

ENSF 381

Full Stack Web Development

Lecture 03:

Foundations of Web Development

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Outline

- Recap
- End-to-End example
- Web development concepts
- Error types

Recap

- **Full Stack development:** the process of designing, developing, testing, and deploying end-to-end web application.
- **Frontend:** everything a user sees and interacts with when they click on a link or type in a web address.
- **Backend:** pertains to the underlying processes and essential components responsible for the seamless and proper functioning of the front-end.

Recap - Continue

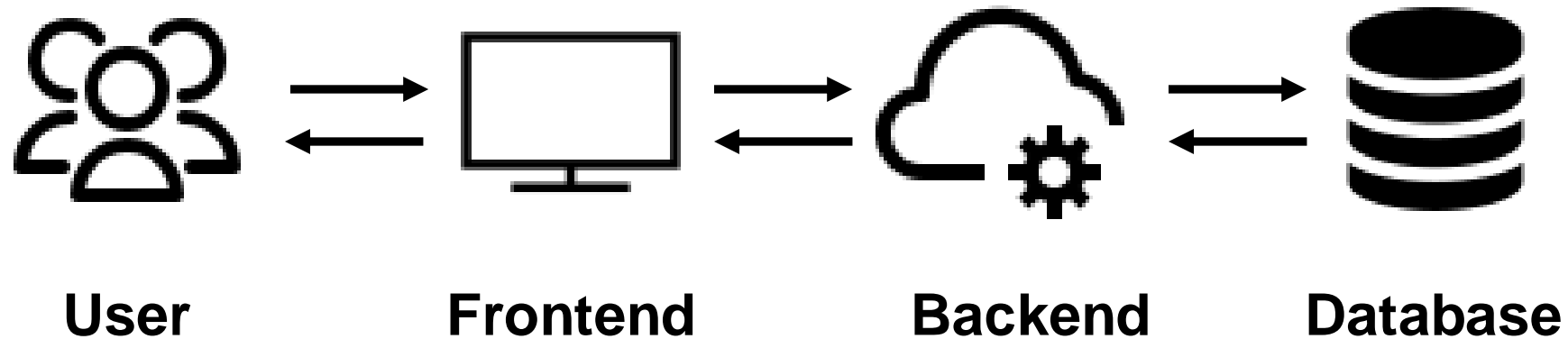
Frontend technologies:

- HTML
- CSS
- JavaScript

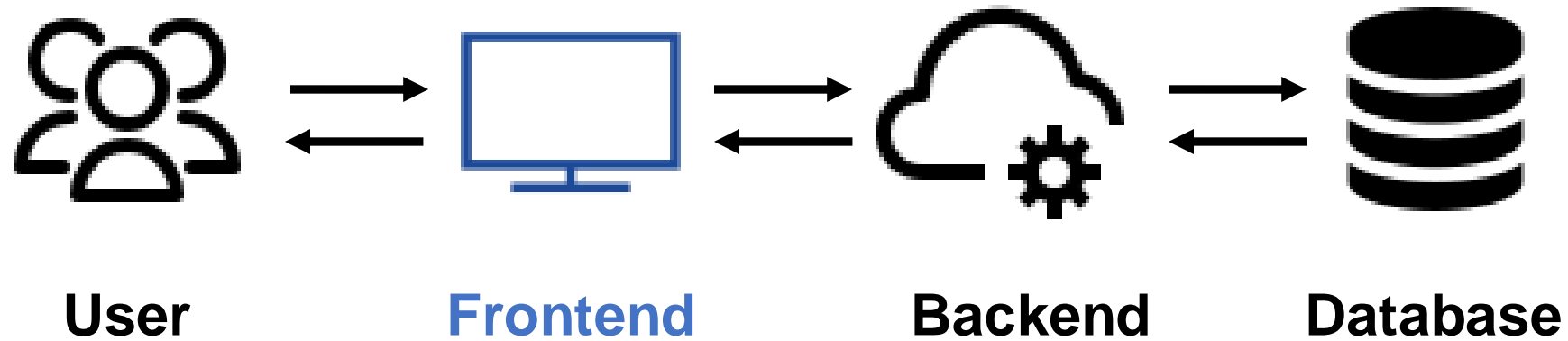
Backend technologies:

