



Instituto Politécnico
de Viana do Castelo

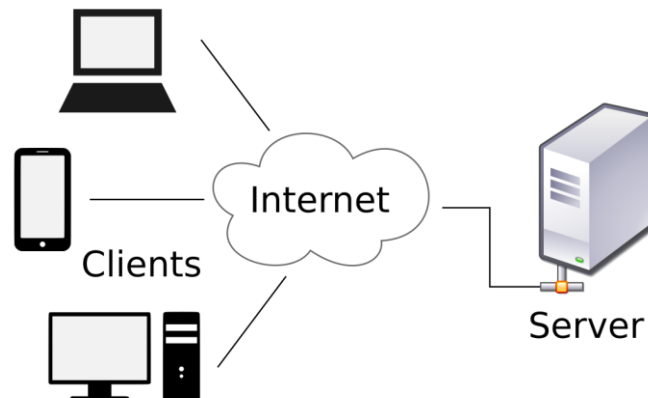
Auth

Aplicações Web



Programming / **web** development is divided into **two** major **domains**:

1. Development on the **client** side (front end);
2. **Server-side** development (back end).





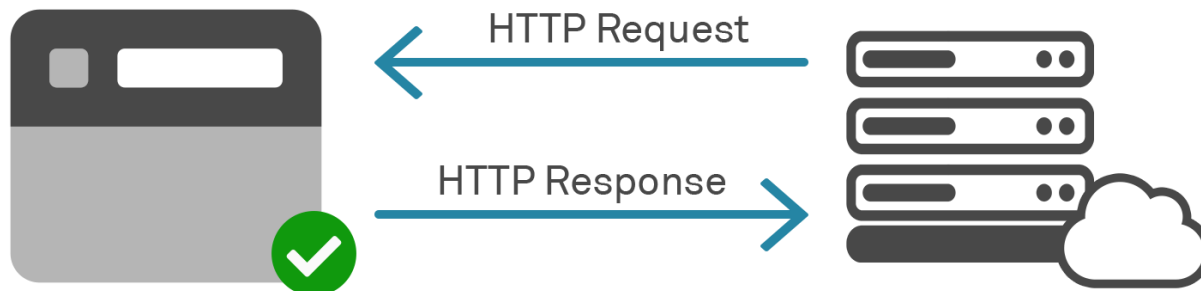
An API, or **application programming interface**, is a set of rules that define how applications or devices can connect to and communicate with each other.



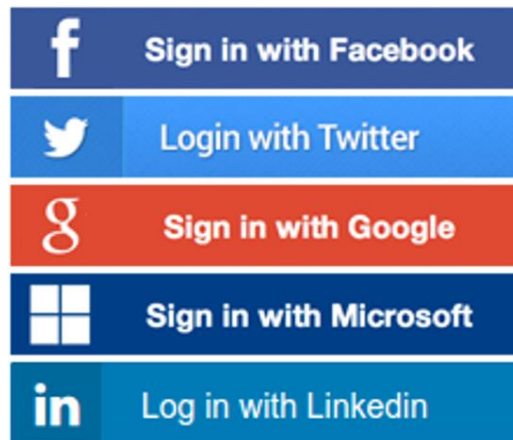
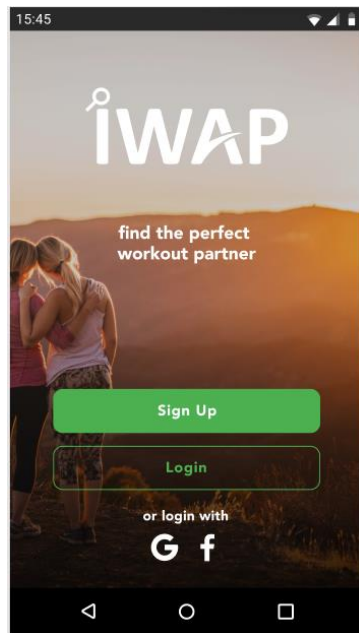
<https://www.ibm.com/topics/rest-apis>

Web development

HTTP response status codes



<https://appcheck-ng.com/http-verbs-security-risks>





Authentication is the process of verifying a user's identification through the acquisition of credentials and using those credentials to confirm the user's identity. The authorization process begins if the credentials are legitimate. The authorization process always follows the authentication procedure.

You were already aware of the authentication process because we all do it daily, whether at work (logging into your computer) or at home (logging into a website). Yet, the truth is that most “things” connected to the Internet require you to prove your identity by providing credentials

<https://www.section.io/engineering-education/how-to-build-authentication-api-with-jwt-token-in-nodejs/>



Authorization is the process of allowing authenticated users access to resources by determining whether they have system access permissions. By giving or denying specific licenses to an authenticated user, authorization enables you to control access privileges.

So, authorization occurs after the system authenticates your identity, granting you complete access to resources such as information, files, databases, funds, places, and anything else. That said, authorization affects your capacity to access the system and the extent to which you can do so.

