

Token statt Cookies

... dank JWT



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canoo

[delivering end-user happiness]

Basel, Schweiz



Hackergarten Basel

[HACKERGARTEN]
A COMPUTER PROGRAMMING CONTRIBUTOR GROUP

markus.schlichting@canoo.com



@madmas

Sessions & Cookies

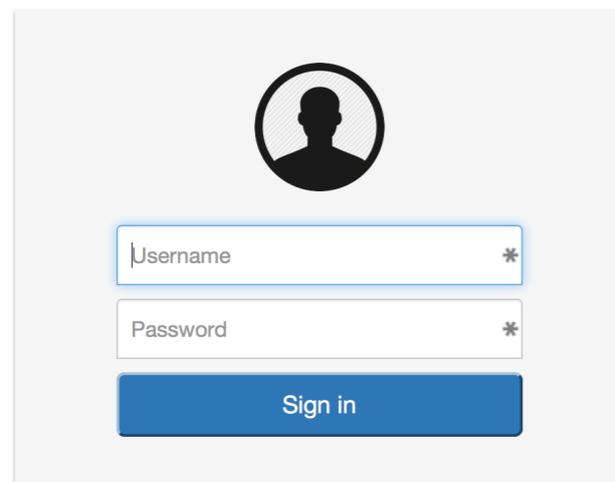


Username *

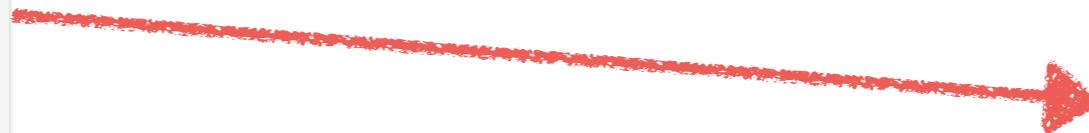
Password *

Sign in

Sessions & Cookies

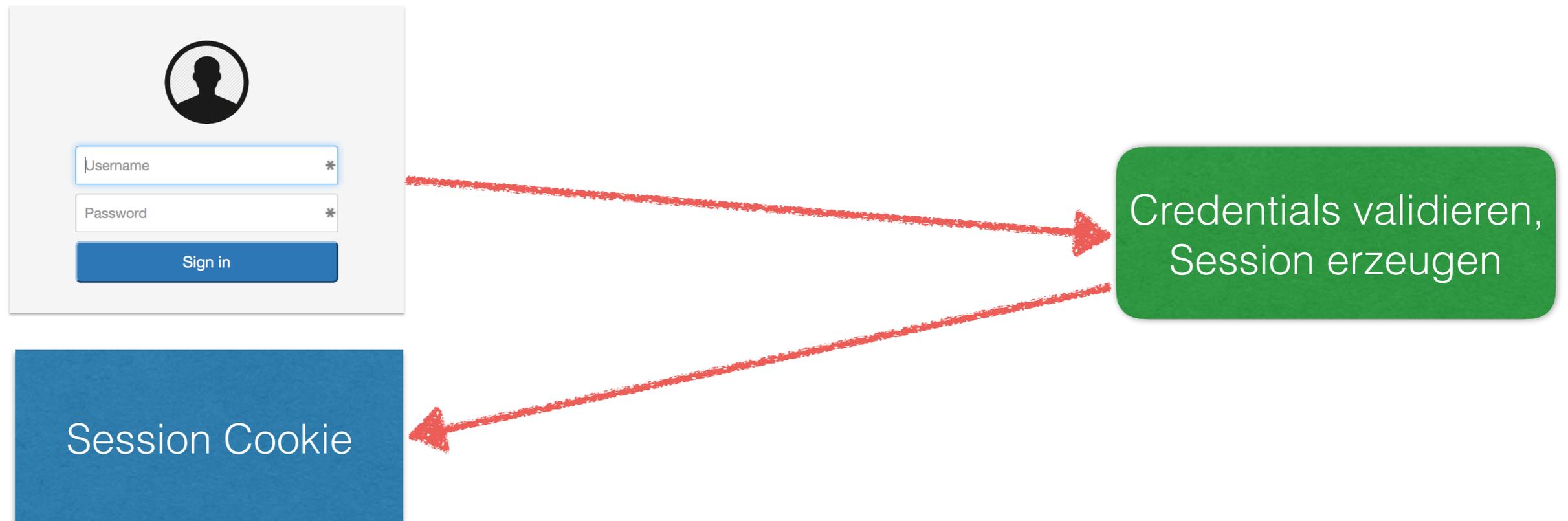


A user login form with a grey background. At the top center is a circular icon of a person's silhouette. Below it are two input fields: the first is labeled 'Username' and the second is labeled 'Password', both with asterisks on the right side. At the bottom is a blue button labeled 'Sign in'.

