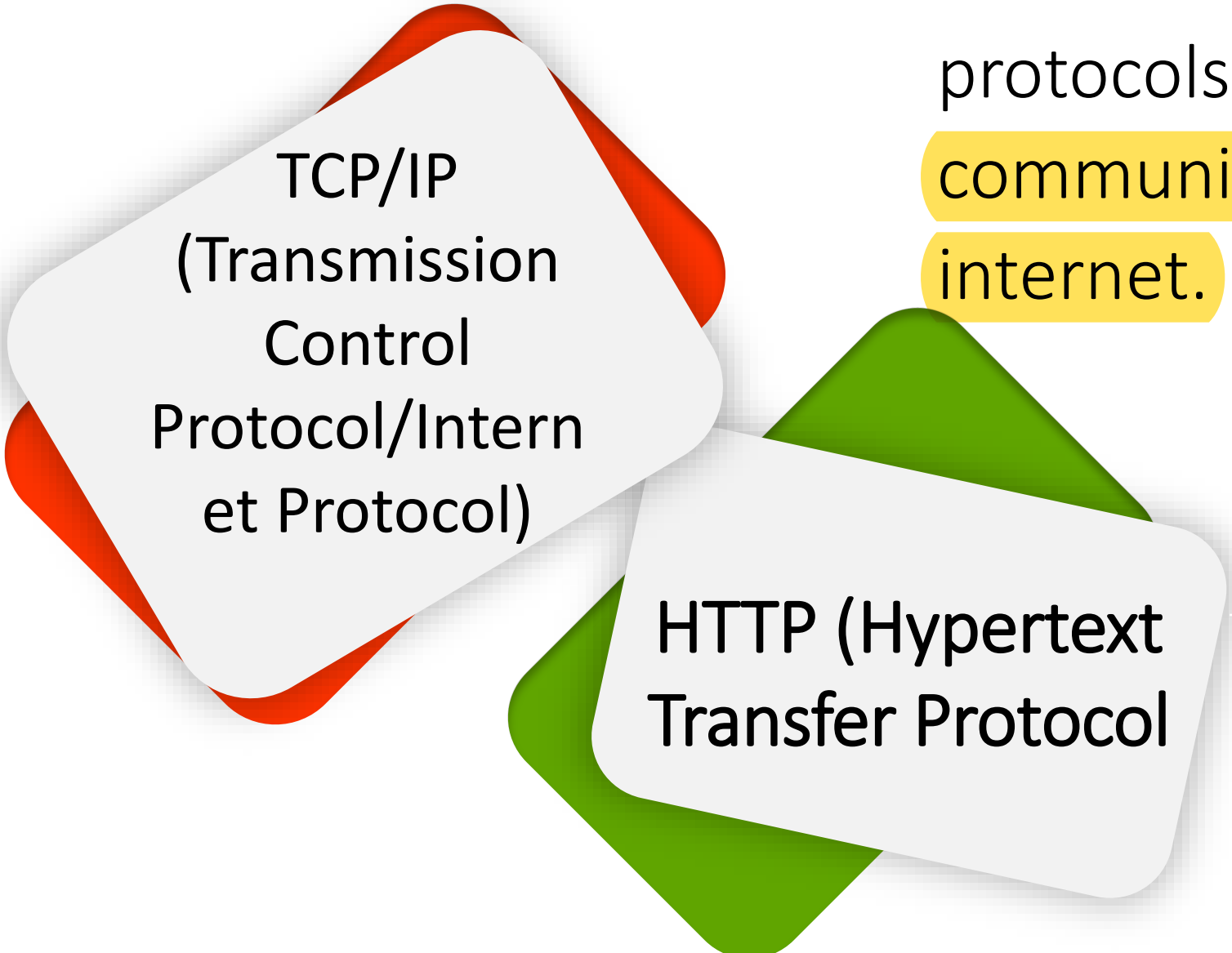
2010s

The mobile revolution and the emergence of social media platforms transform the way people interact with the web.

Internet Protocols and Web Architecture

- The internet is a vast network of interconnected computers that communicate using a set of standardized protocols.
- These protocols ensure that data can be transmitted reliably and efficiently across the network.

Key internet protocols



The fundamental protocols that govern communication on the internet.

The protocol used to transfer web pages and other data between web servers and web browsers.

Key internet protocols

DNS (Domain Name System)

A system that translates human-readable domain names into machine-readable IP addresses.

FTP (File Transfer Protocol)

A protocol for transferring files between computers.

Web architecture

- The web is typically structured as a client-server architecture, where clients (web browsers) send requests to servers (web servers) for web content.
- The server processes the request and sends the requested content back to the client.

Web Browsers and Web Servers

Web browsers

A web browser is a software application that allows users to access and view web content

Popular web browsers include:

Google Chrome

Mozilla Firefox

Safari

Microsoft Edge

Web servers

computer system that delivers web pages to clients. Web servers typically run software such as Apache

Key components of a web server

Web server software

The software that handles incoming requests and sends out responses

Web content

The files (HTML, CSS, JavaScript, images, etc.) that make up the web pages.

Database (optional)

A database may be used to store and retrieve dynamic content.

Activity

Web History Timeline

Assign topics:

- Milestone in the history of the web (1960s, 1980s, 1990s, 2000s, 2010s).

Research

- Identify key events, inventions, or people that contributed to the development of the web.

Create timeline

- Have each group create a timeline on their assigned topic, highlighting the most important events and discoveries.

Present and discuss

- Have each group present their timeline to the class, explaining the significance of the events they included.

