

# **Tencent Cloud EdgeOne**

## **Edge Functions**

### **Product Documentation**



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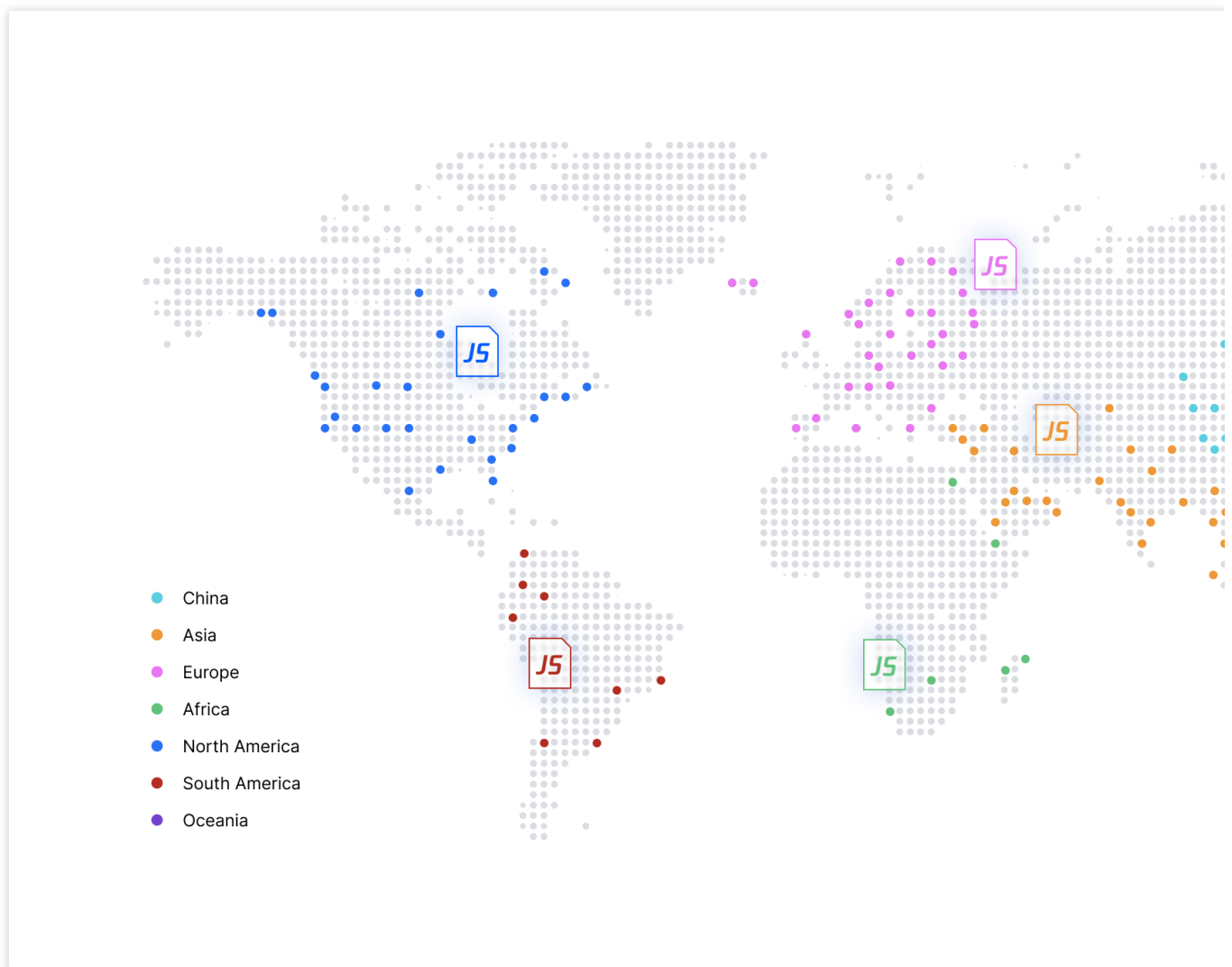


# Edge Functions

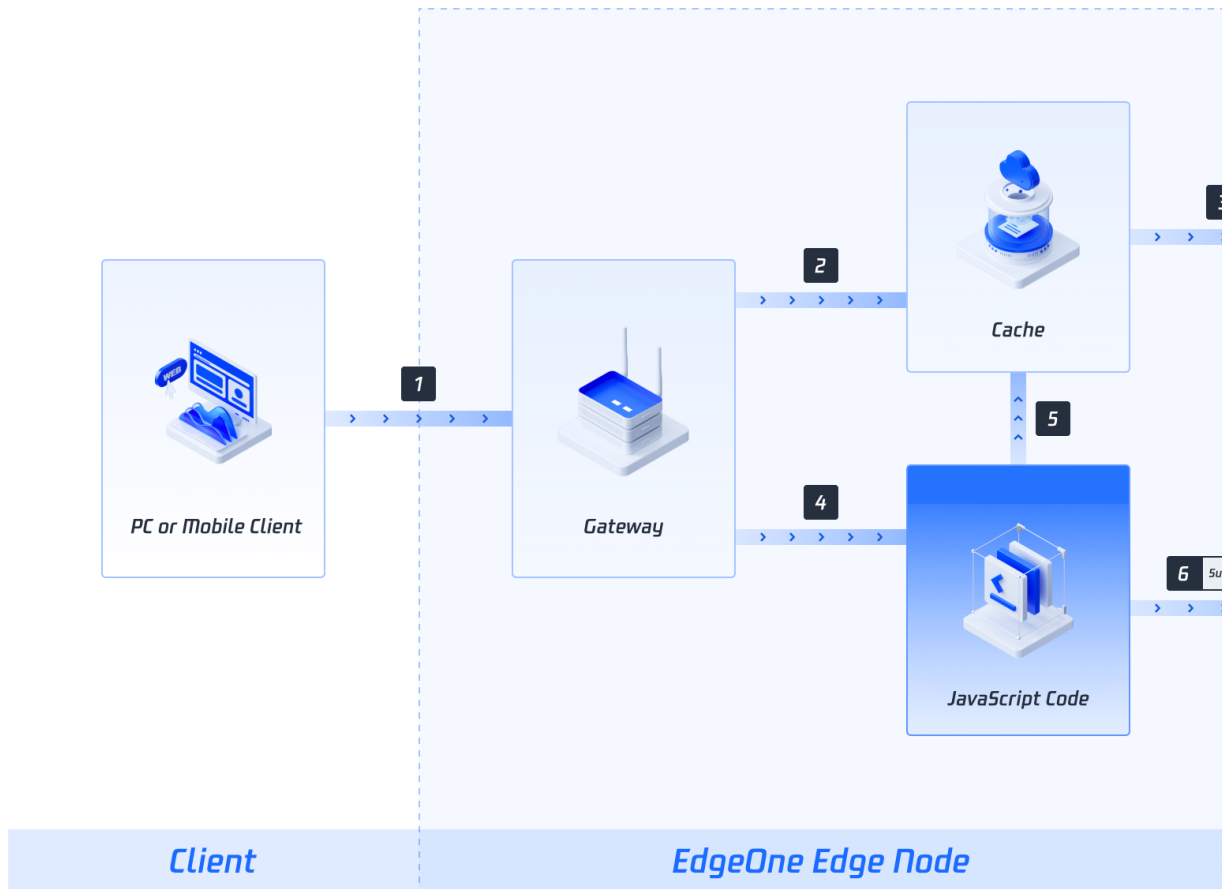
## Overview

Last updated : 2024-07-16 10:17:02

Tencent Cloud Edge Functions provides a serverless code execution environment for the edge nodes of Tencent Cloud EdgeOne. This way, you can focus on writing business function code and configuring triggering rules, without the need to configure or manage infrastructure such as servers. The written code can be elastically and securely executed on the edge nodes that are closest to users.



## How It Works



You can develop JavaScript functions and deploy them to the edge nodes of Tencent Cloud EdgeOne.

1. If a client request does not hit the configured function triggering rule, the request is handled in the following process:

(1) The client request is sent to the gateway of an edge node of Tencent Cloud EdgeOne. > (2) The cache of the node responds if the requested content already exists in the cache. > (3) The origin server responds if the requested content does not exist in the cache.

2. If a client request hits the configured function triggering rule, the request is handled in one of the following processes:

(1) The client request is sent to the gateway of an edge node of Tencent Cloud EdgeOne. > (4) Edge Functions receives and executes the JavaScript code. > (5) Subrequests access the cache. > (3) The origin server responds if the requested content does not exist in the cache.

(1) The client request is sent to the gateway of an edge node of Tencent Cloud EdgeOne. > (4) Edge Functions receives and executes the JavaScript code. > (6) Subrequests access the public network service.

## Benefits

## **Distributed Deployment**

Tencent Cloud EdgeOne supports more than 3,200 edge nodes. Edge Functions is deployed on edge nodes in distributed mode.

## **Ultra-low Latency**

Client requests are automatically scheduled to the edge nodes that are closest to users. If triggering rules are hit, edge functions are triggered to process the requests and return results to the client. This helps significantly reduce the client access latency.

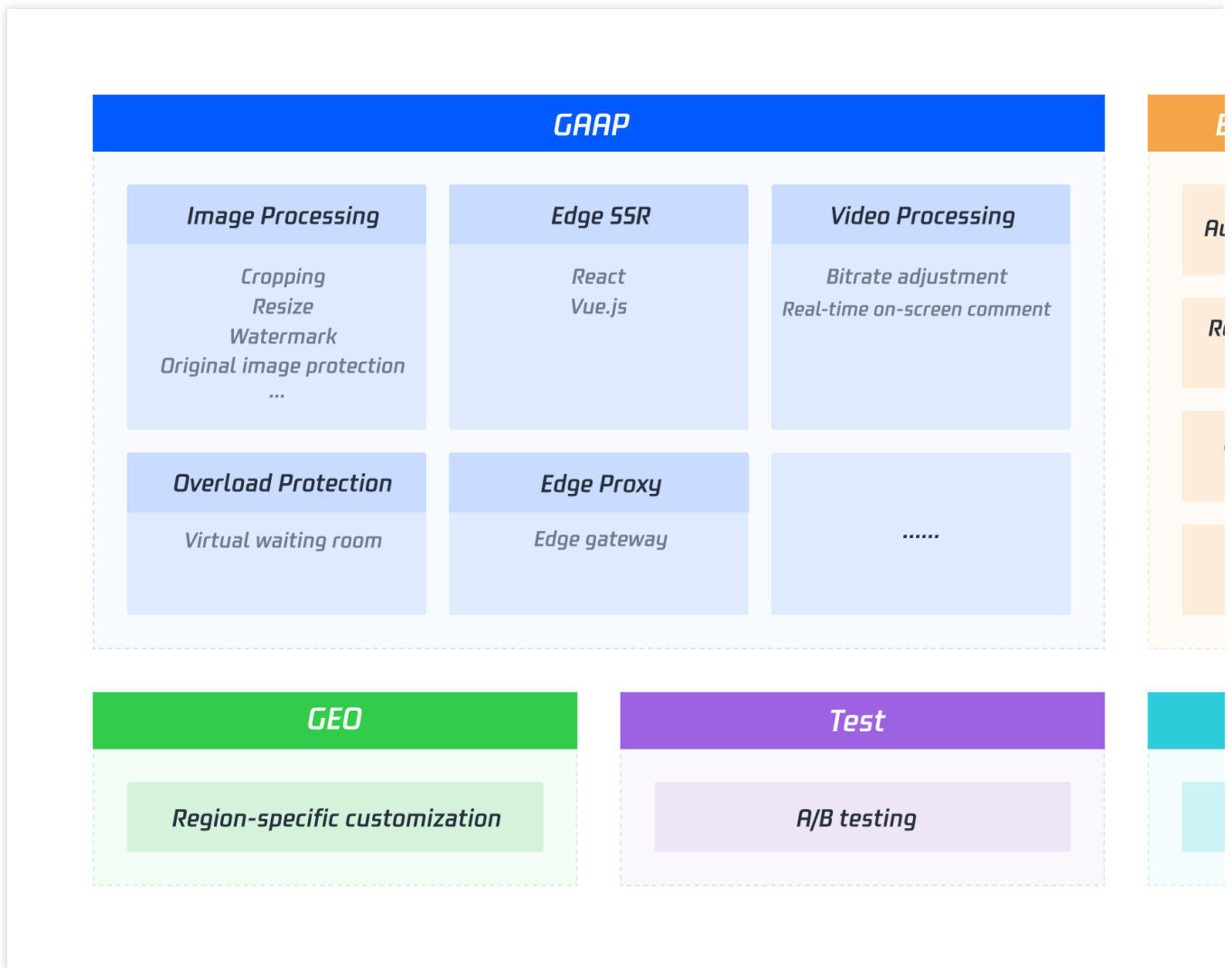
## **Elastic Scaling**

Edge Functions schedules requests to edge nodes that are allocated sufficient computing resources based on the proximity of the user when spikes occur in client requests.

## **Serverless Architecture**

The serverless architecture of Edge Functions eliminates the need to focus on the maintenance of the memory, CPU, and network of servers and other infrastructure resources. You can focus on the development of business code.

# Use Cases



## Use Limits

Content	Limit	Note
Number of Functions per Site	100 functions	A single site supports up to 100 edge functions.
Number of Trigger Rules per Site	200 rules	A single site supports up to 200 trigger rules for functions.
Function Name Length	30 characters	2 to 30 characters, up to 30 characters.
Code Package Size	5 MB	The maximum size for a single function code package is 5 MB.
Request Body Size	1 MB	Client requests can carry a body up to 1 MB.
CPU Time	200 ms	CPU time slice allocated for single function execution, excluding I/O waiting time.

Programming Language	JavaScript	Currently only JavaScript is supported.
Number of Console Invocations	20 times	Each function is allowed to call the console method up to 20 times. Beyond 20 times, print operations will no longer be executed.
Number of Loop Executions	100,000 times	In the function, the <code>for</code> , <code>for in</code> , <code>for of</code> , <code>while</code> , <code>do while</code> loops are limited to execute no more than 100,000 times.

# Getting Started

Last updated : 2024-01-02 10:34:59

This document describes how to create a simple edge function and use the function to redirect a request to another URL and return the custom response header.

## Overview

The site `example.com` is currently connected to EdgeOne service. Under this site, a custom HTML activity page needs to be provided to the users through the custom domain name `www.example.com`. This page can be deployed to the edge nodes of EdgeOne's global AZs through the edge function for users to access nearby.

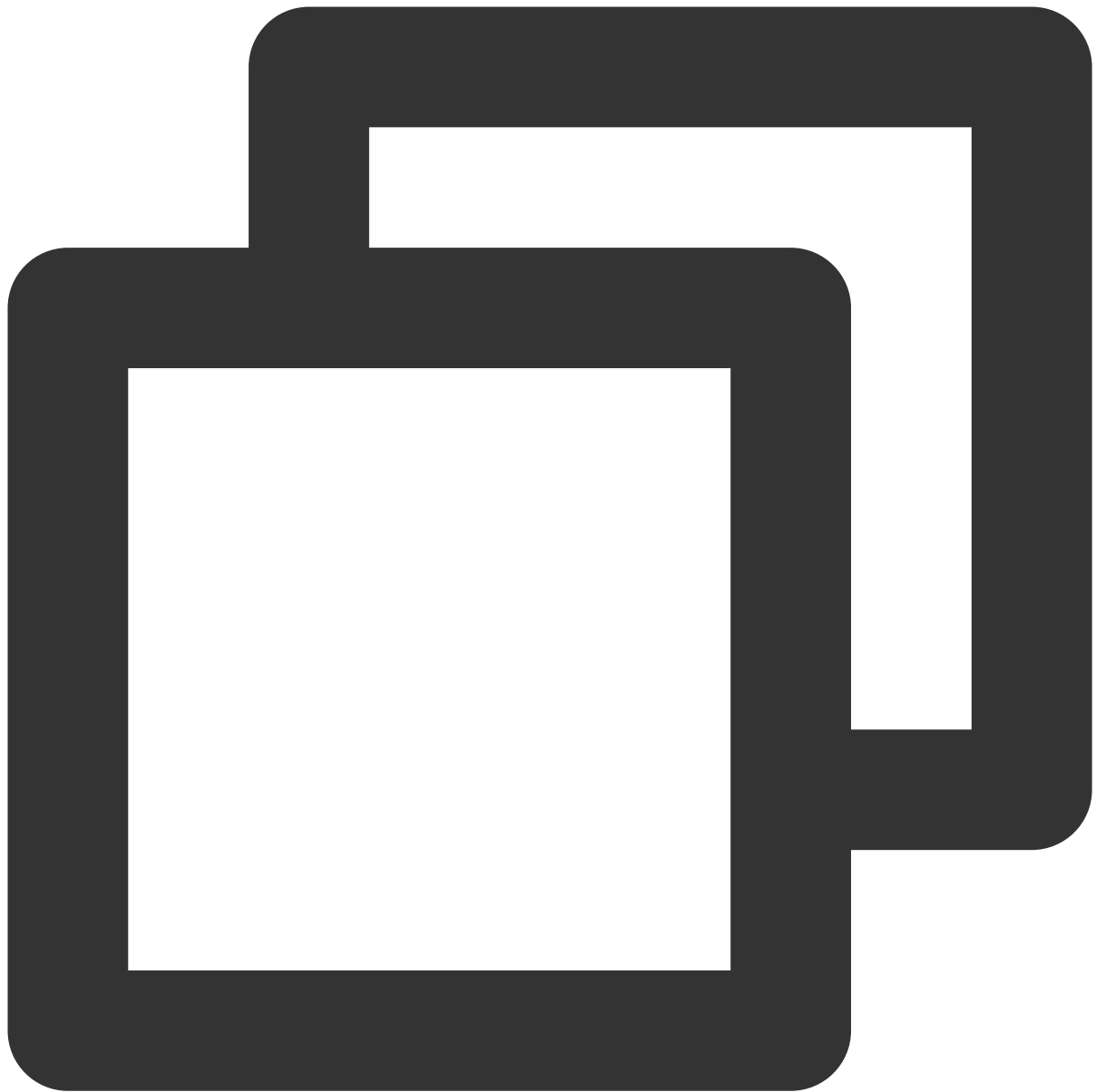
### Note:

1. How to connect to the site, please refer to [Quick Start](#).
2. How to add an acceleration domain, please refer to [Adding a Domain Name for Acceleration](#).

## Directions

### Step 1: Creating and Deploying a Function

1. Log in to the [EdgeOne Console](#) and click **Site List** in the left sidebar. In the site list, click the **Site** to be configured.
2. On the site details page, click **Edge Function > Function Management**.
3. On the edge function management page, click **Create function** and select to create a function using a template. At this step, you can use a template to create a function according to actual business needs. Taking the current scenario as an example, you can select the "Create Hello World" template to create a new one. After selecting the template, click **Next**.
4. On the new Edge Functions page, configure the relevant parameters. The explanations for these parameters are as follows:  
Function: Required, it can only contain letters, numbers, hyphens. It should start with a letter and end with a number or letter, 2-30 characters; and it cannot be modified after creation. For example: test-edgefunctions.  
Description: Optional, it supports up to 60 characters. For Example: Custom HTML page and response header.  
Code: The edge function code that needs to respond. In the current scenario, you may copy the following function code, paste it into the code editor of the console, and replace the default code in the editor.



```
const html = `  
  <!DOCTYPE html>  
  <body>  
    <h1>Hello World</h1>  
    <p>This markup was generated by TencentCloud Edge Functions.</p>  
    <a href="https://cloud.tencent.com/product/teo">TencentCloud EdgeOne</a>  
  </body>  
`;  
  
async function handleRequest(request) {  
  return new Response(html, {
```

```
headers: {
  'content-type': 'text/html; charset=UTF-8',
  'x-edgefunctions-test': 'Welcome to use Edge Functions.',
},
});
}

addEventListener('fetch', event => {
  event.respondWith(handleRequest(event.request));
});
```

### Note

The preceding code creates a custom HTML and adds the following custom response header: x-edgefunctions-test: Welcome to use Edge Functions.

5. Click **Create and deploy**. If you see the following pop-up dialog box, the deployment is successful.



### Deployed successfully

Functions are triggered when triggering rules are matched

Not now

Add triggering rule

## Step 2. Configuring a Triggering Rule

If you want to trigger function execution by setting HOST, URL Path, or file extensions of the matching sites, you could proceed in the following two steps:

1. After the function is deployed successfully, click **Add triggering rule**.
2. On the add triggering rule page, configure the matching conditions. Taking the current scenario as an example, you can select the Matching type as "HOST", the Operator as "Is", and the value as the added subdomain

`www.example.com`. Click **OK** to create the trigger rule.



Add triggering rule

Functions will implement after a request URL matches the triggering rules.

Site

cloud

Description

host test

51 more characters allowed

Condition

If

Matching type

HOST

Operator

Is

Value

+ And

+ Or

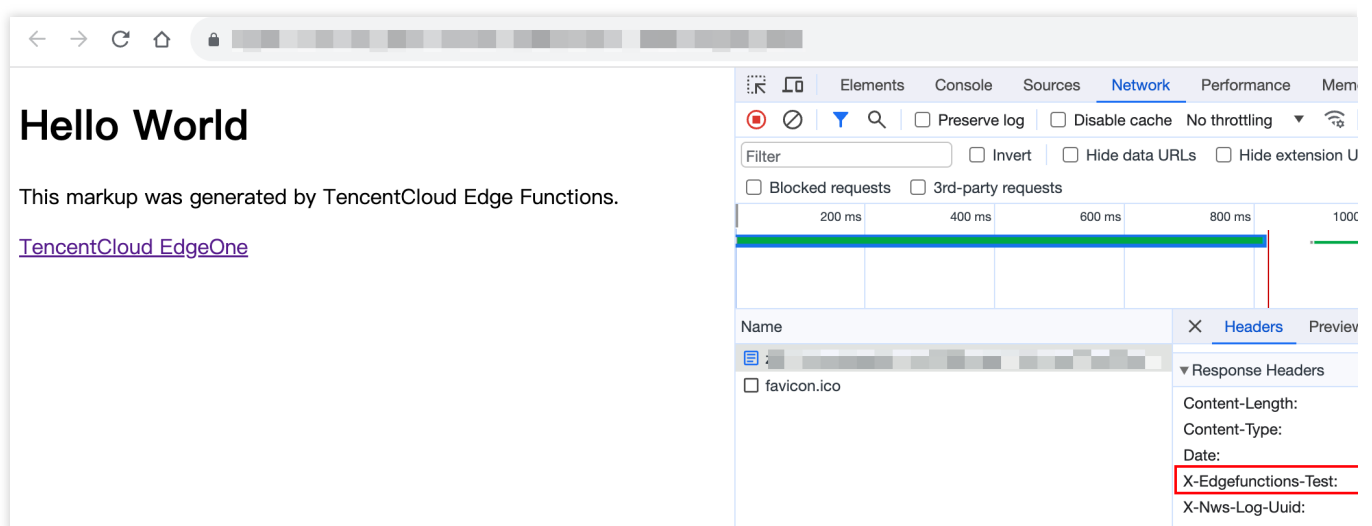
### Step 3: Verifying the Edge Function

To check whether the function is working as expected, you can initiate a request in a browser or by using Curl.

Browser Verification

Curl Verification

Enter the URL in the browser, for instance: `https://www.example.com/test-edgefunctions`. This URL can match the set trigger conditions to trigger the execution of the function and view the response page information.



Run the curl request command within the MAC/Linux terminal to verify. For example: `curl`

`https://www.example.com/test-edgefunctions`. The response can be viewed as follows:

```
+ ~ curl -i https://[redacted] ions
HTTP/2 200
x-edgefunctions-test: Welcome to use Edge Functions.
content-type: text/html; charset=UTF-8
content-length: 238

<!DOCTYPE html>
<body>
  <h1>Hello World</h1>
  <p>This markup was generated by a TencentCloud Edge Functions.</p>
  <a href="https://cloud.tencent.com/product/teo">边缘安全加速平台 (TencentCloud EdgeOne)</a>
</body>
```

# Operation Guide

## Function Management

Last updated : 2024-01-02 10:24:04

### Overview

This document describes how to create, edit, and delete an edge function, and how to configure the rules that trigger the function.

### Creating and Deploying a Function

1. Log in to the [EdgeOne console](#), click **Site List** in the left sidebar, and click the **site** to be configured in the site list.
2. On the site details page, click on **Edge Functions > Function Management**.

3. On the Edge Function Management page, click **Create function**, select to create a function using a template. In this step, you can create a function using a template on your actual business needs.

4. On the create new Edge Function page, configure the relevant parameters as follows:

Function: required, it can only include letters, numbers, hyphens. It must start with a letter and end with a digit or letter, 2-30 characters; it cannot be modified after creation. Example: test-edgefunctions.

Description: optional, it supports up to 60 characters. For instance, custom HTML page and response headers.

Code: the content of the edge function that requires a response.

Function

2-30 characters ([a-z], [0-9] and [-]). It must start with a letter and end with a digit or letter. Consecutive hyphens (.) are not allowed; cannot be modified after creation.

Description

Optional

60 more character allowed

Code


[View sample](#)

```
1 addEventListener('fetch', e => {
2   const response = new Response('Hello World!');
3   e.respondWith(response);
4 });
```

Cancel

Create and deploy

5. Click on **Create and deploy**. If a dialog box appears as shown, it signifies the successful deployment.

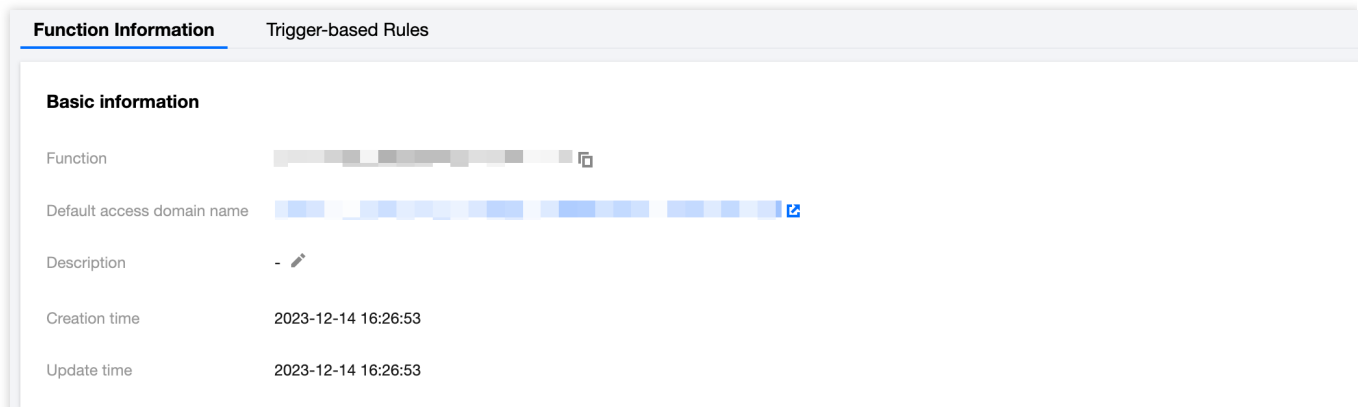


**Deployed successfully**  
Functions are triggered when triggering rules are matched

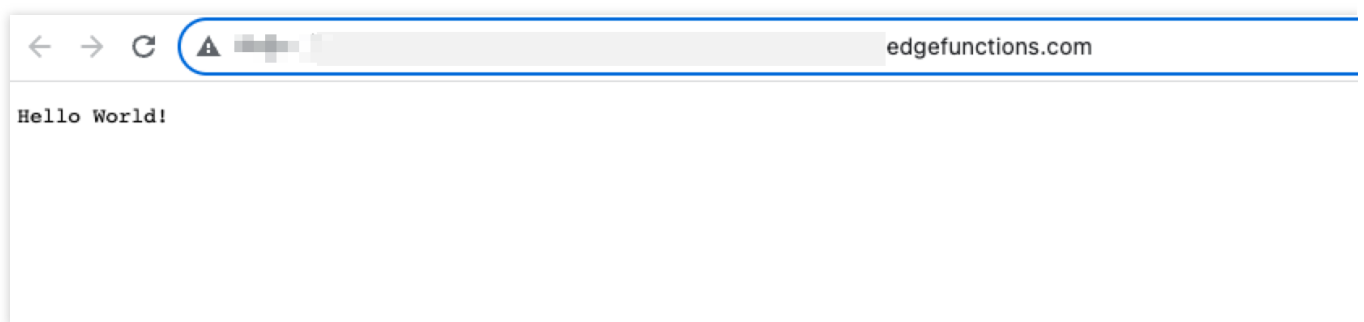
Not now

Add triggering rule

After the deployment is successful, you can click **Default access domain name** assigned by the platform to verify its effectiveness by triggering the function execution.



If the default function code is deployed, it will be displayed as follows:



## Configuring a Triggering Rule

If you want to trigger function execution by setting HOST, URL Path or file suffix of the matching site, there are two steps you can follow:

1. After the function is deployed successfully, click **Add triggering rule**.
2. On the **Add triggering rule** page, specify the matching type, operator, and value as needed.

3/Add triggering rule

Functions will implement after a request URL matches the triggering rules.

Site

ss

Description

host test

51 more characters allowed

Condition

If

Matching type ⓘ

Operator

Value

HOST

Equal to

+ And

+ Or

3. Click **OK**.

Function information

Triggering rule

Add triggering rule

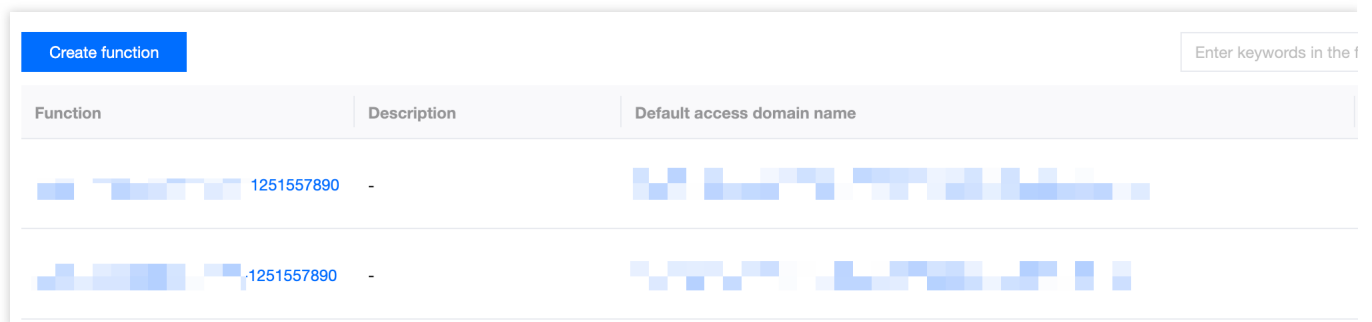
Enter

Rule ID	Description	Condition	Creation time	Upd
rule-	host test	if	2023-01-11 15:05:12	2023

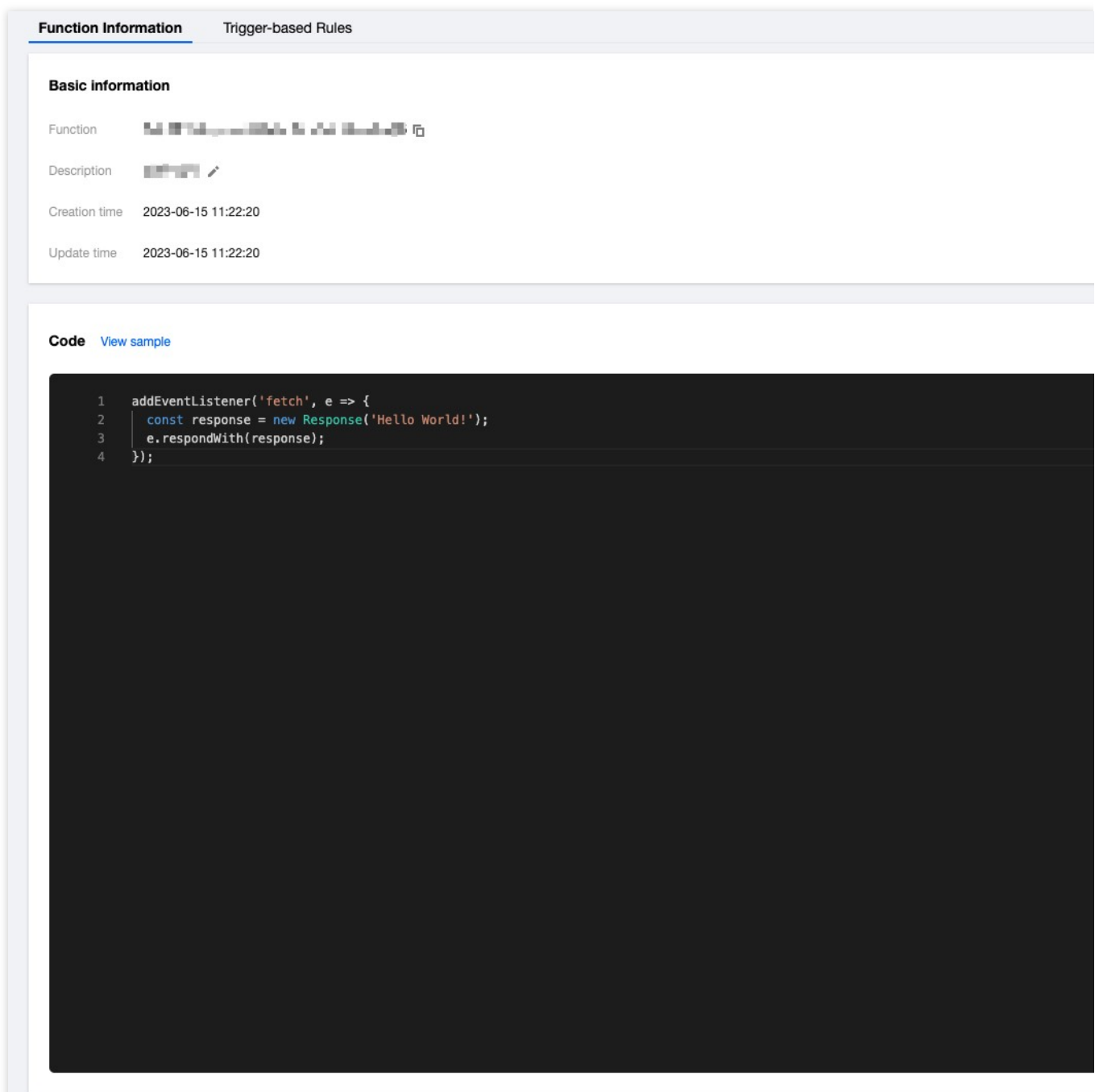
Total items: 1

## Editing the Function

1. On the function management page, select the function you want to modify and click on **Function**.



2. On the function information page, click **Save and deploy** or **Ctrl + S** after modifying the function code.



3. Modify the code and click **Save and deploy**. If you have configured a triggering rule for the function, a note will be displayed as follows:



**The following triggering rules will take effect once they're check the rules before you deploy.**

Rule ID	Condition
rule [redacted]	if [redacted]

CancelDeploy

## Deleting the Function

1. If you need to delete a newly created function, you can go to the function management page, select the function you want to delete, and click on the **Delete** button in the operation column.

