Back-end programming

In this lesson, we will discuss what are the basic functionalities of back-end engineers.

WE'LL COVER THE FOLLOWING

- What do backend engineers do?
  - Efficient storage and delivery of information
  - Customized user experience
  - Controlled access to content
  - Store session/state information
  - Notifications
  - Data analysis

What do backend engineers do?

Backend engineers program servers to process user requests and respond with the requested resource correctly. They also write code to process and store user data.

Efficient storage and delivery of information

Data that pertains to a website has to be stored in a database and delivered upon request. Consider Amazon's database of items; if their database query system becomes inefficient at any point, they'll lose customers.

Customized user experience

Servers often store and use information about clients to provide a tailored user experience. For example, many sites store credit card details so that the information doesn't have to be entered again.

Controlled access to content

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Backend programming entails restricting access to information appropriately. For example, in a ride-hailing application such as Uber, one user should not be able to view another's car travel history.

Store session/state information

Backend engineers also do user session handling, i.e., a string is associated with each user that visits the website, and data associated with the string such as their emails or order history are saved and displayed when the user visits again. Another example is saving the state of a simple game so that the user can go to the site again and carry on from where they left it.

Notifications

Servers can be programmed to send general or user-specific notifications through the website itself or via email, SMS, instant messaging, video conversations, or other communications services.

A few examples include:

- Facebook and Twitter send emails and SMS messages to notify you of new communications.
- Amazon regularly sends product emails that suggest products similar to those already bought or viewed that you might be interested in.
- A web server might send warning messages to site administrators, alerting them to low memory on the server or suspicious user activity.

Data analysis

A website may collect a lot of data about users: what they search for, what they buy, what they recommend, how long they stay on each page. Server-side programming can be used to refine responses based on an analysis of this data.

For example, Amazon and Google both advertise products based on previous searches (and purchases).

In the next lesson, we'll look at Node.js, a popular backend technology!