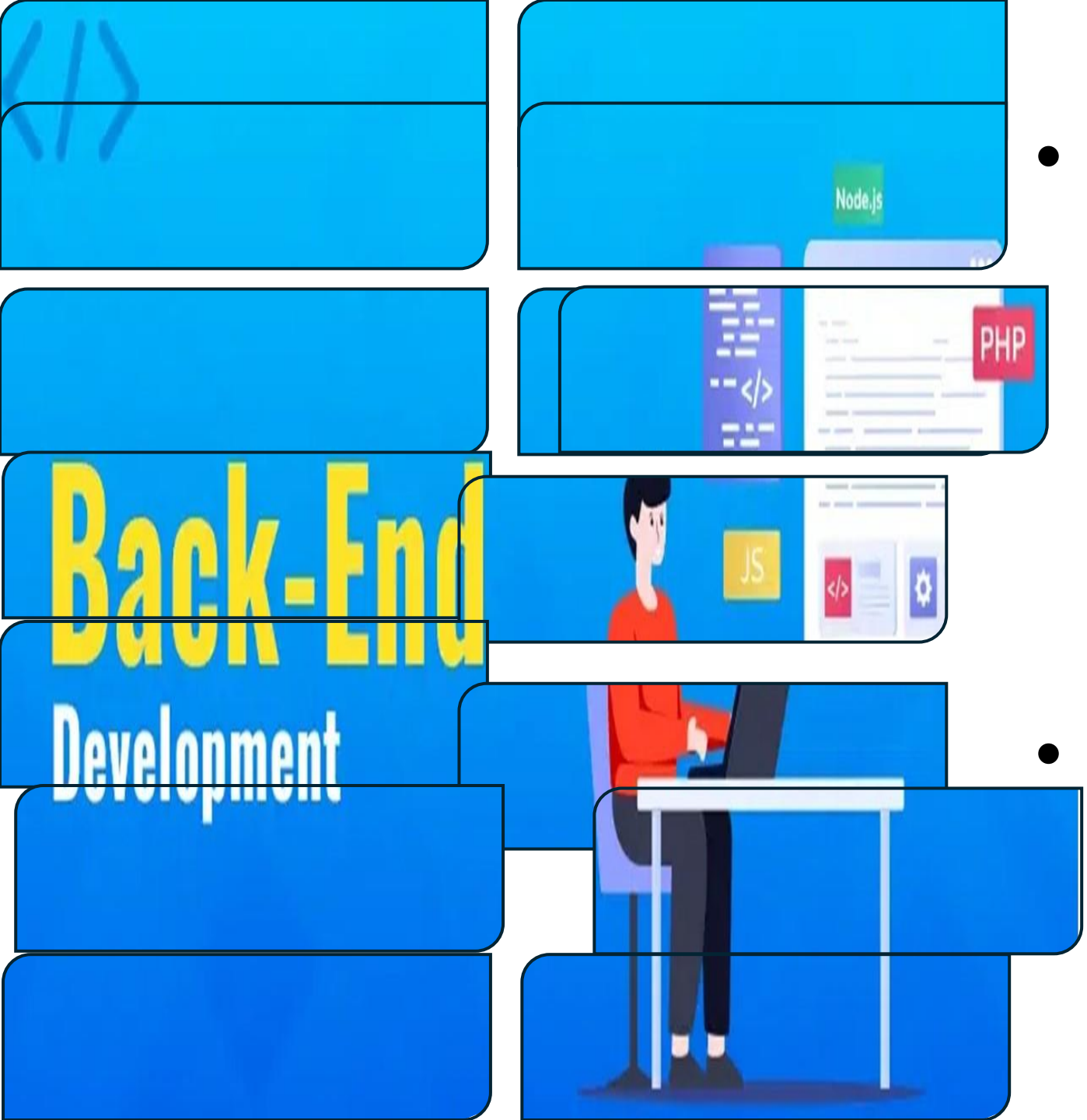
Web Development

Topic Outline

- Roles and Responsibilities of Web Developers
- Overview of Web Development Technologies

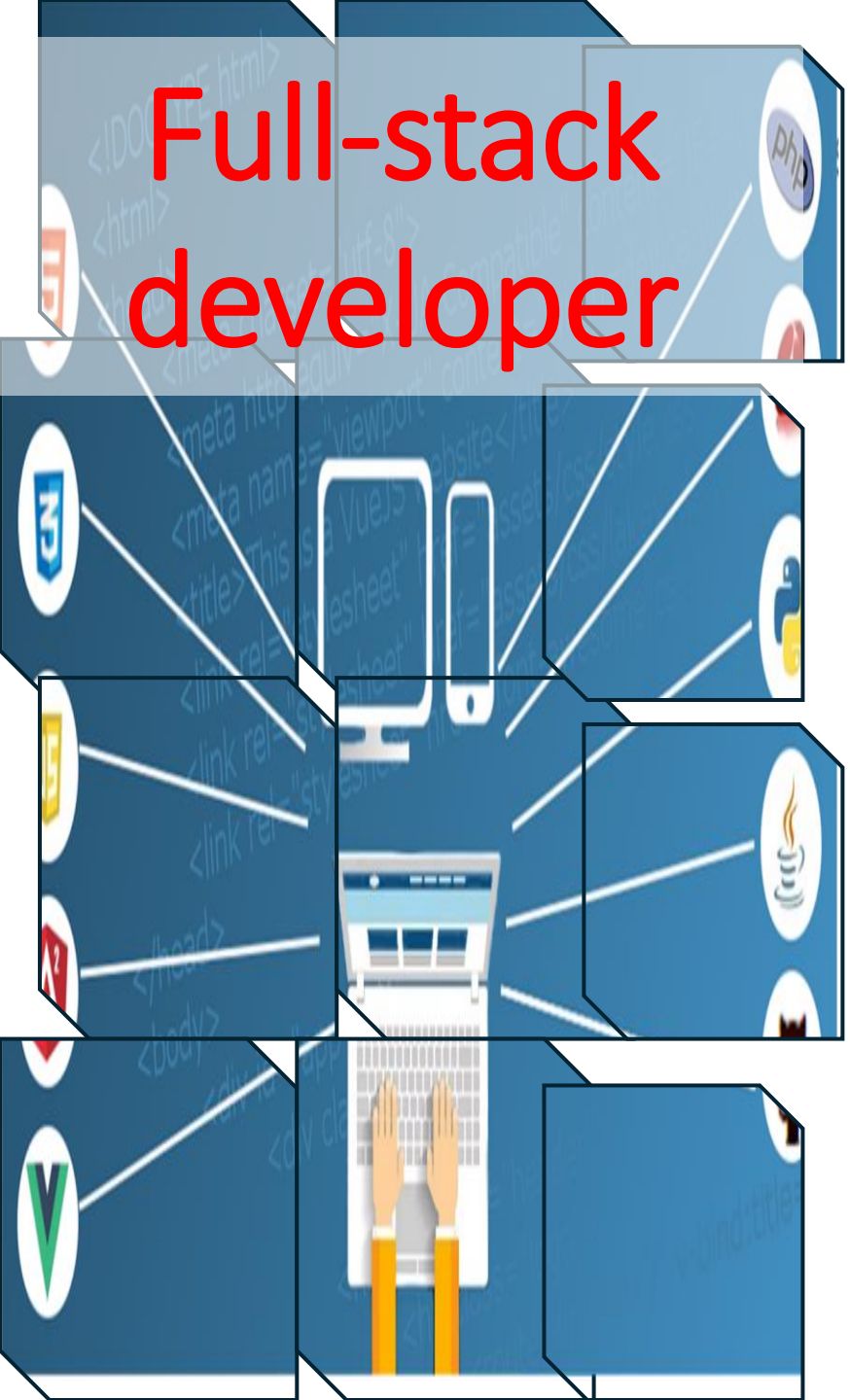
- Web developers play a crucial role in creating and maintaining websites.
- Their responsibilities can vary depending on their specific expertise and the project requirements.

- Focuses on the visual elements of a website, including the layout, design, and user interface.
- They primarily work with HTML, CSS, and JavaScript



- Handles the server-side logic and functionality of a website, such as database interactions and API integrations.
- They often work with languages like PHP, Python, Ruby, or Java.