Function information

Triggering rule

Add triggering rule

Enter keywords in th

Rule ID	Description	Condition	Creation time	Update time
rule <div></div>	host test	if ( <div></div>	2023-01-11 15:05:12	2023-01-11 15:20:05

Total items: 1

2. In the pop-up dialog box, click **OK**.

### Note

Once deleted, the function cannot be restored. The triggering rules of the function will also be deleted.



# Function Trigger

Last updated : 2023-12-14 17:47:37

## Scenarios

This document guides you how to manage function triggering rules.

Add, delete, modify and search for a triggering rule.

Adjust the priority of the triggering rules by reordering them in the list. If the request URL matches multiple triggering rules, only the first hit rule is executed.

## Directions

### Creating a triggering rule

1. Log in to the [EdgeOne](#) console and click **Site List** in the left sidebar. In the site list, click the target site.
2. On the site details page, click **Edge Functions > Function Management**.
3. On the **Function Trigger** page, click the



icon to the right of the rule list.

Add triggering rule

Functions will implement after a request URL matches the triggering rules.

Site

Description

Optional

60 more characters allowed

Execute function

Please select

Create now

Condition

If

Matching type

Please select

+ And + Or

OK

Cancel

### Parameter description:

**Site:** The name of the current site is displayed by default.

**Description:** (Optional) It can contain up to 60 characters.

**Condition:** Specify the matching type, operator, and value as needed. For more information, see [Rule Engine](#).

**Execute function:** Select a function from the drop-down list.

4. Click **OK** to complete the creation.

### Editing the triggering rule

1. On the **Function Trigger** page, find the rule and click **Edit**.

**Rule list** + ⚙ 🔍

1 rules in total, executed from the top to bottom

**01** • rule: rule-xxxxxx Edit

**If**

Matching type ⓘ	Operator	Value
URL Path	Equal to	<span>rule-xxxxxx</span>

**THEN**

Operation	Function	Description
Trigger edge function	<span>rule-xxxxxx</span>	<span>rule-xxxxxx</span>

2. In the **Edit triggering rule** dialog box, modify the parameters and click **OK**.

### Edit triggering rule

 Functions will implement after a request URL matches the triggering rules.

Site

Description

51 more characters allowed

Execute function

 [Create now](#)

Condition

If

Matching type ⓘ

Operator

Value

HOST

Equal to



[+ And](#) [+ Or](#)

OK

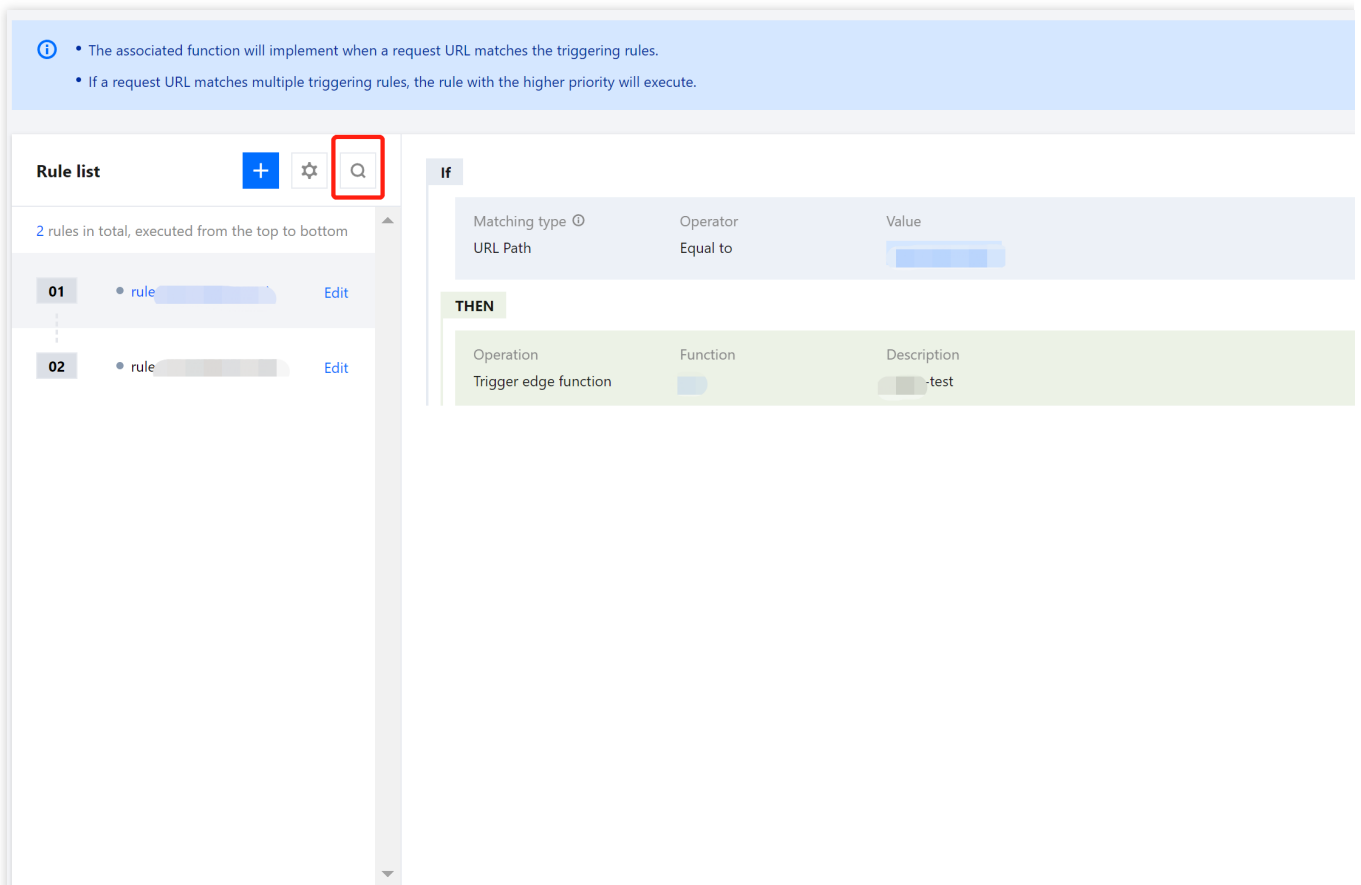
Cancel

### Searching for the triggering rule

On the **Function Trigger** page, click the



icon to the right of the rule list and enter a keyword of the rule ID in the search box to search for the triggering rule.



## Deleting the triggering rule

1. On the **Function Trigger** page, click the



icon to the right of the rule list.

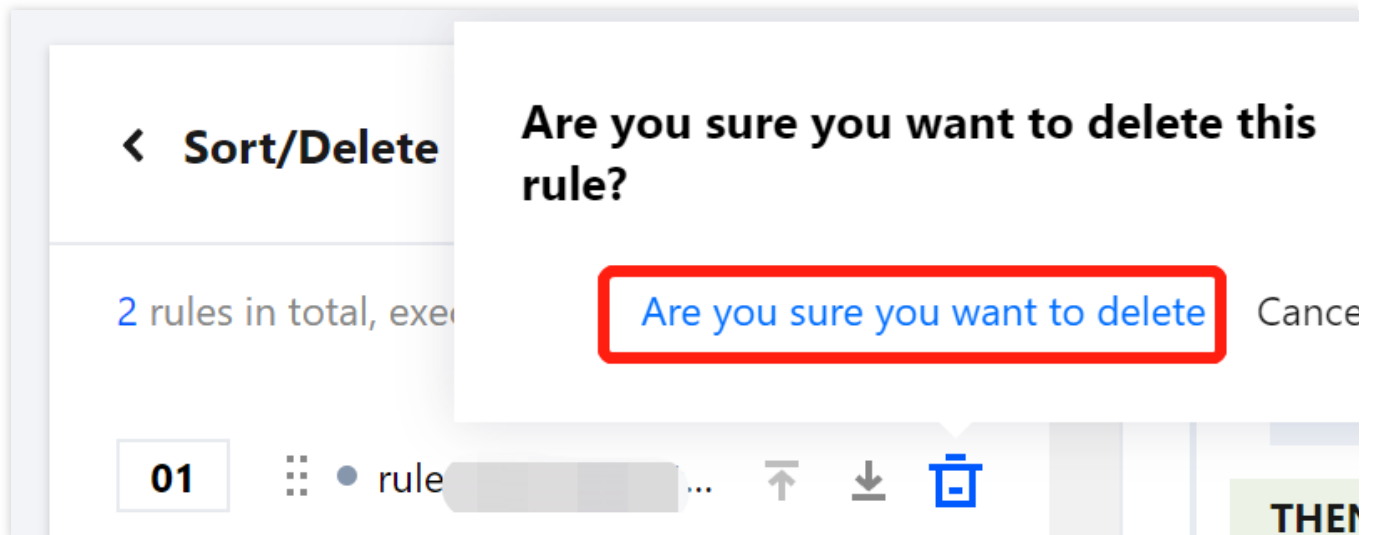
2. Find the rule to delete and click the



icon.



3. In the pop-up dialog box, click **Confirm to delete**.



### Adjusting the priority of the triggering rule

1. On the **Function Trigger** page, click the



icon to the right of the rule list.

2. Find the rule. Click the



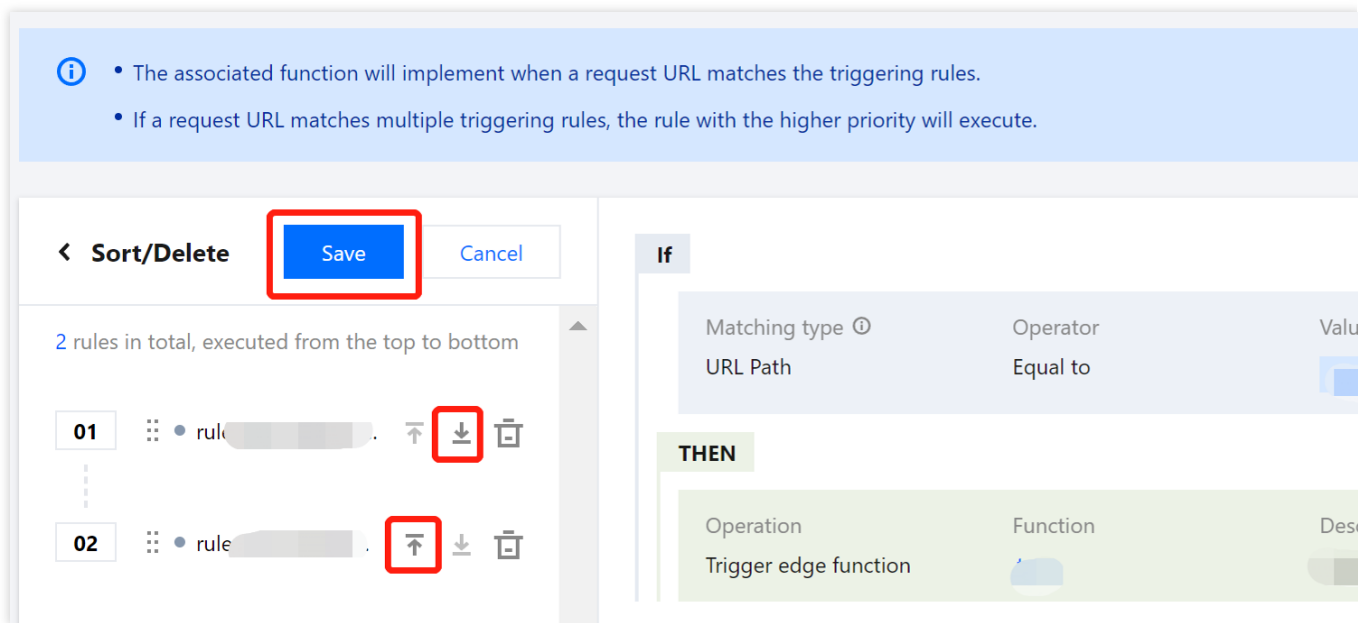
icon to move the rule up by one row or the



icon to move the rule down by one row. Then, click **Save**.

### Reminder

If the request URL matches multiple triggering rules, such as Rules 01 and 02 in the following figure, only the triggering rule on the top will be executed. In this example, only Rule 01 will be executed.



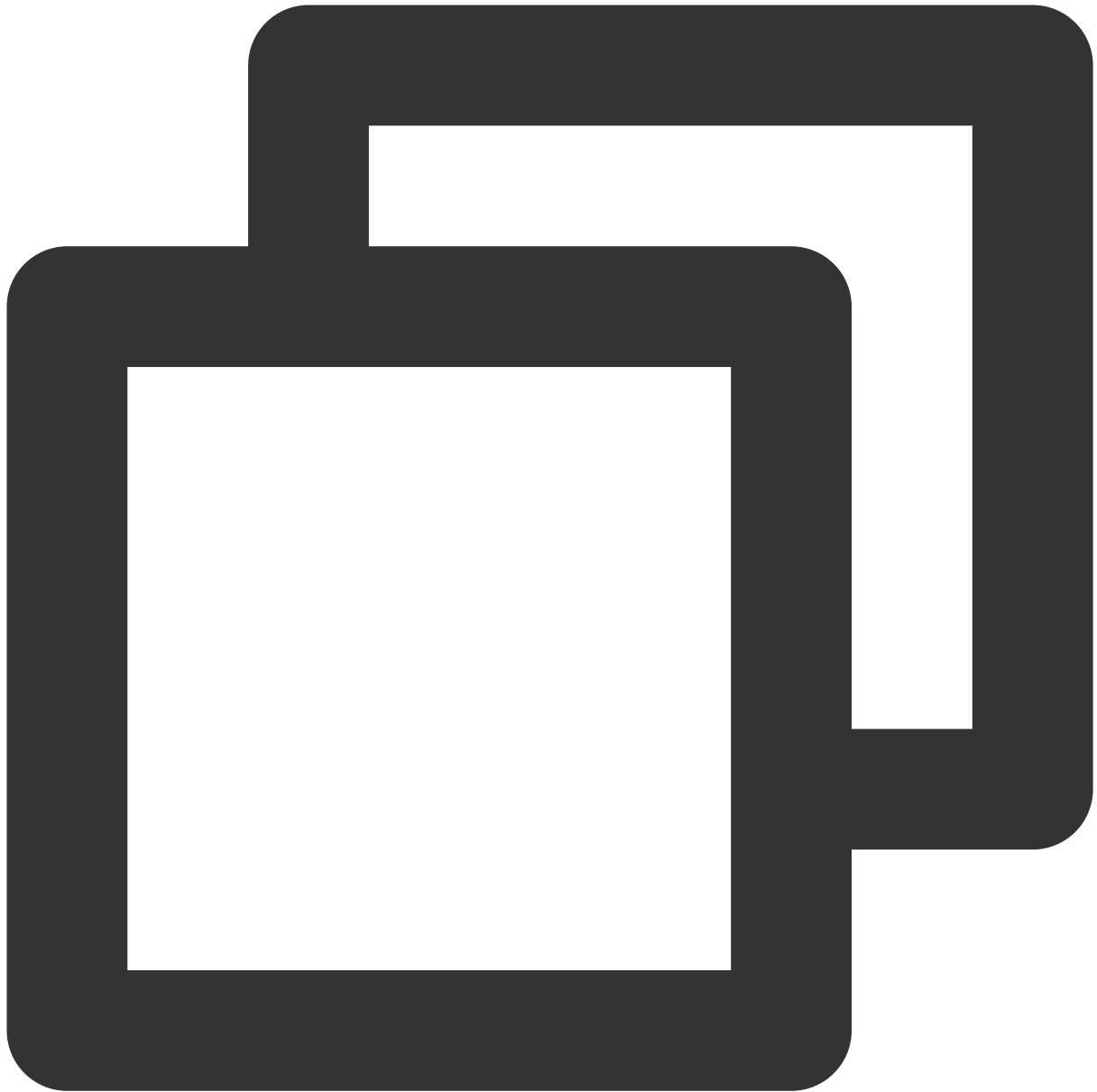
## Use Cases

The following section describes how to adjust the execution order of multiple triggering rules that match the request URL:

1. On the Function Management page, two functions with the same triggering rule are already created.

新建函数				输入函数名称关键词
函数名称	描述	创建时间	更新时间	
test2	edgefunctions-test2	2022-10-14 14:47:02	2022-10-14 14:47:02	
test1	edgefunctions-test1	2022-10-14 14:45:57	2022-10-14 14:46:36	
...	2	2022-09-30 11:50:54	2022-10-14 10:21:12	
...	1	2022-10-14 10:18:54	2022-10-14 10:19:21	
...		2022-10-10 10:44:29	2022-10-13 10:33:39	
共 5 条				

Code of the `test1` function:



```
const html = `
  <!DOCTYPE html>
  <body>
    <h1>The test 1, Hello World</h1>
    <p>This markup was generated by a TencentCloud Edge Functions.</p>
    <a href="https://cloud.tencent.com/product/teo">Tencent Cloud EdgeOne</a>
  </body>
`;

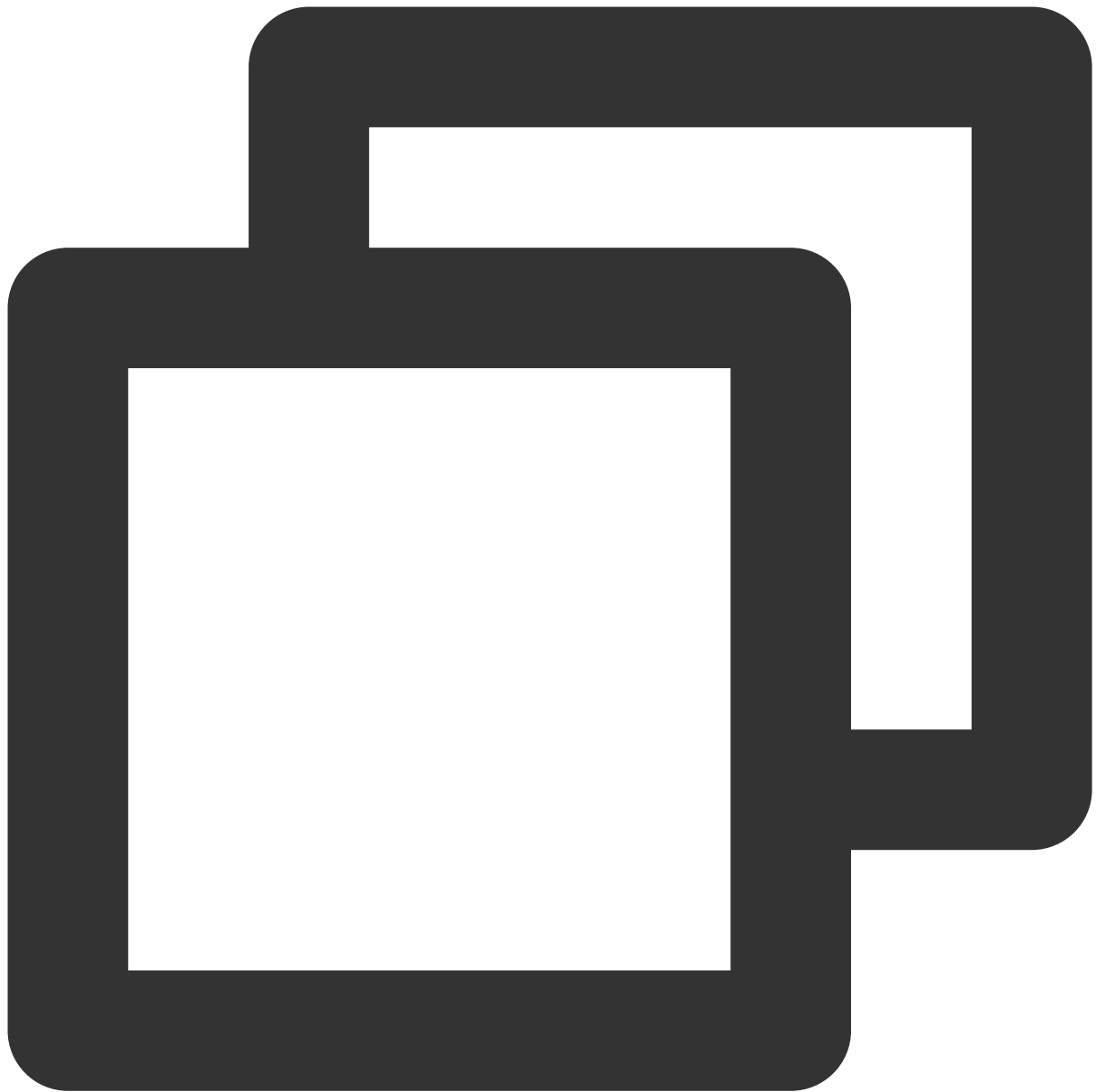
async function handleRequest(request) {
  return new Response(html, {
```



```
headers: {
  'content-type': 'text/html; charset=UTF-8',
  'x-edgesfunctions-test': 'Welcome to use Edge Functions.',
},
});
}

addEventListener('fetch', event => {
  event.respondWith(handleRequest(event.request));
});
```

Code of the `test2` function:



```
const html = `
  <!DOCTYPE html>
  <body>
    <h1>The test 2, Hello World</h1>
    <p>This markup was generated by a TencentCloud Edge Functions.</p>
    <a href="https://cloud.tencent.com/product/teo">Tencent Cloud EdgeOne</a>
  </body>
`;

async function handleRequest(request) {
  return new Response(html, {
```

```
headers: {
  'content-type': 'text/html; charset=UTF-8',
  'x-edgefunctions-test': 'Welcome to use Edge Functions.',
},
});
}

addEventListener('fetch', event => {
  event.respondWith(handleRequest(event.request));
});
```

2. The triggering rules are displayed on the **Function Trigger** page, as shown in the following figure.

The screenshot displays the 'Function Trigger' configuration interface. On the left, the 'Rule list' panel shows three rules, with the first two being visible: '01' (rule-wrqdrqj4) and '02' (rule-8ij6cfrm). The right panel shows the configuration for the selected rule, which is '02'. The 'If' section shows a matching type of 'HOST' and an operator of 'Is'. The 'THEN' section shows an operation of 'Trigger edge function' and a function of 'test2'.

Matching type	Operator	Value
HOST	Is	

Operation	Function	Description
Trigger edge function	test2	-

3. The triggering rule of the `test1` function is listed in position 01, and that of the `test2` function is in position 02, as shown in the following figure.

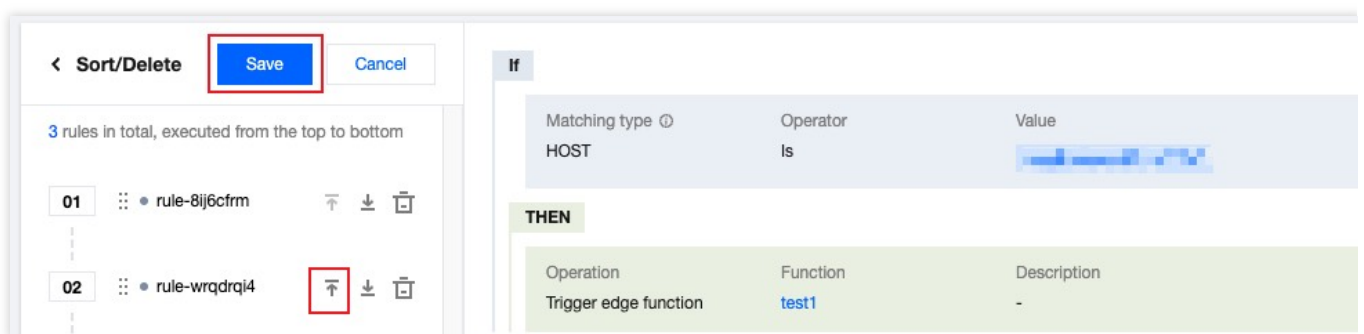


4. Enter the URL that contains the triggering rule in the address bar of a browser and press Enter. The following results are returned.



5. Click the

icon of the `test2` function and then click **Save**.



6. The triggering rule of the `test2` function is adjusted to position 01, and that of the `test1` function is adjusted to position 02.

7. Enter the URL that contains the triggering rule in the address bar of a browser and press Enter. The response is as below:

# The test 2, Hello World

This markup was generated by a TencentCloud Edge Functions.

[TencentCloud EdgeOne](#)

# Environment Variable

Last updated : 2024-08-05 16:49:47

## Operation scenarios

Environment Variables are key-value pairs set in the running environment of Edge Functions, which can be accessed as global variables in Edge Function scripts without the need for explicit importing or initialization. By using Environment Variables, function code can be decoupled from configuration. Their common uses are as follows:

**Configuration Decoupling:** Environment Variables allow developers to configure Edge Functions without modifying the function's code, meaning developers can set different values for different environments (such as development, testing, and production) to control function behavior.

**Security:** By storing Sensitive Information (like API Keys) in Environment Variables instead of hardcoding them into the code, application security is enhanced. This approach reduces the Risk of leakage of Sensitive Information in the code repository and simplifies Key Management.

**Flexibility:** Environment Variables provide great Flexibility for Edge Functions, allowing developers to adjust the behavior of Edge Functions as needed. For example, developers can use Environment Variables to achieve Gray release, by controlling different User Groups to access different versions of code or configuration.

## Operation Introduction

1. Log in into the [TencentCloud EdgeOne console](#), click on **Site List** in the left sidebar. Subsequently, within the Site List, select the **site** you wish to configure.
2. On the website details page, click on **Edge Function > Function Management**.
3. On the Function Management page, click **Specific Function Name**. At the bottom of the page, find the **Environment Variables** section. If the function has not been created, please follow the [Create and Deploy Function](#) guide to complete the function creation first.

### Create and Deploy Environment Variables

1. In the Environment Variables section, click **Quick addition** and configure the relevant parameters.

Create Environment Variable

×

Value

The characters can only include uppercase and lowercase letters, numbers, and special characters are only supported as @, ., -, \_ , with a length of 1 to 64 characters.

Variable type

☒ String
☐ JSON

Variable name

Please enter value

OK

Cancel

Parameter name	Description
Variable name	Required fields can only include uppercase and lowercase letters, numbers, and special characters limited to @, ., -, _ . The length is restricted to 1 to 64 characters. The variable name cannot be duplicated and cannot be modified after creation. For example: keytest.
Variable type	Required fields support String and JSON types. String: After selecting this option, the input variable value content will be saved as a string. For specific usage, please refer to the <a href="#">Edge Function References Environment Variables</a> section for the variable type String. JSON: After selecting this option, the input variable value content will be saved as a JSON array. The Edge Function will automatically parse the variable value into a JavaScript object without the need to manually call JSON.parse(). For specific usage, please refer to the <a href="#">Edge Function References Environment Variables</a> section for the variable type JSON.
Variable value	Required fields support a maximum of 5 KB. For example: if the type is String, enter valuetest as the variable value. If the type is JSON, the variable value will be validated to check if the input content follows the JSON Data Structure. If it does not, there will be an Exception Prompt.

2. Click **Confirm**, to complete the creation of the environment variable. A single Edge Function supports creating up to 64 environment variables.

Environment variables			
Environment variables can achieve decoupling of function code and configuration.			
Value	Variable name	Variable type	Operation
<a href="#">+ Quick add</a>			
keytest	valuetest	String	<a href="#">Edit</a> <a href="#">Delete</a>

3. Click **Deploy** to make it effective.

## Edge Functions introduce environment variables

If the environment variables referenced by the function do not contain special characters : @, ., -, , , , , they can be referenced in the form of `env.envname`. For example: if the environment variable envname is: `keytest` , the way to reference it in edge function code is `env.keytest` . For detailed usage, refer to the String type section.

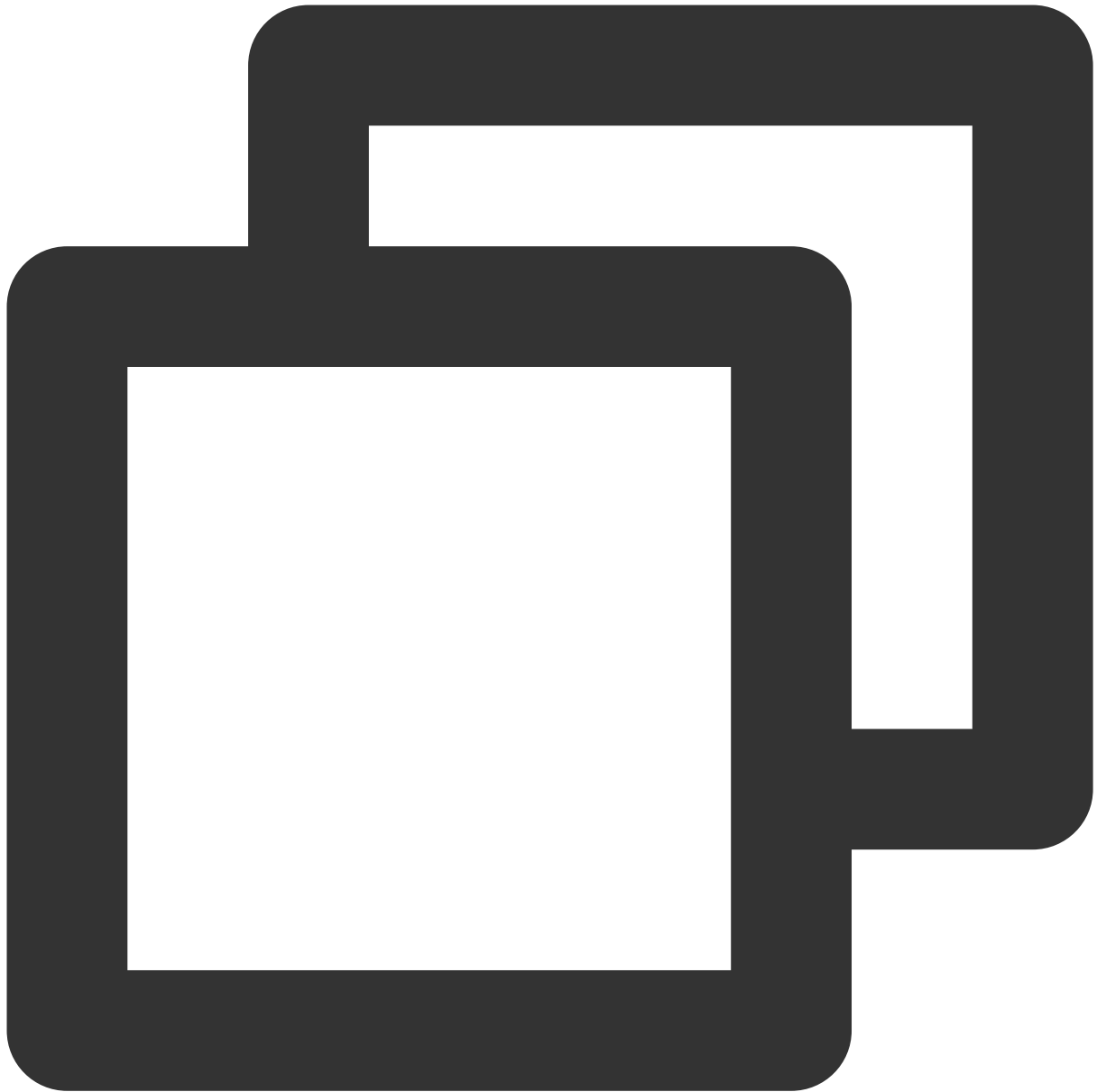
If the environment variable name referenced by the function contains special characters : @, ., -, , , , , they can be referenced in the form of `env['envname']`. For example: if the environment variable envname is: `test-@.-a` , the way to reference it in edge function code is `env['test-@.-a']` .

Below is sample code for edge functions referencing environment variables of types String and JSON. Developers can adjust according to actual requirements.