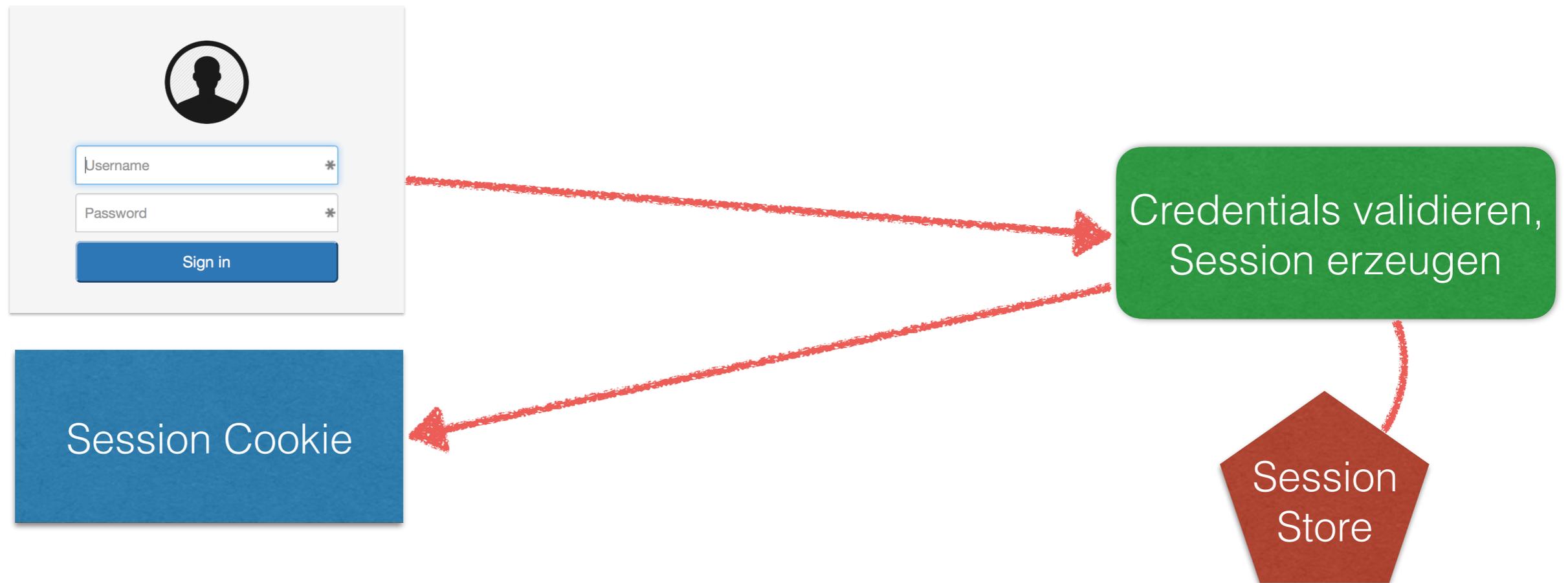


Credentials validieren,
Session erzeugen

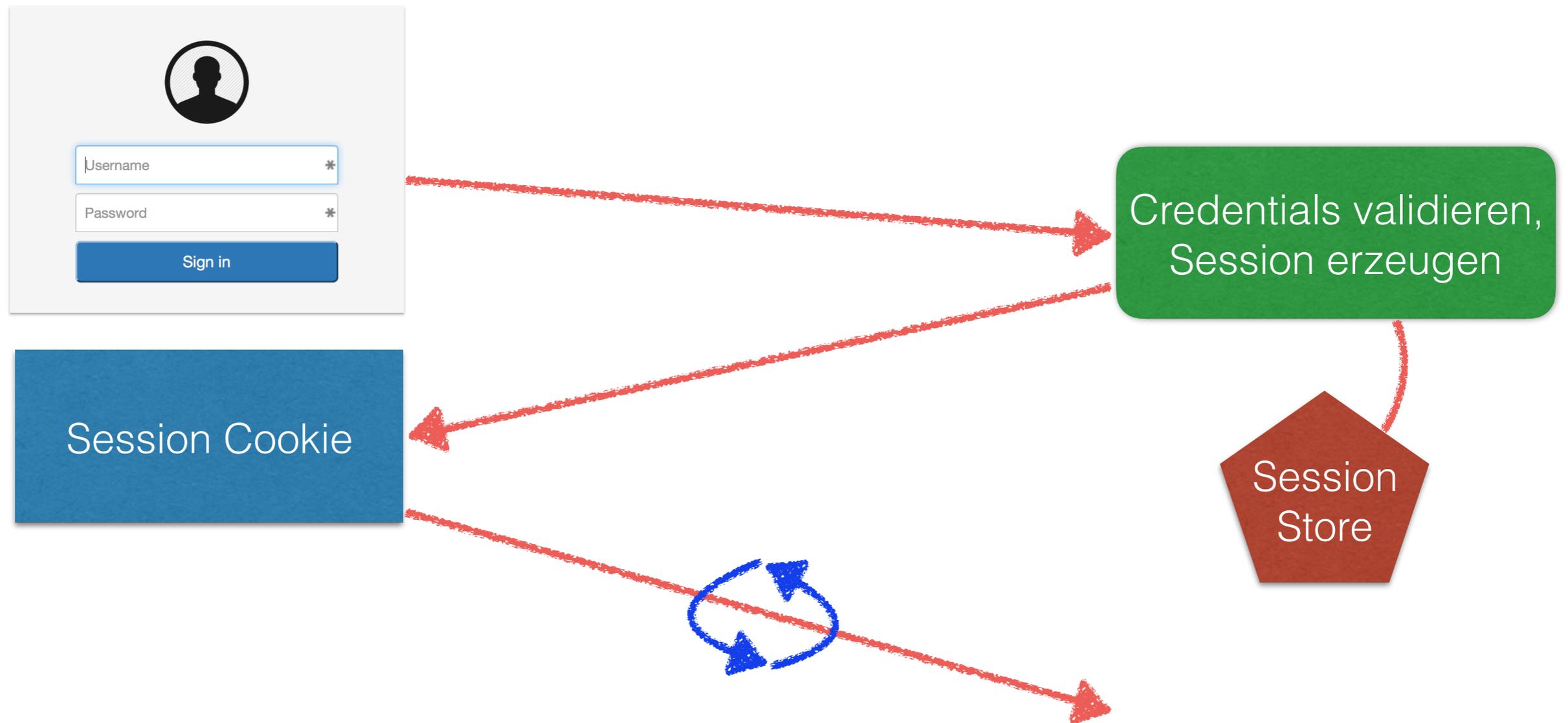
Sessions & Cookies



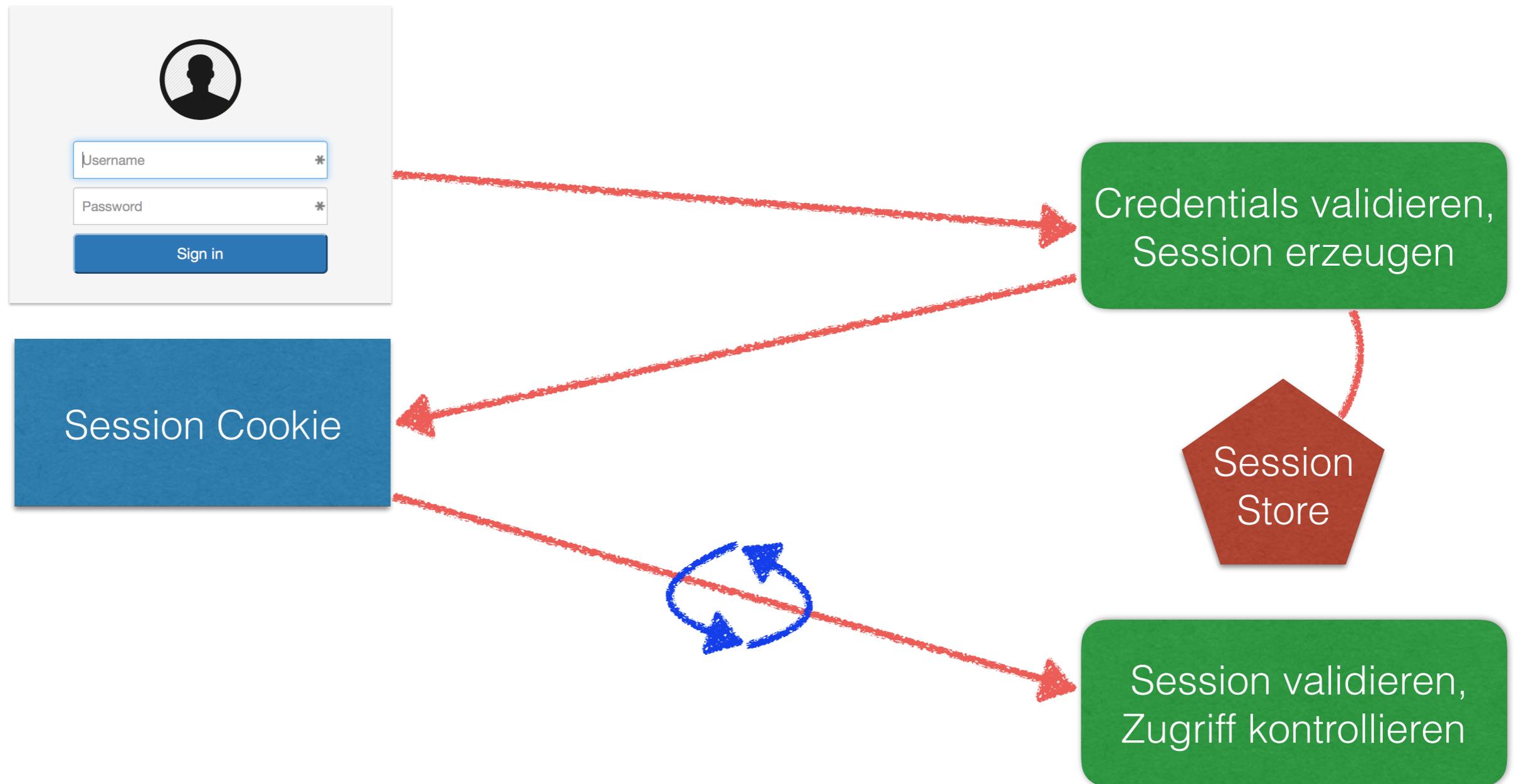
Sessions & Cookies



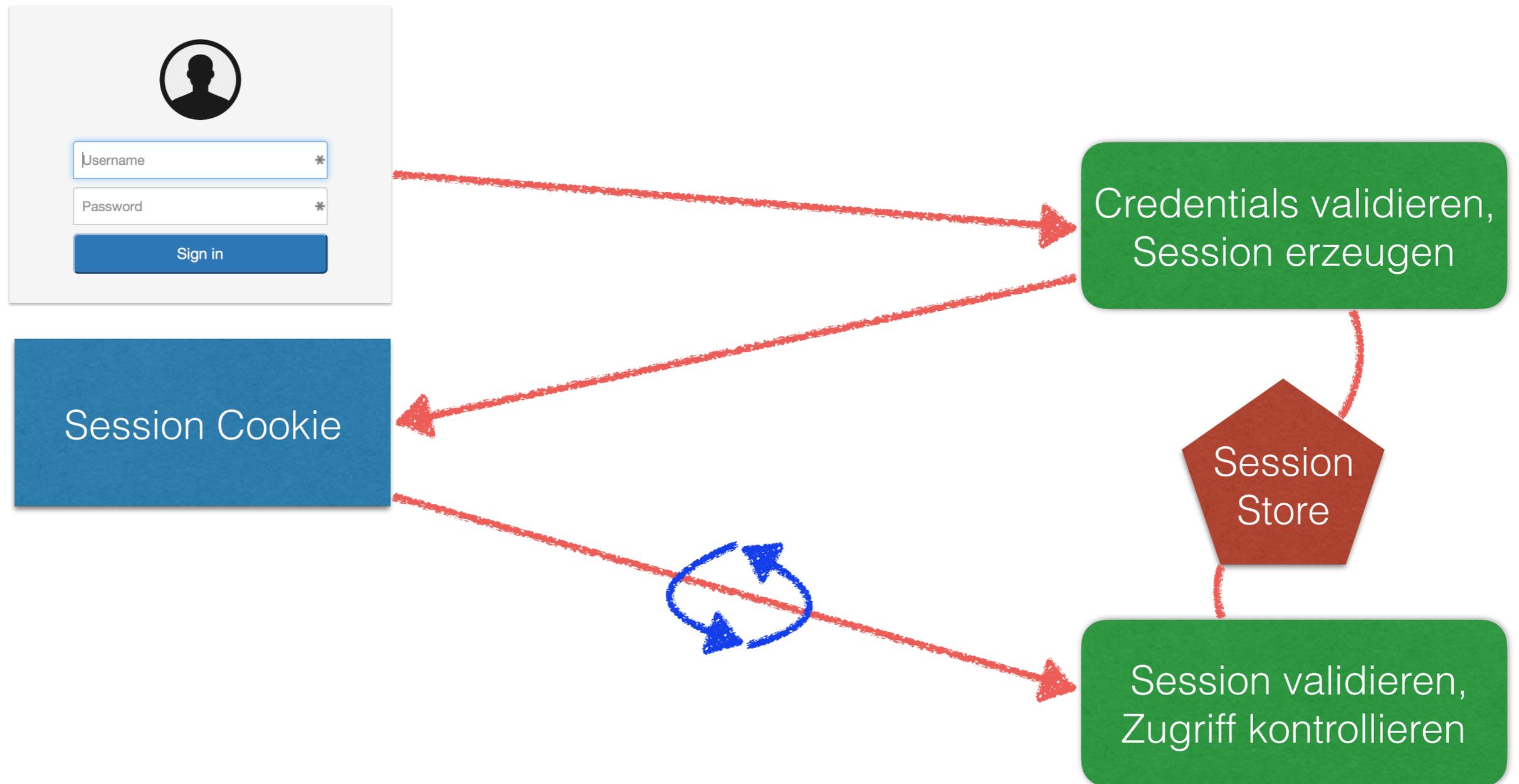
Sessions & Cookies



Sessions & Cookies

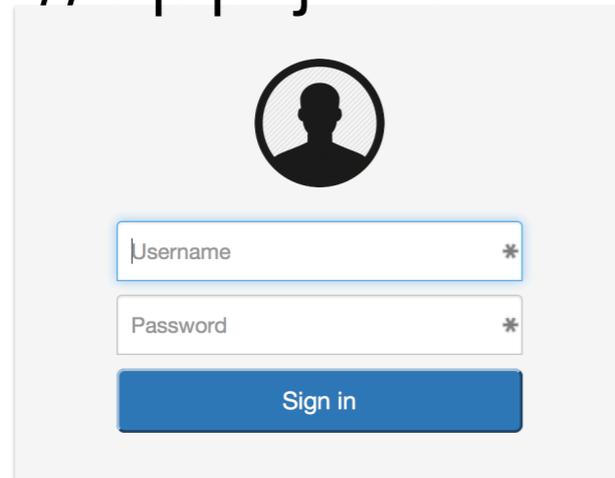


Sessions & Cookies



Sessions & Cookies

http://app.javaland.de



A login form with a user icon, a Username input field with an asterisk, a Password input field with an asterisk, and a blue Sign in button.