Full-stack developer



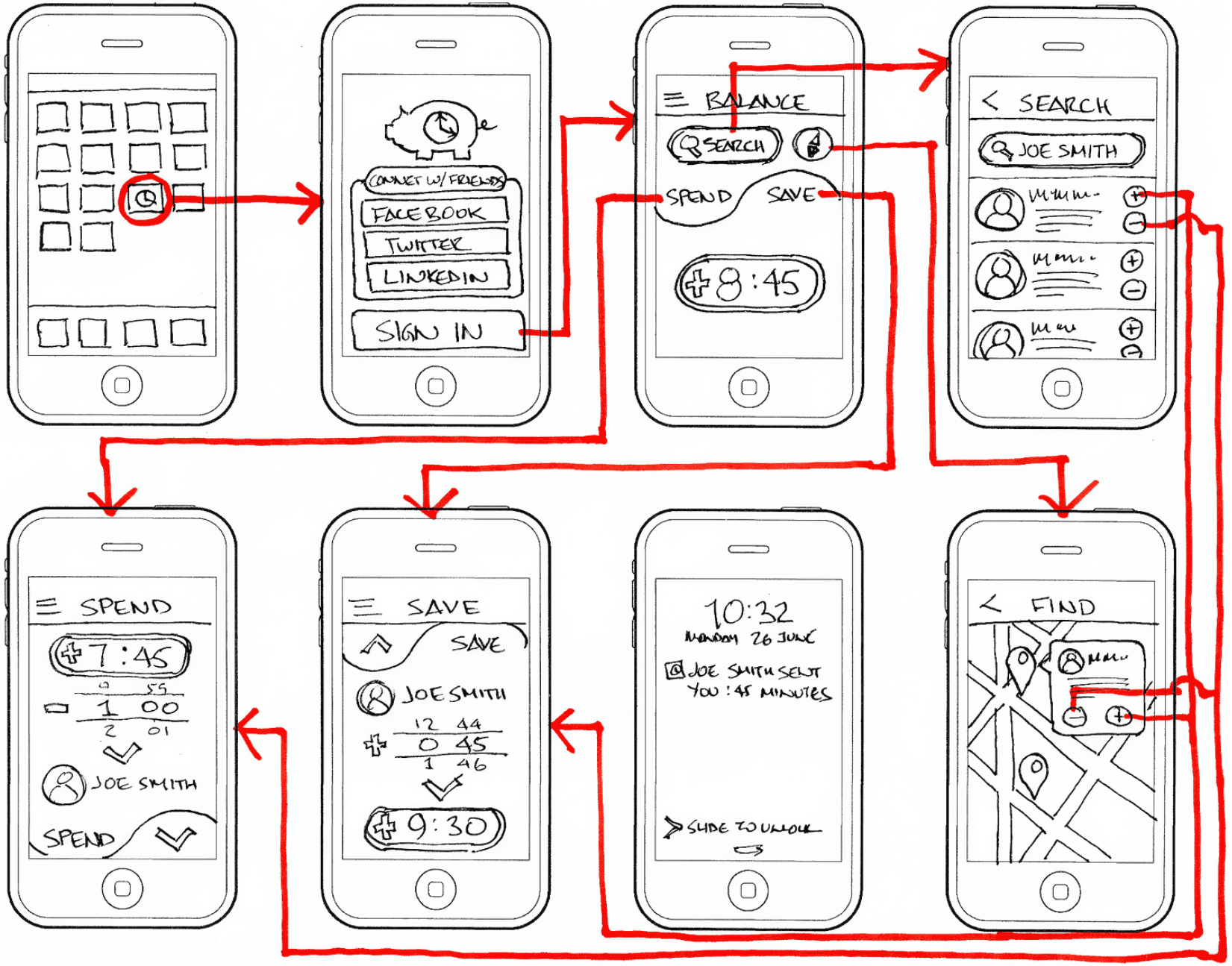
Possesses skills in both front-end and back-end development, allowing them to work on all aspects of a website.

UI/UX designer

- Designs the user interface and user experience of a website, focusing on creating intuitive and visually appealing designs.

UX designer

user experience



WEB DESIGNER

Creates the overall look and feel of a website, including the layout, color scheme, and typography.

WEB DESIGNER

- is a professional who creates the visual interface of a website.
- responsible for designing the User interface, and the visuals of a website.
- creates a website design that is visually appealing, user-friendly, and effectively communicates the mission of the website.

- 38% of visitors will stop engaging with a website if the design is unattractive, and
- 48% say the design of the website is the most important factor in determining a business' credibility *(Blue Corona)*
- 98% of people who've had a bad website experience will shop with a competitor *(Web FX)*

https://www.manypixels.co/blog/web-design/scope-of-service

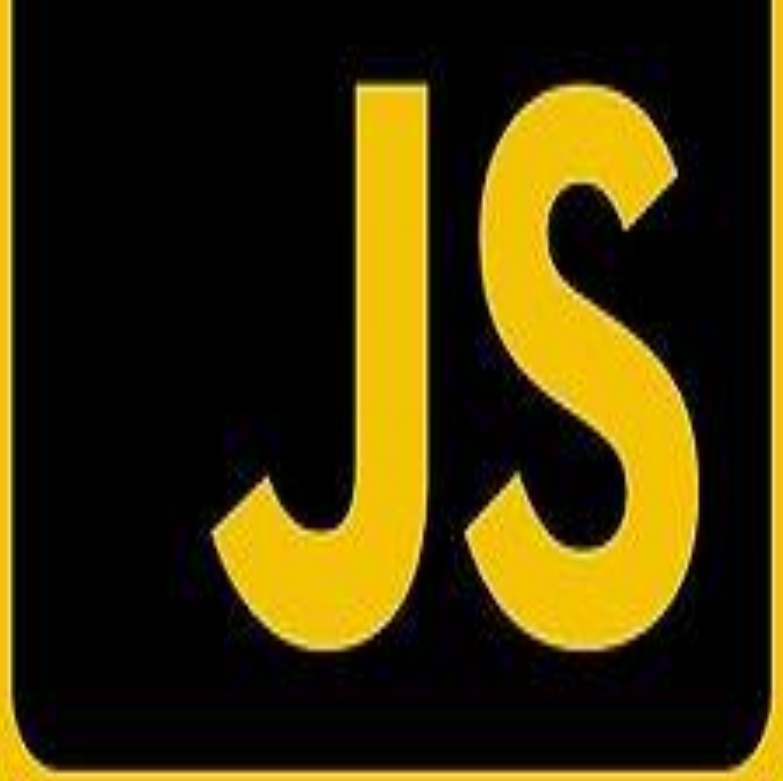
Web development involves a wide range of technologies and tools

<html>

- The fundamental language for creating web pages.
- It defines the structure and content of a page.

CSS

Used to style HTML elements, controlling their appearance, layout, and formatting.



A programming language that adds interactivity and dynamic features to web pages.

Bootstrap

A popular front-end framework that provides pre-built components and styles for creating responsive websites.

Activity

Website/Web Application Critique

Instructions

1. Choose a Website

- Select a website to critique.
- This could be a *personal blog*, a *corporate site*, an *e-commerce platform*, or a *non-profit organization's website*.

2. Review the Website

Pay attention to the following aspects:

1. **Design and Aesthetics**: Is the website visually appealing? Are colors, fonts, and images used effectively?

2. **Usability**: Is the website easy to navigate? Are menus and links intuitive? Is information easy to find?

3. **Content Quality**: Is the content well-written and informative? Does it engage the target audience?

4. Functionality: Do all features (forms, buttons, links) work correctly? Are there any broken links or errors?

5. Mobile Responsiveness: How does the website perform on a mobile device? Is it user-friendly on smaller screens?

Step 3: Use the Critique Guidelines

Refer to the following critique guidelines to structure your evaluation:

1. **Strengths:** List **three** things the website does well.

2. **Weaknesses:** Identify **three** areas for improvement.