### Variable Type: String

Through the above steps to create and deploy environment variables, create an environment variable named `keytest` with the value `valuetest` . The edge function reference is as follows:





```
// Entry function
addEventListener('fetch', event => {
  event.respondWith(handleRequest(event.request));
});

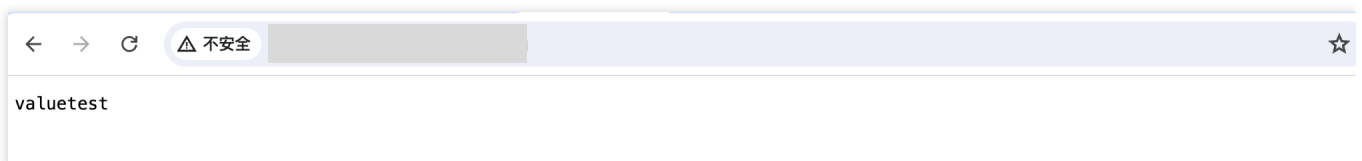
// Function to handle requests
async function handleRequest(request) {
  // Get value from environment variable, this environment variable needs to be cre
  const valueFromEnv = env.keytest;
  // Create response
  const response = new Response(valueFromEnv, {
```

```
headers: {
  'Content-Type': 'text/plain' // Set the response Content-Type
}
});

// Return the response
return response;
}
```

The semantic summary of the above code is to get the environment variable that the function has created and deployed, and respond it to the client as text.

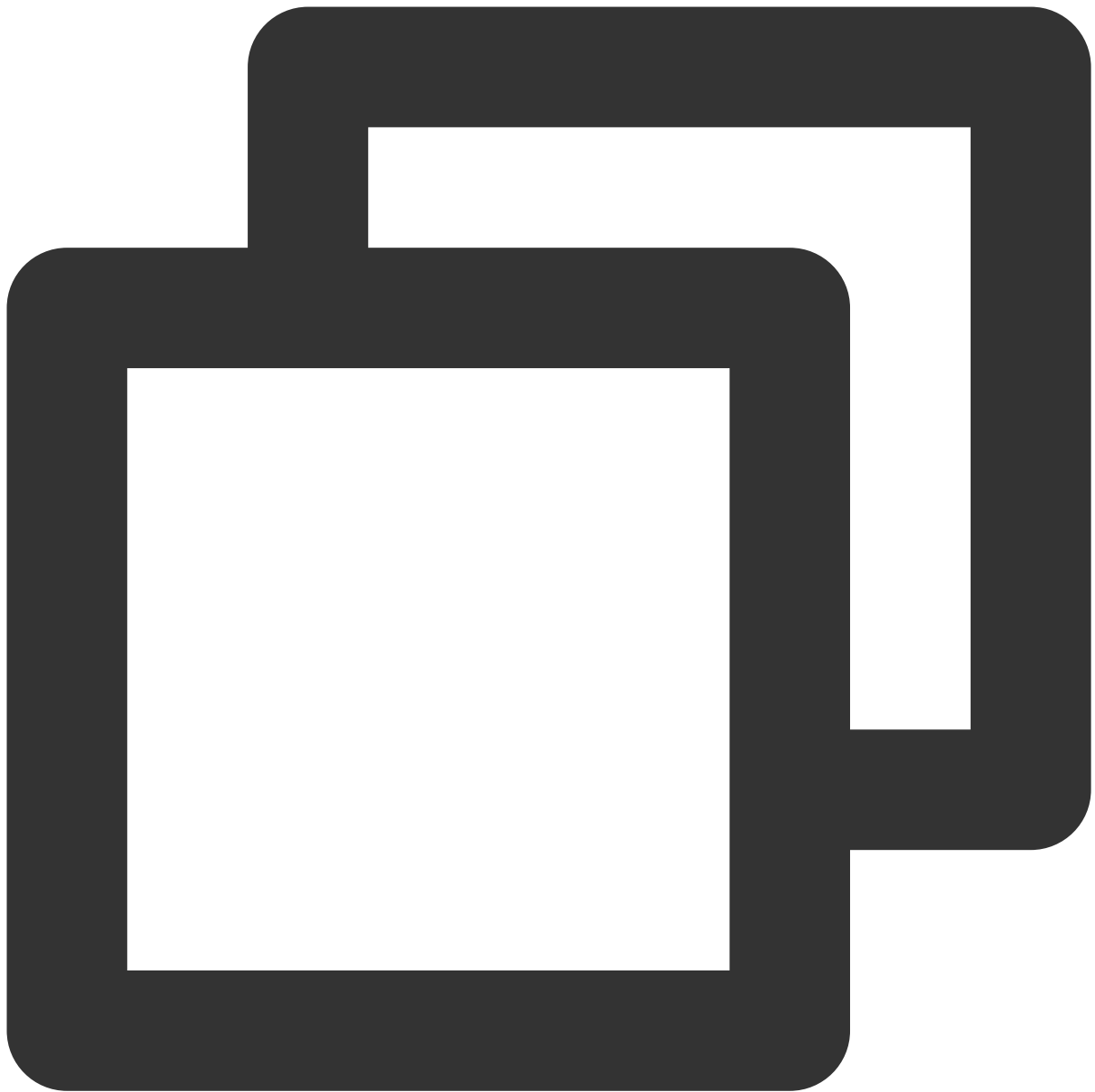
**Deploy** the code, and you can view the result by accessing the trigger rules or default access of the function.



### Variable type: JSON

Repeat the steps to create and deploy environment variables, and create and deploy an environment variable of type JSON named `keytestjson`, as shown below:

Environment variables			
Environment variables can achieve decoupling of function code and configuration.			
Value	Variable name	Variable type	Operation
<a href="#">+ Quick add</a>			
keytestjson	[{"name": "Alice", "age": 25, "hobbies": ["reading", "painting", "hiking"]}, {"n...	JSON	<a href="#">Edit</a> <a href="#">Del</a>
keytest	valuetest	String	<a href="#">Edit</a> <a href="#">Del</a>



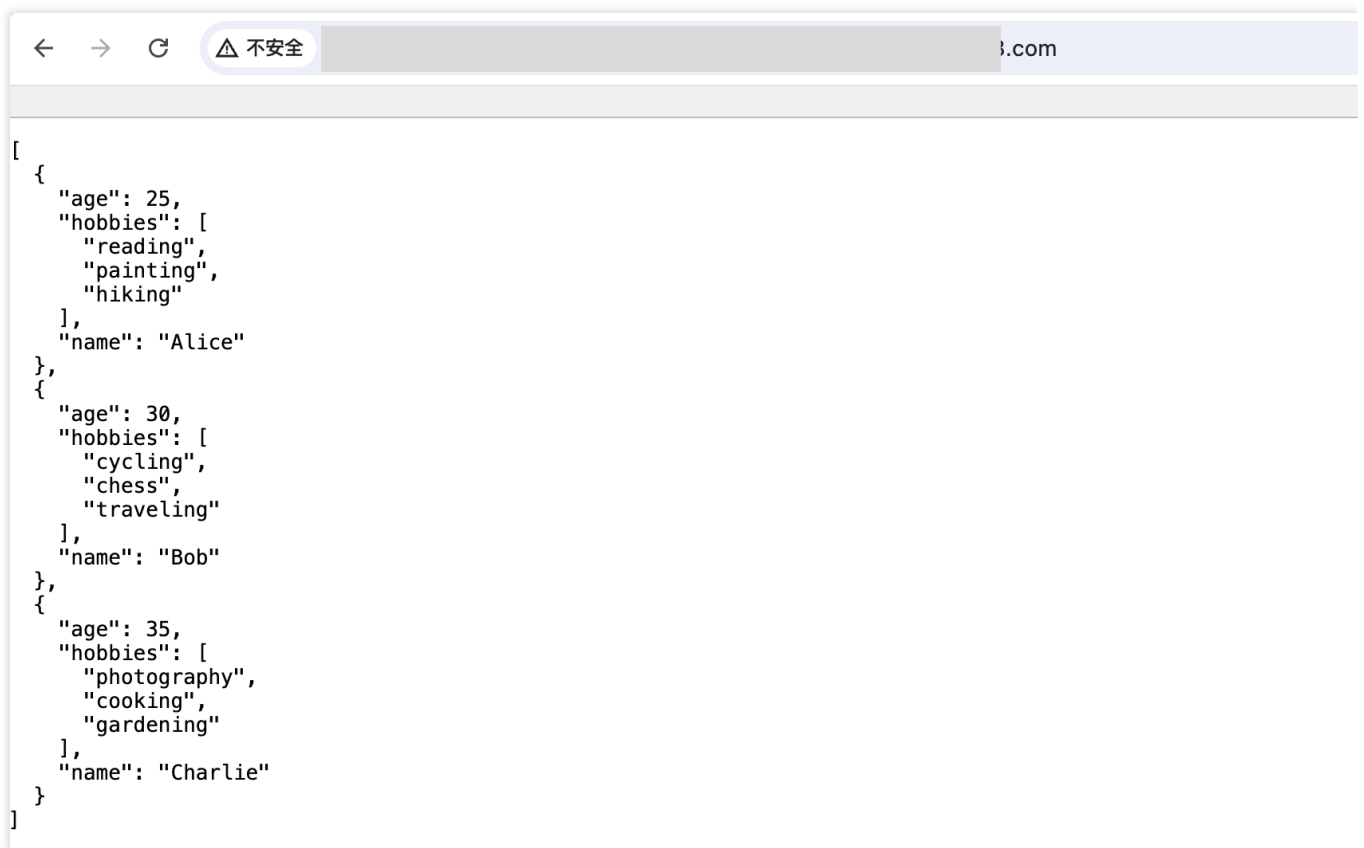
```
// Entry function
addEventListener('fetch', event => {
  event.respondWith(handleRequest(event.request));
});

async function handleRequest(request) {
  // Get value from environment variable, this environment variable needs to be created
  const myJsonData = env.keytestjson;
  // Create Response Body
  const response = new Response(JSON.stringify(myJsonData), {
    headers: {
```

```
    'Content-Type': 'application/json'
  }
});
// Return the response
return response;
}
```

The semantic summary of the above code is to get the environment variable that the function has created and deployed, and respond it to the client as JSON data.

**Deploy** the code, and you can view the result by accessing the trigger rules or default access of the function.



## Edit Environment Variable

1. In the Environment Variables module, click Edit for a specific environment variable. In the popup window, you can change the variable type and variable value. Click **Confirm** to save the edited content.
2. In the Environment Variables module, click **Deploy**. The popup window will display the specific updates for this operation. Click **Confirm** to complete the deployment.

### Deployment Prompt



#### Current Operation

- Modified 1 function variables:keytest

Confirm to continue the deployment operation?

OK

Cancel

### Delete Environment Variable

In the Environment Variables section, click **Delete** for a specific environment variable, then click **Deploy**. The popup window will display the specific environment variables being deleted in this operation. Click **Confirm** to complete the deployment.

### Deployment Prompt

#### Current Operation

- Deleted 1 function variables:keytest

⚠ If you delete an environment variable that has been referenced by a function, please adjust the related reference logic in the function code.

Confirm to continue the deployment operation?

OK

Cancel

#### Note:

If the environment variables referenced by the function are deleted through the above operations, please adjust the logic of related references in the function code.

# Runtime APIs

## addEventListener

Last updated : 2023-03-08 11:26:27

This API is used to register an event listener for a target. The event listener triggers an edge function when the specified type of event is delivered to the target. Only one event listener takes effect for the same type of event. Only `fetch` request events are supported currently. If a `fetch` event occurs after a `fetch` event listener is registered, the event listener generates a [FetchEvent](#) object to process the HTTP request.

## Overview



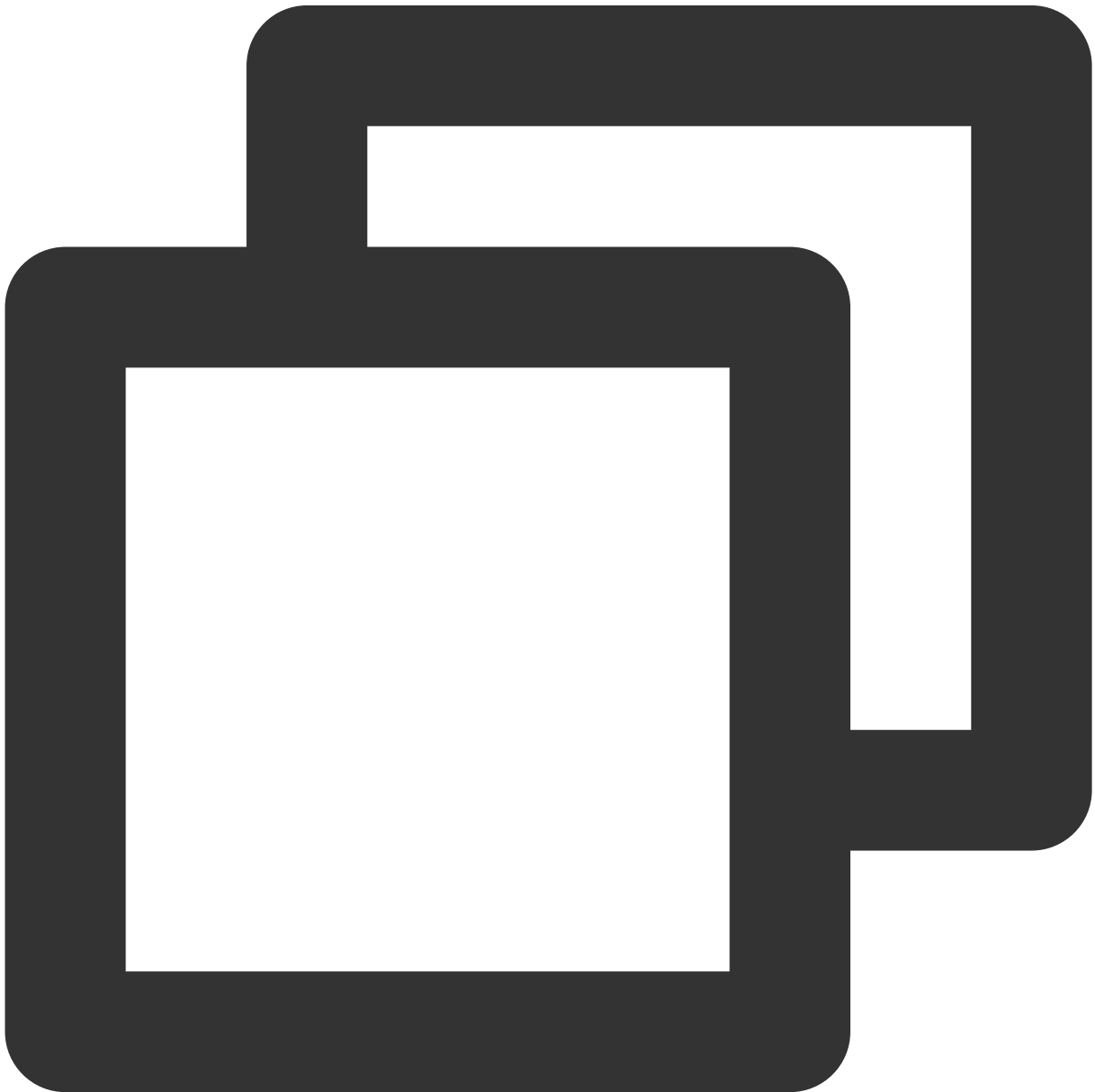
```
function addEventListener(type: string, listener: (event: FetchEvent) => void): void
```

## Parameters

Parameter	Type	Required	Description
type	string	Yes	Event type. Only <code>fetch</code> request events are supported. If you specify a request event type other than <code>fetch</code> , the Edge Functions engine throws an

			Error exception.
listener	(event: FetchEvent) => void	Yes	Event listener that is used to process event callbacks. You can register a fetch event listener to generate FetchEvent objects.

## Sample Code





```
// Register a fetch event listener.  
addEventListener('fetch', (event) => {  
  // Respond to the client.  
  event.respondWith(new Response('Hello World!'));  
});
```

## References

[MDN documentation: addEventListener](#)

[Sample Functions: Returning an HTML Page](#)

[Sample Functions: Returning a JSON Object](#)

# Cache

Last updated : 2024-01-31 10:10:01

The **Cache** API is designed based on the standard Web API [Cache](#). During the runtime of edge functions, a global `caches` object that provides a group of methods for cache-related operations is injected.

**Note:**

The cached content takes effect only on the current data node and is not automatically copied to other data nodes.

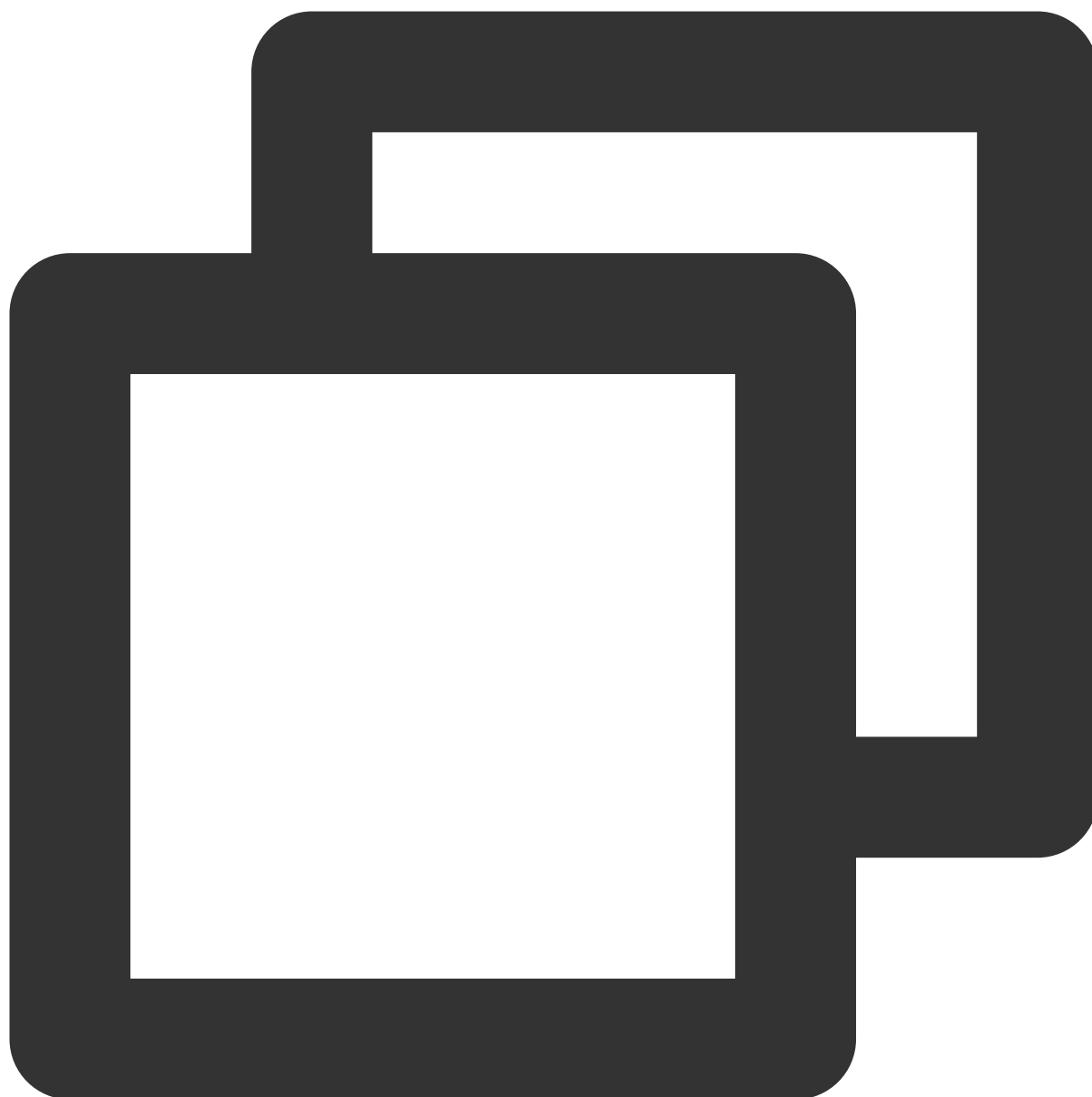
## Constructor API

Use `caches.default` to fetch the default cache instance.



```
// Fetch the default cache instance.  
const cache = caches.default;  
  
// This method provides the same effect as `caches.default`.  
await caches.open('default');
```

Use `caches.open` to create a cache instance with the specified namespace.



```
// Create a cache instance with the specified namespace.  
const cache = await caches.open(namespace);
```

## Parameters

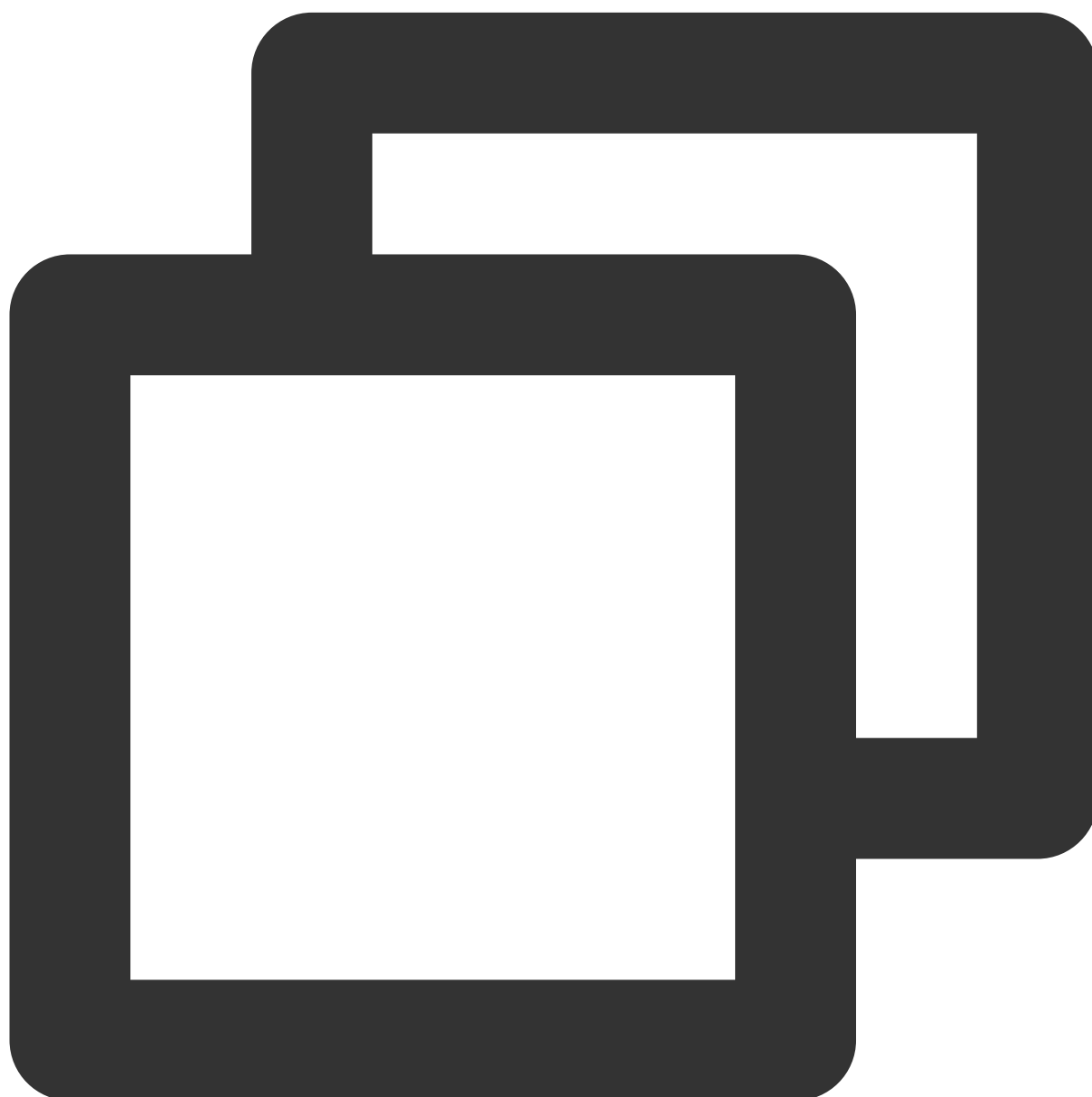
The following table describes the parameters of the `caches.open(namespace)` method.

Parameter	Type	Required	Description
namespace	string	Yes	The namespace of the cache.

			The value "default" specifies the default instance. You can also use caches.default to fetch a default instance.
--	--	--	--

## Methods

### match



```
cache.match(request: string | Request, options?: MatchOptions): Promise<Response |
```

The `match()` method fetches the [Response](#) cache associated with the request and returns a Promise object. If the cache exists, the object contains the Response object. If not, the object contains undefined.

**Note:**

The **`cache.match()`** method does not forward requests to the origin. If the cache expires, the method throws a 504 error.

**Parameters**

Parameter	Type	Required	Description
request	string   <a href="#">Request</a>	Yes	<p>The request object. The following method and headers are supported:</p> <p>GET</p> <p>Only the GET method is supported. If this parameter is set to a string, the string is used as a URL to construct a Request object.</p> <p>Range</p> <p>If the request contains a Range header and the cached response contains the Accept-Ranges header, the 206 response is returned.</p> <p>If-Modified-Since</p> <p>If the request contains a <a href="#">If-Modified-Since</a> header and the cached response contains a <a href="#">Last-Modified</a> header with the same value as that of the If-Modified-Since header, the 304 response is returned.</p> <p>If-None-Match</p> <p>If the request contains a <a href="#">If-None-Match</a> header and the cached response contains an <a href="#">ETag</a> header with the same value as that of the If-Modified-Since header, the 304 response is returned.</p>
options	<a href="#">MatchOptions</a>	No	The options.

**MatchOptions**

Parameter	Type	Example	Description
ignoreMethod	boolean	true	Specifies whether to ignore the request method. If you set this parameter to true, the request is considered to be a GET request regardless of its actual method.

**put**



```
cache.put(request: string | Request, response: Response): Promise<undefined>
```

The `put()` method tries to add a response to the cache by using the given request as the cache key. A

`Promise<undefined>` object is returned regardless of whether caching is successful.

#### Note:

The `put()` method returns a 413 error if the Cache-Control header of the object specified in the **response** parameter instructs not to cache.

#### Parameters

--	--	--	--

Parameter	Type	Required	Description
request	string   <a href="#">Request</a>	Yes	<p>The cache key.</p> <p>GET</p> <p>The <code>request</code> parameter supports only the GET method. If other methods are specified, an error is thrown.</p> <p>string</p> <p>If the <code>request</code> parameter is set to a string, the string is used as a URL to construct a <a href="#">Request</a> object.</p>
response	<a href="#">Response</a>	Yes	<p>The cache content.</p> <p>Cache-Control</p> <p>Valid values: s-maxage, max-age, no-store, no-cache, and private. The values no-store, no-cache, and private indicate no caching. If you use these values, the <code>cache.put</code> method returns a 413 error.</p> <p>Pragma</p> <p>If <a href="#">Cache-Control</a> is not specified and <a href="#">Pragma</a> is set to no-cache, no caching is performed.</p> <p>ETag</p> <p>If the <code>request</code> parameter of the <code>cache.match</code> method contains a <a href="#">If-None-Match</a> header, you can associate it with <a href="#">ETag</a>.</p> <p>Last-Modified</p> <p>if the <code>request</code> parameter of the <code>cache.match</code> method contains a <a href="#">If-Modified-Since</a> header, you can associate it with <a href="#">Last-Modified</a>.</p> <p>416 Range Not Satisfiable</p> <p>If the object specified in the <code>response</code> parameter is <a href="#">416 Range Not Satisfiable</a>, no caching is performed.</p>

### Parameter limits

The `cache.put` method throws an error in the following scenarios:

The `request` parameter specifies a method other than the GET method.

The status code of the `response` parameter is [206 Partial Content](#).

The `response` parameter contains a [Vary: \\*](#) header.

### delete





```
cache.delete(request: string | Request, options?: DeleteOptions): Promise<boolean>
```

The `delete()` method deletes the response associated with the request from the cache. If no network exception occurs, a Promise containing `true` is returned. Otherwise, a Promise containing `false` is returned.

#### Parameters

Parameter	Type	Required	Description
request	string   <a href="#">Request</a>	Yes	The cache key. GET

			The request parameter supports only the GET method. string If the <code>request</code> parameter is set to a string, the string is used as a URL to construct a <a href="#">Request</a> object.
options	<a href="#">DeleteOptions</a>	No	The options.

### DeleteOptions

Parameter	Type	Example	Description
ignoreMethod	boolean	true	Specifies whether to ignore the request method. If you set this parameter to true, the request is considered to be a GET request regardless of its actual method.

## References

[MDN documentation: Cache](#)

[Sample Functions: Caching POST Requests](#)

[Sample Functions: Using the Cache API](#)

# Cookies

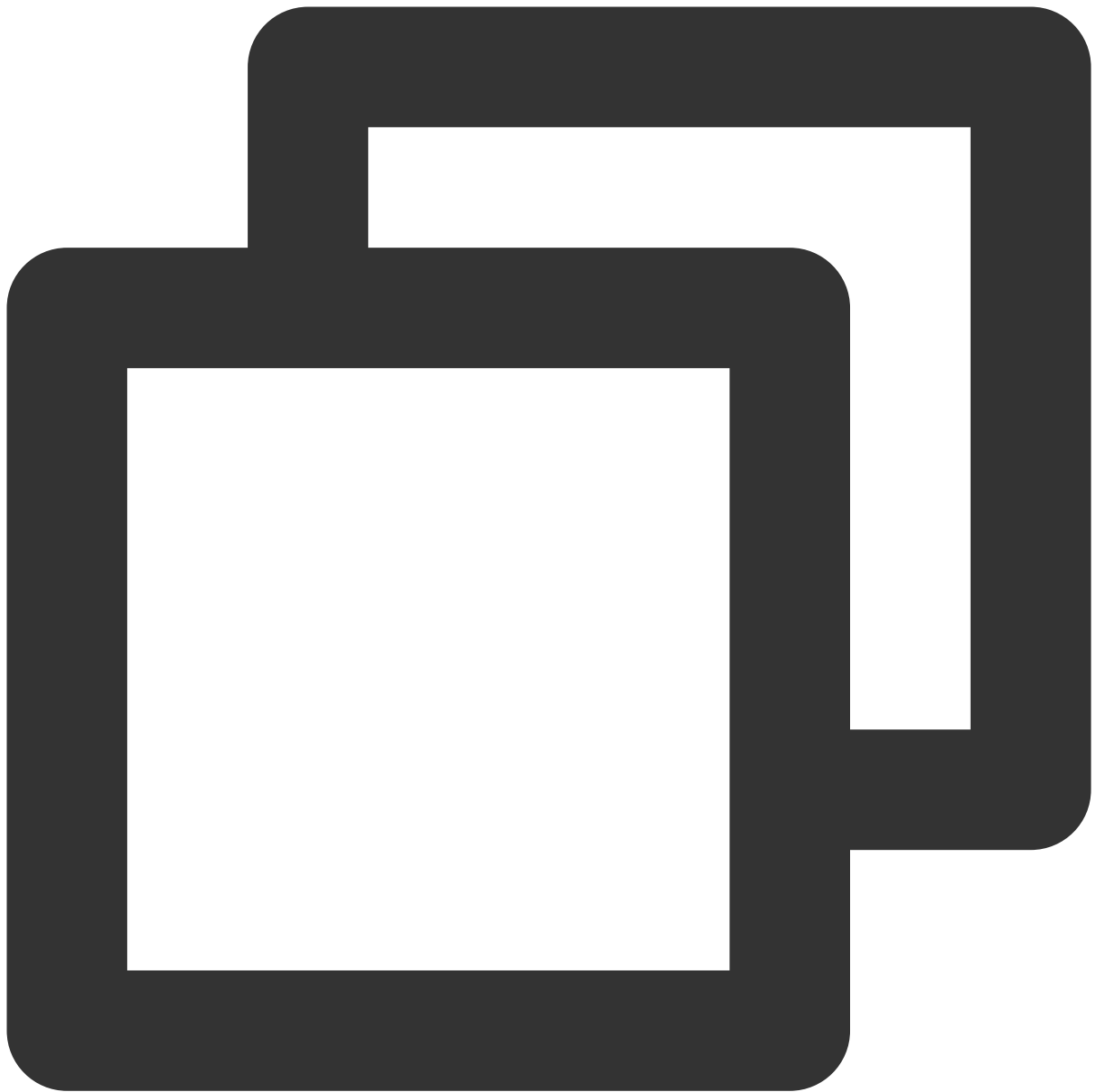
Last updated : 2024-01-30 17:12:01

The **Cookies** API provides a group of methods for you to manage cookies.

**Note:**

The unique keys of Cookies objects are in the format of `name + domain + path` . You can manage Cookies objects based on the unique keys.