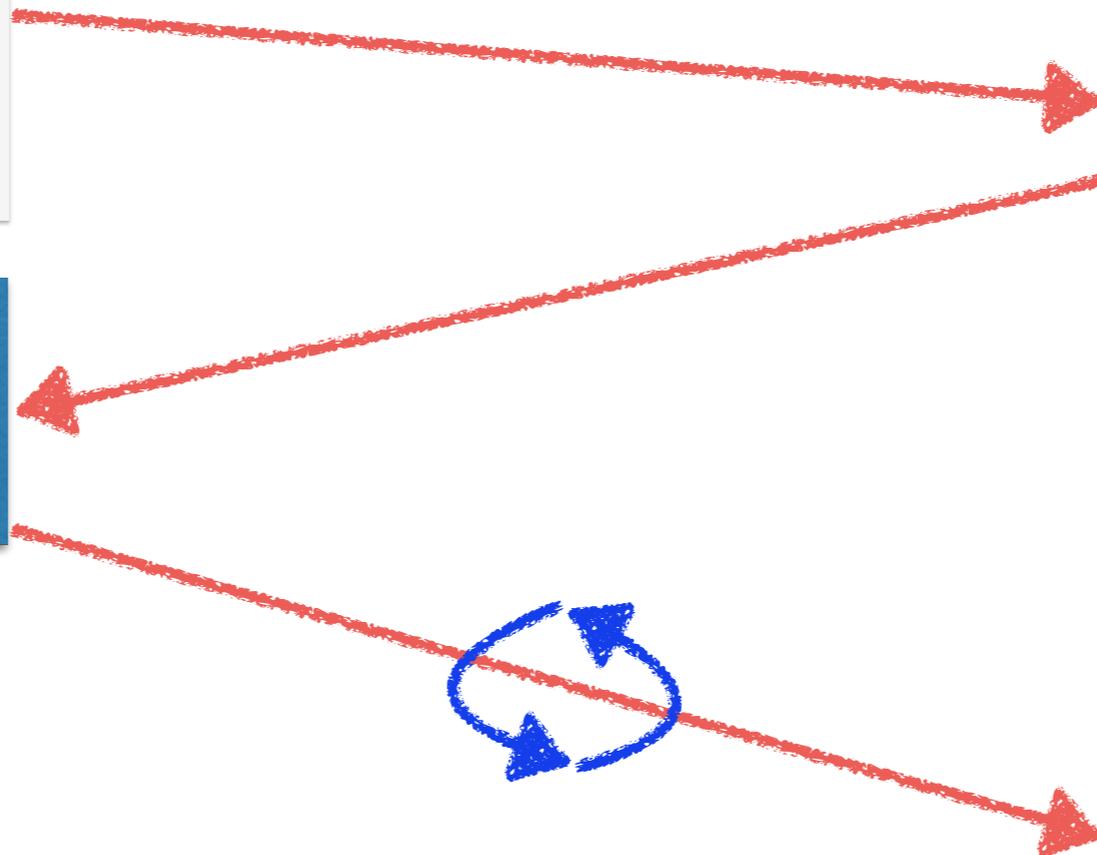
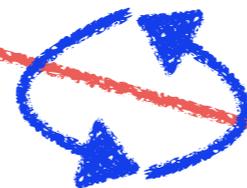
http://app.javaland.de

Credentials validieren,
Session erzeugen

Session
Store

Session validieren,
Zugriff kontrollieren

Session Cookie



Sessions & Cookies

Sessions & Cookies

Loadbalancing benötigt **geteilten Sessionpool**

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Loadbalancing benötigt **geteilten Sessionpool**

Services werden **gekoppelt**

Sessions & Cookies

Loadbalancing benötigt **geteilten Sessionpool**

Services werden **gekoppelt**

Cross Domain Authentifizierung: **CORS**