- Python
- PHP
- Node.js

Full stack application overview



An end-to-end example



An end-to-end example

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An end-to-end example



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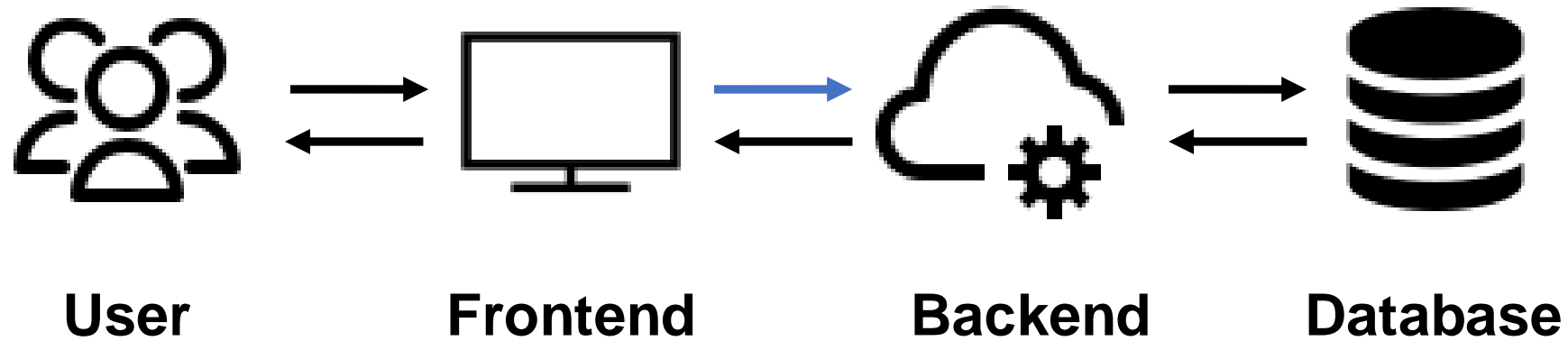
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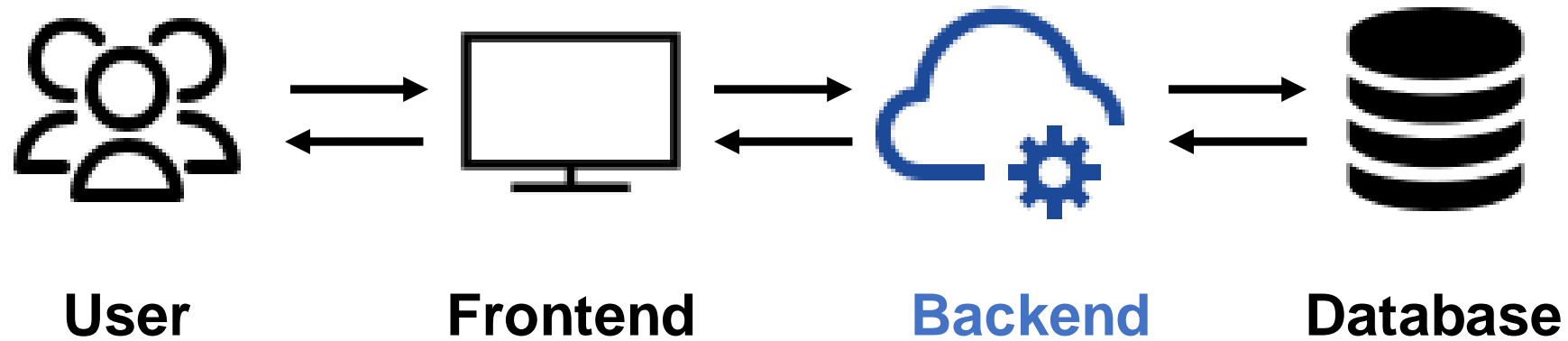
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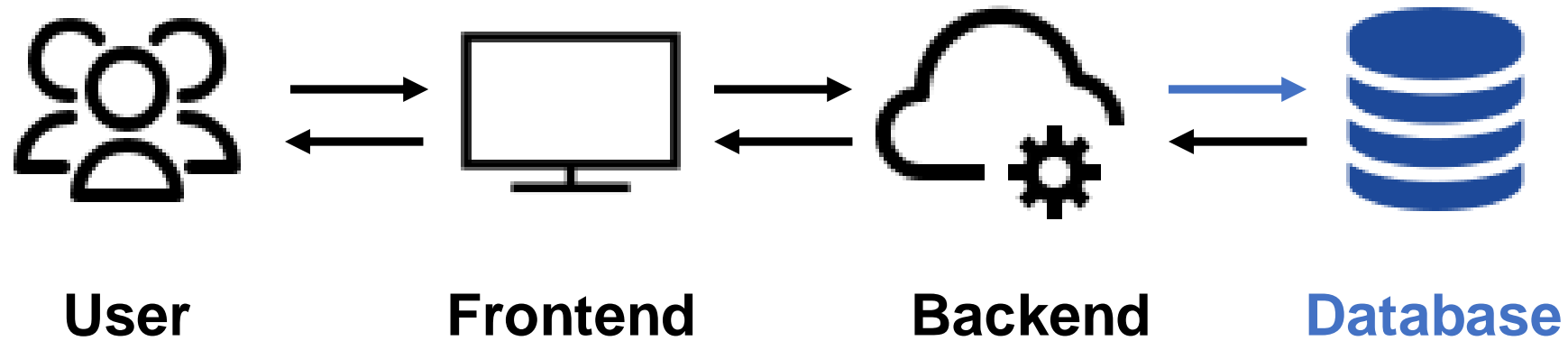
An end-to-end example