## Constructor API



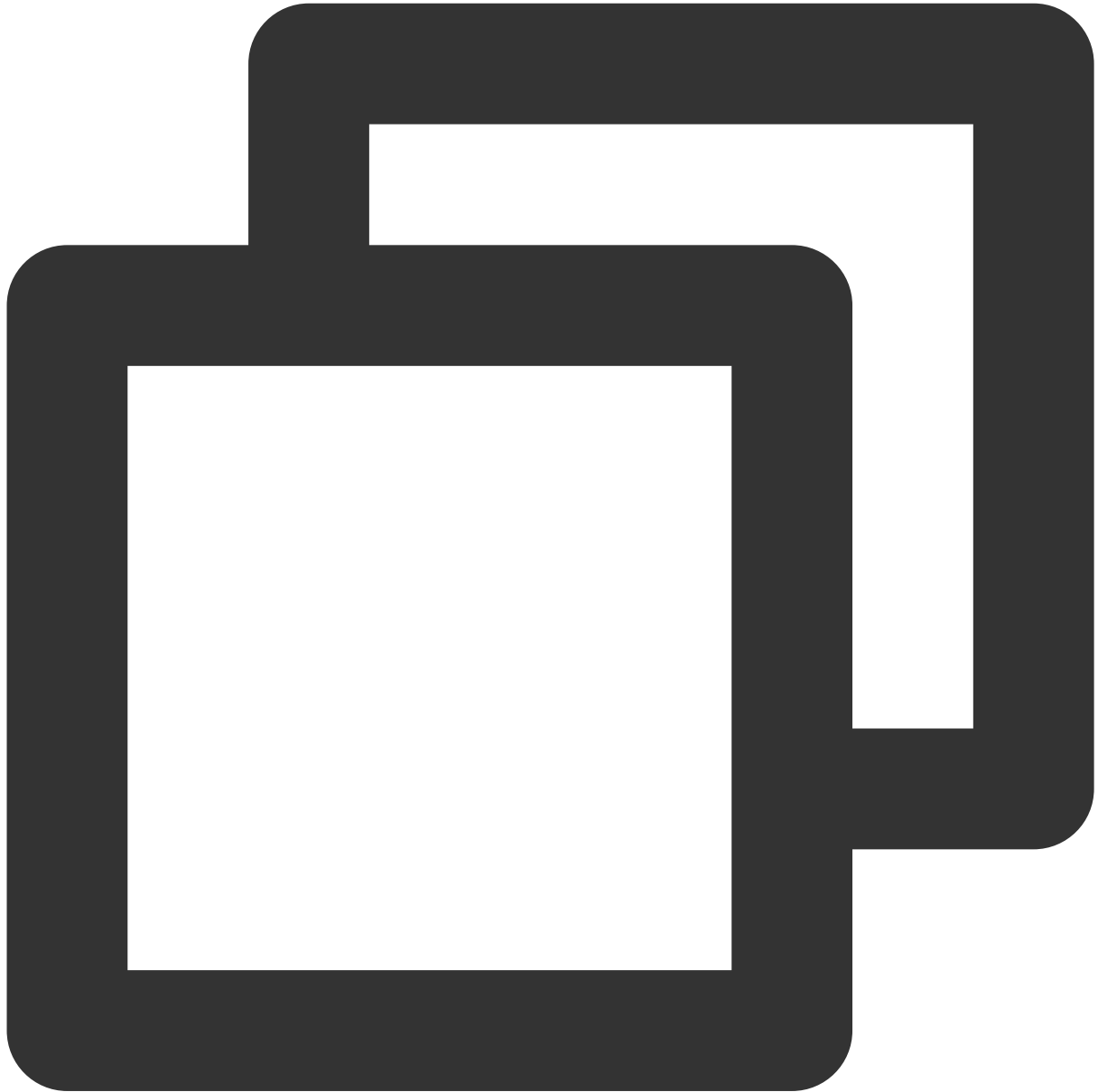
```
const cookies = new Cookies(cookieStr?: string, isSetCookie?: boolean);
```

## Parameters

Parameter	Type	Required	Description
cookieStr	string	No	The Cookie string or <a href="#">Set-Cookie</a> string.
isSetCookie	boolean	No	Specifies whether the value of the cookieStr parameter is a <a href="#">Set-Cookie</a> string. Default value: false.

## Methods

### get



```
cookies.get(name?: string): null | Cookie | Array<Cookie>;
```

The `get()` method obtains the [Cookie](#) object of the specified name. If multiple objects are matched, a [Cookie](#) array is returned.

#### Parameters

Parameter	Type	Required	Description
name	string	No	The name of Cookie object. Valid options: Default name Obtains all Cookie objects. Specified name Obtains the Cookie object of the specified name. If multiple objects are matched, a <a href="#">Cookie</a> array is returned.

## Cookie

The following table describes the attributes of the `Cookie` object. For more information, see [Set-Cookie](#).

Attribute	Type	Read-only	Description
name	string	Yes	The name of the Cookie object.
value	string	Yes	The value of the Cookie object.
domain	string	Yes	The host to which the Cookie object will be sent.
path	string	Yes	The path to which the Cookie object will be sent.
expires	string	Yes	The maximum effective time of the Cookie object. The value meets the <a href="#">HTTP Date</a> header standards.
max_age	string	Yes	The number of seconds until the Cookie object expires.
samesite	string	Yes	Controls whether the Cookie object is sent with cross-site requests, providing some protection against cross-site request forgery (CSRF) attacks.
httponly	boolean	Yes	Forbids JavaScript from accessing the Cookie object. The attribute is carried only by HTTP requests.
secure	boolean	Yes	Specifies that the Cookie object can be carried only by HTTPS requests.

## set



```
cookies.set(name: string, value: string, options?: Cookie): boolean;
```

The `set()` method adds cookies in overwrite mode. If `true` is returned, cookies are successfully added. If `false` is returned, cookies fail to be added because the number of cookies exceeds the upper limit. For more information, see [Cookie limits](#).

**Note:**

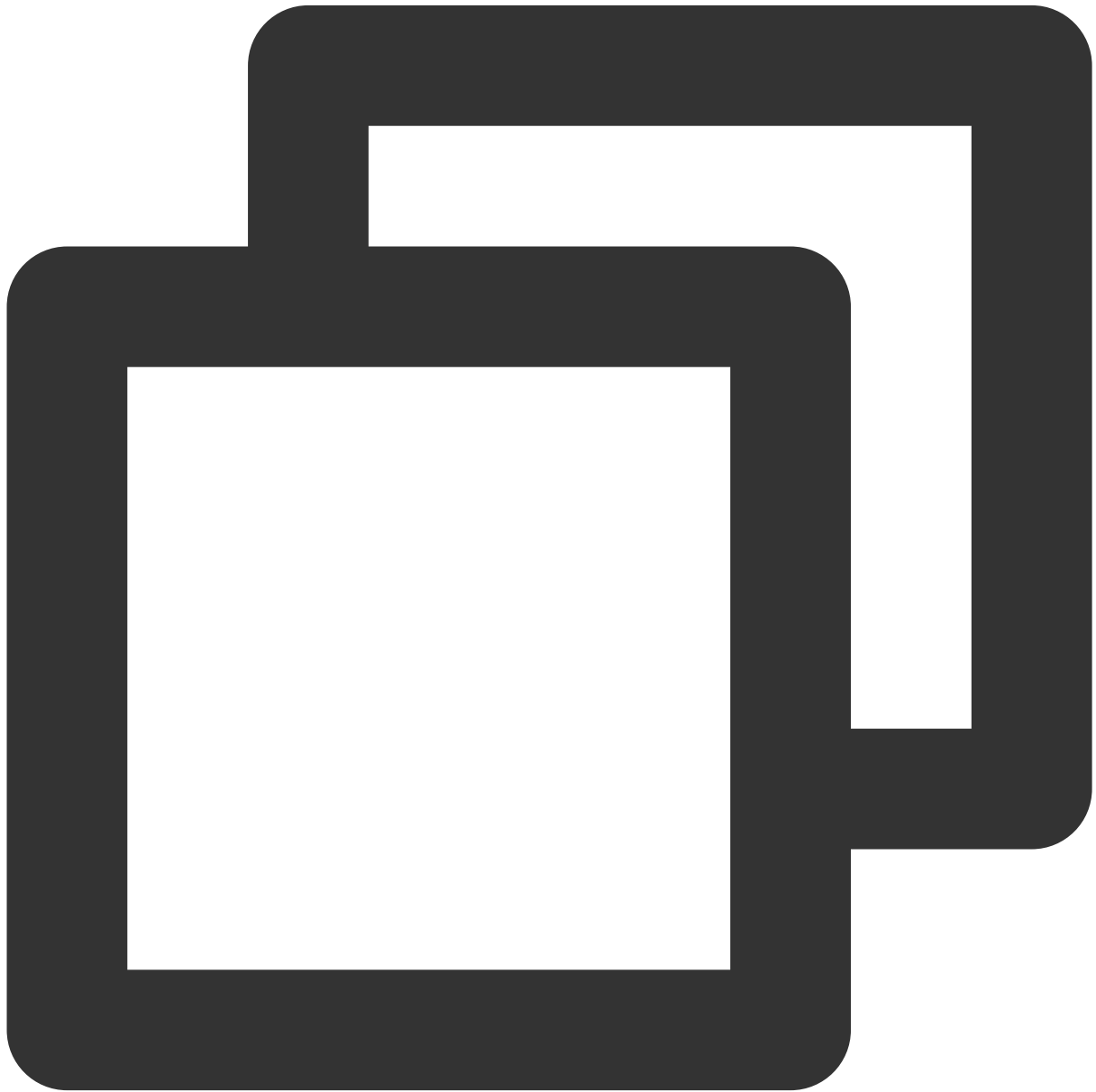
Cookies are added in overwrite mode based on unique keys in the format of `name + domain + path`.

**Parameters**

--	--	--	--

Parameter	Type	Required	Description
name	string	Yes	The name of the Cookie object.
value	string	Yes	The value of the Cookie object.
Cookie	string	No	The configuration items of the <a href="#">Cookie</a> object.

## append



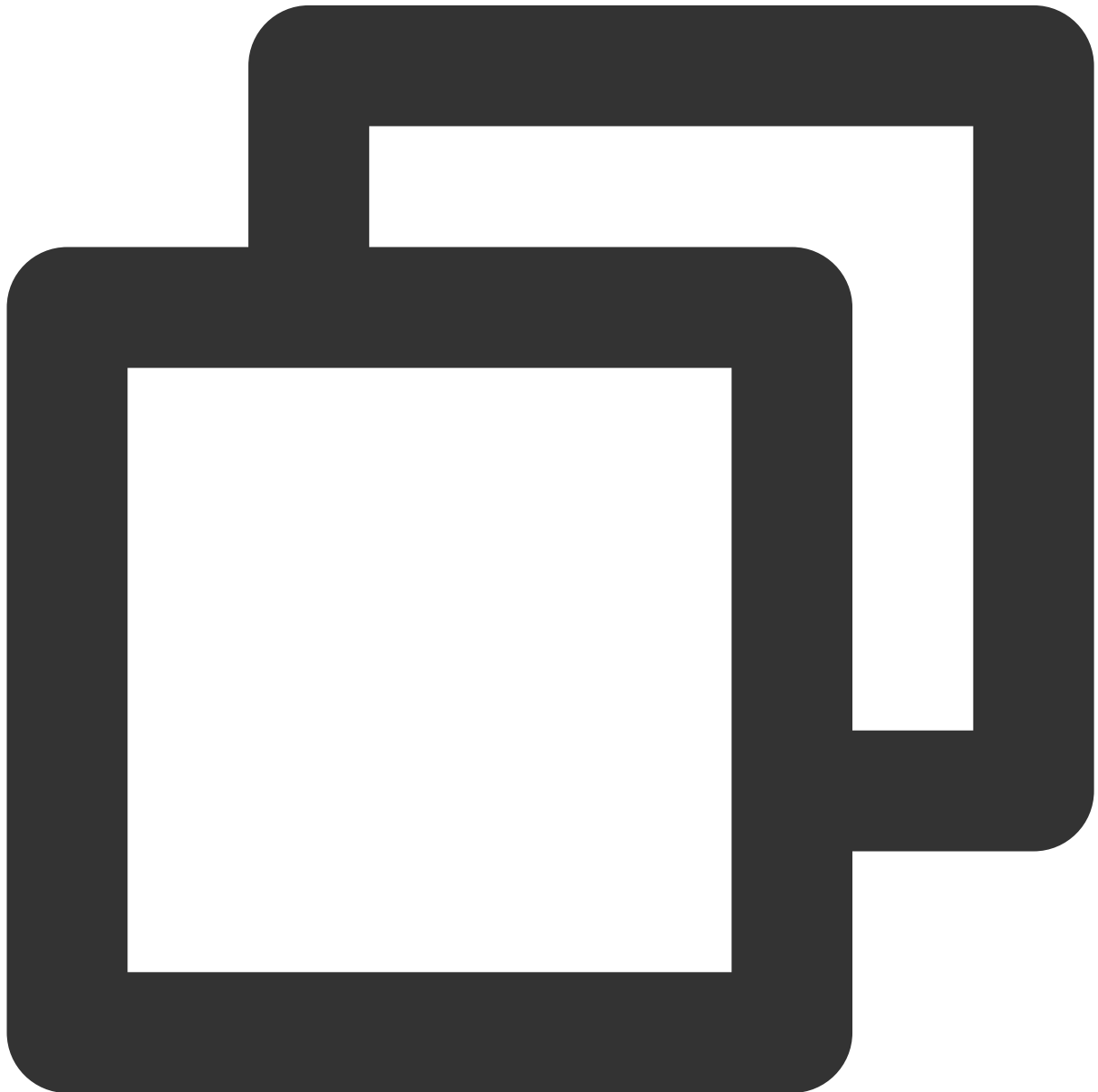
```
cookies.append(name: string, value: string, options?: Cookie): boolean;
```



The `append()` method appends cookies in scenarios where multiple values correspond to the same name. If `true` is returned, cookies are successfully appended. If `false` is returned, cookies fail to be appended because the value already exists or the number of cookies exceeds the upper limit. For more information, see [Cookie limits](#).

**Note:**

Cookies are appended based on unique keys in the format of `name + domain + path`.

**remove**

```
cookies.remove(name: string, options?: Cookie): boolean;
```

The `remove()` method deletes cookies.

#### Note:

Cookies are deleted based on unique keys in the format of `name + domain + path`.

#### Parameters

Parameter	Type	Required	Description
name	string	Yes	The name of the Cookie object.
options	Cookie	Yes	The configuration items of the <a href="#">Cookie</a> object. The configuration items <code>`domain`</code> and <code>`path`</code> support the wildcard character (*), indicating that all items are matched.

## Use Limits

### Automatic escape of special characters

The following characters are automatically escaped if they are contained in the value of the `name` attribute: `" ( ) , / : ; ? < = > ? @ [ ] \ \ { } . 0x00~0x1F` and `0x7F~0xFF`.

The following characters are automatically escaped if they are contained in the value of the `value` attribute: `, , ; " \ \ . 0x00~0x1F` and `0x7F~0xFF`.

### Cookie limits

The size of the Cookie attribute `name` cannot exceed 64 bytes.

The accumulated size of the Cookie attributes `value, domain, path, expires, max_age, and samesite` cannot exceed 1 KB.

The total length of all fields after escape of cookies cannot exceed 4 KB.

The total number of Cookie objects contained in cookies cannot exceed 64.

## Sample Code



```
function handleEvent(event) {  
  const response = new Response('hello world');  
  
  // Generate a Cookies object.  
  const cookies = new Cookies('ssid=helloworld; expires=Sun, 10-Dec-2023 03:10:01 G  
  
  // Set the response header Set-Cookie.  
  response.setCookies(cookies);  
  
  return response;  
}
```

```
addEventListener('fetch', (event) => {  
  event.respondWith(handleEvent(event));  
});
```

## References

[MDN documentation: Set-Cookie](#)

[Sample Functions: Performing an A/B Test](#)

[Sample Functions: Setting Cookies](#)

# Encoding

Last updated : 2024-01-30 16:56:26

The encoder and decoder are designed based on standard Web APIs [TextEncoder](#) and [TextDecoder](#).

## TextEncoder

The TextEncoder API takes code point streams as inputs and generates `UTF-8` byte streams as outputs. For more information, see [TextEncoder](#).

### Constructor API



```
// The TextEncoder() constructor does not have any parameters.  
const encoder = new TextEncoder();
```

## Attributes



```
// encoder.encoding  
readonly encoding: string;
```

The name of the encoding algorithm that is used by the encoder. The value is fixed to `UTF-8`.

## Methods

### encode



```
encoder.encode(input?: string | undefined): Uint8Array
```

The `encoder.encode()` method takes code point streams as inputs and generates `UTF-8` byte streams as outputs.

**Note:**

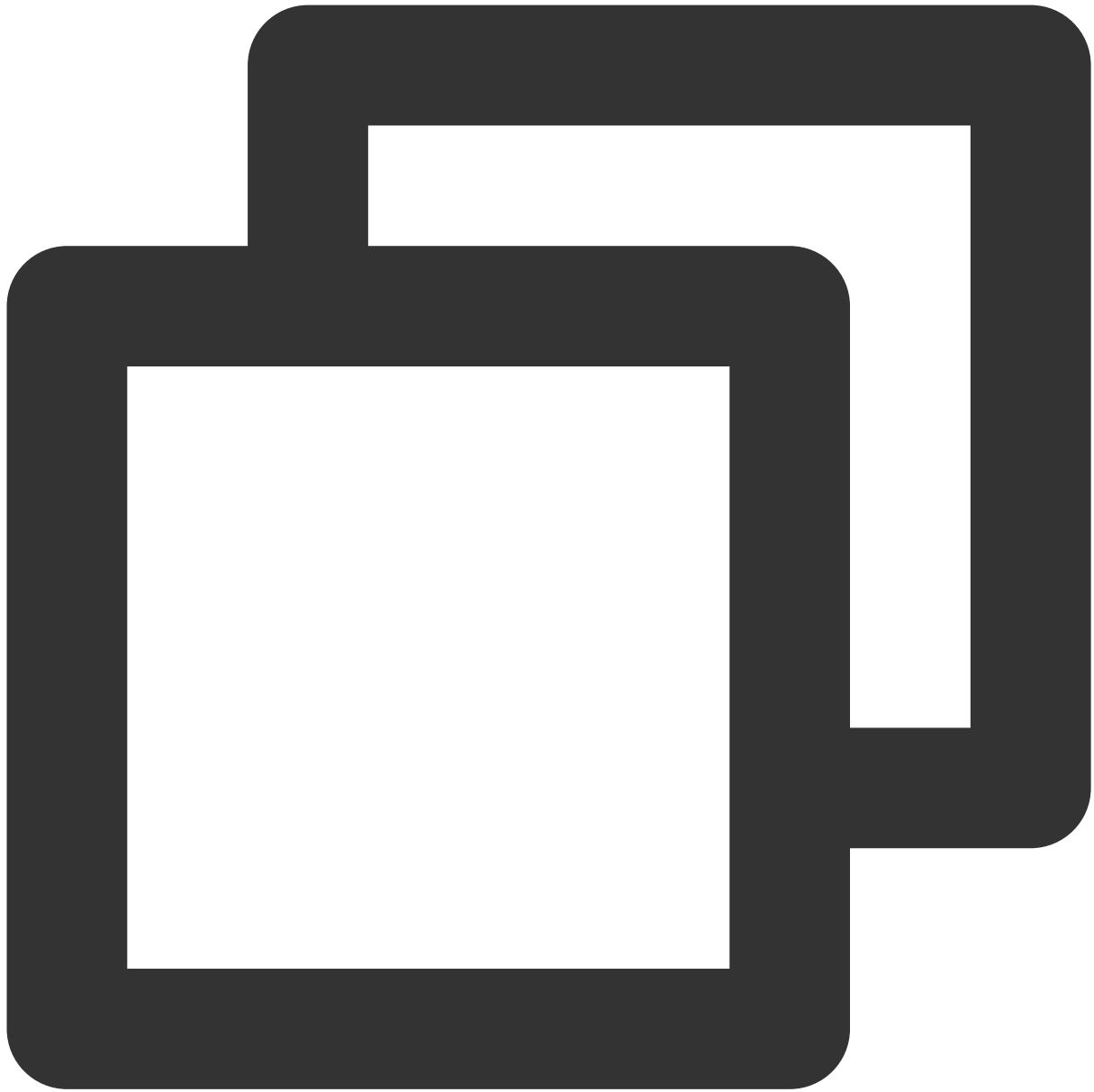
The maximum length of **input** is 300 MB. An exception will be thrown if the maximum length is exceeded.

`encoder.encode` parameters

Parameter	Type	Required	Description
input	string   undefined	No	The text to be encoded.



## encodeInto



```
encoder.encodeInto(input: string, destination: Uint8Array): EncodeIntoResult;
```

The `encoder.encodeInto()` method takes code point streams as inputs, generates `UTF-8` byte streams as outputs, and writes the outputs to a `destination` byte array.

### Parameters

Parameter	Type	Required	Description
input	string	Yes	The text to be encoded.

destination	<a href="#">Uint8Array</a>	Yes	The object in which the encoded text is stored.
-------------	----------------------------	-----	---

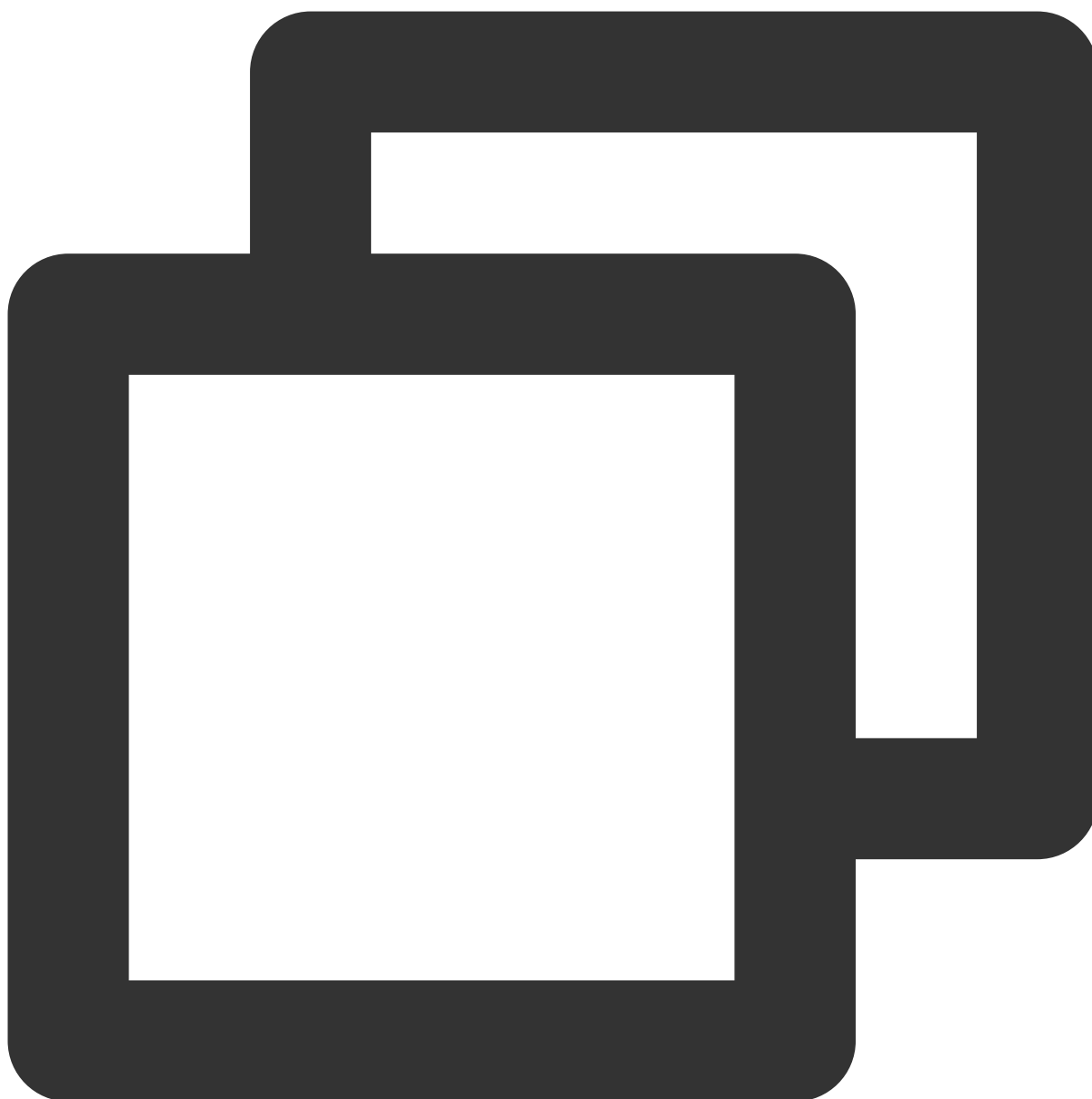
Return value: `EncodeIntoResult`

Parameter	Type	Description
read	number	The number of UTF-16 units that have been converted to UTF-8.
written	number	The number of bytes that are modified in the destination <a href="#">Uint8Array</a> .

## TextDecoder

The TextDecoder API takes byte streams as inputs and generates code point streams as outputs. For more information, see [TextDecoder](#).

### Construction API



```
const decoder = new TextDecoder(label?: string | undefined, options?: DecoderOption
```

## Parameters

### Note:

The [label](#) parameter does not support the following values:

iso-8859-16

hz-gb-2312

csiso2022kr, iso-2022-kr

Parameter	Type	Required	Description
label	string   undefined	No	The name of the decoding algorithm that is used by the decoder. Default value: UTF-8. For the valid values of label, see <a href="#">Encoding API Encodings</a> .
options	<a href="#">DecoderOptions</a>   undefined	No	The configuration items of the decoder.

## DecoderOptions

The following table describes the configuration items of the decoder.

Parameter	Type	Default value	Description
fatal	boolean	false	Specifies whether to throw an exception when decoding fails.
ignoreBOM	boolean	false	Specifies whether to ignore <a href="#">byte-order marker</a> .

## Attributes

### encoding



```
// decoder.encoding  
readonly encoding: string;
```

The name of the decoding algorithm that is used by the decoder.

**fatal**



```
// decoder.fatal  
readonly fatal: boolean;
```

Specifies whether to throw an exception when decoding fails.

### **ignoreBOM**



```
// decoder.ignoreBOM  
readonly ignoreBOM: boolean;
```

Specifies whether to ignore [byte-order marker](#).

## Methods

**decode**



```
const result = decoder.decode(buffer?: ArrayBuffer | ArrayBufferView | undefined, o
```

**Note:**

The maximum length of **buffer** is 100 MB. An exception will be thrown if the maximum length is exceeded.

Parameter	Type	Required	Description
buffer	<a href="#">ArrayBuffer</a>   <a href="#">ArrayBufferView</a>   undefined	No	The byte stream to be decoded. The maximum length of buffer is 100 MB. An exception will be thrown if the maximum length is exceeded.



options	<a href="#">DecodeOptions</a>	No	The configuration items for decoding.
---------	-------------------------------	----	---------------------------------------

## DecodeOptions

The following table describes the configuration items for decoding.

Parameter	Type	Default value	Description
stream	boolean	false	<p>Specifies whether to perform decoding in streaming mode. Default value: false. Valid values:</p> <p>true</p> <p>Perform decoding in streaming mode. Use this value if data is processed in chunks and additional chunks are expected.</p> <p>false</p> <p>Do not perform decoding in streaming mode. Use this value if the current chunk is the last one or data is not chunked.</p>

## Sample Code



```
function handleEvent(event) {  
  // Encoder  
  const encoder = new TextEncoder();  
  const encodeText = encoder.encode('hello world');  
  
  // Decoder  
  const decoder = new TextDecoder();  
  const decodeText = decoder.decode(encodeText);  
  
  // Response  
  const response = new Response(JSON.stringify({
```

```
        encodeText: encodeText.toString(),
        decodeText,
    }));

    return response;
}

addEventListener('fetch', (event) => {
    event.respondWith(handleEvent(event));
});
```

## References

[MDN documentation: TextEncoder](#)

[MDN documentation:TextDecoder](#)

[MDN documentation: Encoding API Encodings](#)

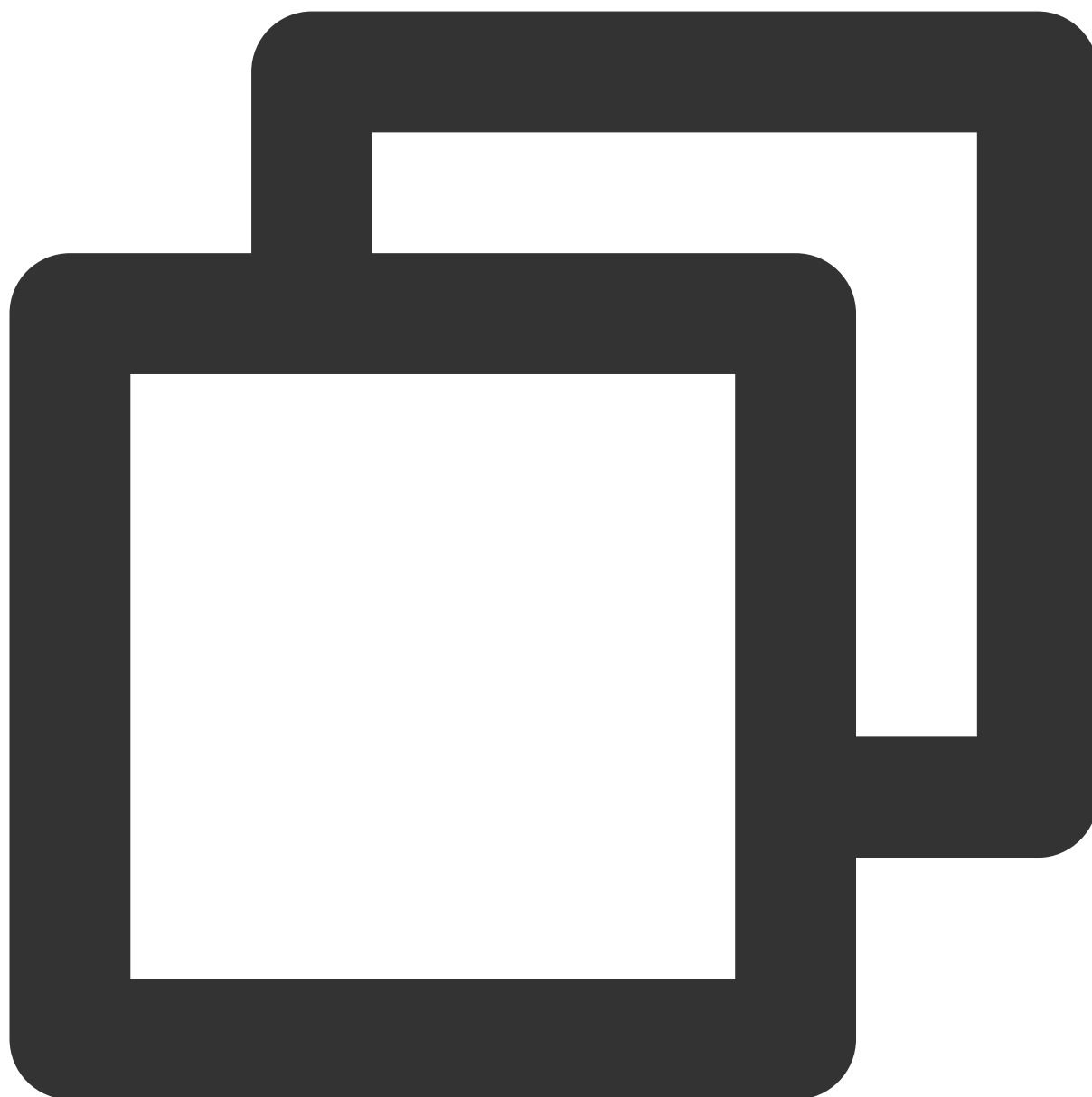
[Sample Functions: Protecting Data from Tampering](#)

# Fetch

Last updated : 2023-09-12 09:55:42

The `Fetch` API is designed based on the standard Web API [Fetch](#). You can add `fetch` to the edge function runtime to initiate an async request to fetch remote.

## Description



```
function fetch(request: string | Request, requestInit?: RequestInit): Promise<Respo
```

## Parameters

Parameter name	Type	Required	Description
request	string   <a href="#">Request</a>	Yes	Requested resource.

requestInit	<a href="#">RequestInit</a>	No	Initial configuration items of the request object. For more information, see <a href="#">RequestInit</a> .
-------------	-----------------------------	----	--

## Advanced Features

With `fetch`, you can pass in specific parameters for finer configuration of EdgeOne node caching, fetching from the origin, image processing and redirection.

### Accessing EdgeOne nodes or fetching from the origin

When a client request comes to a domain name [domain name connected to EdgeOne](#) (such as `www.example.com`), if the request triggers an edge function, `fetch(www.example.com)` is executed in the edge function. The request is directed to the cache on the EdgeOne node. If no cache is hit, the request is redirected to the origin.