Sessions & Cookies

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Cross Domain Authentifizierung: **CORS**

CSRF Verwundbarkeit

Sessions & Cookies

Loadbalancing benötigt **geteilten Sessionpool**

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Cross Domain Authentifizierung: **CORS**

CSRF Verwundbarkeit

Andere Clients ausser Browser?

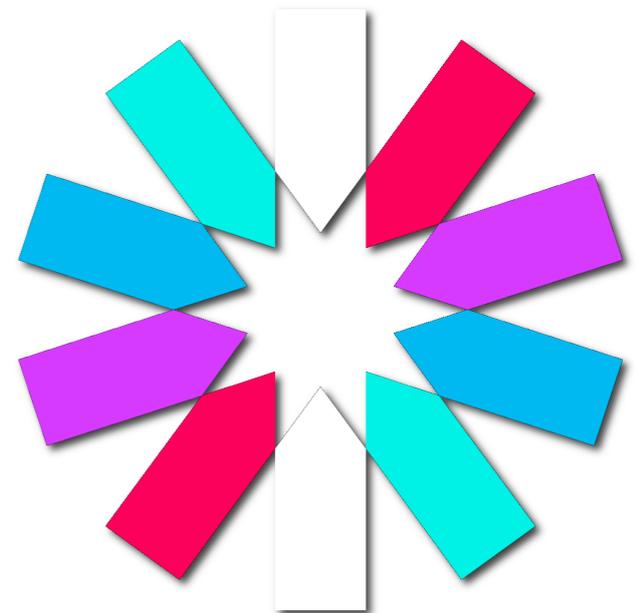
JSON Web Token



JSON Web Token

JSON Web Tokens are an open, industry standard method for representing claims securely between two parties.