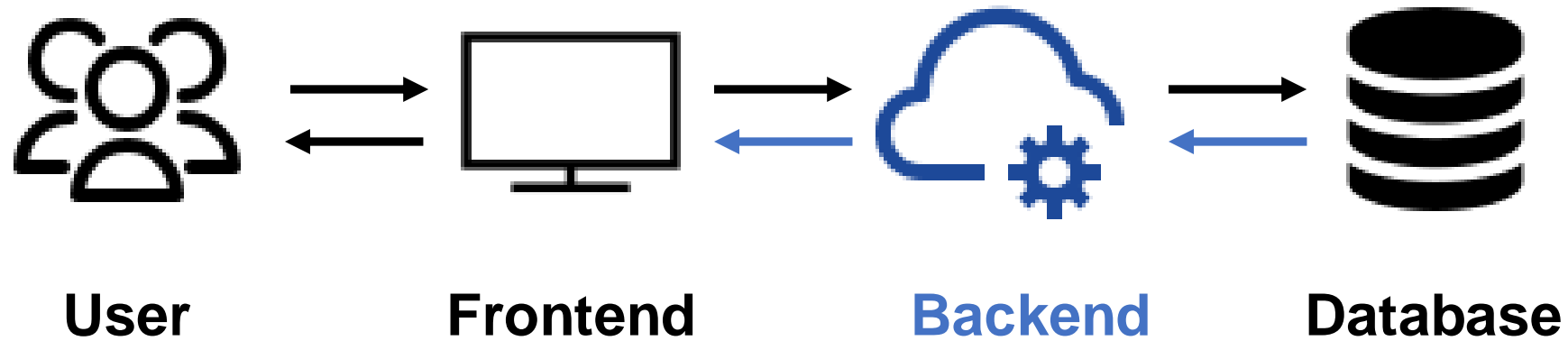
An end-to-end example



An end-to-end example



An end-to-end example






An end-to-end example

9 class section(s) found

▼ ENSF 381 - Full Stack Web Development

Class	Section	Days & Times	Location	Room	Instructor	Section Group *	Topic	Meeting Dates	Status	Class Restrictions
14378	01-LEC Regular	MoWeFr 8:00AM - 8:50AM	Main UofC Campus		Ahmad Hazzaa Khader Abdel Latif	1		2024/01/08 - 2024/04/09		