#### Restrictions and requirements:

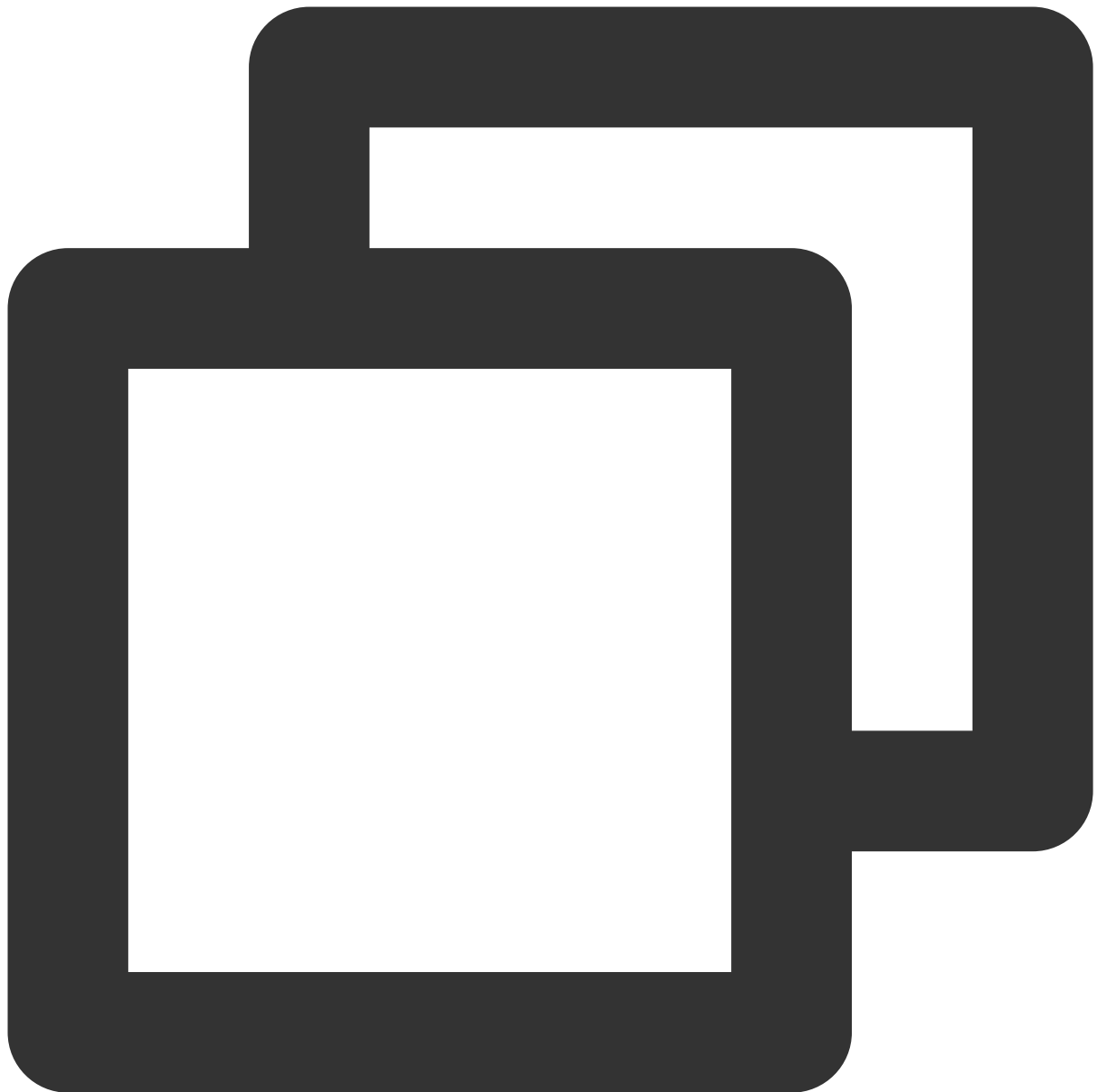
1. The domain name is connected to EdgeOne and the request triggers the edge function.
2. HOST of `request.url` specified in `fetch(request)` is the same as the HOST of client request URL.
3. HOST of `request.headers.host` specified in `fetch(request)` is the same as the HOST of client request URL.

Use `fetch(event.request)` to obtain the cache from EdgeOne nodes and pull resources from the origin if no cache is hit.



```
addEventListener('fetch', (event) => {  
  //Use `fetch(event.request)` to obtain the cache from EdgeOne nodes and pull resources from the origin if no cache is hit.  
  const response = fetch(event.request);  
  
  event.respondWith(response);  
});
```

Use `fetch(url)` to obtain the cache from EdgeOne nodes and pull resources from the origin if no cache is hit.



```
addEventListener('fetch', (event) => {
  event.respondWith(handleEvent(event));
});

async function handleEvent(event) {
  const { request } = event;
  const urlInfo = new URL(request.url);
  // origin-pull URL rewrite
  const url = `${urlInfo.origin}/h5/${urlInfo.pathname}`;

  // fetch(url) collected EdgeOne CDN Cache and origin-pull.
```



```
const response = await fetch(url);
return response;
}
```

## Image processing

You can use `requestInit.eo.image` to scale images or convert the image format. For details, see [ImageProperties](#).

### Note:

To use `fetch(request, requestInit)` to process images, the requirements for using `fetch` to obtain cache and pull from the origin must be met.

## Redirection

`fetch` supports `3xx` redirect status codes. You can use the second parameter `requestInit.redirect` to specify the redirect status code. For more information, see [RequestInit](#).

Redirect rules conform to the [Fetch Standard](#). The follow rules vary based on the status code.

Status code	Redirect Rule
301 and 302	Replaces the POST method with the GET method.
303	Replaces all request methods except for HEAD and GET with the GET method.
307 and 308	Retains the original request method.

### Important

The redirect address is obtained from the `Location` response header. If `Location` does not exist, no redirect action is taken.

The value of the `Location` can be an absolute URL or a relative URL. For more information, see [RFC-3986: URI Reference](#).

## Runtime limits

If you use `fetch` to initiate a request in an edge function, take note of the following limits:

Number of times: Each time an edge function runs, `fetch` can be initiated for a maximum of 64 times. If the limit is exceeded, the exceeding requests fail and exceptions are returned.

Number of concurrencies: Each time an edge function runs, `fetch` can be initiated at a maximum concurrency of 8. If the limit is exceeded, the exceeding requests are postponed until a running `fetch` is resolved.

### Note

Each redirect is counted as a request and has a higher priority than newly-initiated `fetch` requests.

## References

[MDN documentation: Fetch](#)

[Sample functions: Obtaining Remote Resources and Responding to the Client](#)

# FetchEvent

Last updated : 2024-01-30 16:48:21

A **FetchEvent** object represents any incoming HTTP request event. Edge Functions processes HTTP requests by registering `fetch` event listeners.

## Overview

In Edge Functions, use [addEventListener](#) to register a `fetch` event listener to generate an HTTP request event [FetchEvent](#), thereby processing HTTP requests.

### Note:

The `FetchEvent` object cannot be constructed directly. You can use `addEventListener` to register a `fetch` event listener to obtain the `event` object.



```
// `event` is the `FetchEvent` object.  
addEventListener('fetch', (event) => {  
  event.respondWith(new Response('hello world!'));  
});
```

## Attributes

### ClientId



```
// event.clientId  
readonly clientId: string;
```

The `ClientId` attribute specifies the ID allocated by Edge Functions for each request.

## **request**



```
// event.request  
readonly request: Request;
```

The request attribute specifies the HTTP request object initiated by the client. For more information, see [Request](#).

## Methods

### respondWith



```
event.respondWith(response: Response | Promise<Response>): void;
```

Edge Functions takes over requests from the client and uses this method to return custom responses.

**Note:**

In the `fetch` event callback of the `addEventListener` event listener, the `event.respondWith()` method is used to respond to the client. If this method is not invoked, Edge Functions forwards the current request back to the origin.

**Parameters**

--	--	--	--

Parameter	Type	Required	Description
response	<a href="#">Response</a> Promise< <a href="#">Response</a> >	Yes	The response to the HTTP request of the client.

## waitUntil



```
event.waitUntil(task: Promise<any>): void;
```

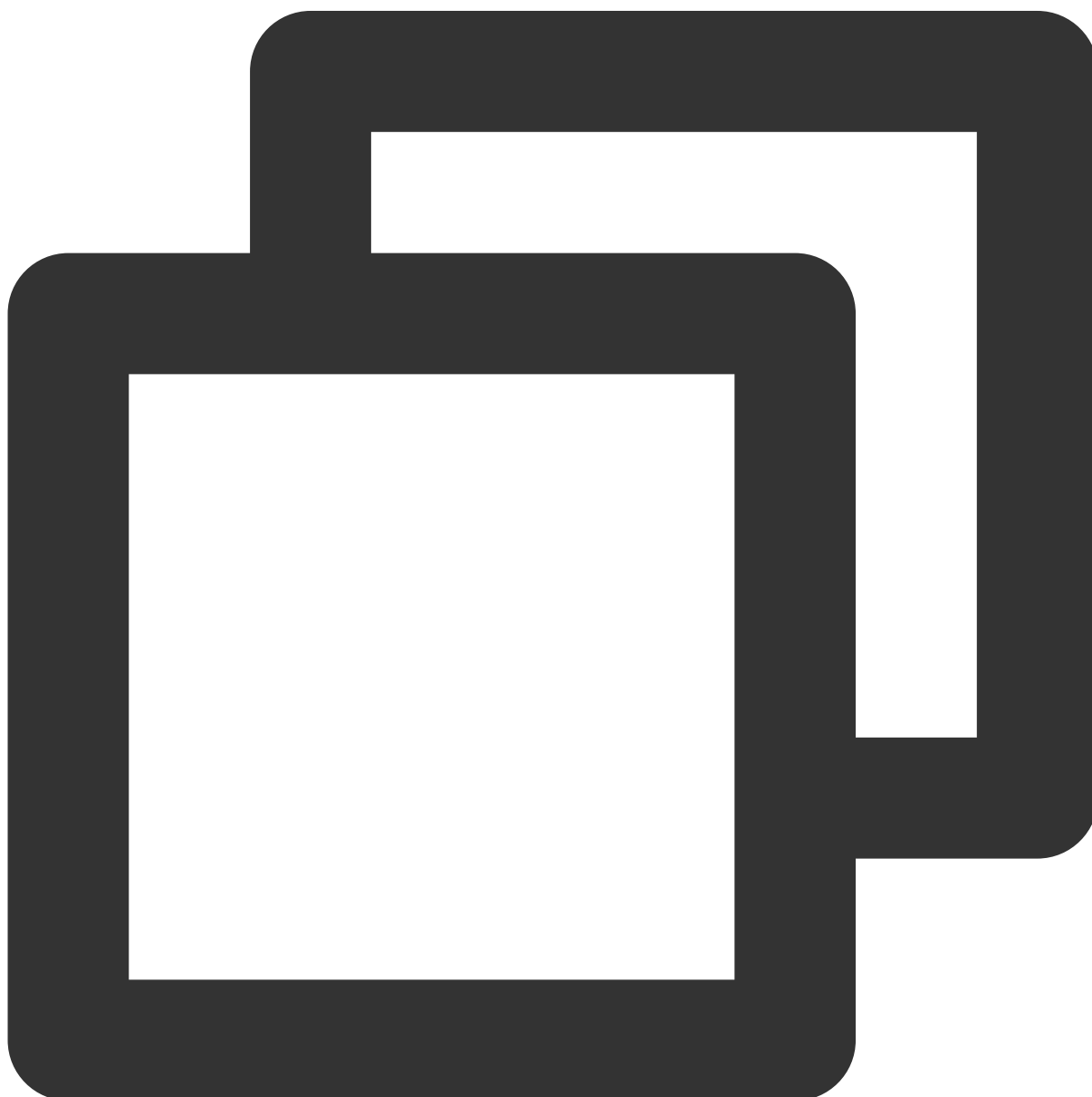


The `waitUntil()` method is used to notify Edge Functions to wait until a `Promise`-based task is completed, extending the event processing lifecycle.

### Parameters

Parameter	Type	Required	Description
task	Promise< <a href="#">Response</a> >	Yes	The `Promise`-based task.

### `passThroughOnException`

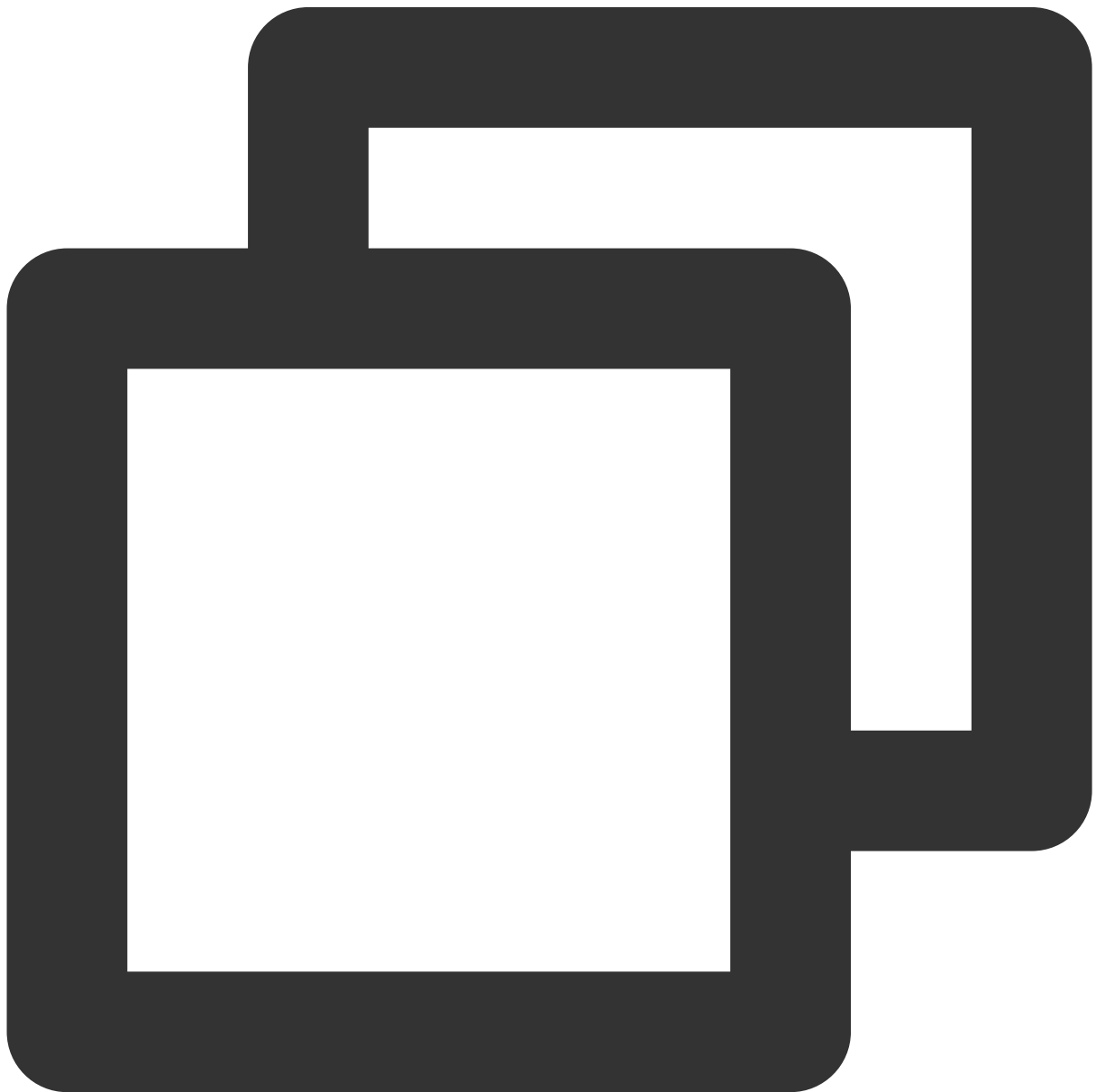


```
event.passThroughOnException(): void;
```

The `passThroughOnException()` method is used to prevent runtime error responses. If the function code throws an unhandled exception, Edge Functions forwards the request back to the origin, enhancing the service availability.

## Sample Code

If the `event.respondWith` method is not invoked, Edge Functions forwards the current request back to the origin.



```
function handleRequest(request) {
  return new Response('Edge Functions, Hello World!');
}

addEventListener('fetch', event => {
  const request = event.request;
  // If the request URL contains the string /ignore/, Edge Functions forwards the c
  if (request.url.indexOf('/ignore/') !== -1) {
    // The event.respondWith method is not invoked.
    return;
  }

  // Customize content in the edge function to respond to the client.
  event.respondWith(handleRequest(request));
});
```

If the function code throws an unhandled exception, Edge Functions forwards the current request back to the origin.



```
addEventListener('fetch', event => {  
  // If the function code throws an unhandled exception, Edge Functions forwards th  
  event.passThroughOnException();  
  throw new Error('Throw error');  
});
```

## References

---

[MDN documentation: FetchEvent](#)

[Sample Functions: Returning an HTML Page](#)

[Sample Functions: Using the Cache API](#)

# Headers

Last updated : 2023-09-12 09:50:38

The **Headers** API is designed based on the standard Web API [Headers](#). You can use this API to perform operations on HTTP request and response headers.

## Constructor API



```
const headers = new Headers(init?: object | Array<[string, string]> | Headers);
```

## Parameters

Parameter	Type	Required	Description
init	<a href="#">object</a>   <a href="#">Array&lt;[string, string]&gt;</a>   <a href="#">Headers</a>	No	The HTTP header that is used to pre-populate the Headers object. Valid parameter types:

object

The Constructor API enumerates all enumerable attributes that are included in the specified object and pre-populates the attributes to the new Headers object.

Array<[string, string]>

Each element in the array is a key-value pair. Example: [key, value]. The Constructor API traverses the array and pre-populates the key-value pairs to the new Headers object.

Headers

The Constructor API copies all fields from an existing Headers object to the new Headers object.

## Methods

### append





```
headers.append(name: string, value: string): void;
```

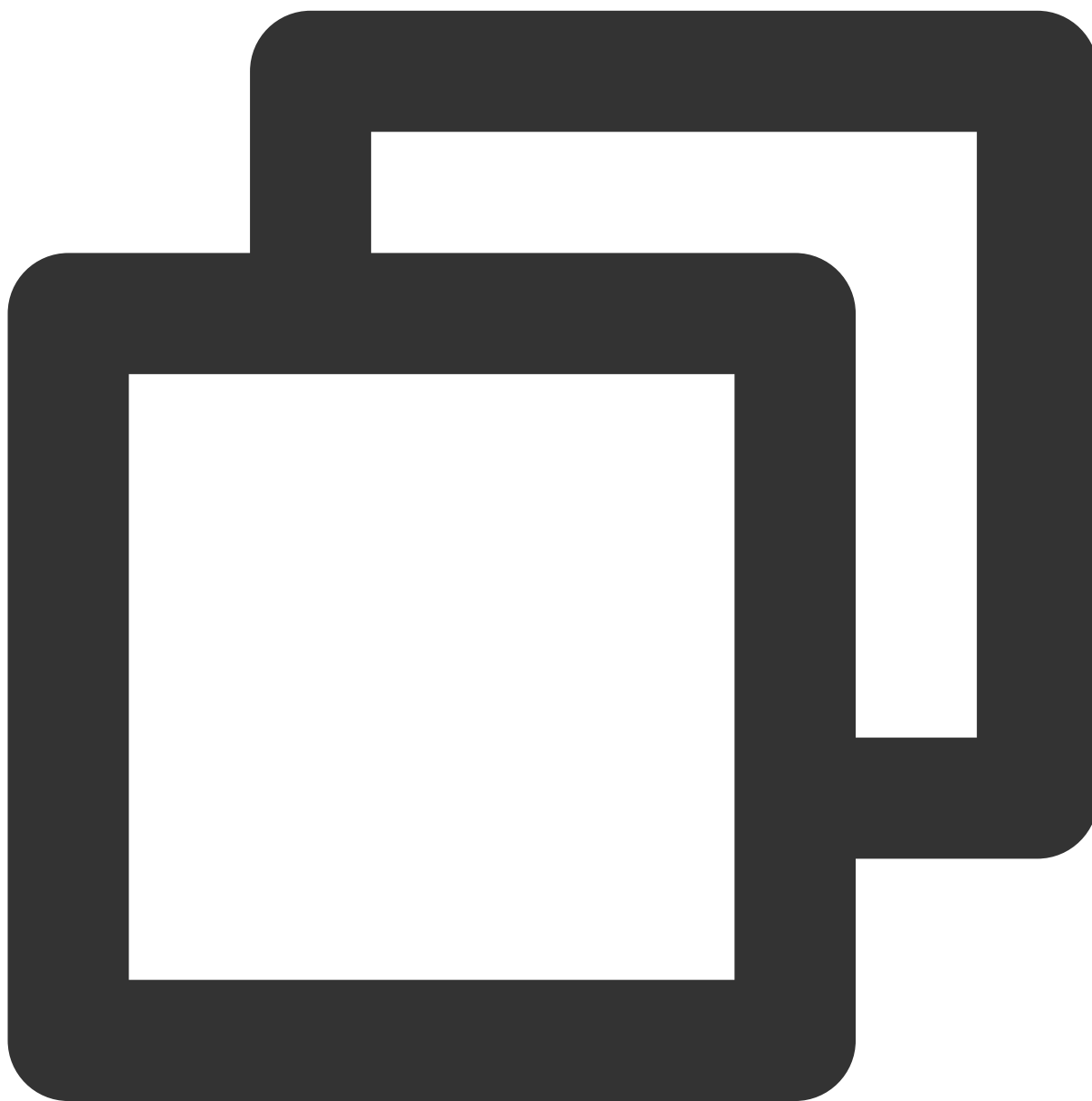
The `append()` method appends a new value to a header that is specified by the `Headers` object. If the header does not exist, the `append()` method directly adds the header.

### Parameters

Parameter	Type	Required	Description
name	string	Yes	The name of the HTTP header that you want to add to the Headers object.

value	string	Yes	The value of the HTTP header that you want to add.
-------	--------	-----	--

## delete



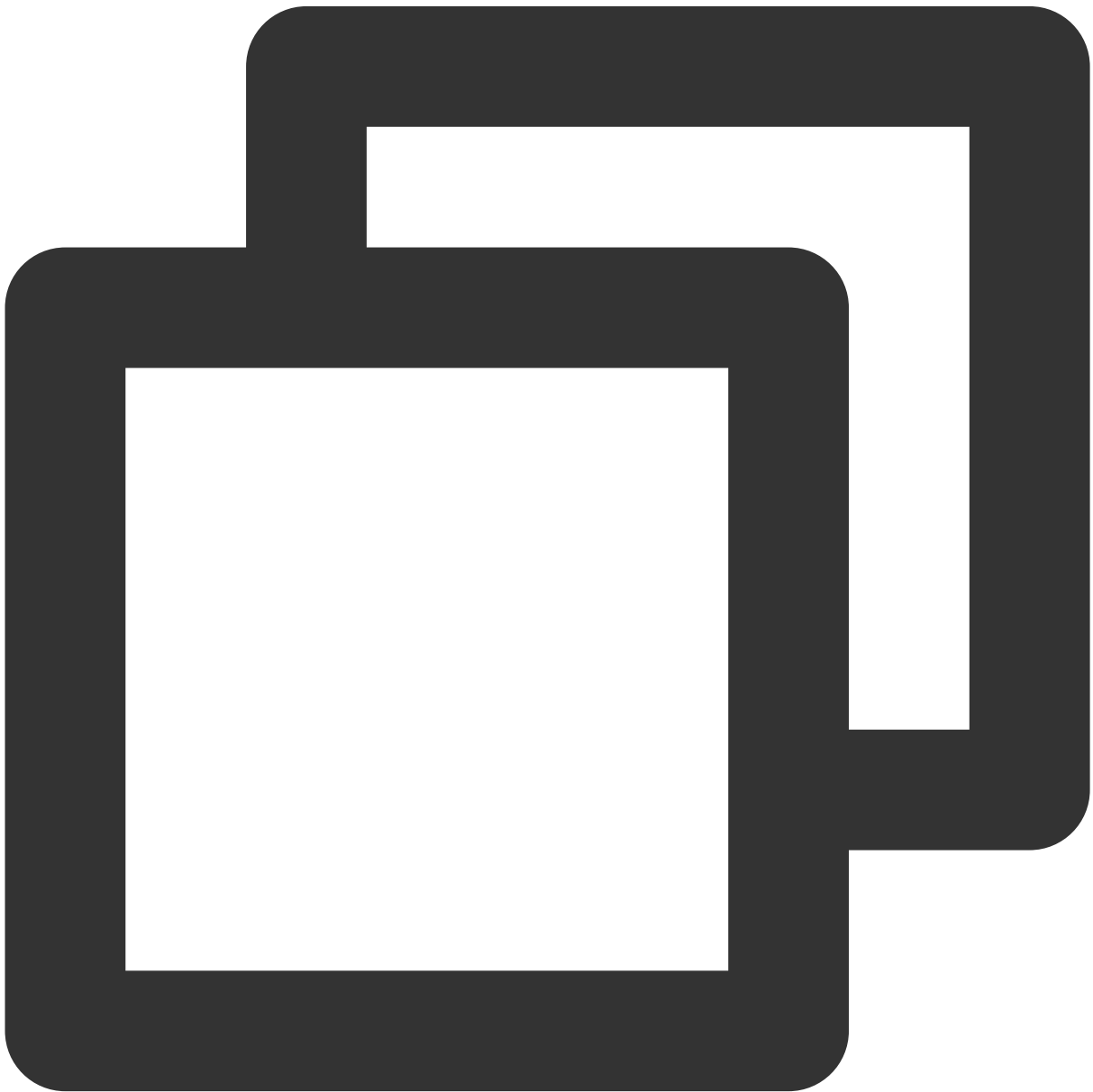
```
headers.delete(name: string): void;
```

The `delete()` method deletes the specified header from the `Headers` object.

Parameters

Parameter	Type	Required	Description
name	string	Yes	The name of the HTTP header that you want to delete from the Headers object.

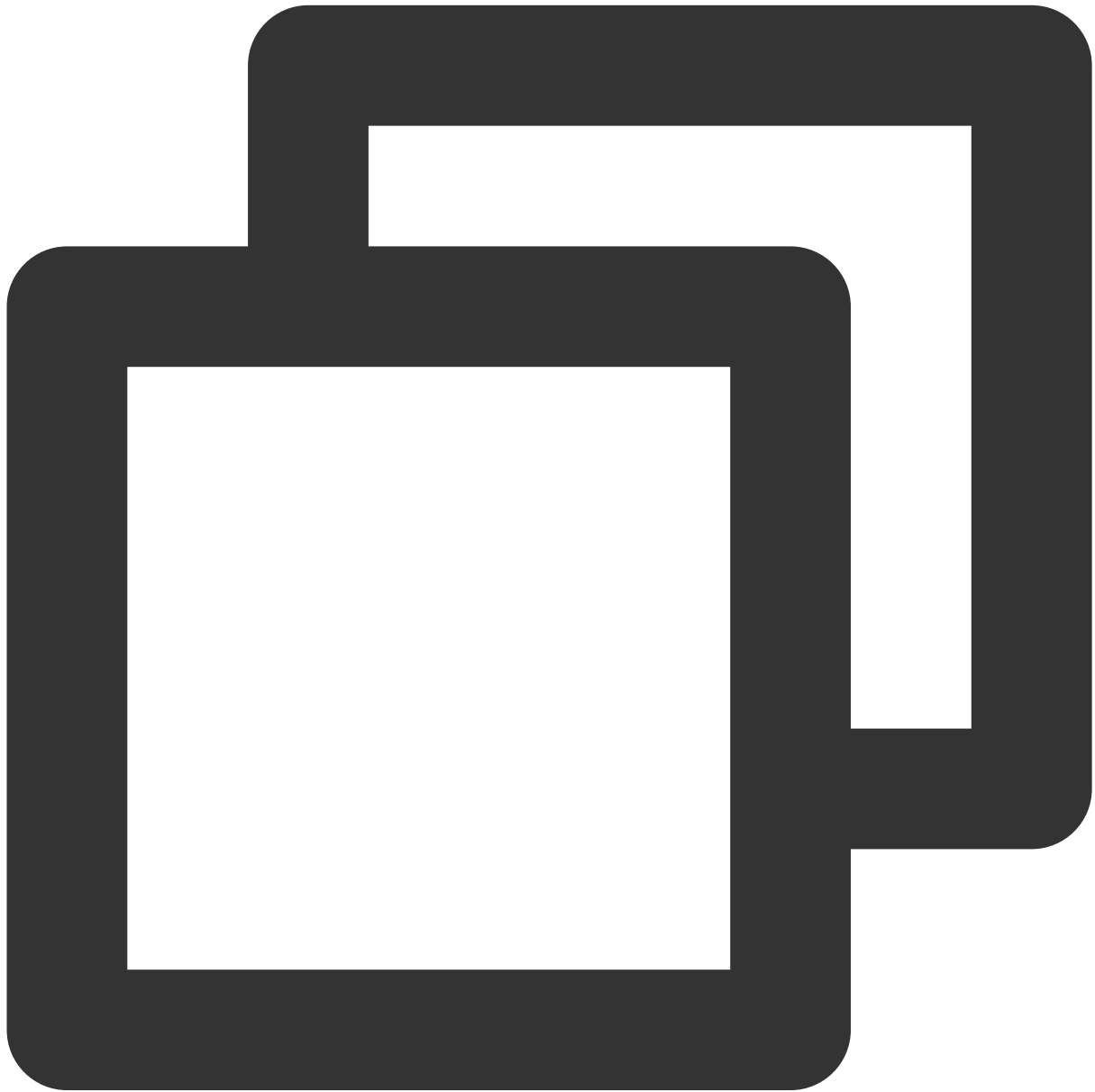
entries



```
headers.entries(): iterator;
```

The `entries()` method obtains an array of all key-value pairs from the `Headers` object. The key-value pairs are in the format of `[name, value]`. For valid return values, see [Iteration protocols](#).

## forEach

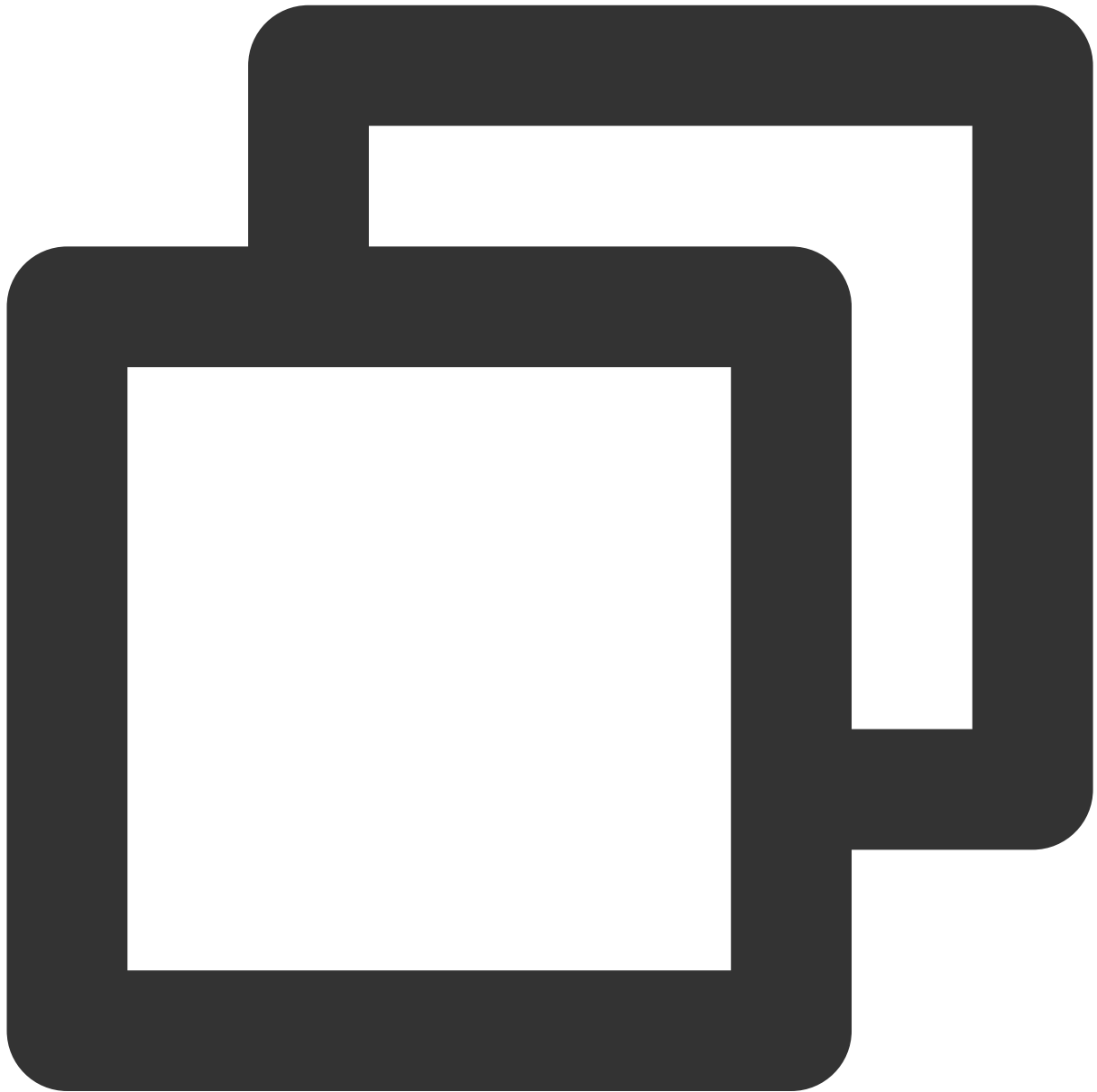


```
headers.forEach(callback: (name: string, value: string) => void | number): void;
```

The `forEach()` method traverses all headers that are included in the `Headers` object. If `callback` returns a non-zero value, traversal is stopped.