3. **User Experience:** Describe your overall experience as a user. How did it feel to interact with the site?

4. **Recommendations:** Suggest specific changes or enhancements that could improve the website.

Introduction to the Web Development Life Cycle

Topic Outline

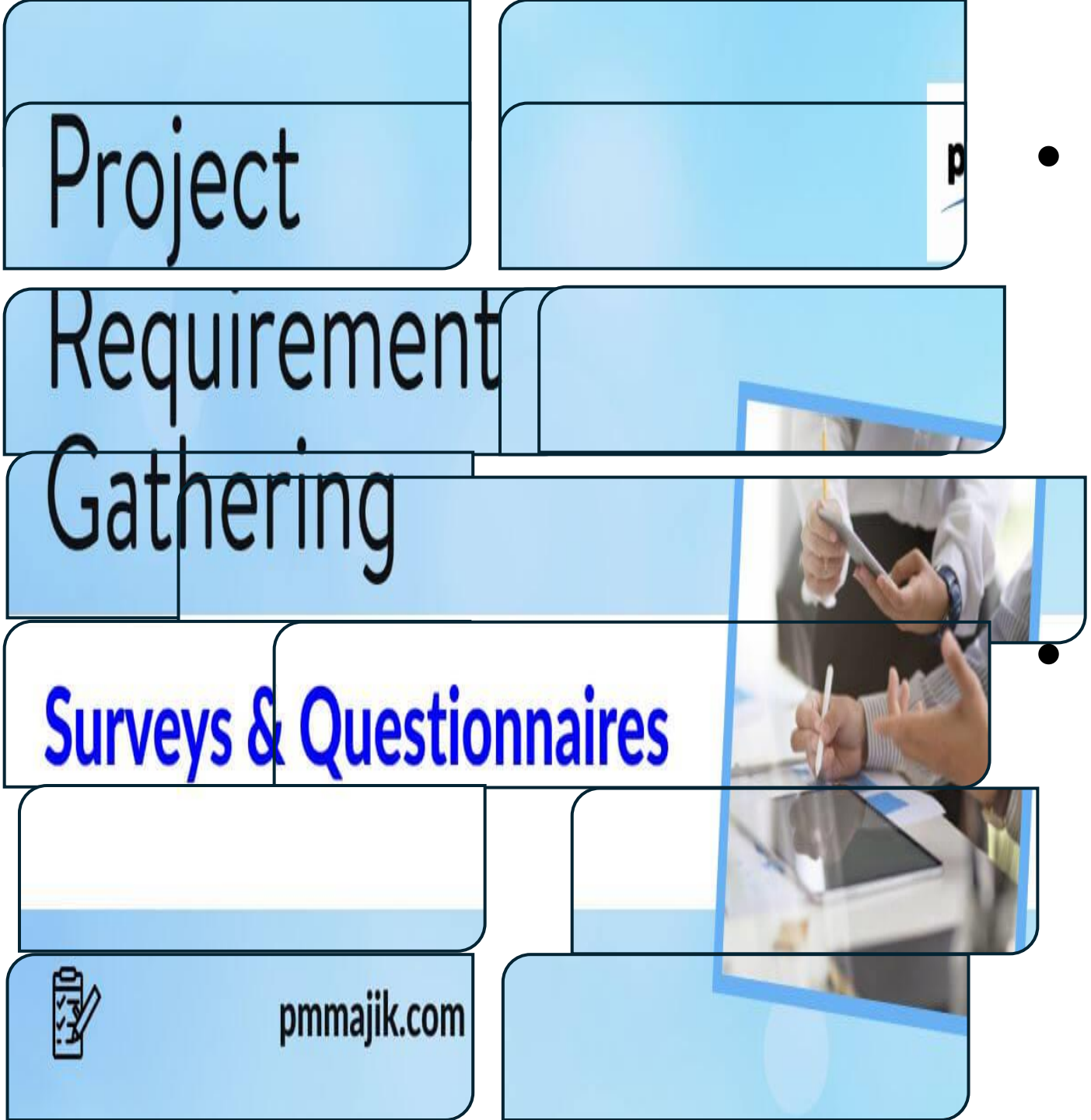
- Project Planning and Requirements Gathering
- Web Design and User Experience
- Web Development Process

- The web development life cycle (WDLC) is a structured process that outlines the steps involved in creating a website/web application. It helps ensure that the project is completed efficiently and effectively.

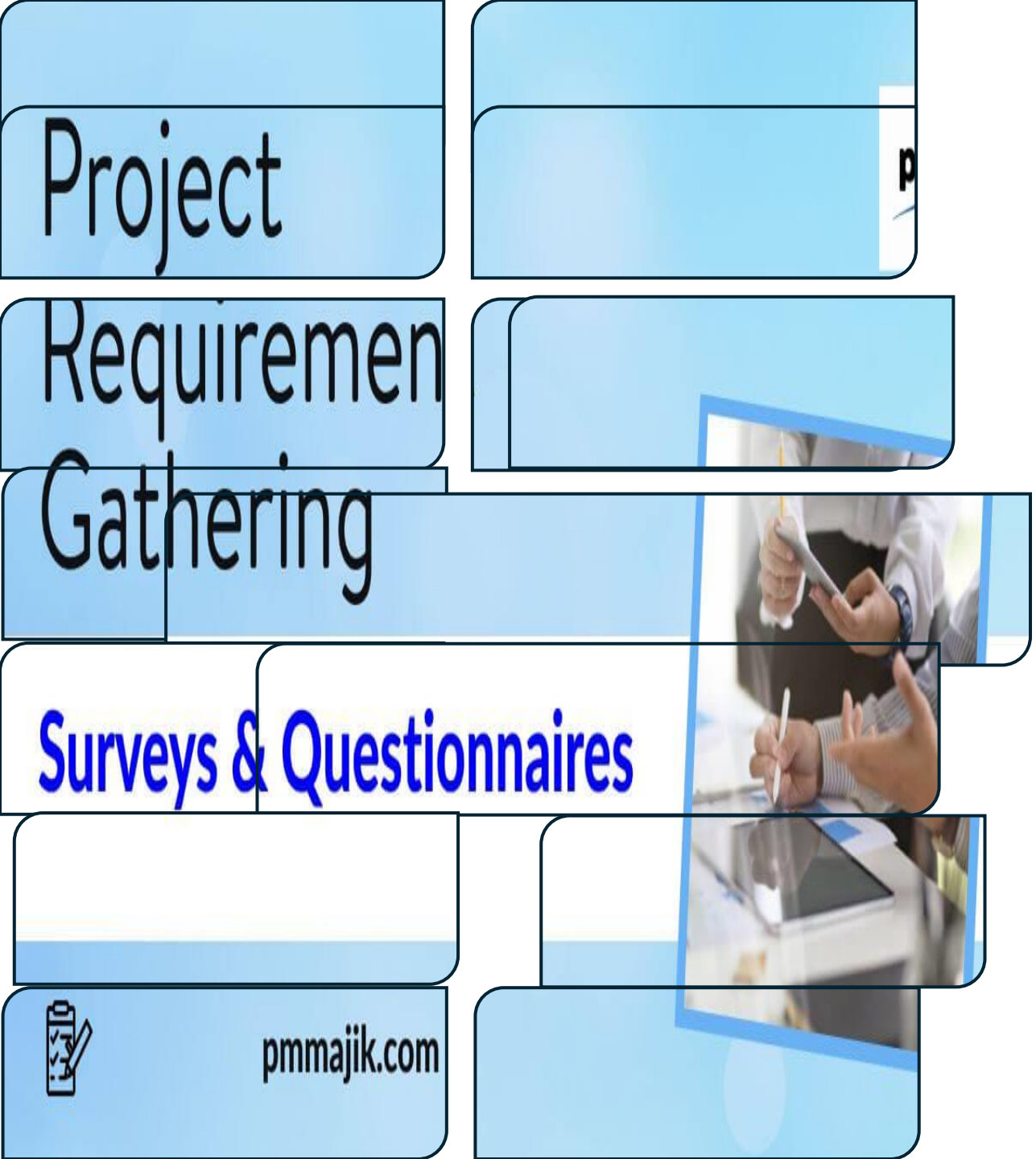
- Phase of the WDLC is ***project planning*** and ***requirements gathering.***