Class	Section	Days & Times	Location	Room	Instructor	Section Group *	Topic	Meeting Dates	Status	Class Restrictions
14379	02-LEC Regular	MoWeFr 1:00PM - 1:50PM	Main UofC Campus		Samuel Sofela	2		2024/01/08 - 2024/04/09		

Class	Section	Days & Times	Location	Room	Instructor	Section Group *	Topic	Meeting Dates	Status	Class Restrictions
15328	03-LEC Regular	MoWeFr 11:00AM - 11:50AM	Main UofC Campus		Mahdi Ansari	3		2024/01/08 - 2024/04/09		


Terminologies

- **Uniform Resource Locator (URL):** the address used to access resources on the web, specifying the location of a web page or file.

URL - Example

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Terminologies

- **Uniform Resource Locator (URL):** the address used to access resources on the web, specifying the location of a web page or file.
- **Responsive Images:** techniques for optimizing and displaying images on various screen sizes and resolutions.

URL - Example

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Responsive Images - Example

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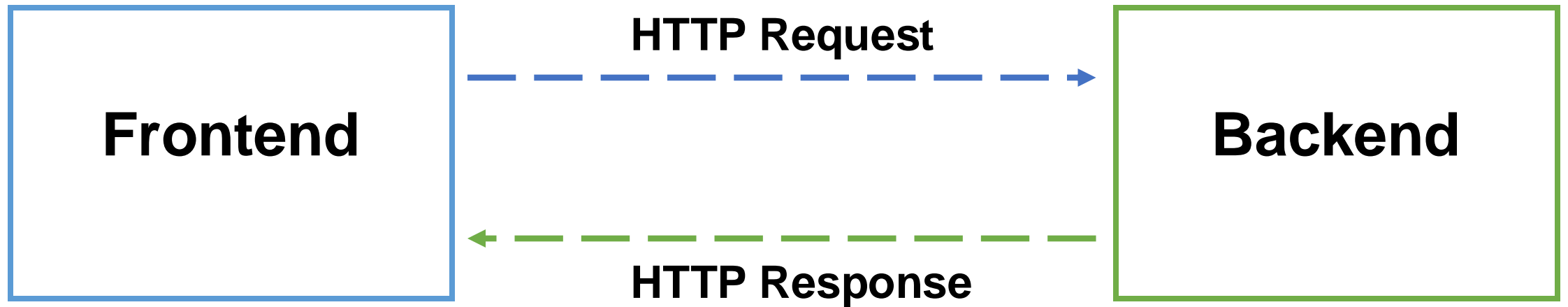
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Terminologies

- **Uniform Resource Locator (URL):** the address used to access resources on the web, specifying the location of a web page or file.
- **Responsive Images:** techniques for optimizing and displaying images on various screen sizes and resolutions.
- **Hypertext Transfer Protocol (HTTP):** the protocol used for transmitting data on the web, including requests and responses between frontend and backend.