**Note**

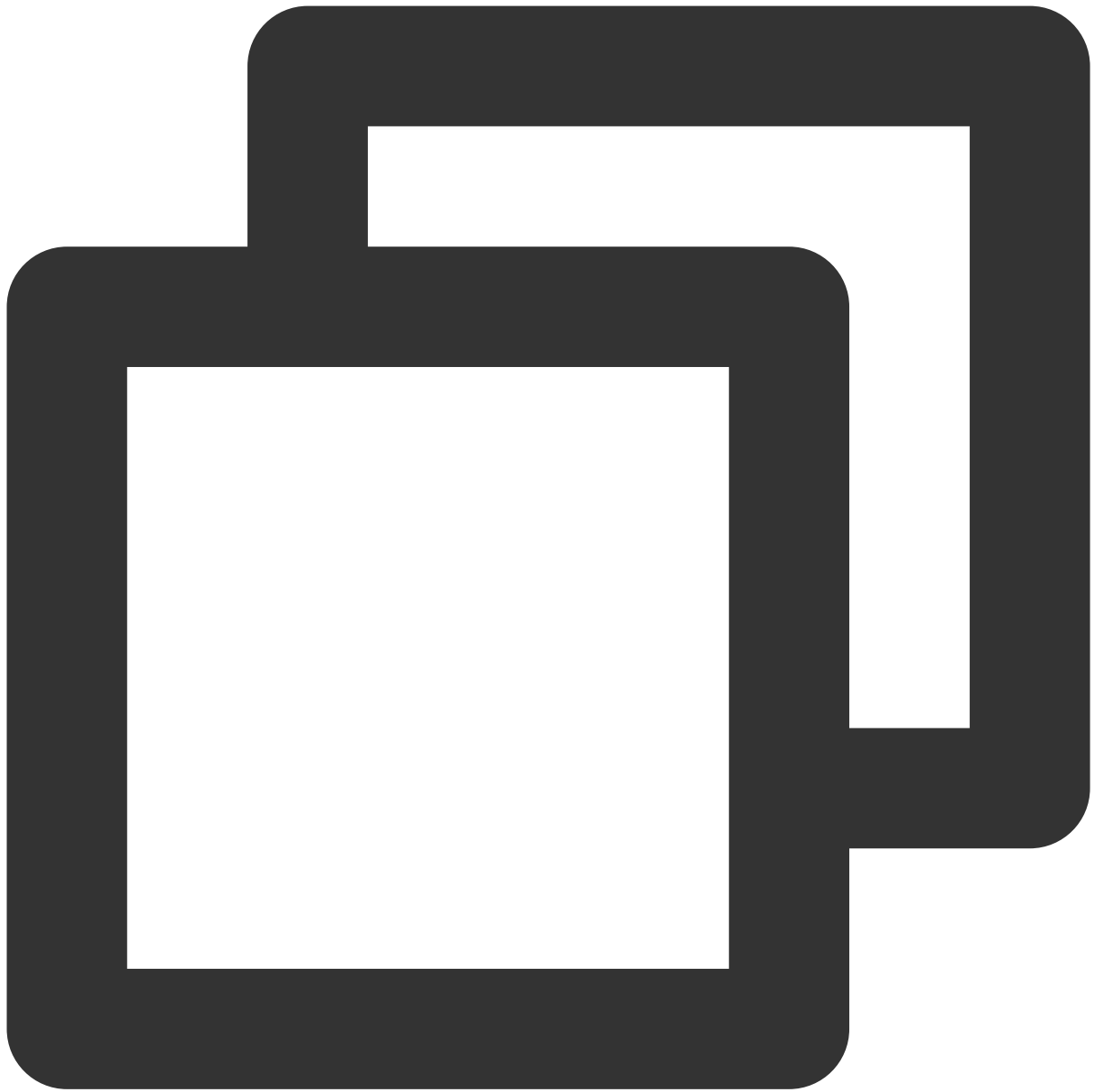
The `forEach` method does not comply with Web API standards. Edge Functions extends the functionality of the method based on Web API standards to provide an efficient way to traverse headers.

**get**

```
headers.get(name: string): string;
```

The `get()` method obtains the value of the specified header from the `Headers` object.

## getSetCookie



```
headers.getSetCookie(): Array<string>
```

This method returns an array, containing all values of the [Set-Cookie](#) headers.

**has**



```
headers.has(name: string): boolean;
```

The `has()` method checks whether the `Headers` object contains the specified header.

## keys



```
headers.keys(): iterator;
```

The `keys()` method obtains all keys that are included in the `Headers` object. For valid return values, see [Iteration protocols](#).

## set





```
headers.set(name: string, value: string): void;
```

The `set()` method sets a new value for an existing header in the `Headers` object. If the header does not exist, the `set()` method directly adds the header.

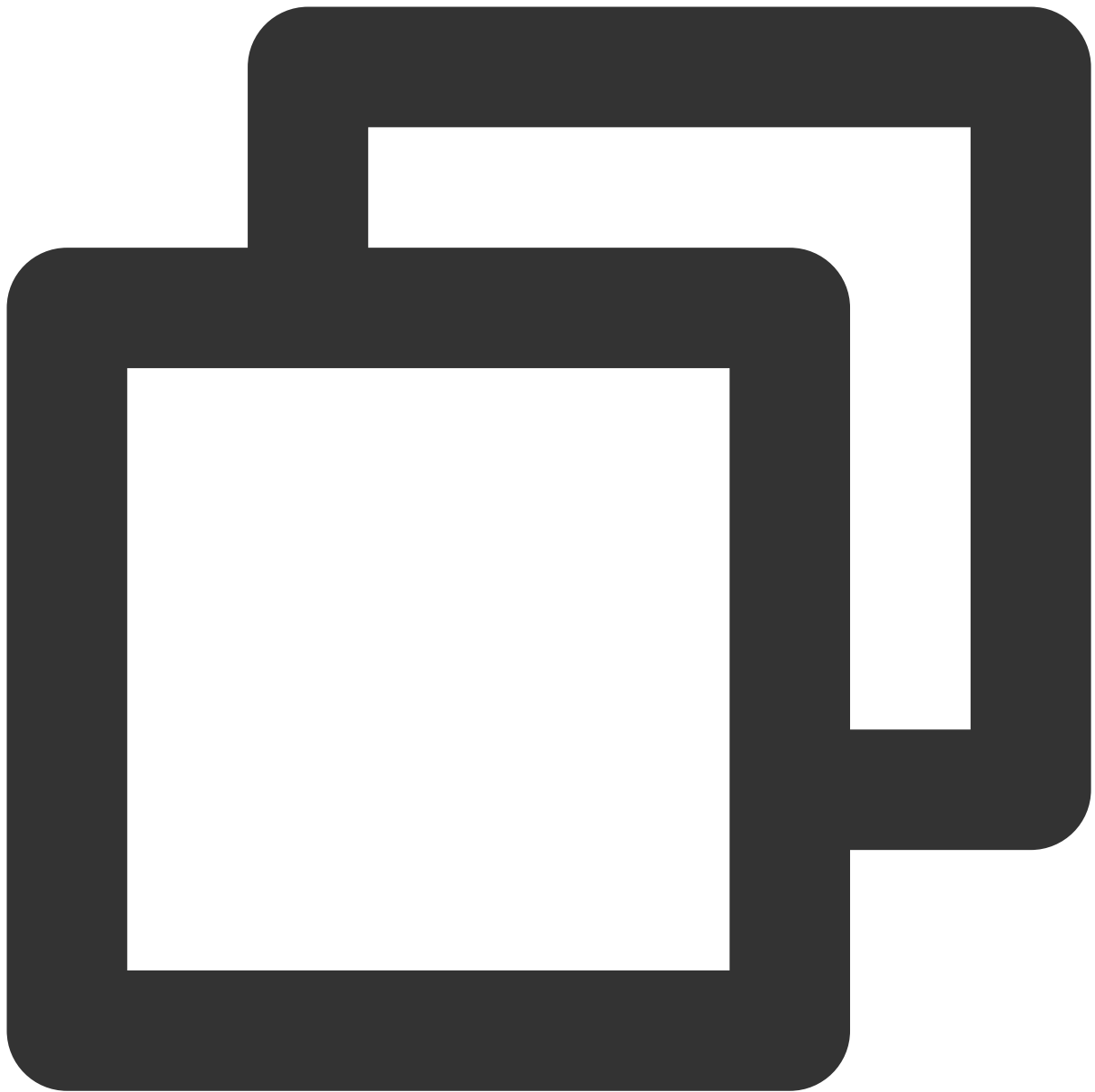
## values



```
headers.values(): iterator;
```

The `values()` method obtains all values that are included in the `Headers` object. For valid return values, see [Iteration protocols](#).

## Sample Code



```
function handleEvent() {  
  const headers = new Headers({  
    'my-header-x': 'hello world',  
  });  
  
  const response = new Response('hello world',{  
    headers,  
  });  
  return response;  
}
```

```
addEventListener('fetch', (event) => {  
  event.respondWith(handleEvent(event));  
});
```

## References

[MDN documentation: Headers](#)

[Sample Functions: Protecting Data from Tampering](#)

[Sample Functions: Authenticating a Request Header](#)

[Sample Functions: Modifying a Response Header](#)

# Request

Last updated : 2024-05-11 15:35:51

The **Request** API represents an HTTP request. It is designed based on the standard Web API [Request](#).

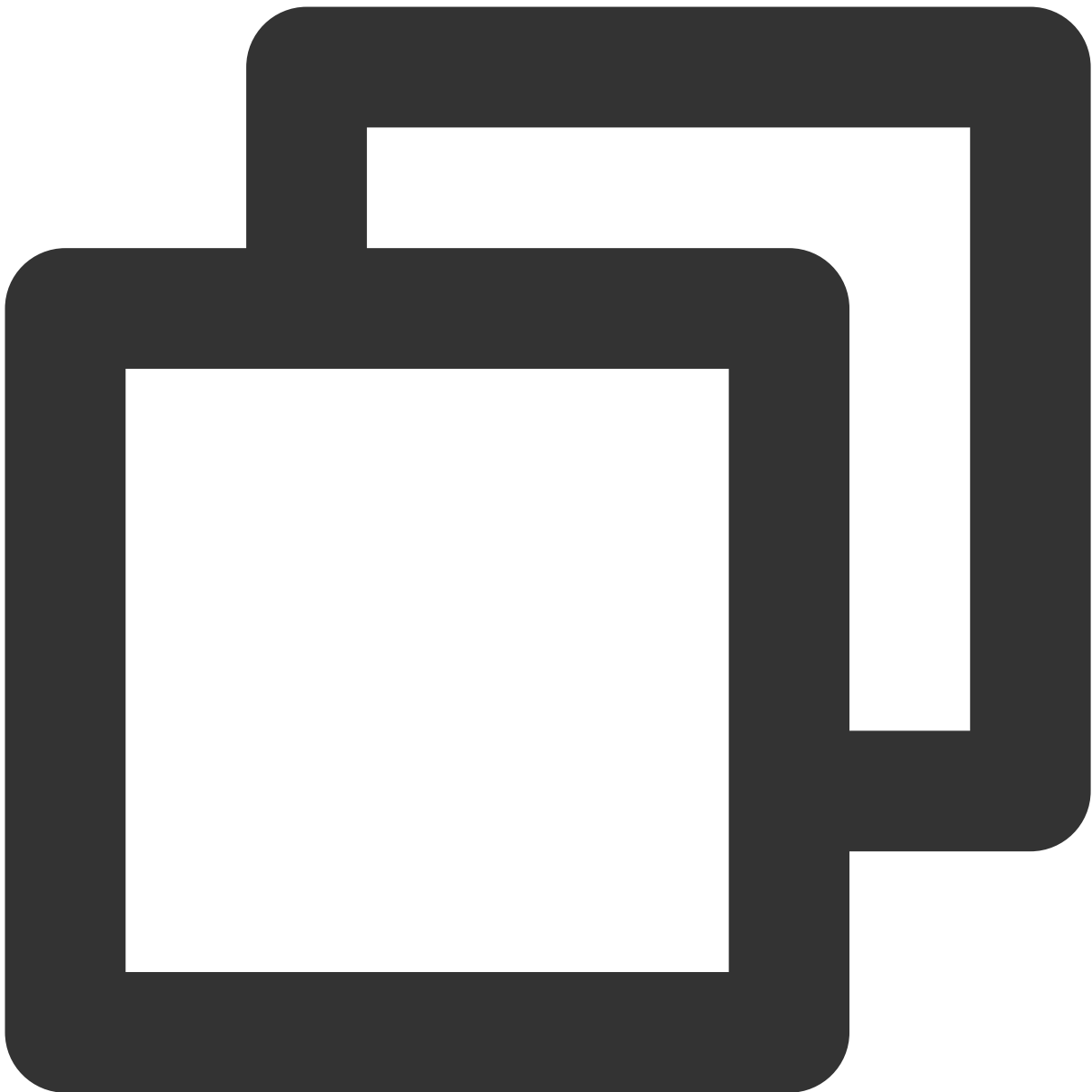
## Note

In Edge Functions, you can obtain a `Request` object by using any of the following methods:

Create a `Request` object for the Fetch API by using the `Request` constructor.

Use the `FetchEvent` object [event.request](#) to obtain a `Request` object.

## Constructor API



```
const request = new Request(input: string | Request, init?: RequestInit)
```

Parameters

Parameter name	Type	Required	Description
input	string   <a href="#">Request</a>	Yes	A URL string or a <code>Request</code> object.
options	<a href="#">RequestInit</a>	No	Initial configuration items of the <code>Request</code>

object.

## RequestInit

The following table describes the initial configuration items of the Request object.

Name	Type	Required	Default value	Description
method	string	No	GET	Request method. Examples: <code>GET</code> and <code>POST</code> .
headers	<a href="#">Headers</a>	No	-	Headers that you want to add to the request.
body	string   <a href="#">Blob</a>   <a href="#">ArrayBuffer</a>   <a href="#">ArrayBufferView</a>   <a href="#">ReadableStream</a>	No	-	Request body.
redirect	string	No	follow	Redirect mode. Valid values: <code>manual</code> , <code>error</code> , and <code>follow</code> .
maxFollow	number	No	12	The maximum number of redirects allowed.
version	string	No	HTTP/1.1	HTTP version. Valid values: <code>HTTP/1.0</code> , <code>HTTP/1.1</code> , and <code>HTTP/2.0</code> .
copyHeaders	boolean	No	-	Specifies whether to copy the headers of the <code>Request</code> object. <b>This parameter is not in the Web API specifications.</b>
eo	<a href="#">RequestInitEoProperties</a>	No	-	Specifies the behavior that Edge Functions adopts in processing the request. <b>This parameter is not in the Web API specifications.</b>

## RequestInitEoProperties

This parameter specifies the behavior that Edge Functions adopts in processing the request. It is not in the Web API specifications.

Parameter name	Type	Required	Description
----------------	------	----------	-------------

resolveOverride	string	No	Overrides the original domain name resolution for the <a href="#">fetch</a> request. You can specify a domain name or IP address that meets the following requirements: The IP address cannot contain a scheme or port number. For an IPv6 address, you do not need to enclose it in a pair of square brackets.
Image	<a href="#">ImageProperties</a>	No	Image processing configurations

## ImageProperties

[fetch](#) supports image processing. The configurations are the same as of site acceleration. For more information, see [Resizing and Converting Images](#).

Parameter name	Type	Required	Description
format	string	No	Convert an image into a specified format. Valid values: <code>jpg</code> , <code>gif</code> , <code>png</code> , <code>bmp</code> , <code>webp</code> , <code>avif</code> , <code>jp2</code> , <code>jxr</code> , <code>heif</code> .
long	number	No	Specify the length of the long side, and automatically scale the short side (if not specified)
short	number	No	Specify the length of the short side, and automatically scale the long side (if not specified)
width	number	No	Specify the width, and automatically scale the height (if not specified)
height	number	No	Specify the height, and automatically scale the width (if not specified)

## Attributes

### body





```
// request.body  
readonly body: ReadableStream;
```

Request body. For more information, see [ReadableStream](#).

## **bodyUsed**



```
// request.bodyUsed  
readonly bodyUsed: boolean;
```

Indicates whether the request body is read.

## headers



```
// request.headers  
readonly headers: Headers;
```

Request headers. For more information, see [Headers](#).

## method



```
// request.method  
readonly method: string;
```

The request method. Default value: `GET` .

## **redirect**



```
// request.redirect  
readonly redirect: string;
```

The request redirect mode. Valid values: `follow` , `error` , and `manual` . Default value: `manual` .

### **maxFollow**



```
// request.maxFollow  
readonly maxFollow: number;
```

The maximum number of redirects.

**url**



```
// request.url  
readonly url: string;
```

The request URL.

**version**

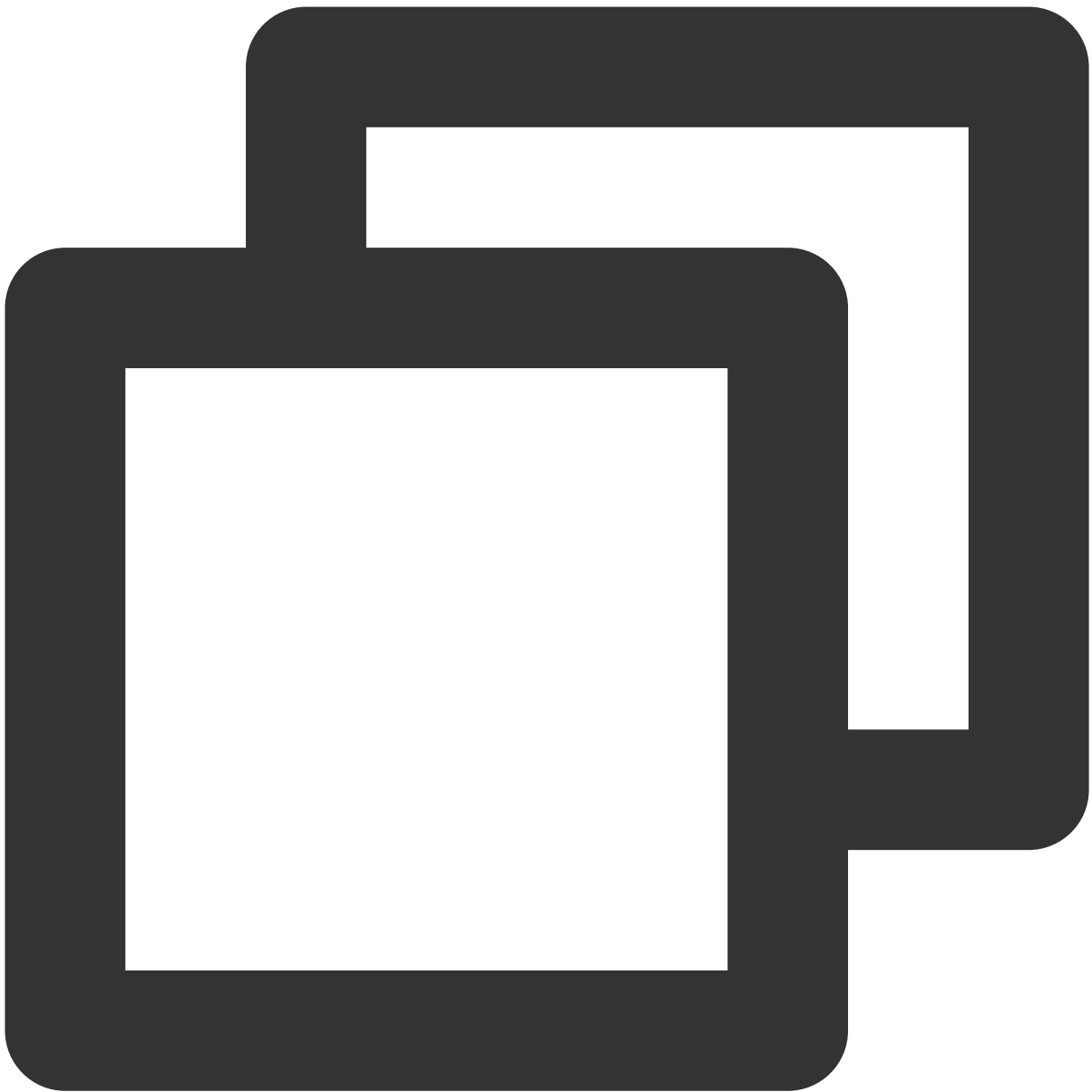


```
// request.version  
readonly version: string;
```

The HTTP version that is used by the request.

**eo**





```
// request.version
readonly eo: IncomingRequestEoProperties;
```

Other information provided by Edge Functions about the current request. For more information, see [IncomingRequestEoProperties](#).

**IncomingRequestEoProperties**

The client request object `event.request` contains an `eo` attribute.

Name	Type	Description	Example
------	------	-------------	---------

geo	<a href="#">GeoProperties</a>	Location of the client who initiates the request.	-
-----	-------------------------------	---	---

## GeoProperties

Location of the client who initiates the request.

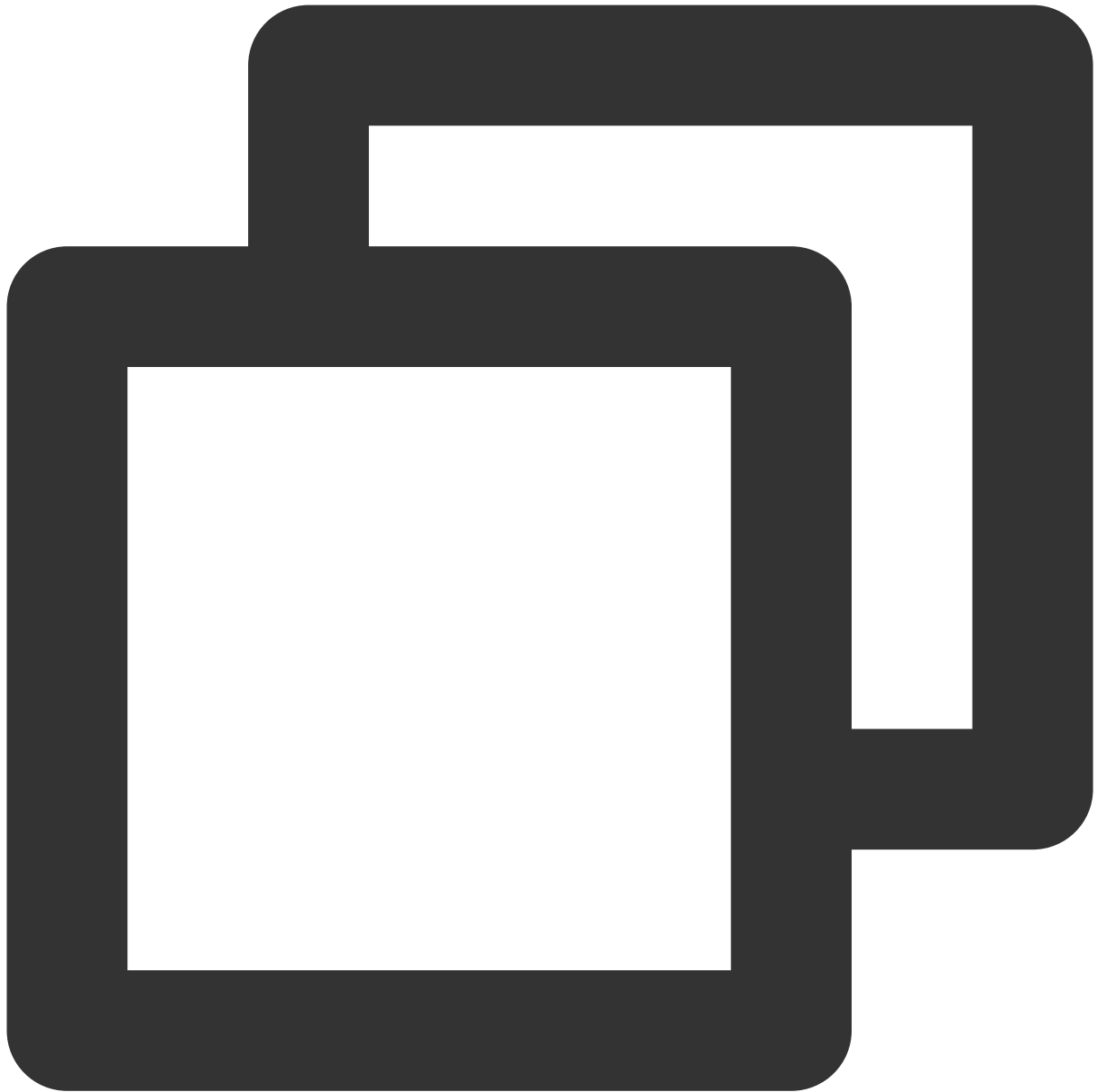
Name	Type	Description	Example
asn	number	<a href="#">ASN</a>	132203
countryName	string	Country name	Singapore
countryCodeAlpha2	string	<a href="#">ISO-3611 alpha2</a> code of the country	SG
countryCodeAlpha3	string	<a href="#">ISO-3611 alpha3</a> code of the country	SGP
countryCodeNumeric	string	<a href="#">ISO-3611 numeric</a> code of the country.	702
regionName	string	Region name	-
regionCode	string	Region code	AA-AA
cityName	string	City name	singapore
latitude	number	Latitude	1.29027
longitude	number	Longitude	103.851959

## Methods

### Important

When using a method to obtain the request body, the size of the `HTTP body` is capped at 1 MB. If the threshold is exceeded, an `OverSize` exception is returned. In this case, we recommend that you use `request.body` to read the request body in streaming mode. For more information, see [ReadableStream](#).

### arrayBuffer



```
request.arrayBuffer(): Promise<ArrayBuffer>;
```

The `arrayBuffer()` method reads the request body and returns a promise that resolves with an [ArrayBuffer](#).

## **blob**



```
request.blob(): Promise<Blob>;
```

The `blob()` method reads the request body and returns a promise that resolves with a [Blob](#).

## clone



```
request.clone(copyHeaders?: boolean): Request;
```

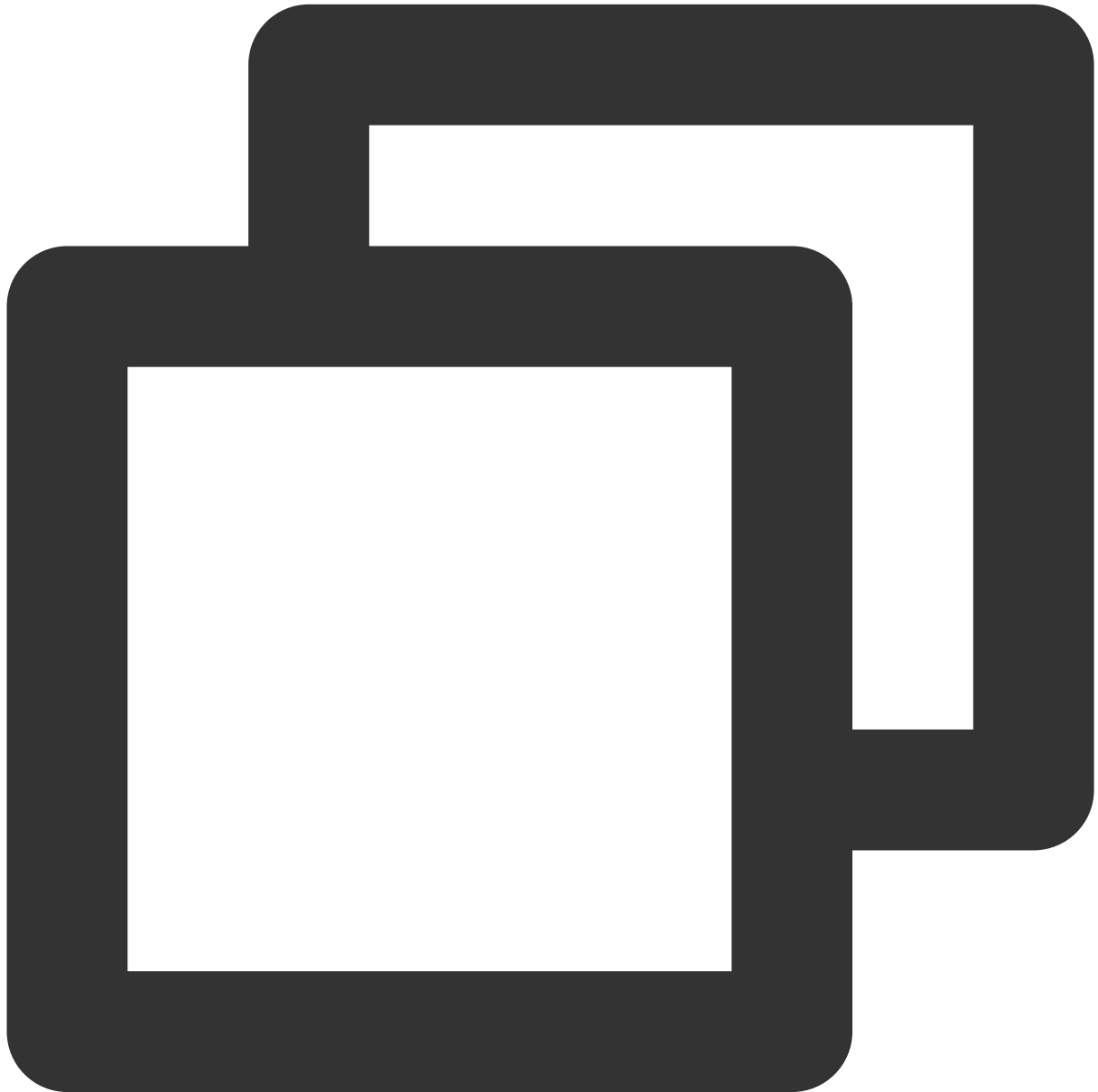
The clone() method creates a clone of a request object.

#### Parameter

Parameter name	Type	Required	Description
copyHeaders	boolean	No	Specifies whether to copy the request headers of the original object. Default value: <code>false</code> . Valid values:

			<code>true</code> Copy the request headers of the original object. <code>false</code> Reference the request headers of the original object.
--	--	--	--

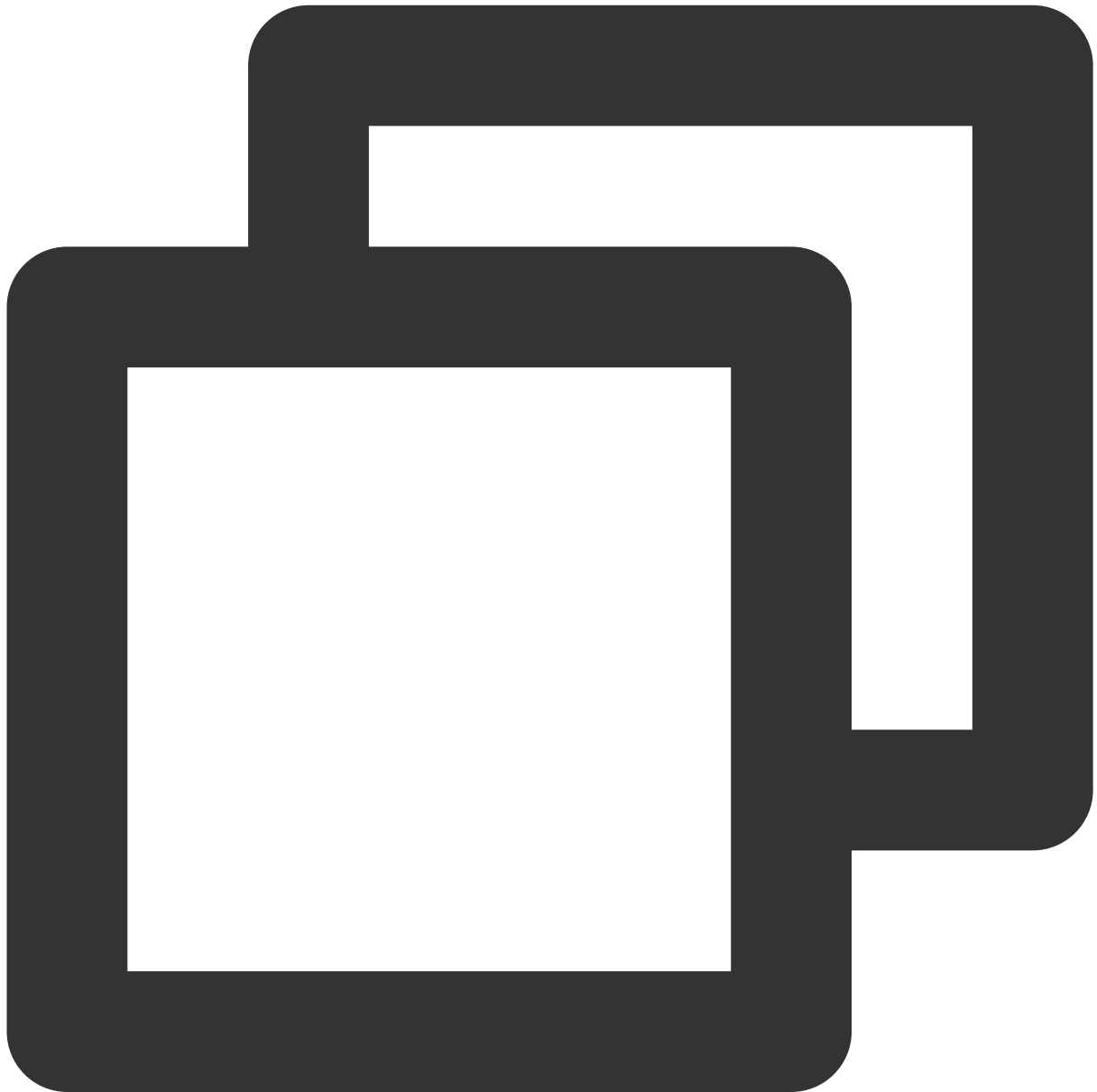
**json**



```
request.json(): Promise<object>;
```

The `json()` method reads the request body and returns a promise that resolves with the parsing result of the body text as `json`.

## text



```
request.text(): Promise<string>;
```

The `text()` method reads the request body and returns a promise that resolves with a `String`.

## formData



```
request.formData(): Promise<FormData>;
```

The `formData()` method takes a Response stream, reads it to completion, and returns a promise that resolves with a [FormData](#).