- Define project goals and objectives.
- Identify target audience and their needs.
- Determine project scope and timeline.

- Assign roles and responsibilities to team members.
- Create a project plan with milestones and deadlines.



- Gather information about the website's functionality, features, and design preferences
- Conduct interviews, surveys, and user research to understand user needs.

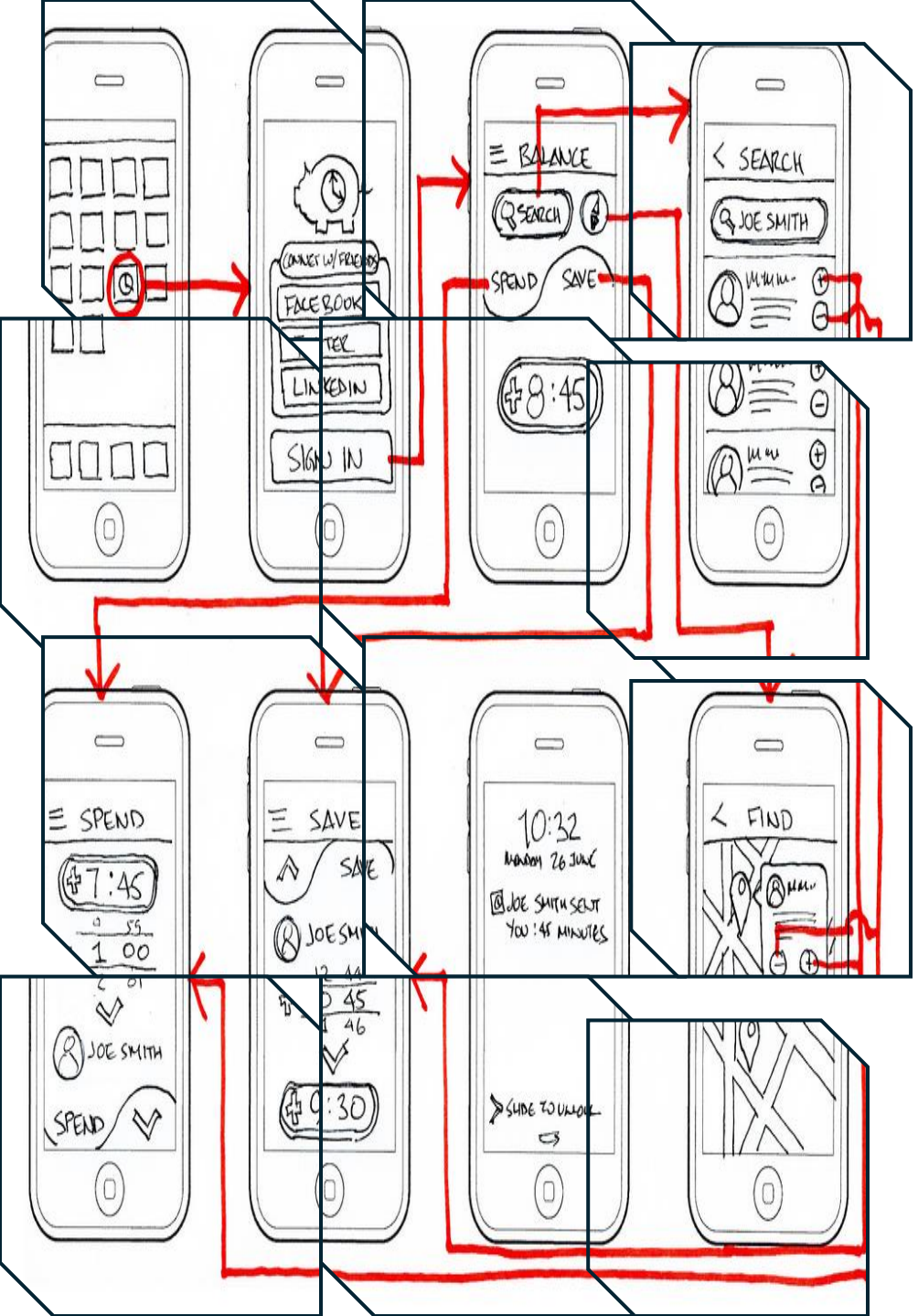


- Create detailed requirements documents, such as wireframes and mockups.

- Once the requirements are gathered, the next phase is web design and user experience (UX).

- This involves creating the visual elements of the website, as well as ensuring that it is easy to use and navigate.

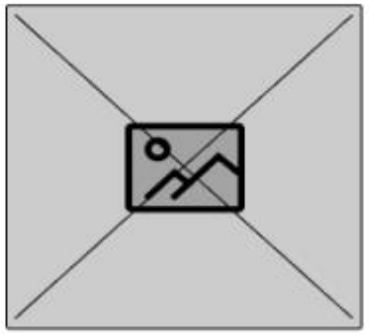
1. Create ***wireframes*** and ***mockups*** to visualize the layout and structure of the website



- ***wireframe*** is a set of schematic (usually black and white) blocks that outline the arrangement of the elements on the future website/app interface.

- It usually shows the layout of the buttons, visuals, copy, but doesn't go into details presenting only the main design ideas.