(RFC 7519)

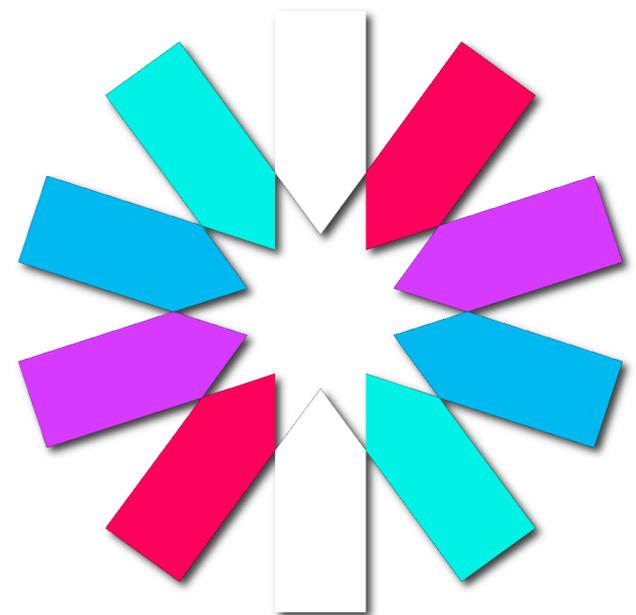


JSON Web Token

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(RFC 7519)

The suggested pronunciation of JWT is the same as the English word "jot".

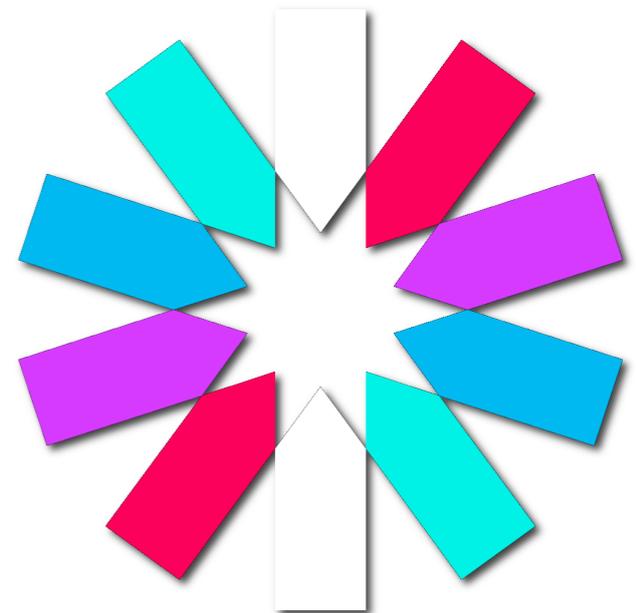


JSON Web Token

basierend auf anderen JSON-Standards:

JWS (JSON Web **Signature**)

JWE (JSON Web **Encryption**)



JSON Web Token

basierend auf anderen JSON-Standards:

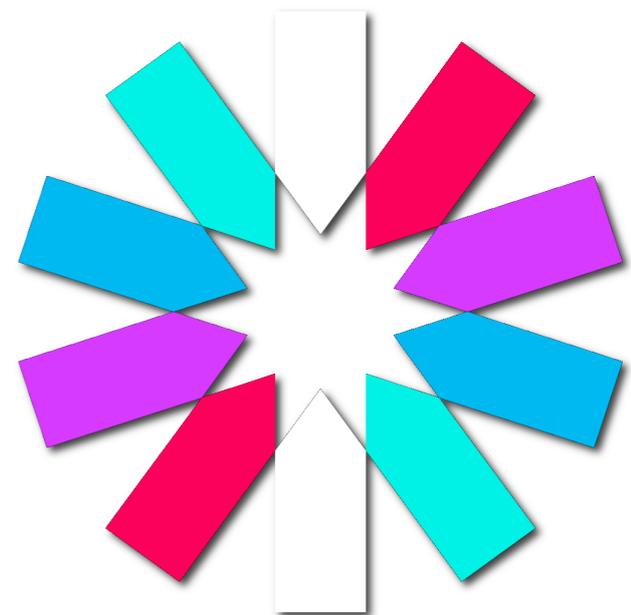
JWS (JSON Web **Signature**)

JWE (JSON Web **Encryption**)

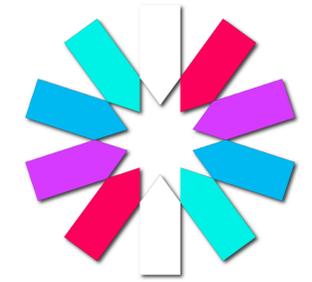
Bibliotheken für..



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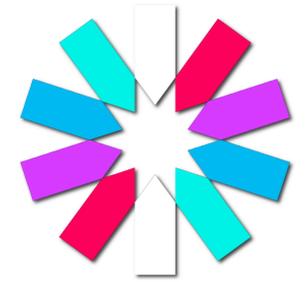


JWT in Action



A user login form with a light gray background. At the top center is a circular icon containing a black silhouette of a person's head and shoulders. Below the icon are two input fields: the first is labeled "Username" and the second is labeled "Password", both with an asterisk (*) on the right side. Below the password field is a blue button with the text "Sign in" in white.