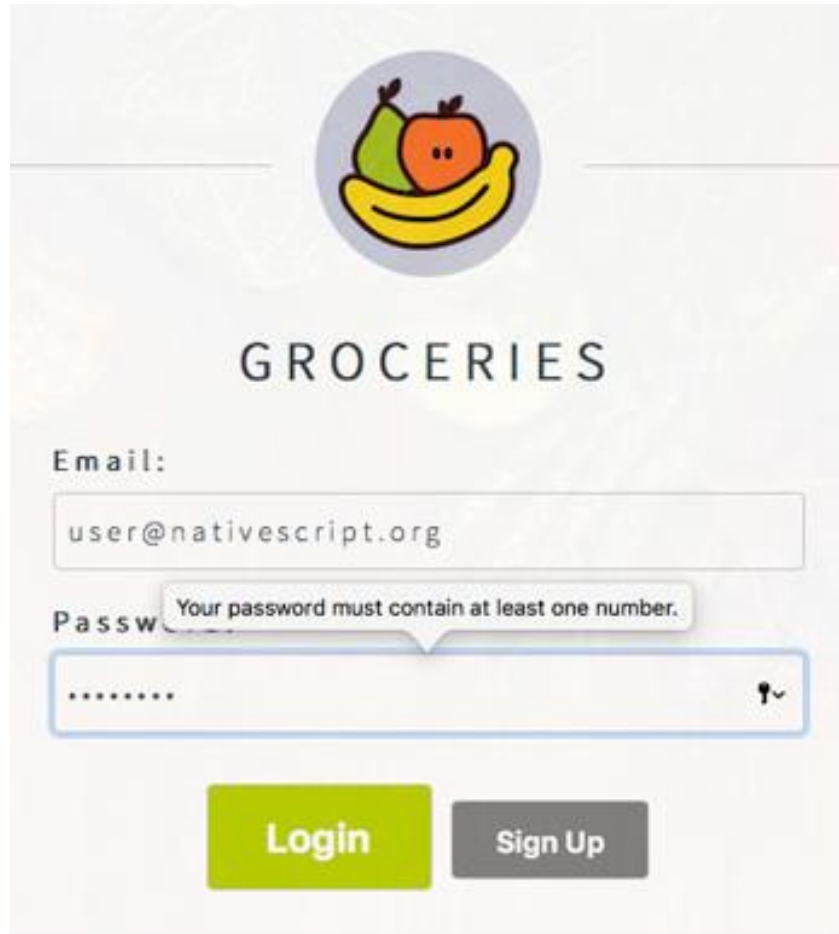
HTTP - Example



Terminologies

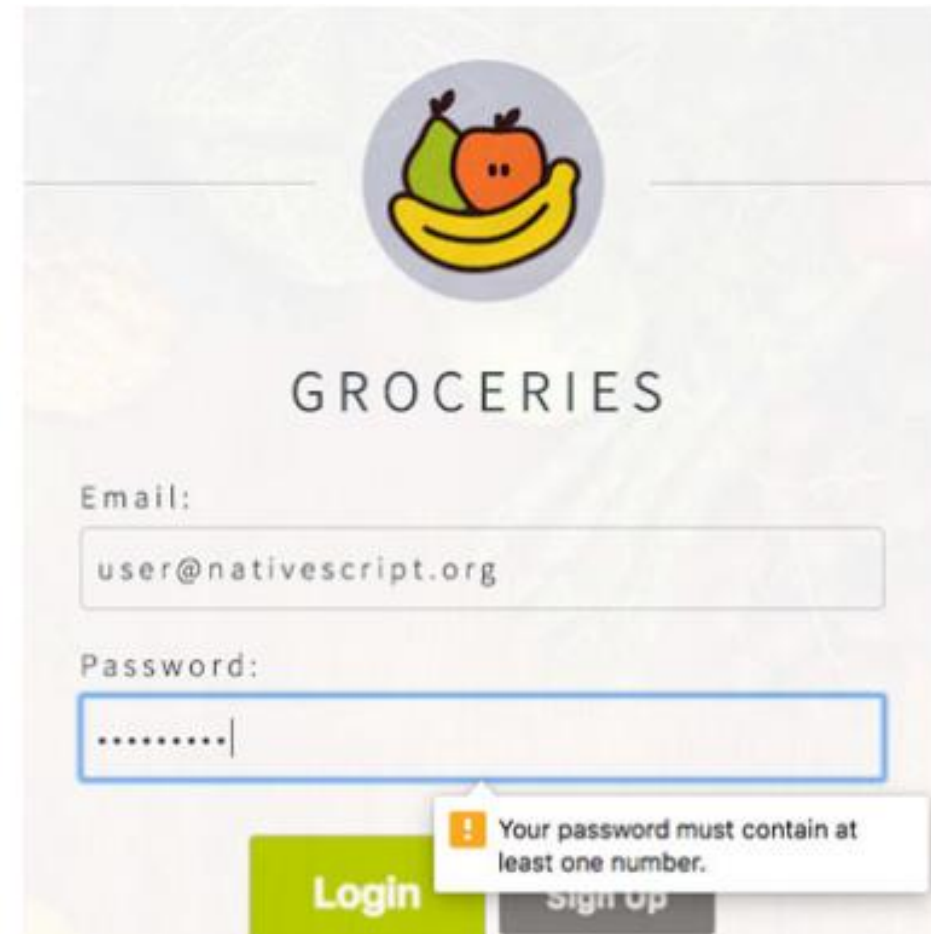
- **Application Programming Interface (API):** a set of rules and protocols that allows one software application to interact with another. The frontend makes requests to the backend API to retrieve or send data, and the backend processes these requests.
- **Cross-Browser Compatibility:** ensuring that websites function consistently across different browsers.