TENDR X DASHBOARD CARRIERS FEED TEMPLATES SUBSCRIPTIONS MESSANGER



DHL Ukraine

Financial Services Kyiv, Ukraine

Shipper

wireframe

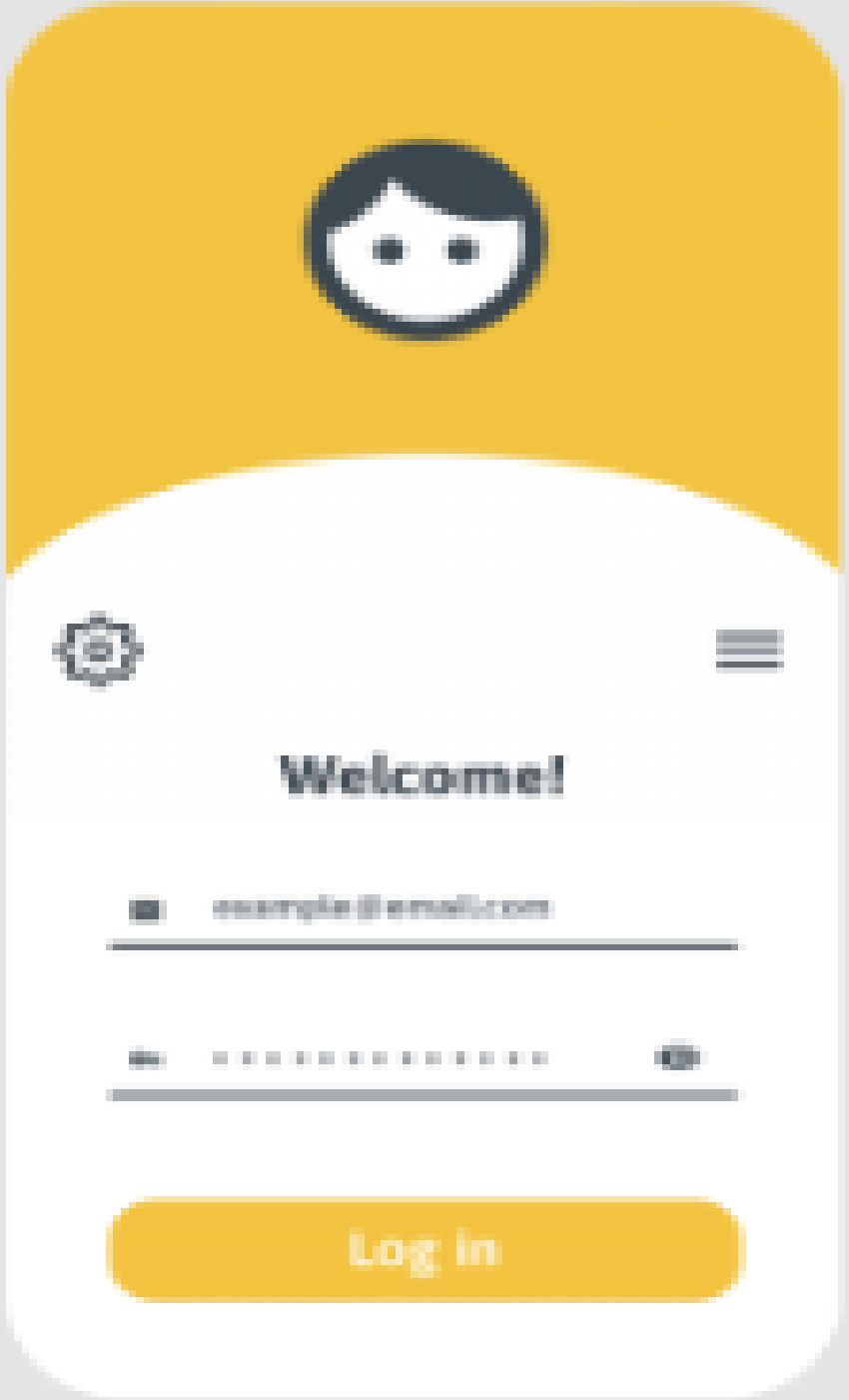
Posts
About
Following

Write a post

+ ADD PHOTO + ADD VIDEO + ADD FILE PUBLISH

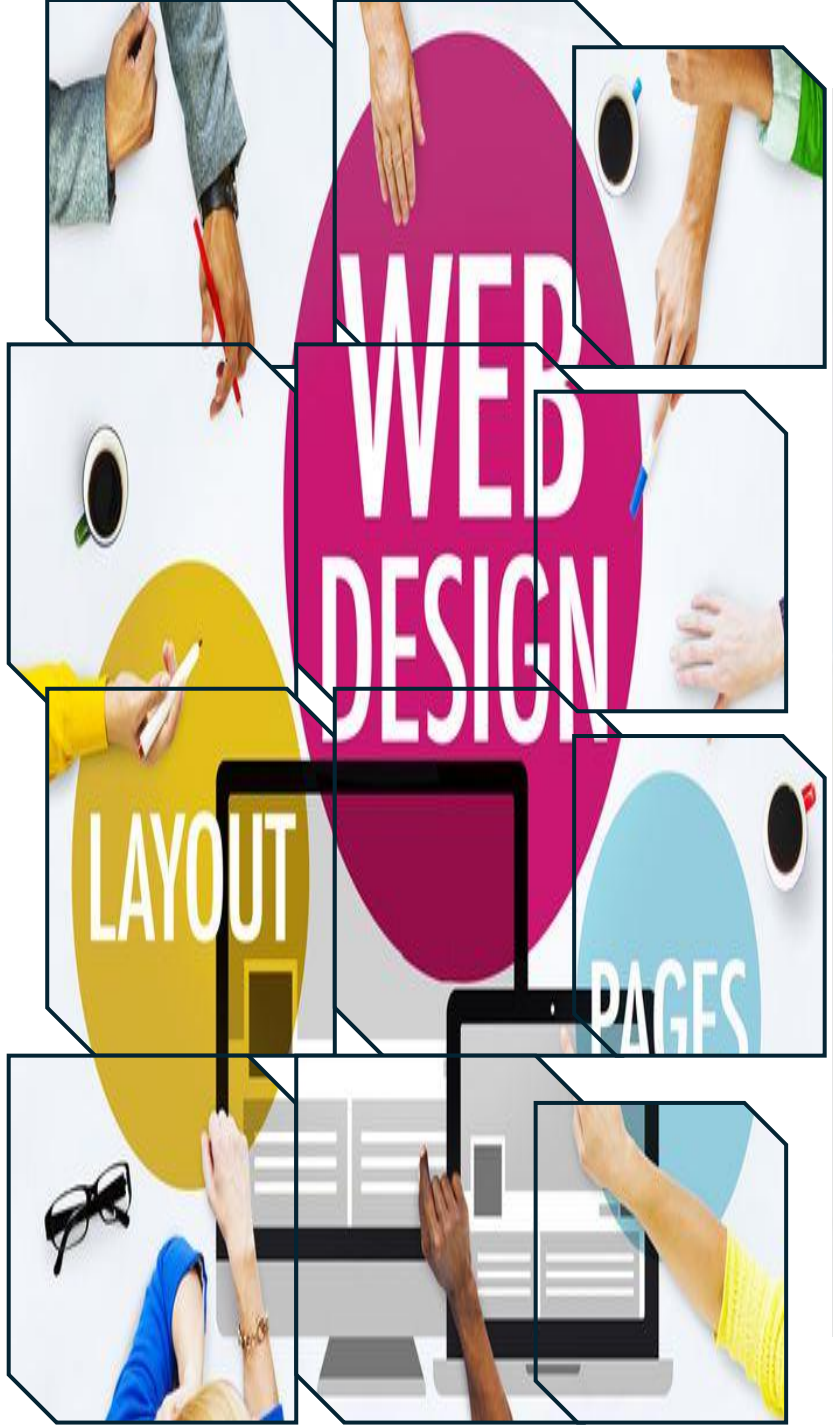
DHL Ukraine
Apr 12 2020 15:34

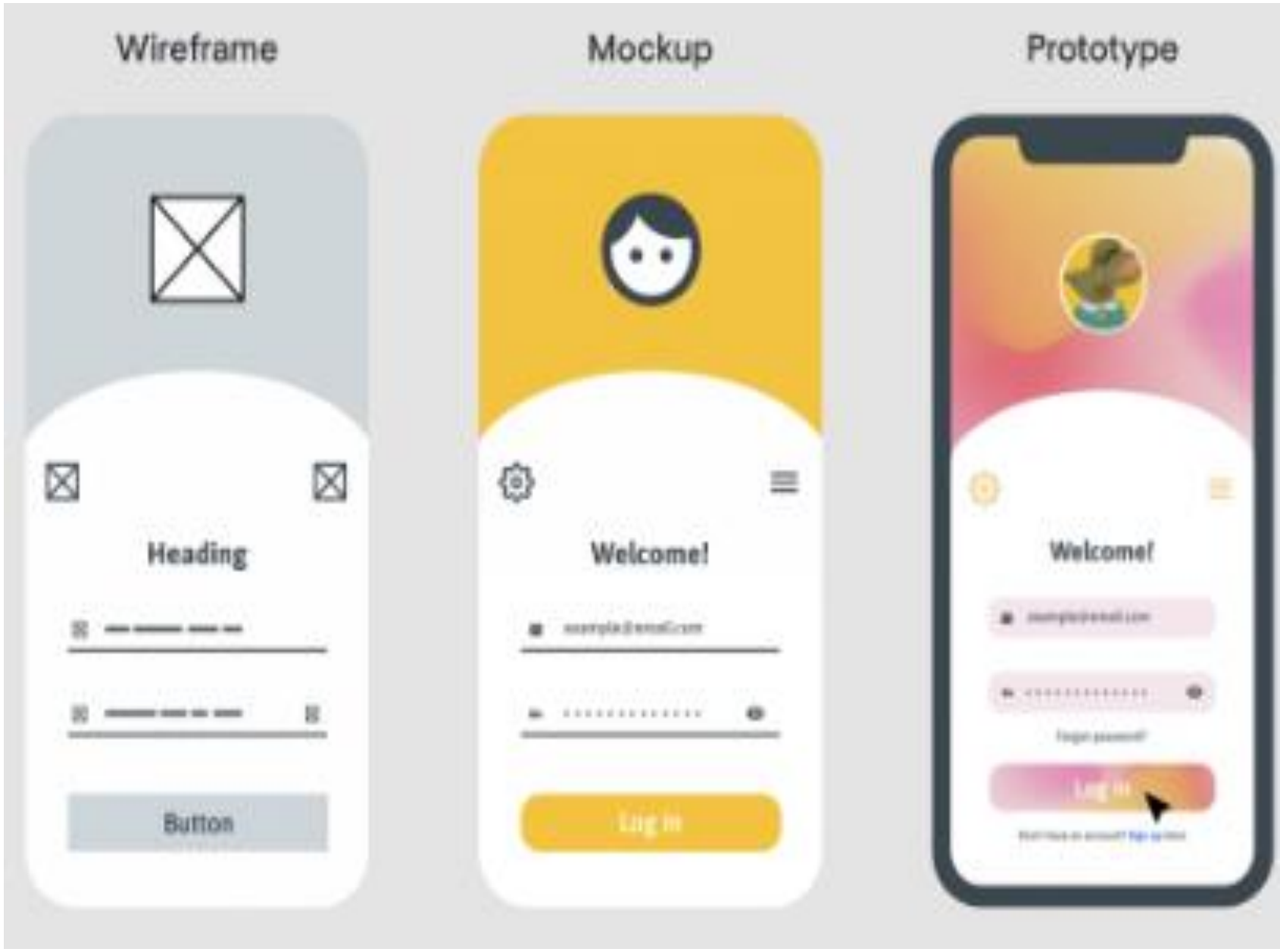
"We are mobilizing the firm's resources to support customers, employees and communities – especially the most vulnerable – in this time