#### Parameter

Parameter name	Type	Required	Description



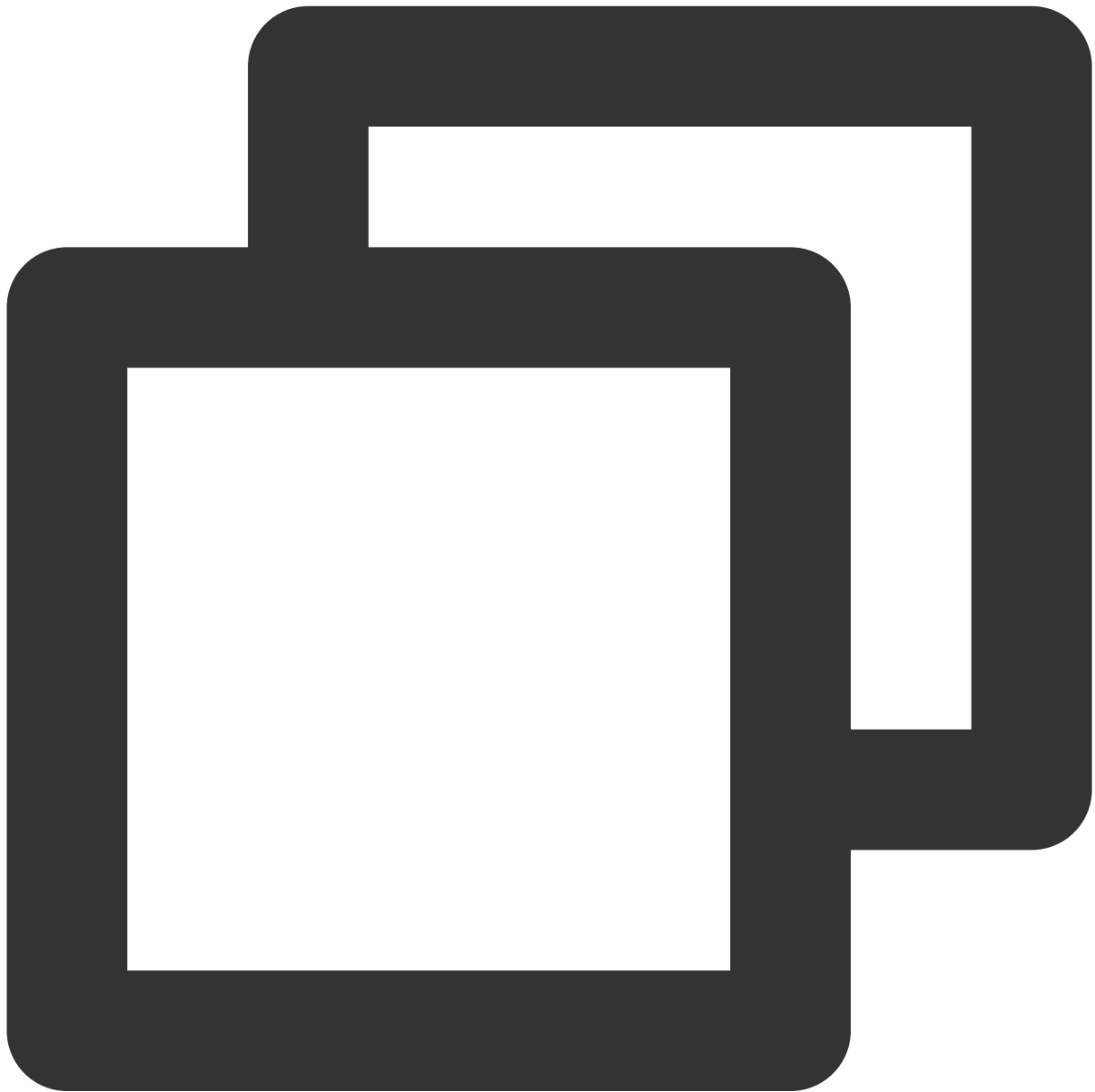
cookies

[Cookies](#)

No

A new Cookies object.

## Sample Code



```
async function handleRequest() {  
  const request = new Request('https://www.tencentcloud.com/');  
  const response = await fetch(request);  
  return response;  
}
```

```
}

addEventListener('fetch', (event) => {
  event.respondWith(handleRequest());
});
```

## References

[MDN documentation: Request](#)

[Sample Functions: Using the Cache API](#)

[Sample Functions: Performing Redirect Based on the Request Location](#)

# Response

Last updated : 2024-05-07 16:15:40

The **Response** API represents the response to an HTTP request. It is designed based on the standard Web API [Response](#).

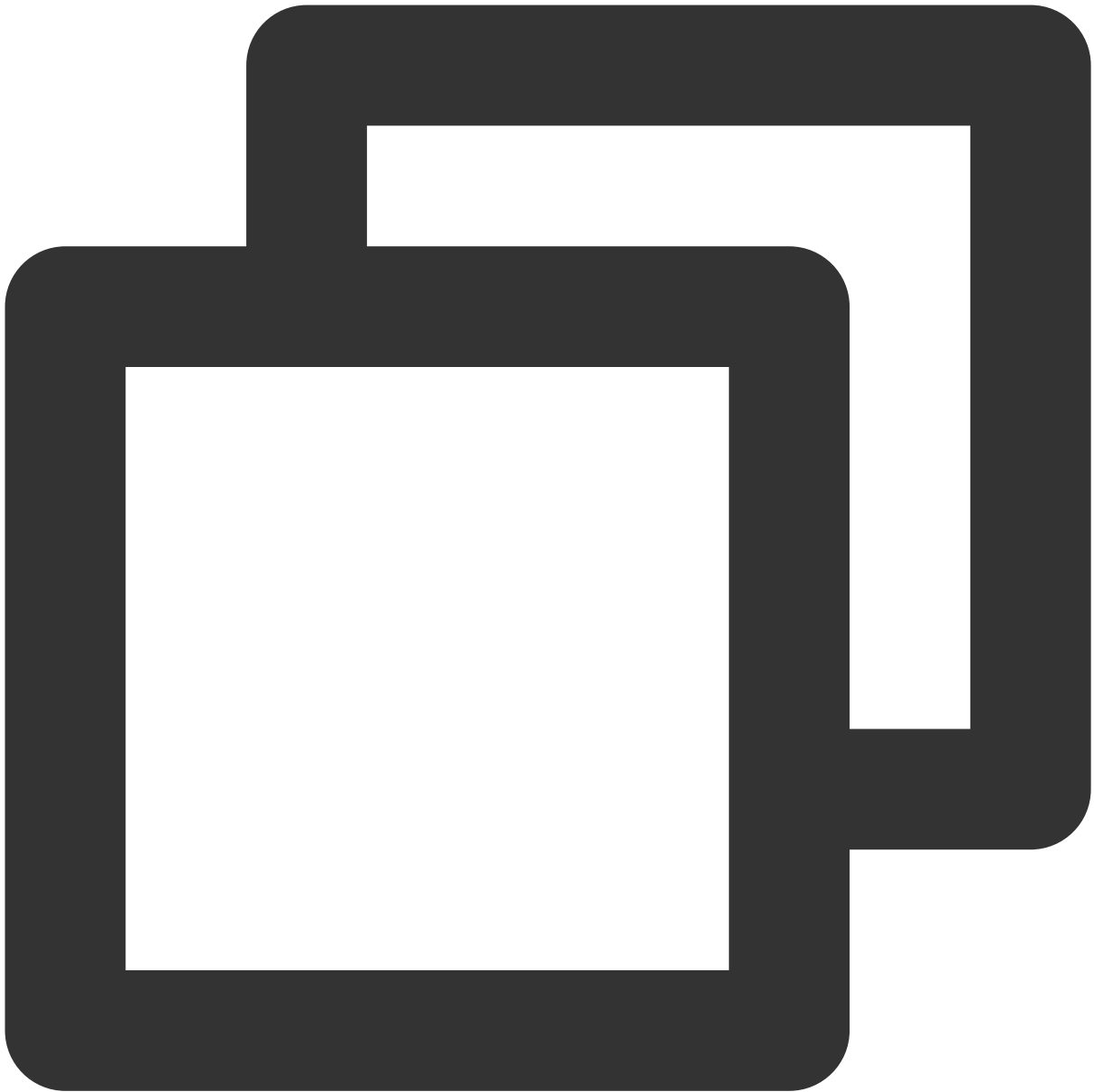
## Note

In Edge Functions, you can obtain a `Response` object by using the following methods:

Create a `Response` object by using the `Response` constructor API. This object can be used as the value of the `response` parameter in the [event.respondWith](#) method.

Use [Fetch](#) to obtain a `Response` object.

## Constructor API



```
const response = new Response(body?: string | ArrayBuffer | Blob | ReadableStream |
```

Parameters

Parameter	Type	Required	Description
body	string   <a href="#">ArrayBuffer</a>   <a href="#">Blob</a>   <a href="#">ReadableStream</a>   null   undefined	Yes	The body of the <code>Response</code> object.

init	<a href="#">ResponseInit</a>	No	The initial configuration items of the <code>Response</code> object.
------	------------------------------	----	--

## ResponseInit

Parameter	Type	Required	Description
status	number	No	The status code for the response.
statusText	string	No	The status message for the response. The maximum length is 4,095 bytes. If the length exceeds the upper limit, the extra content will be truncated.
headers	<a href="#">Headers</a>	No	The headers associated with the response.

## Attributes

### body



```
// response.body  
readonly body: ReadableStream;
```

The response body. For more information, see [ReadableStream](#).

## **bodyUsed**



```
// response.bodyUsed  
readonly bodyUsed: boolean;
```

Indicates whether the response body is read.

## headers



```
// response.headers  
readonly headers: Headers;
```

The response headers. For more information, see [Headers](#).

**ok**





```
// response.ok  
readonly ok: boolean;
```

Indicates whether the response was successful. If the status code ranges from 200 to 299, the response was successful.

### **status**



```
// response.status  
readonly status: number;
```

The status code for the response.

**statusText**



```
// response.statusText  
readonly statusText: string;
```

The status message for the response.

**url**



```
// response.url  
readonly url: string;
```

The URL of the response.

**redirected**



```
// response.redirected  
readonly redirected: boolean;
```

Indicates whether the response is the result of a redirect.

## **redirectUrls**



```
// response.redirectUrls  
readonly redirectUrls: Array<String>
```

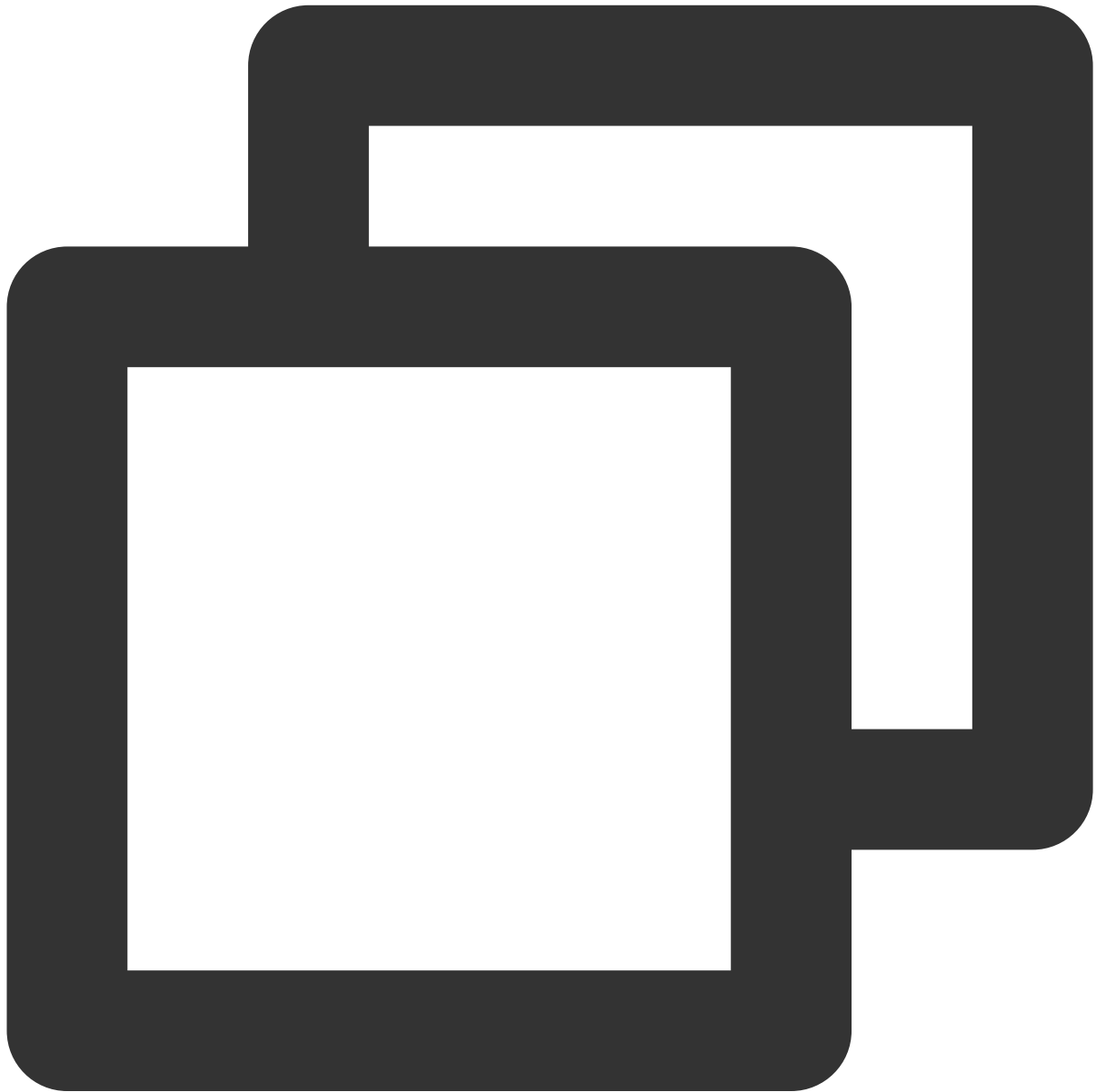
All URLs for redirection.

## Methods

### Note

If the size of the `HTTP body` obtained by using a method exceeds 1 MB, the `OverSize` exception will be thrown. In this case, we recommend that you use `response.body` to read the response body in streaming mode. For more information, see [ReadableStream](#).

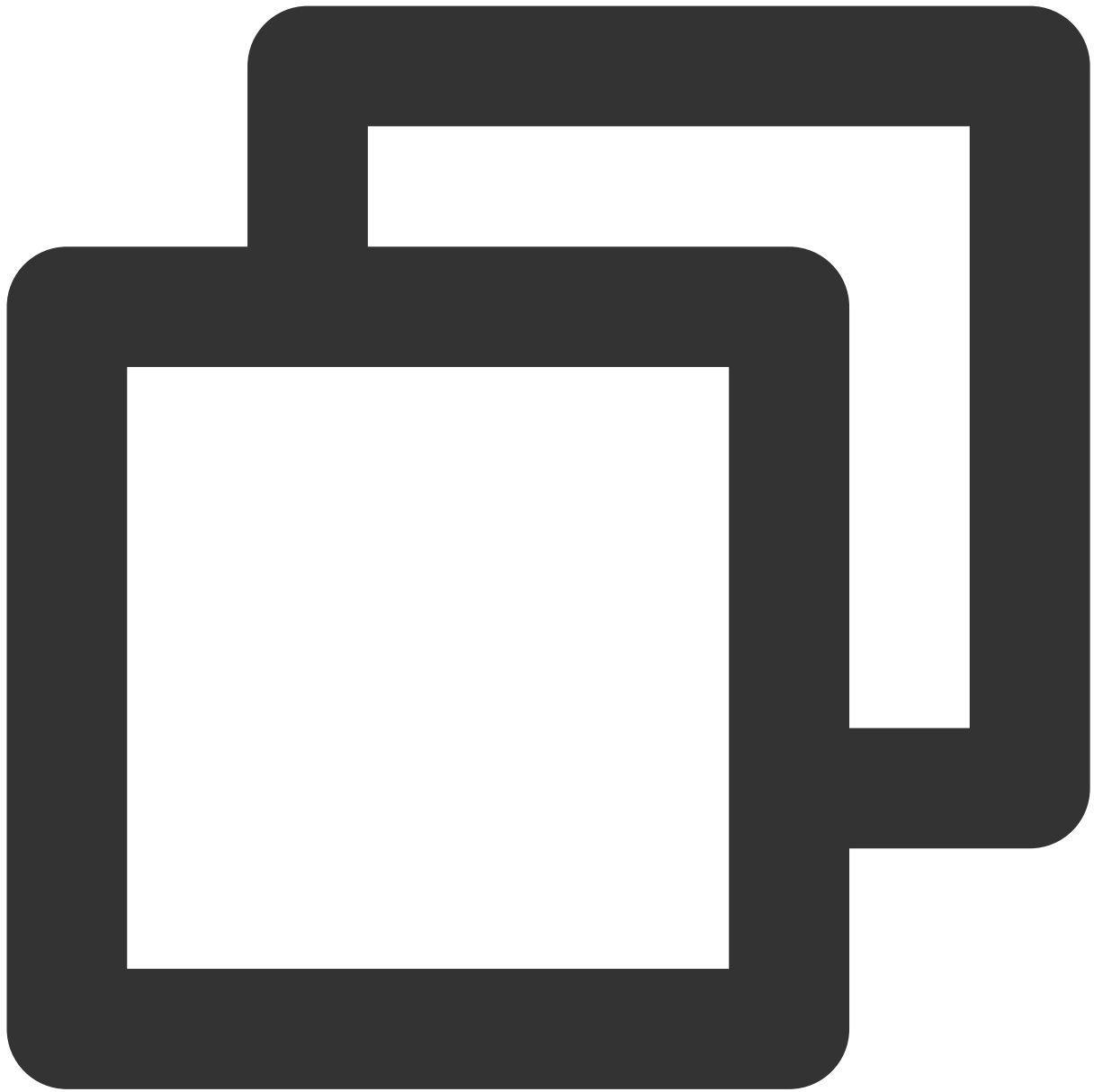
## arrayBuffer



```
response.arrayBuffer(): Promise<ArrayBuffer>;
```

The `arrayBuffer()` method takes a `Response` stream, reads it to completion, and returns a promise that resolves with an [ArrayBuffer](#).

## blob



```
response.blob(): Promise<Blob>;
```

The `blob()` method takes a `Response` stream, reads it to completion, and returns a promise that resolves with a [Blob](#).

## clone





```
response.clone(copyHeaders?: boolean): Request;
```

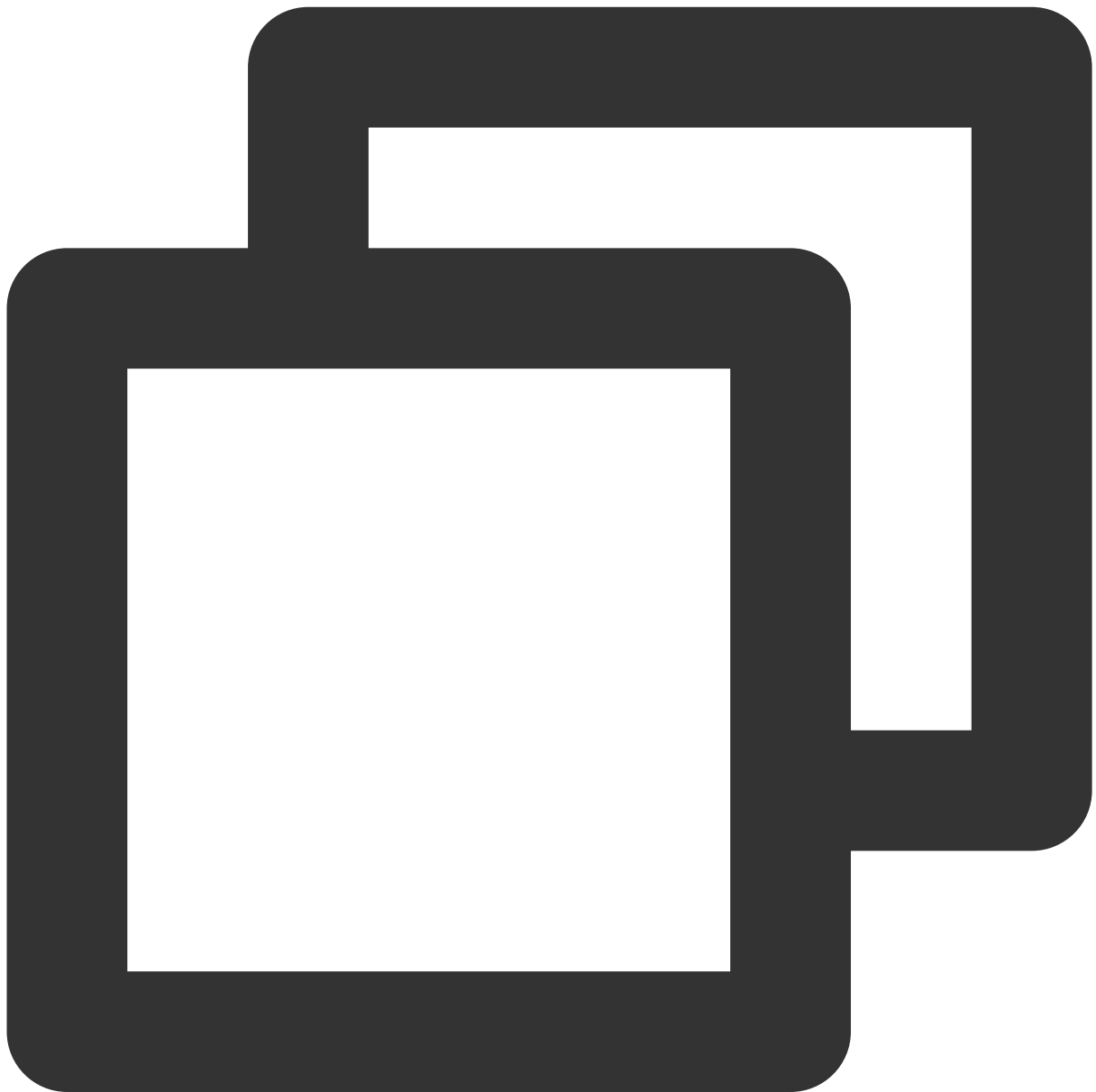
The clone() method creates a clone of a response object.

### Parameters

Parameter	Type	Required	Description
copyHeaders	boolean	No	Specifies whether to copy the response headers of the original object. Default value: <code>false</code> . Valid values: <code>true</code>

			Copy the response headers of the original object. false Reference the response headers of the original object.
--	--	--	--

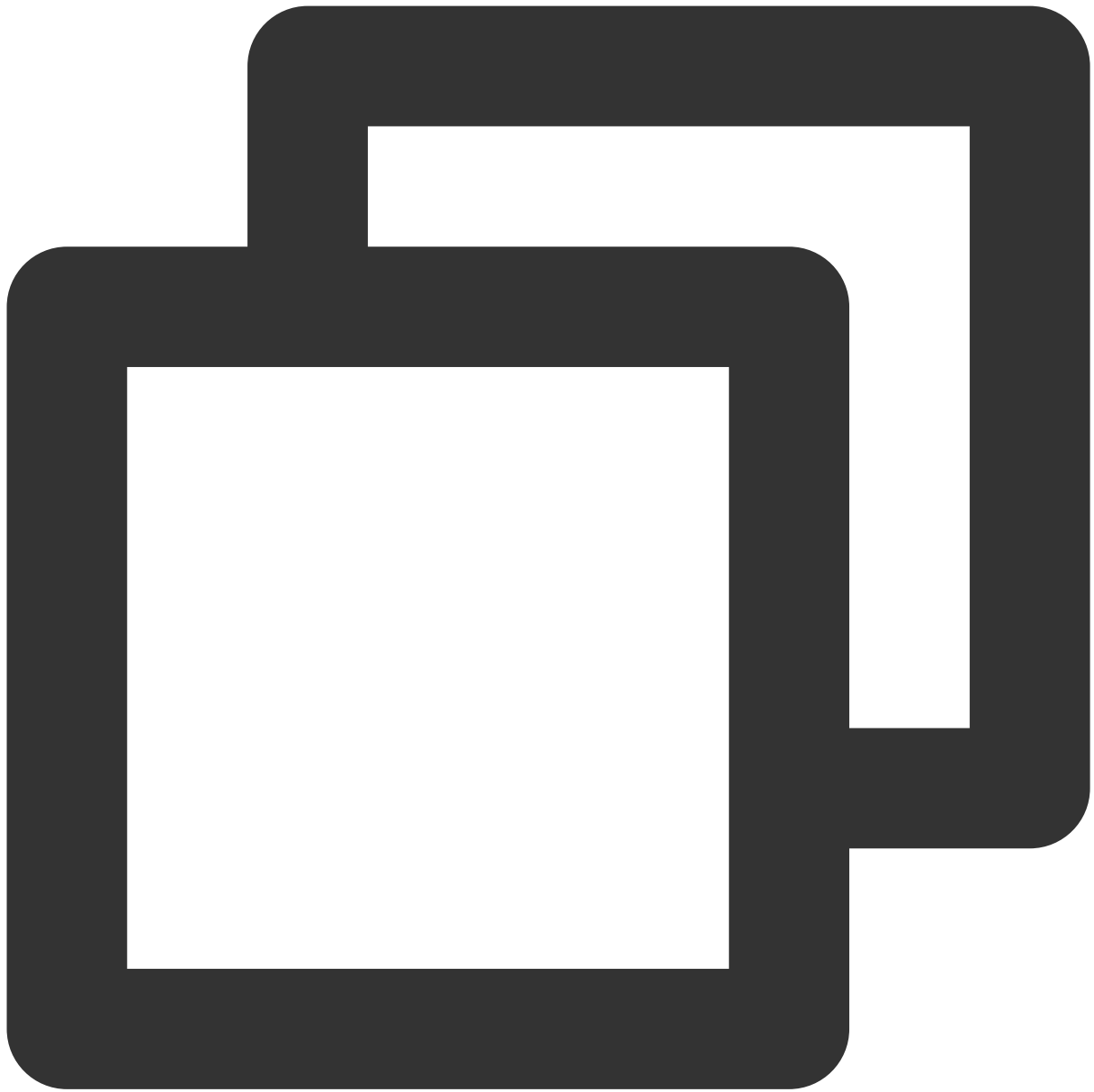
**json**



```
response.json(): Promise<object>;
```

The `json()` method takes a `Response` stream, reads it to completion, and returns a promise which resolves with the parsing result of the body text as `json`.

**text**



```
response.text(): Promise<string>;
```

The `text()` method takes a `Response` stream, reads it to completion, and returns a promise that resolves with a `String`.

**formData**

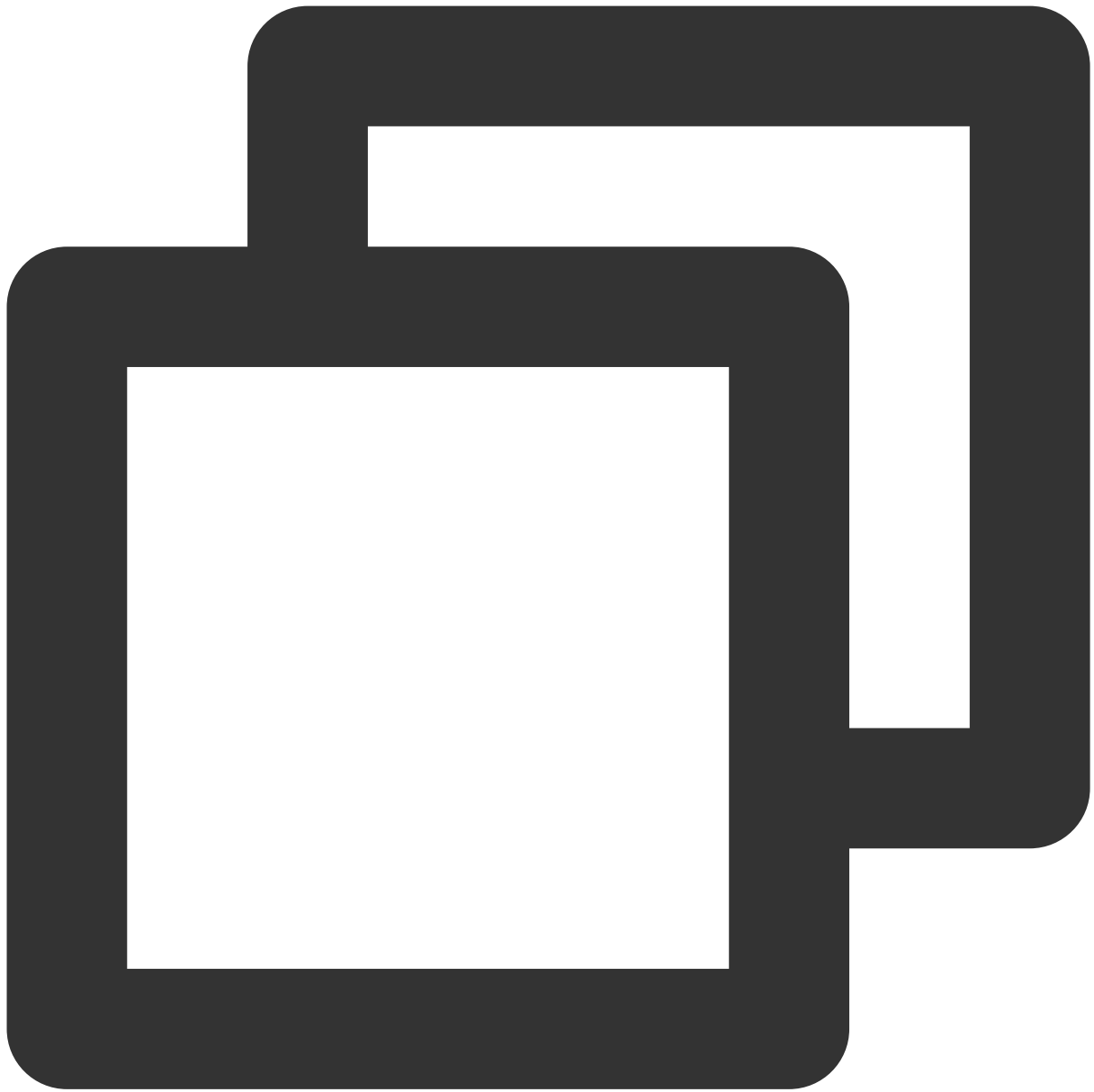


```
response.formData(): Promise<FormData>;
```

The `formData()` method takes a `Response` stream, reads it to completion, and returns a promise that resolves with a [FormData](#).

## Static Methods

## error



```
Response.error() : Response;
```

The `error()` method returns a new [Response](#) object that contains network error information.

## redirect



```
Response.redirect(url: string | URL, status?: number): Response;
```

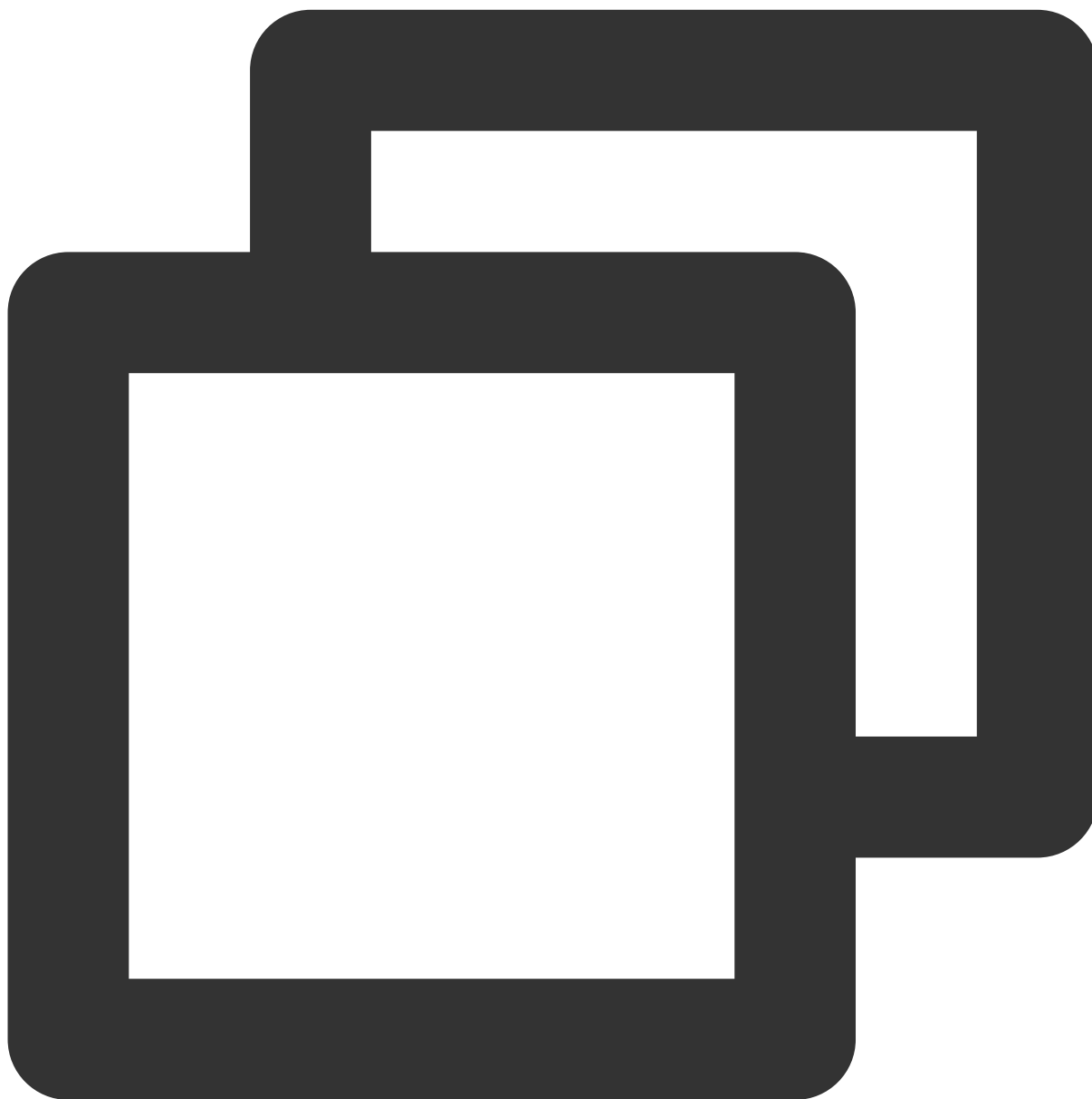
The `redirect()` method returns a [Response](#) object resulting in a redirect to the specified URL.