Cross-Browser Compatibility - example



The image shows a login screen for an app called "GROCERIES". At the top is a logo featuring a green pear, an orange with a face, and a yellow banana. Below the logo is the word "GROCERIES" in a sans-serif font. There are two input fields: "Email:" with the text "user@nativescript.org" and "Passw" (password) with masked characters ".....". A tooltip message "Your password must contain at least one number." is positioned above the password field. At the bottom are two buttons: a green "Login" button and a grey "Sign Up" button.

Browser: Safari



This image shows the same login screen as the Safari version, but rendered in the Chrome browser. The layout and elements are identical, including the logo, "GROCERIES" title, email and password fields, tooltip, and "Login"/"Sign Up" buttons. The browser's address bar at the top shows "https://www.lambdatest.com/".

Browser: Chrome

Terminologies

- **Application Programming Interface (API):** a set of rules and protocols that allows one software application to interact with another. The frontend makes requests to the backend API to retrieve or send data, and the backend processes these requests.
- **Cross-Browser Compatibility:** ensuring that websites function consistently across different browsers.
- **Hosting:** the process of storing, serving, and making a website or web application accessible on the Internet.

Types of errors in a full-stack web application

1. Frontend errors.

Frontend errors

Issues and problems that occur within the client-side code of a web application.

- **Syntax Errors:** errors in the code that violate the syntax rules of the programming language.
- **Runtime Errors:** errors that occur during the execution of the code.
- **Logical Errors:** errors in the logic of the code that cause unexpected behavior or incorrect output.

Types of errors in a full-stack web application

1. Frontend errors.

2. Backend errors.

Backend errors

Pertain to problems that arise in the server-side code and processes of a web application.

- Similar to the frontend, the backend experiences syntax, runtime, and logical errors, which occur in server-side code.
- Database Errors: issues related to database interactions, such as connection failures.
- Security Vulnerabilities: errors that can lead to security vulnerabilities such as SQL injection.

Types of errors in a full-stack web application

1. Frontend errors.
2. Backend errors.
3. Communication and Integration errors.

Communication and integration errors

Failures or problems in the exchange of data and functionality between the frontend and backend components of a web application.

- **API Errors:** failures in communication between frontend and backend through APIs.
- **Data Format Mismatch:** problems arising from inconsistencies in data formats expected by the frontend and provided by the backend.

Types of errors in a full-stack web application

1. Frontend errors.
2. Backend errors.
3. Communication and Integration errors.
4. Deployment and Configuration errors.

Deployment and configuration errors

- **Deployment Failures:** issues during the deployment process, such as incomplete updates, missing dependencies, or incorrect environment settings.
- **Environment-Specific Errors:** errors that only occur in specific environments (development, testing, production), often due to differences in configurations.
- **Server Configuration Issues:** errors related to misconfigurations of the server environment, affecting the application's behavior.

Questions