of crisis." Peter L. Scher, Head of Corporate Responsibility on our firm's response to the #coronavirus pandemic.
http://bit.ly/2Wlnwwd



- ***mockup*** is a page or screen of the finished application design, as it will look to the user

- It is colorful, with thought-out visuals and typography, and it gives viewers a realistic impression of the future product's look.

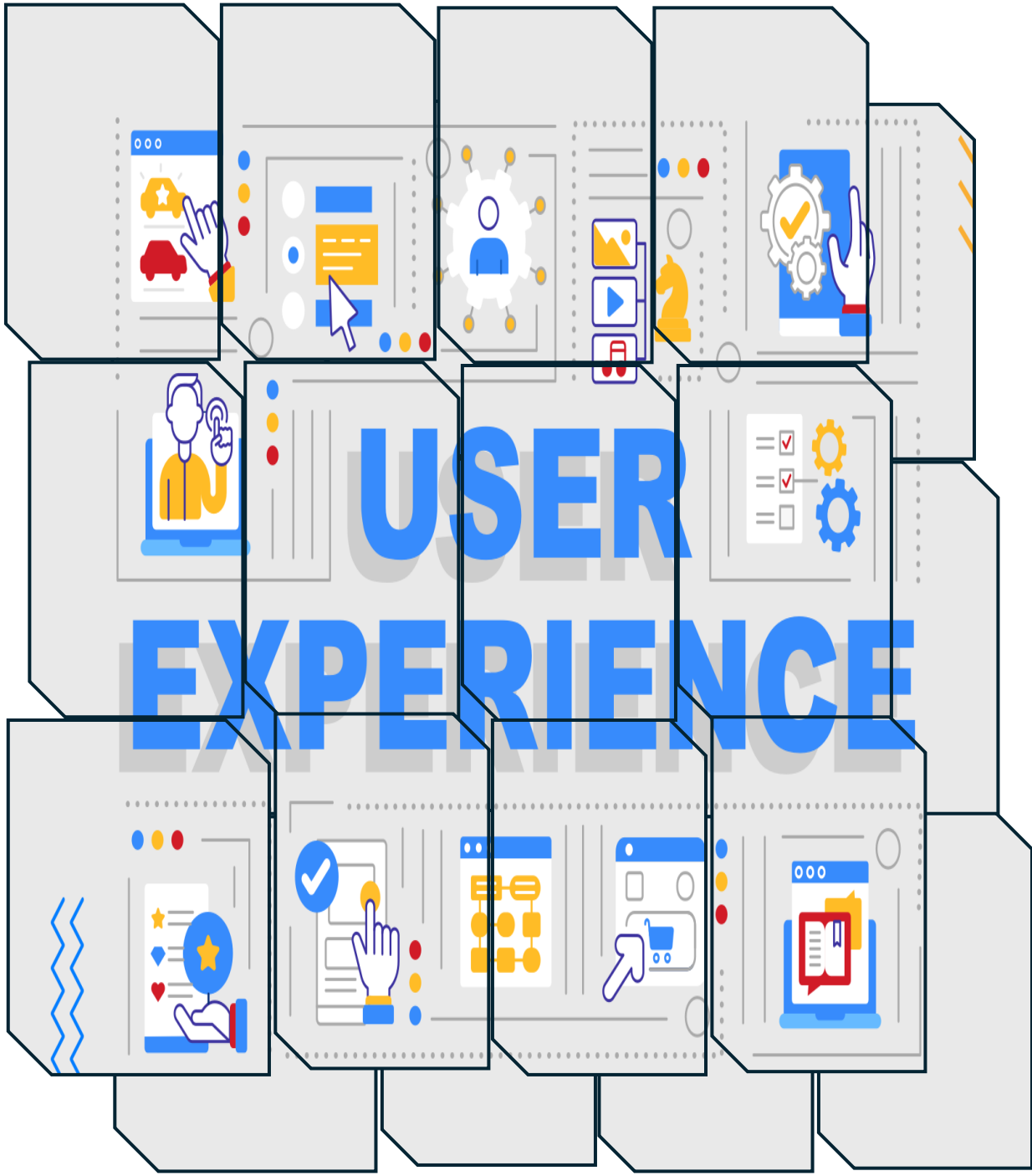

WEB
DESIGN
LAYOUT
PAGES


Wireframe
Heading
Button
Mockup
Welcome!
Log in
Prototype
Welcome!