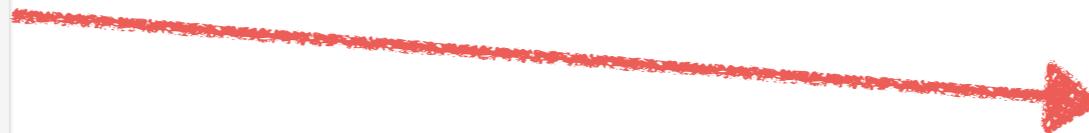
JWT in Action



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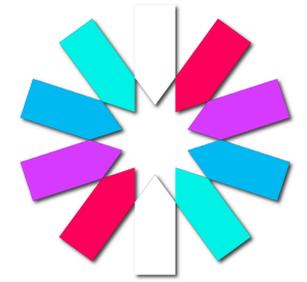
Password *

Sign in



Credentials validieren,
Token erzeugen

JWT in Action



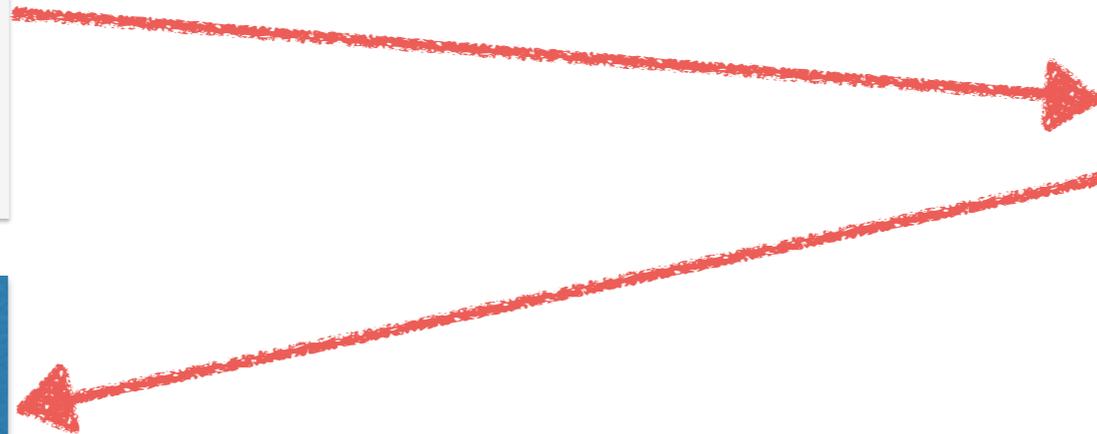
Username *

Password *

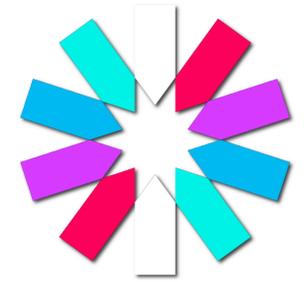
Sign in

Credentials validieren,
Token erzeugen

Token speichern



JWT in Action



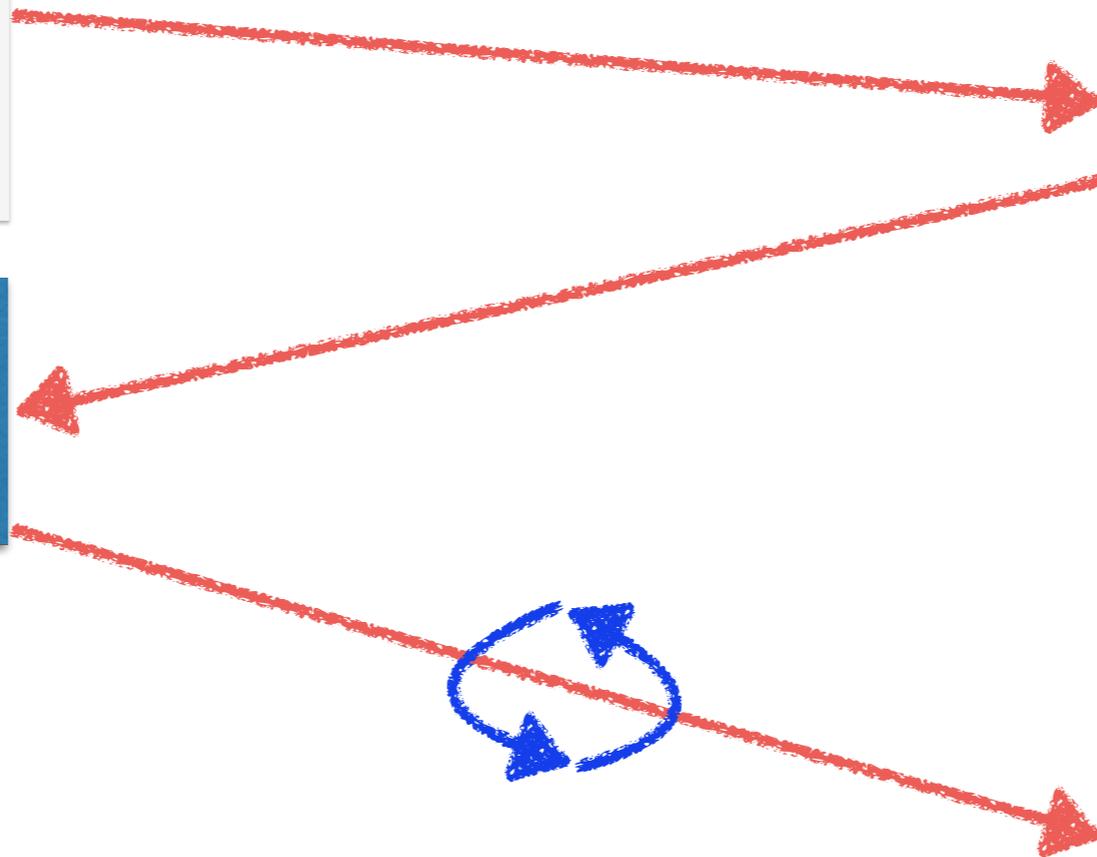
Username *

Password *

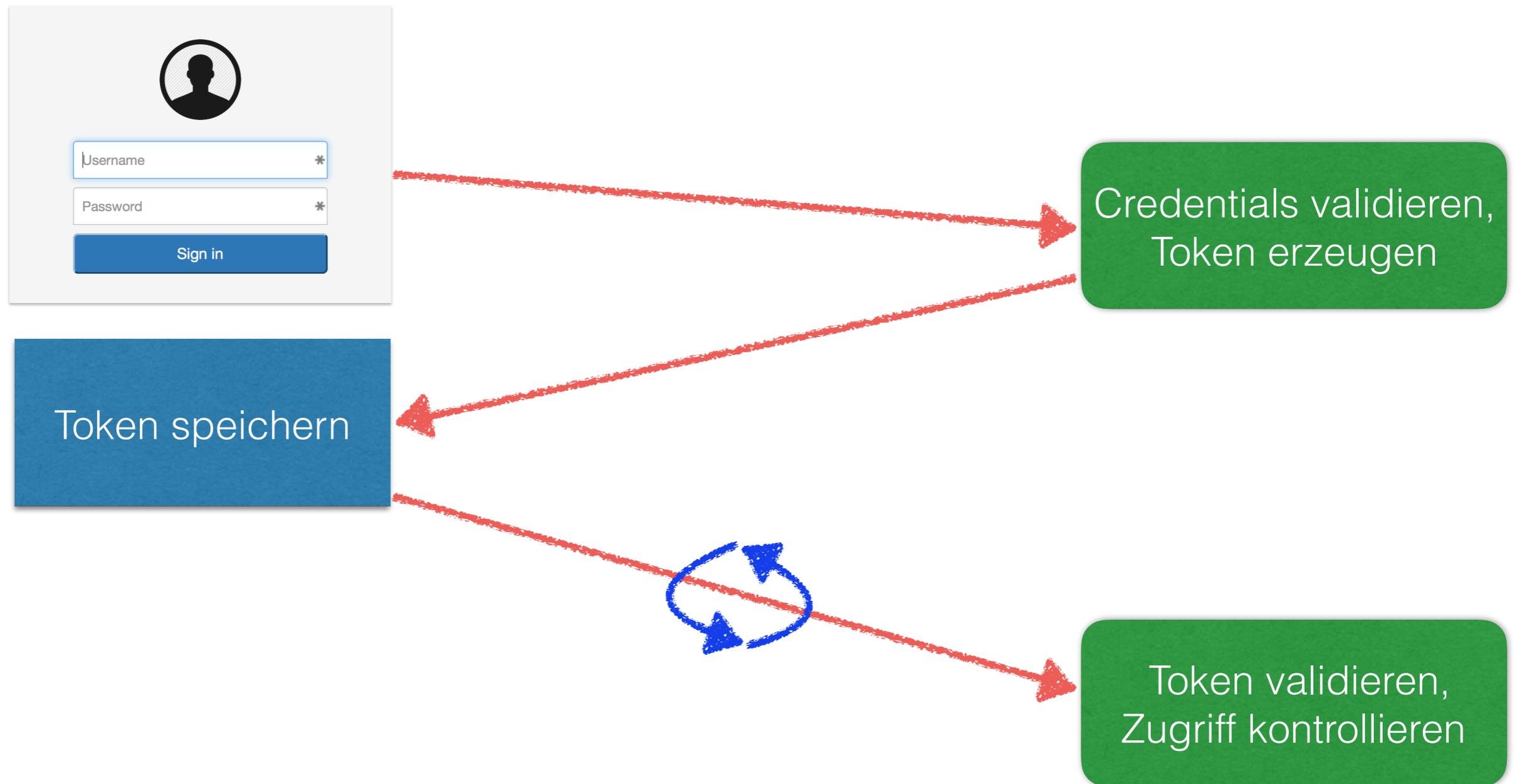
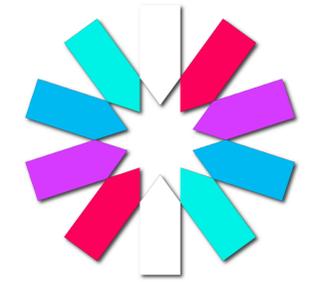
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Credentials validieren,
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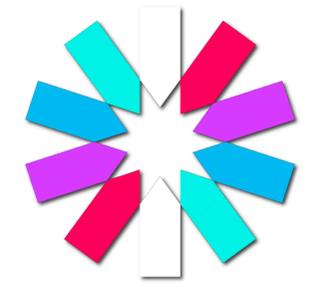
Token speichern



JWT in Action



JWT in Action



http://app.javaland.de

Username *

Password *

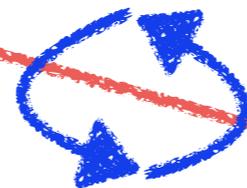
Sign in

http://api.javaland.de

Credentials validieren,
Token erzeugen

Token speichern

Token validieren,
Zugriff kontrollieren



JWT - inside

