CS50

JavaScript

Overview

If you've seen websites with cool animations when you interact with them, it's likely that those features were written in JavaScript. Each programming language plays a certain role in computer science, and JavaScript's job is in the web browser. JavaScript is a language used in web development to program the behavior of web pages. Because JavaScript was created for this use, JavaScript has many features that other languages such as Python, C, and Java do not have.

Key Terms

- JavaScript
- event
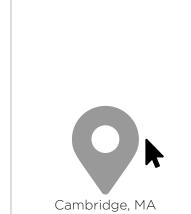- anonymous function
- jQuery

JavaScript

JavaScript is a programming language used in web browsers to create dynamic web pages. Because JavaScript runs in all major web browsers, it is universally supported and used in the majority of modern websites. JavaScript is primarily used on the client-side of web applications, meaning the code is run on a user's browser rather than somewhere on a external server. This means that without additional HTML requests, JavaScript does not have access to information on the server.
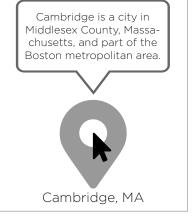
JavaScript works closely with HTML and CSS to create user interfaces for web applications. Javascript is written within script tags of an HTML page and has many functions that allow for direct manipulation of HTML using the DOM. Part of what makes JavaScript so powerful and dynamic is its focus on responding to **events**, or actions from a user or other devices. An event-driven language is one that enables a program to act according to these events. Some examples of events include mouse clicks, key presses, scrolling, or outputs from sensors. The job of many JavaScript programs is to do something depending upon what the user does, and JavaScript provides built-in features to support this kind of functionality.

event: on click of marker
action: show pop-up window with the first line of the location's Wikipedia page

Cambridge is a city in Middlesex County, Massachusetts, and part of the Boston metropolitan area.

Cambridge, MA

Cambridge, MA

One of these features is unnamed functions, or **anonymous functions**. Functions are named so we can call them in various parts of our program, but since JavaScript is event-driven, many actions are only triggered by particular events. In other words, it is common to have functions that are only used once in a program. Therefore, JavaScript allows us to create anonymous functions. Unlike declared functions, anonymous functions run immediately without storing them in memory first. This simplifies code, lets us assign functions as variables, and allows us to pass functions around as arguments in other functions. All of these features simply make creating interactive and user-friendly web pages more convenient.

Additional Resources

JavaScript is widely used among web developers, so there are many JavaScript resources available to make coding more convenient and to expand the range of possibilities. One of these resources is a library called jQuery. **jQuery** is a cross-platform JavaScript library that simplifies some of JavaScript's syntax and includes some additional helpful functions. It uses the $ symbol as a global variable to access jQuery. In addition to jQuery, JavaScript has a plethora of resources available. Some of these resources include libraries of pre-built JavaScript components and tools for data visualization. Because web development brings together so many technologies and has such a big impact on how information is presented, there are constantly new resources being developed around JavaScript. Part of web development is keeping up with these technologies and being able to adapt quickly. Be sure to check out which resources could be useful for your next project!