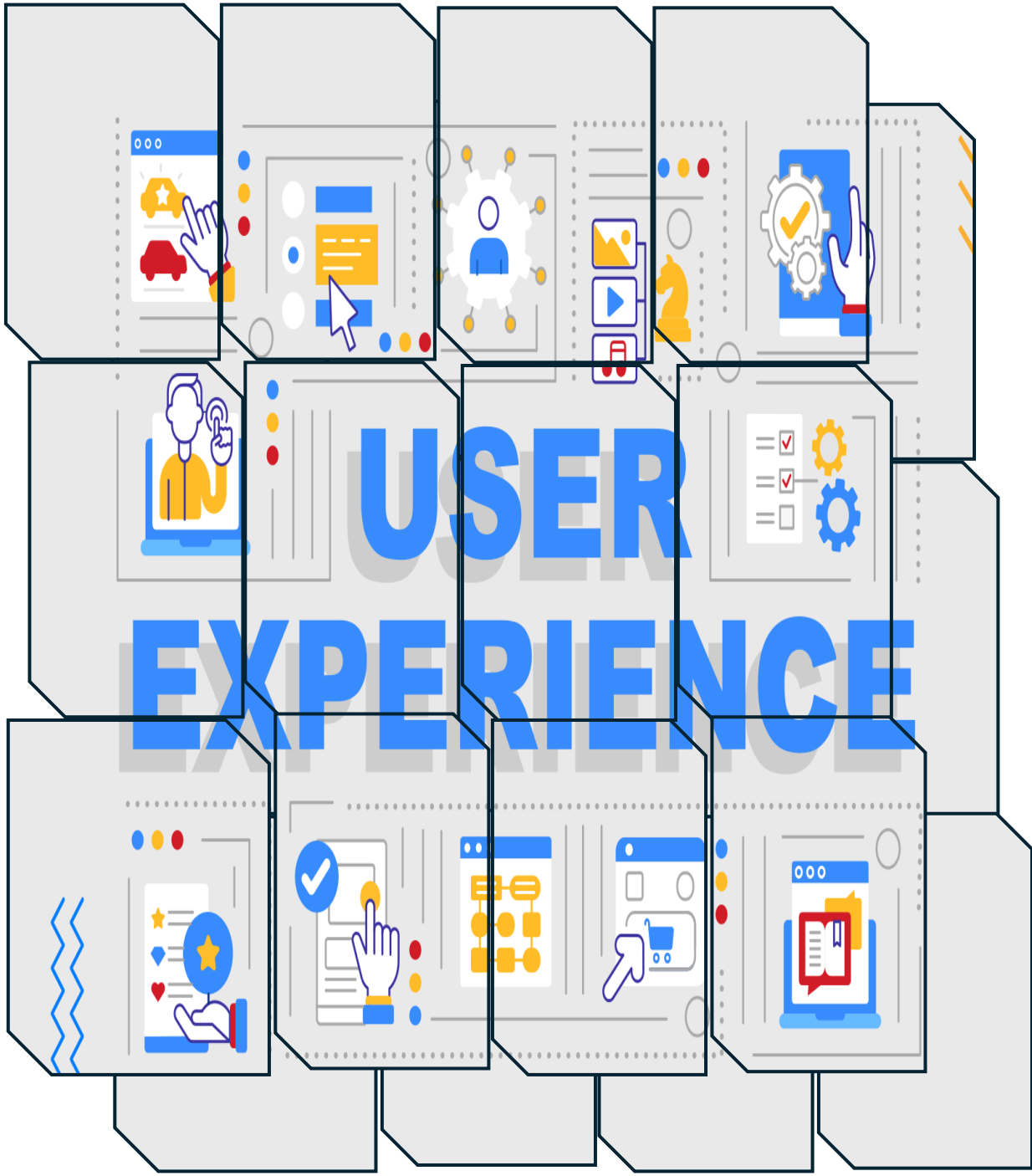
2. Design the visual elements, including color scheme, typography, and imagery.

3. Ensure that the design is responsive and looks good on different devices.

- Consider usability factors such as navigation, accessibility, and load times.
- Conduct user testing to gather feedback and make improvements.



- Ensure that the website is intuitive and easy to use for the target audience



COMMON METHODS INCLUDE

COMMON METHODS INCLUDE

- GET
- POST
- PUT
- DELETE

GET

Purpose: Send data to the server to be processed

Example: Submitting a form with user input

POST

Purpose: Send data to the server to be processed

Example: Submitting a form with user input

PUT

Purpose: Update existing data on the server

Example: Modifying user profile information

DELETE

Purpose: Remove data from the server

Example: Deleting a user account

STATUS CODES

HTTP RESPONSES INCLUDE STATUS CODES THAT INDICATE THE OUTCOME OF THE REQUEST

EXAMPLE STATUS OF CODE

200 OK

The request was successful, and the server has returned the requested data

Example Use: When a user accesses a web page, and the page loads successfully

404
NOT FOUND

The requested resource was not found on the server

Example Use: When a user tries to access a URL that doesn't correspond to an existing web page or resource

400 BAD REQUESTS

Meaning: The server couldn't understand the request due to a client error, often due to malformed syntax

Example Use: When a user submits a form with missing or incorrect data

401 UNAUTHORIZED

The request requires authentication, and the user's credentials are either missing or invalid

Example Use: When a user tries to access a restricted page without logging in

403 FORBIDDEN

Meaning: The server understood the request, but the server refuses to authorize it

Example Use: When a user attempts to access a resource they don't have permission to view

500 INTERNAL SERVER ERROR

The server encountered an error it couldn't handle, affecting its ability to fulfill the request

Example Use: When there's a problem on the server side that prevents it from processing the request

503 SERVICE UNAVAILABLE

Meaning: The server is currently unable to handle the request due to temporary overloading or maintenance

Example Use: When a website is undergoing maintenance and is temporarily unavailable

302 FOUND

The requested resource has been temporarily moved to a different location

Example Use: When a web page has been moved, and the server provides a temporary redirection to the new URL

301 MOVED PERMANENTLY

The requested resource has been permanently moved to a different location

Example Use: Similar to the 302 status but indicating that the redirection is permanent

204 NO CONTENT

The server successfully processed the request, but there's no new content to send back

Example Use: Commonly used with AJAX requests where the client doesn't need a new page or content update