Encoded PASTE A TOKEN HERE

```
eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJzdWIiOiIxMjM0NTY3ODkwIiwibmFtZSI6IkpXVCJ9.eyJzdWIiOiIxMjM0NTY3ODkwIiwibmFtZSI6IkpXVCJ9.eyJzdWIiOiIxMjM0NTY3ODkwIiwibmFtZSI6IkpXVCJ9.t_q03Kwc
```

Decoded EDIT THE PAYLOAD AND SECRET (ONLY HS256 SUPPORTED)

HEADER: ALGORITHM & TOKEN TYPE

```
{  
  "alg": "HS256",  
  "typ": "JWT"  
}
```

PAYLOAD: DATA

```
{  
  "sub": "1234567890",  
  "name": "Markus Sample",  
  "admin": true,  
  "secret": false  
}
```

VERIFY SIGNATURE

```
HMACSHA256(  
  base64UrlEncode(header) + "." +  
  base64UrlEncode(payload),  
    
)  secret base64 encoded
```

jwt.io

JWT - in practice

Demo!

JWT Security Aspekte

JWT Security Aspekte

immer verschlüsselt Kommunizieren (**HTTPS!**)

JWT Security Aspekte

immer verschlüsselt Kommunizieren (**HTTPS!**)

URL Token vermeiden

<https://yourpage.de/service/action?token=jwt.goes.here>

JWT Security Aspekte

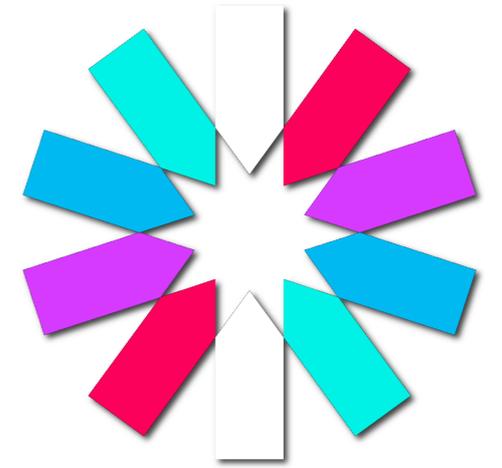
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URL Token vermeiden