<https://www.section.io/engineering-education/how-to-build-authentication-api-with-jwt-token-in-nodejs/>



JSON Web Tokens (JWT) are an RFC 7519 open industry standard for representing claims between two parties. For example, you can use jwt.io to decode, verify, and produce JWT.

JWT specifies a compact and self-contained method for communicating information as a JSON object between two parties. Because it is signed, this information can be checked and trusted. JWTs can be signed using a secret (using the HMAC algorithm) or an RSA or ECDSA public/private key combination. In a moment, we'll see some examples of how to use them.

<https://www.section.io/engineering-education/how-to-build-authentication-api-with-jwt-token-in-nodejs/>



JWTs are a singular object of three concatenated strings separated by a . A sample JWT would look something like this: `aaaaaaaaaaaaaaaaa.bbbbbbbbbbbbbbbbbbbbbbb.ccccccccccccccccccc`

The first string (aaa...a) is the header which contains the algorithm used to encrypt it and the type of token which of course is JWT.

The second string (bbb...b) is the payload which contains all the meat. It can contain what you want, but generally you'll include the user id and username etc.

The third string (ccc...c) is the signature which contains a hash (encryption) of the header and the payload. It is hashed with a secret key that is provided by the developer.



The diagram illustrates the structure of a signed message. It consists of three main components arranged horizontally: a red bracketed section labeled 'HEADER', a purple bracketed section labeled 'PAYLOAD', and a blue bracketed section labeled 'SIGNATURE'. Below these brackets, the corresponding Base64-encoded data is shown. The header data is 'eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.', the payload data is 'eyJ1YW11IjoieS9obiBEb2U1LCJhbW91bnQ0IjUwMCwieH16IjoieWJjIn0.', and the signature data is '54W-Y-Xz6xKgSnbQ7Se7tK5hcbXIVjsZ47u6CnQxjag'.

```
eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1YW11IjoieS9obiBEb2U1LCJhbW91bnQ0IjUwMCwieH16IjoieWJjIn0.54W-Y-Xz6xKgSnbQ7Se7tK5hcbXIVjsZ47u6CnQxjag
```

HEADER PAYLOAD SIGNATURE

Web development

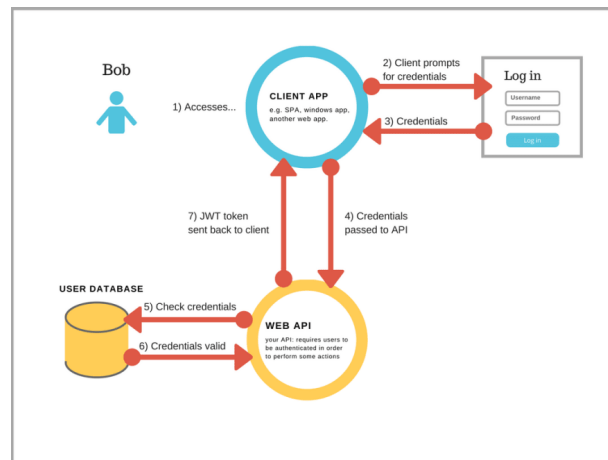
Auth flow



When a user signs in with a valid username and password (validated by the back end) the backend gives a signed token to the client.

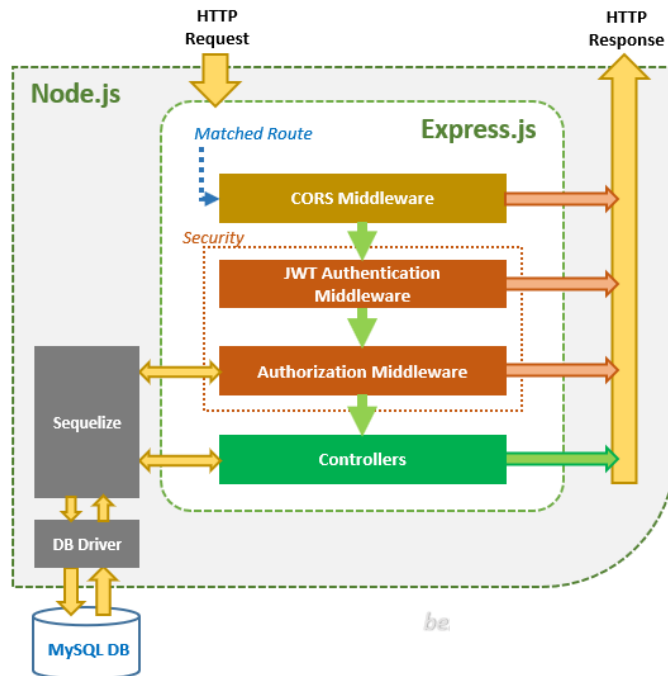
The client will store the token and it will be supplied in the headers to every request that needs authorization.

Effectively, it is an access pass for the user that stores unique encoded identifiers and the unique signature from the backend. It proves the user is who they say they are.



Web development

Full authentication and authorization flow



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