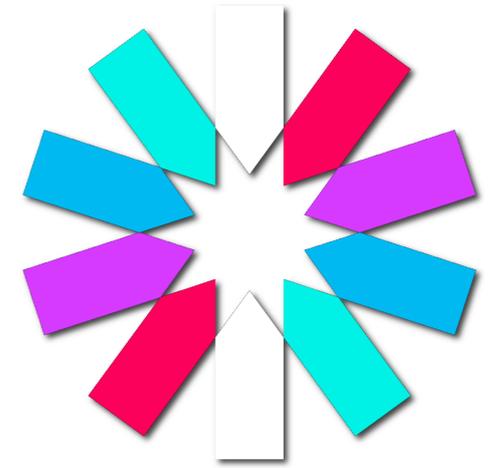
<https://yourpage.de/service/action?token=jwt.goes.here>

Token Handling: Invalidation, Reset

JWT Überblick

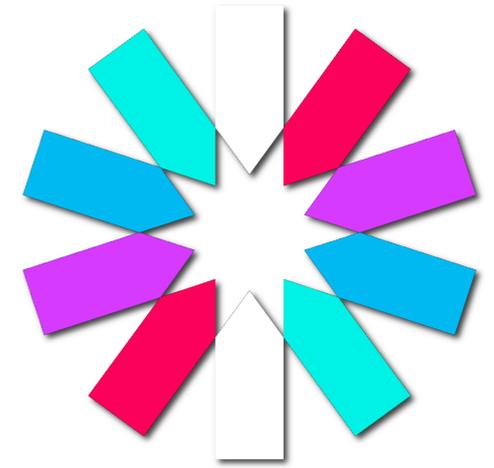


JWT Überblick



basiert auf **JSON**

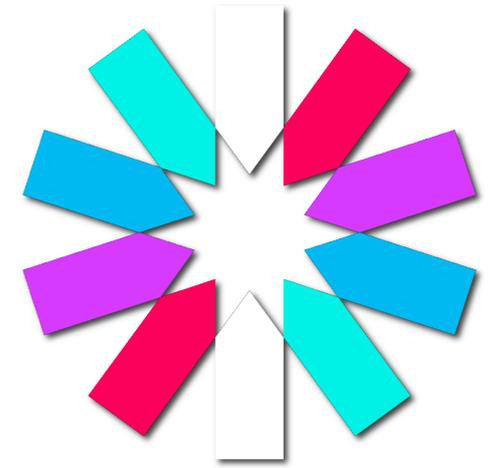
JWT Überblick



basiert auf **JSON**

einfach zu nutzen, **einfach** zu implementieren

JWT Überblick

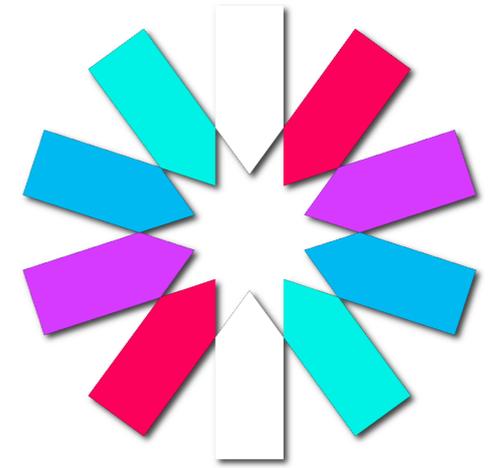


basiert auf **JSON**

einfach zu nutzen, **einfach** zu implementieren

symmetrische und **asymmetrische** Crypto

JWT Überblick



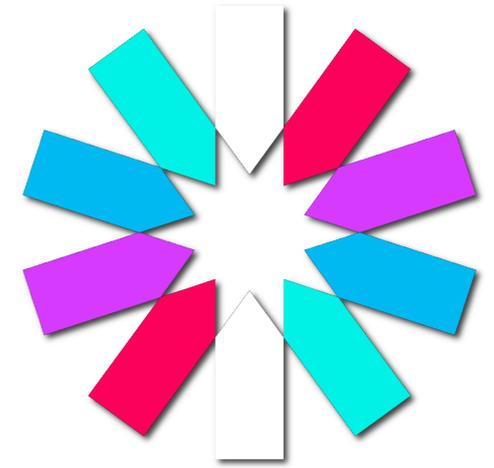
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reduziert Abhängigkeiten

JWT Überblick



basiert auf **JSON**

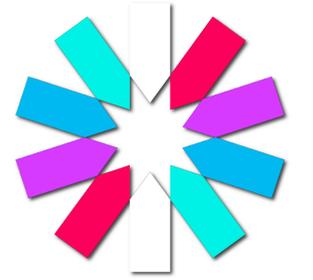
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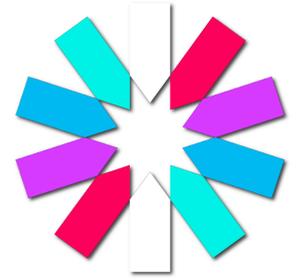
reduziert Abhängigkeiten

Basisprinzip von REST: **State transfer**

Zusammenfassung

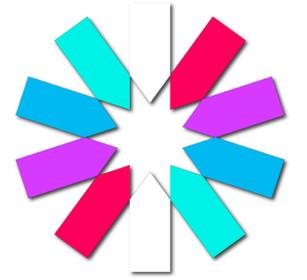


Zusammenfassung



Cookies nicht obsolet, **Token** bieten jedoch **viele Vorteile**

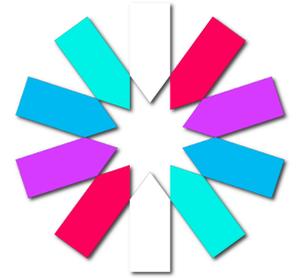
Zusammenfassung



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JWT für **Skalierbarkeit** und **Flexibilität**

Zusammenfassung

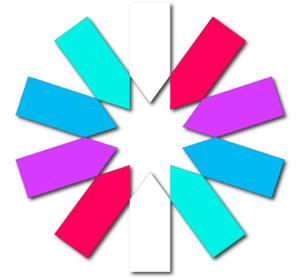


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JWT für **Skalierbarkeit** und **Flexibilität**

Cross Plattform

Zusammenfassung



Cookies nicht obsolet, **Token** bieten jedoch **viele Vorteile**

JWT für **Skalierbarkeit** und **Flexibilität**

Cross Plattform

Cookies oder **Token?**

Anforderungen und Implikationen abwägen!

Demo Sources und Slides:

<https://github.com/madmas/TokenVsCookies>