### Parameters

Parameter	Type	Required	Description
url	string	Yes	Redirect URL
status	number	No	Status code for the response. Valid values: 301, 302,

			303, 307, and 308. Default value: 302.
--	--	--	--

## Sample Code



```
addEventListener('fetch', (event) => {  
  const response = new Response('hello world');  
  event.respondWith(response);  
});
```

## References

[MDN documentation: Response](#)

[Sample Functions: Returning an HTML Page](#)

[Sample Functions: Modifying a Response Header](#)

[Sample Functions: Performing an A/B Test](#)



# Streams

## ReadableStream

Last updated : 2024-01-30 14:59:48

The **ReadableStream** API represents a readable stream or readable end. It is designed based on the standard Web API [ReadableStream](#).

### Note:

A `ReadableStream` object cannot be constructed directly. You can use [TransformStream](#) to construct a `ReadableStream` object.

## Overview



```
// Use TransformStream to construct a ReadableStream object.  
const { readable } = new TransformStream();
```

## Attributes



```
// readable.locked
readonly locked: boolean;
```

The locked attribute indicates whether a stream is locked.

**Note:**

A stream is locked in the following scenarios:

The stream has no more than one activated `reader`. Before the `reader` calls the `releaseLock()` method, the stream is locked.

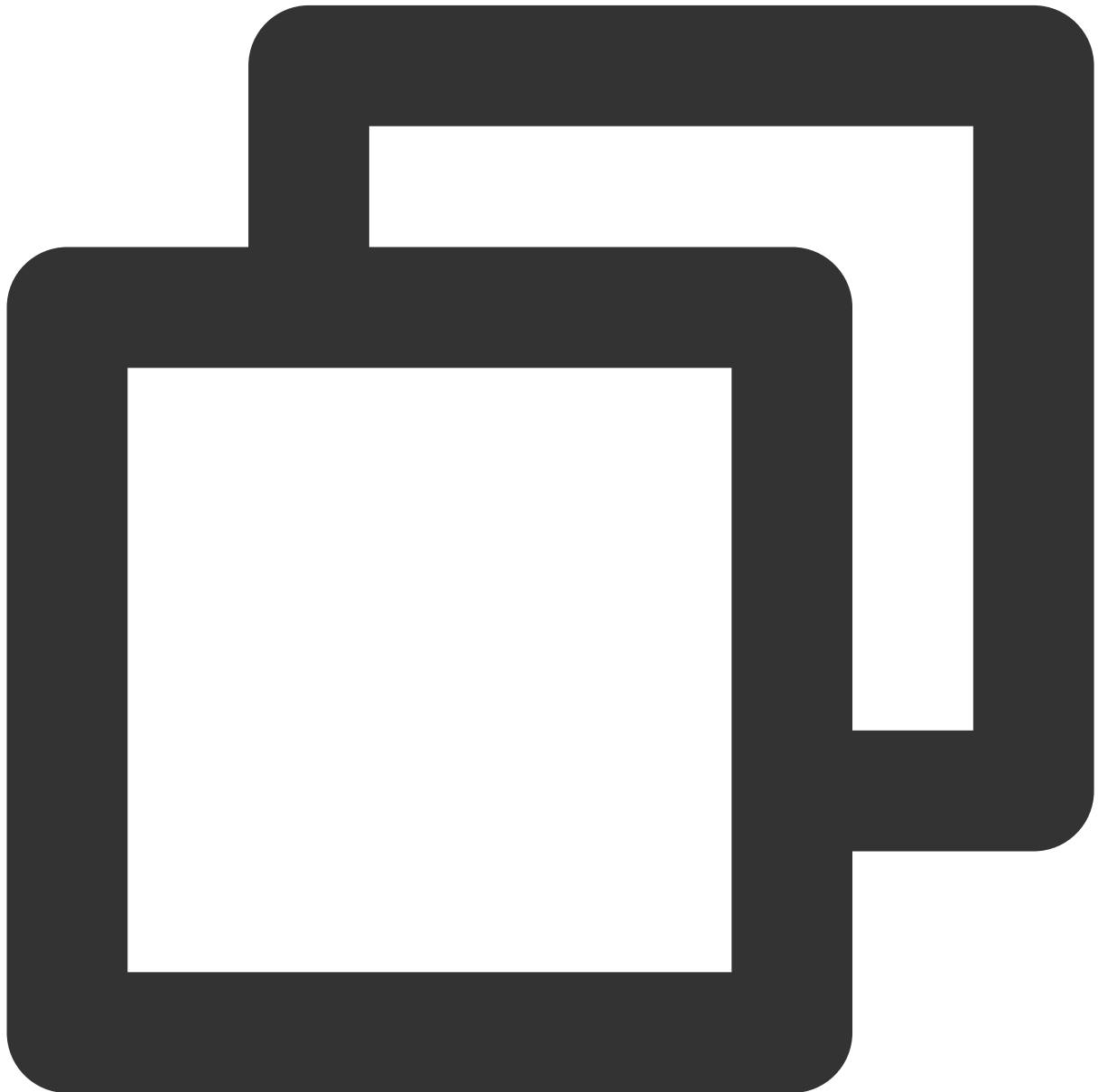
The stream is in being piped. The stream is locked until the piping ends.

## Methods

### Note:

Before you use any of the following methods, make sure that the stream is not locked. Otherwise, an exception is returned.

### **getReader**



```
readable.getReader(options?: ReaderOptions): ReadableStreamDefaultReader | Readable
```

The `getReader()` method creates a `reader` and locks the current stream until the `reader` calls the `releaseLock()` method.

### Parameters

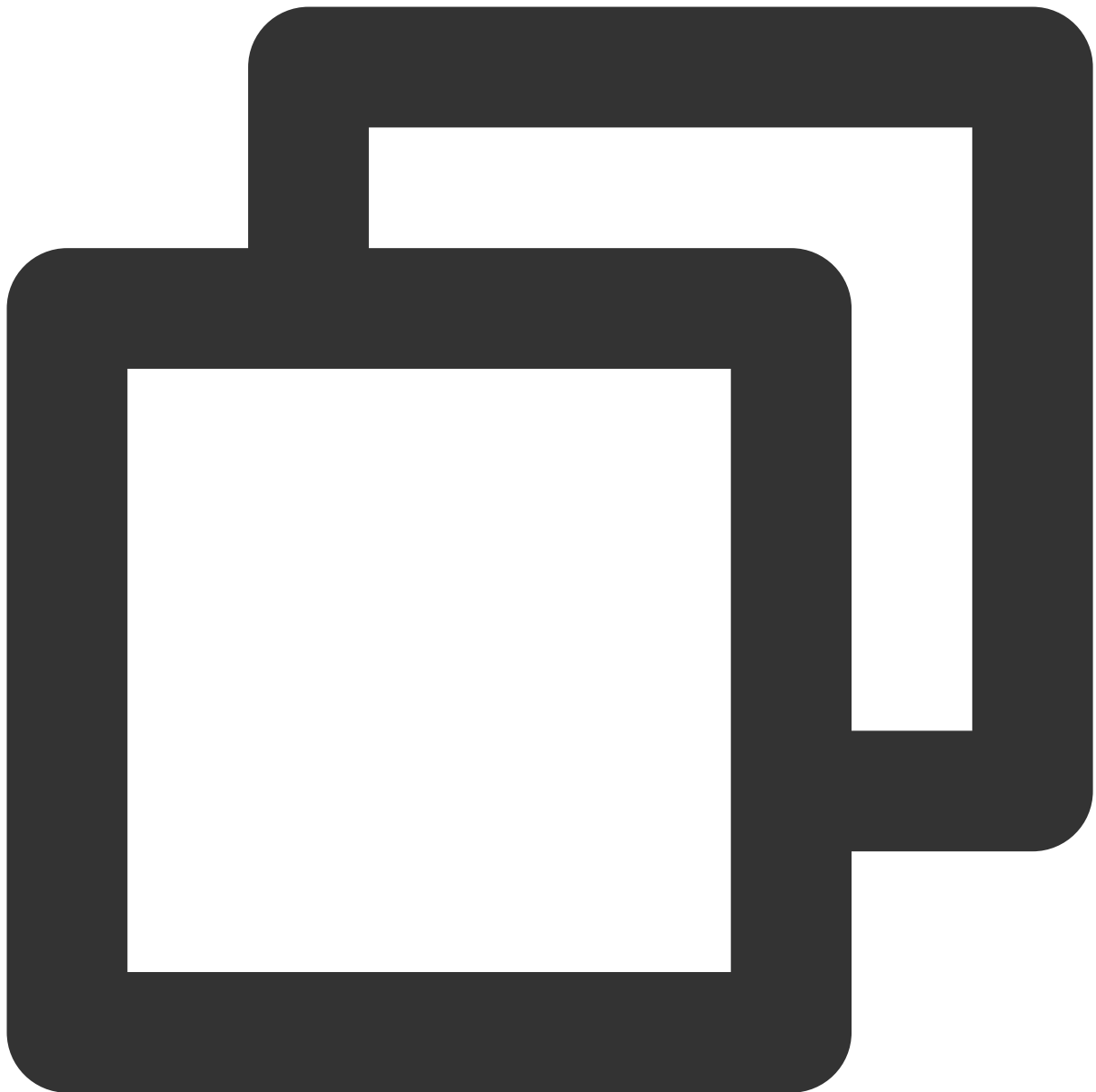
Parameter	Type	Required	Description
options	<a href="#">ReaderOptions</a>	Yes	The configuration items for generating the reader.

### ReaderOptions

The following table describes the parameters of the `ReaderOptions` object.

Parameter	Type	Required	Description
mode	string	No	Reader The type of the `reader`. Default value: <code>undefined</code> . Valid values: <code>undefined</code> Create a reader of the <a href="#">ReadableStreamDefaultReader</a> type. <code>byob</code> Create a reader of the <a href="#">ReadableStreamBYOBReader</a> type.

### pipeThrough



```
readable.pipeThrough(transformStream: TransformStream, options?: PipeToOptions): Re
```

The `pipeThrough()` method pipes the data of the current readable stream to the writable side of the `transformStream` and returns the readable side of the `transformStream`.

**Note:**

During the piping, the `writable` side of the current stream is locked.

**Parameters**

Parameter	Type	Required	Description
-----------	------	----------	-------------

transformStream	<a href="#">TransformStream</a>	Yes	The destination to which the current stream is piped.
options	<a href="#">PipeToOptions</a>	Yes	The configuration items for piping the stream.

## PipeToOptions

The following table describes the configuration items for piping the stream.

Parameter	Type	Required	Description
preventClose	boolean	No	If the value is true, the writable stream is not closed along with the readable stream.
preventAbort	boolean	No	If the value is true, the writable stream is not stopped when an exception occurs on the readable stream.
preventCancel	boolean	No	If the value is true, the writable stream is not closed when the readable stream is incorrect.
signal	<a href="#">AbortSignal</a>	No	If `signal` is stopped, ongoing pipe operations are stopped.

## pipeTo



```
readable.pipeTo(destination: WritableStream, options?: PipeToOptions): Promise<void>
```

The `pipeTo()` method pipes the current readable stream to the `destination` writable stream.

**Note:**

During the piping, the `destination` of the current stream is locked.

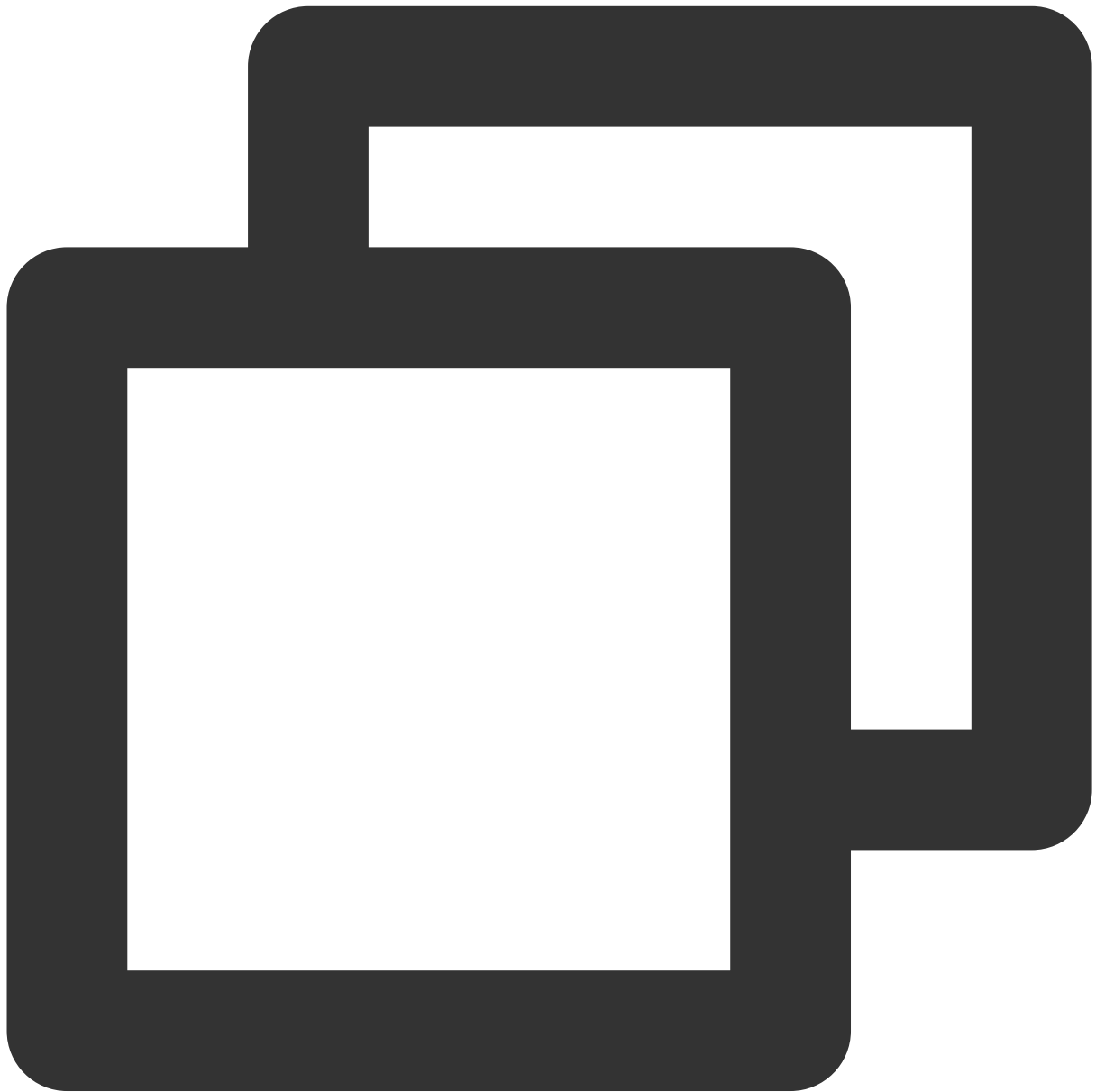
**Parameters**

Parameter	Type	Required	Description



destination	<a href="#">WritableStream</a>	Yes	The writable stream.
options	<a href="#">PipeToOptions</a>	Yes	The configuration items for piping the stream.

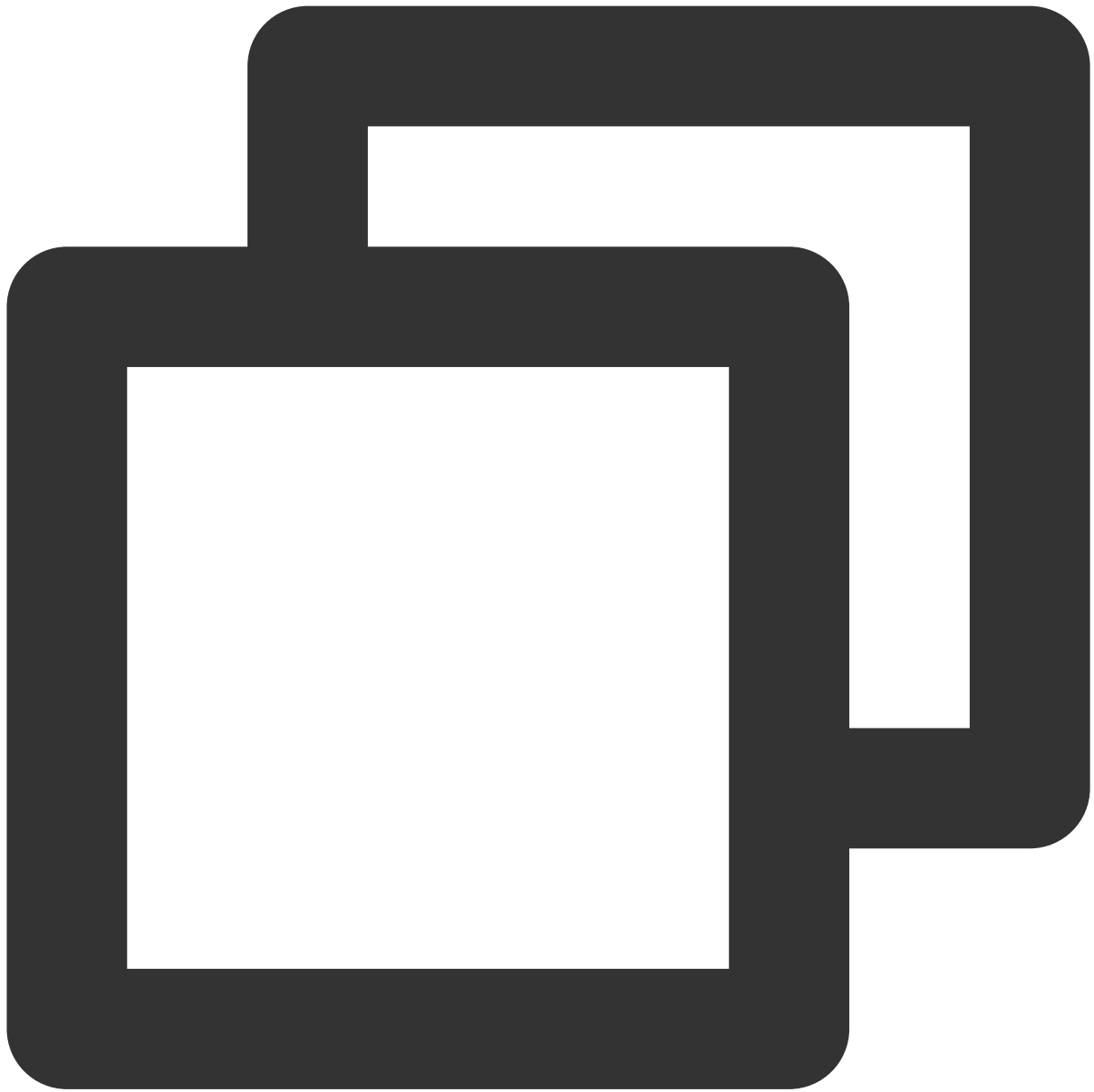
## tee



```
readable.tee(): [ReadableStream, ReadableStream];
```

The `tee()` method tees the current readable stream and returns two independent branches.

## cancel



```
readable.cancel(reason?: string): Promise<string>;
```

The `cancel()` method ends the current stream.

## References

[MDN documentation: ReadableStream](#)

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[Sample Functions: Merging Resources and Responding in Streaming Mode](#)

[Sample Functions: Rewriting a m3u8 File and Configuring Authentication](#)

# ReadableStreamBYOBReader

Last updated : 2024-01-30 15:05:35

The **ReadableStreamBYOBReader** API defines a reader for a readable stream. It is designed based on the standard Web API [ReadableStreamBYOBReader](#). **BYOB** is an abbreviation of bring your own buffer. A **ReadableStreamBYOBReader** object allows to read data from streams and write the read data to the buffer, thereby reducing replicas.

## Note:

A `ReadableStreamBYOBReader` object cannot be constructed directly. You can use the [ReadableStream.getReader](#) method to construct a `ReadableStreamBYOBReader` object.

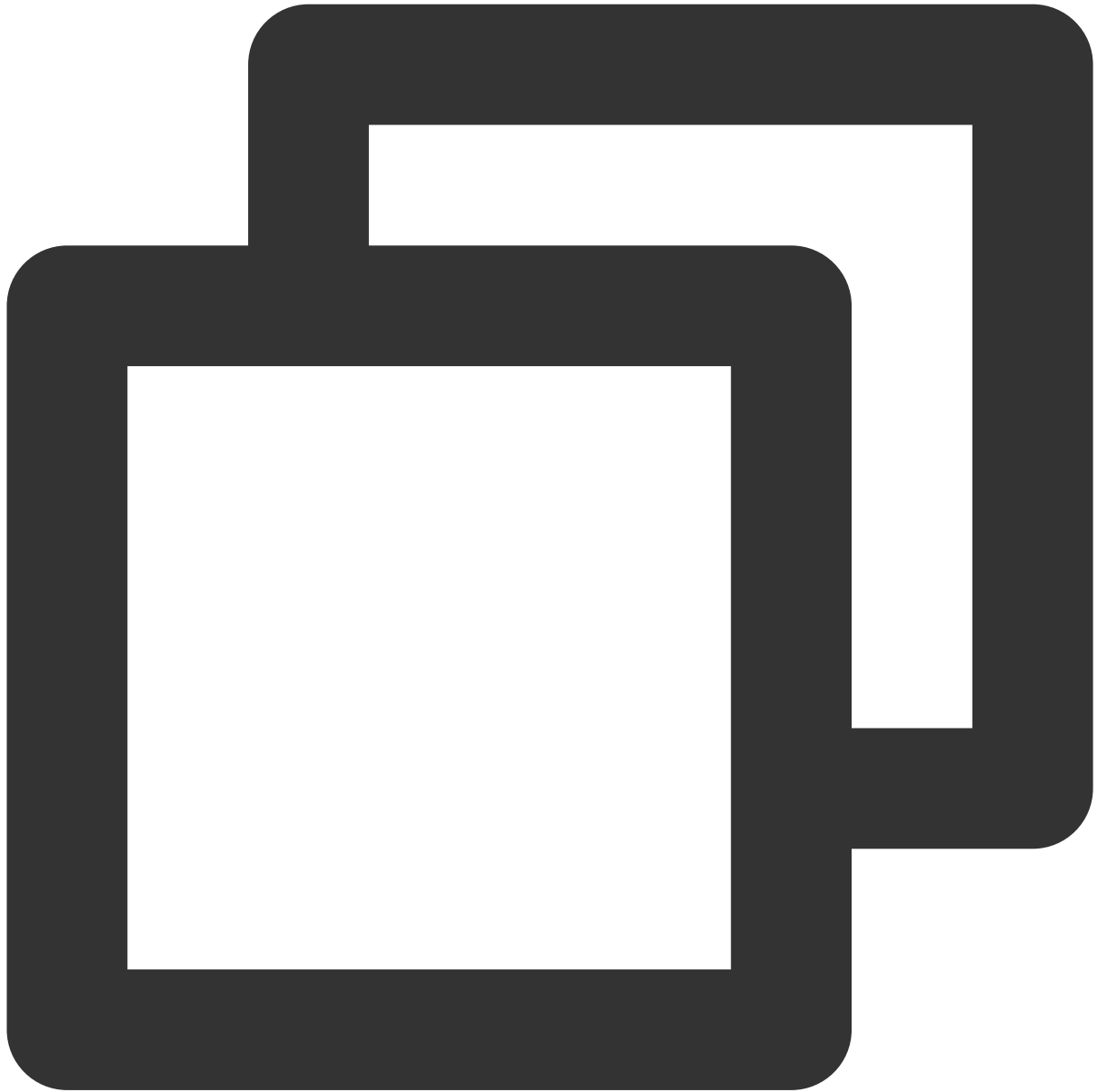
## Overview



```
// Use TransformStream to construct a ReadableStream object.
const { readable } = new TransformStream();

// Use the ReadableStream object to obtain the reader.
const reader = readable.getReader({
  mode: 'byob',
});
```

## Attributes

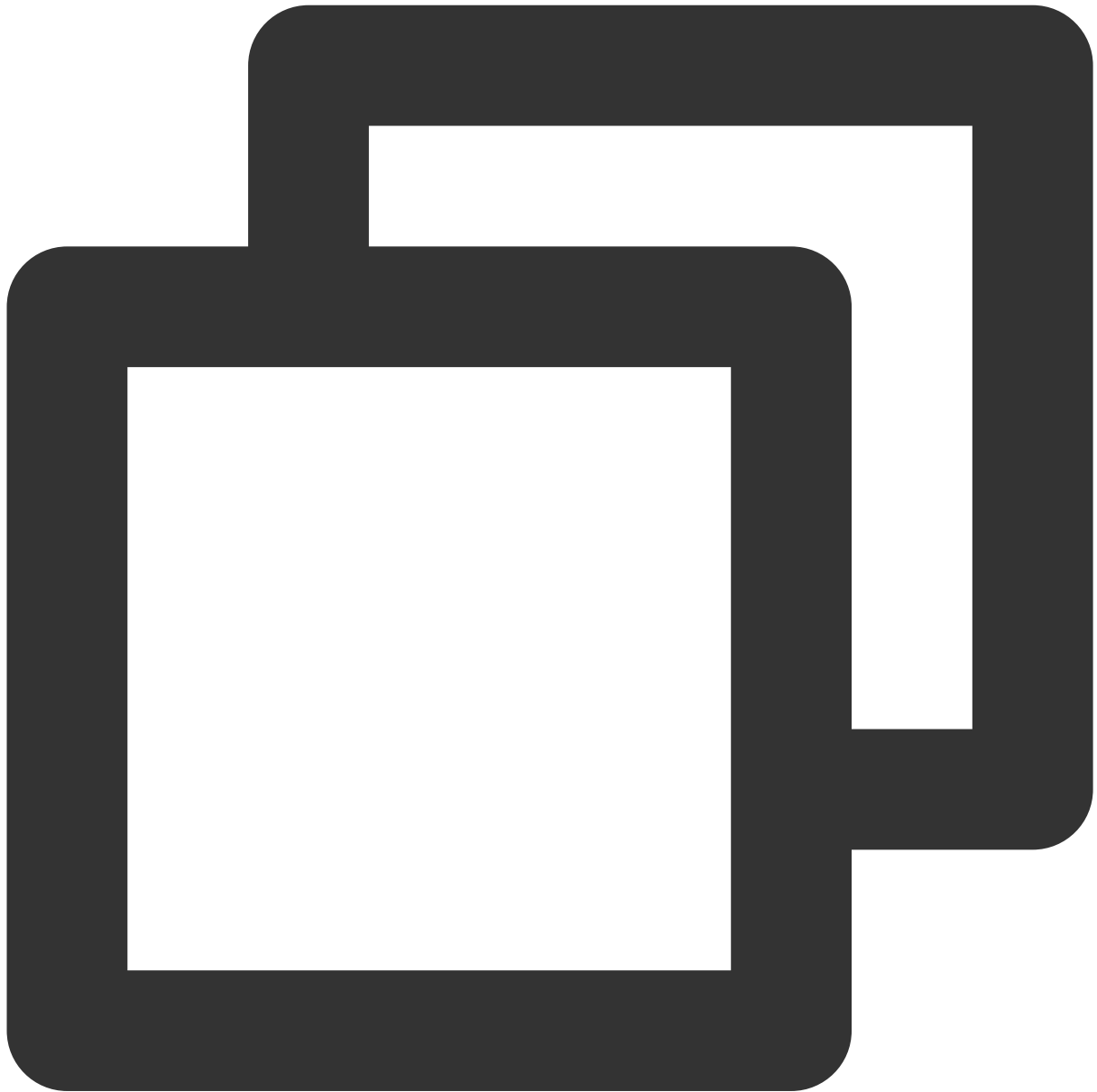


```
// readable.locked  
readonly locked: boolean;
```

The `locked` attribute returns a Promise object. If the stream is closed, the status of the Promise object is `fulfilled` . If an exception occurs on the stream or the lock on the reader is released, the status of the Promise object is `rejected` .

## Methods

### read



```
reader.read(bufferView: ArrayBufferView): Promise<{value: ArrayBufferView, done: bo
```

The `read()` method reads data from the stream and writes the read data to the `bufferView` on the buffer.

**Note:**

You cannot initiate the next stream reading operation until the current stream reading operation ends.

## Returned values

The `reader.read` method returns a Promise object that contains the read data and the reading status.

If a chunk is available, the Promise object is in the `fulfilled` status and contains an object in the `{ value: theChunk, done: false }` format.

If the stream is closed, the status of the Promise object is switched to `fulfilled`, and an object in the `{ value: theChunk, done: true }` format is contained.

If an exception occurs on the stream, the Promise object is in the `rejected` status, and the relevant error information is included.

## cancel





```
reader.cancel(reason?: string): Promise<string>;
```

The `cancel()` method closes the stream and ends the reading operation.

### **releaseLock**



```
reader.releaseLock(): void;
```

The `releaseLock()` method cancels the association with the stream and releases the lock on the stream.

## References

[MDN documentation: ReadableStreamBYOBReader](#)

# ReadableStreamDefaultReader

Last updated : 2024-01-30 15:08:11

The **ReadableStreamDefaultReader** API defines a reader for a readable stream. It is designed based on the standard Web APIs [ReadableStreamDefaultReader](#).

## Note:

A `ReadableStreamDefaultReader` object cannot be constructed directly. You can use the [ReadableStream.getReader](#) method to construct a `ReadableStreamDefaultReader` object.

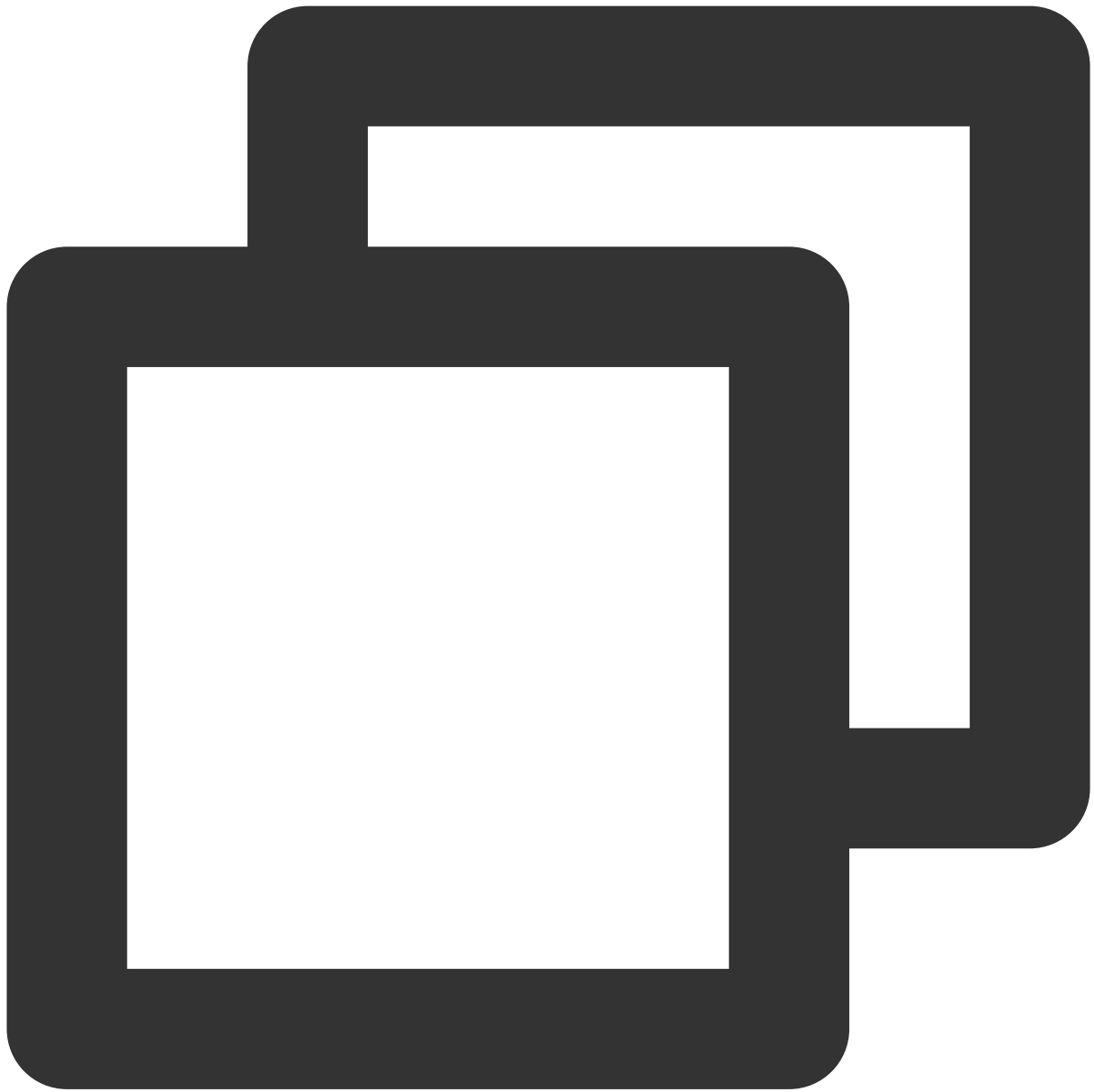
## Overview



```
// Use TransformStream to construct a ReadableStream object.  
const { readable } = new TransformStream();  
  
// Use the ReadableStream object to obtain the reader.  
const reader = readable.getReader();
```

## Attributes

closed

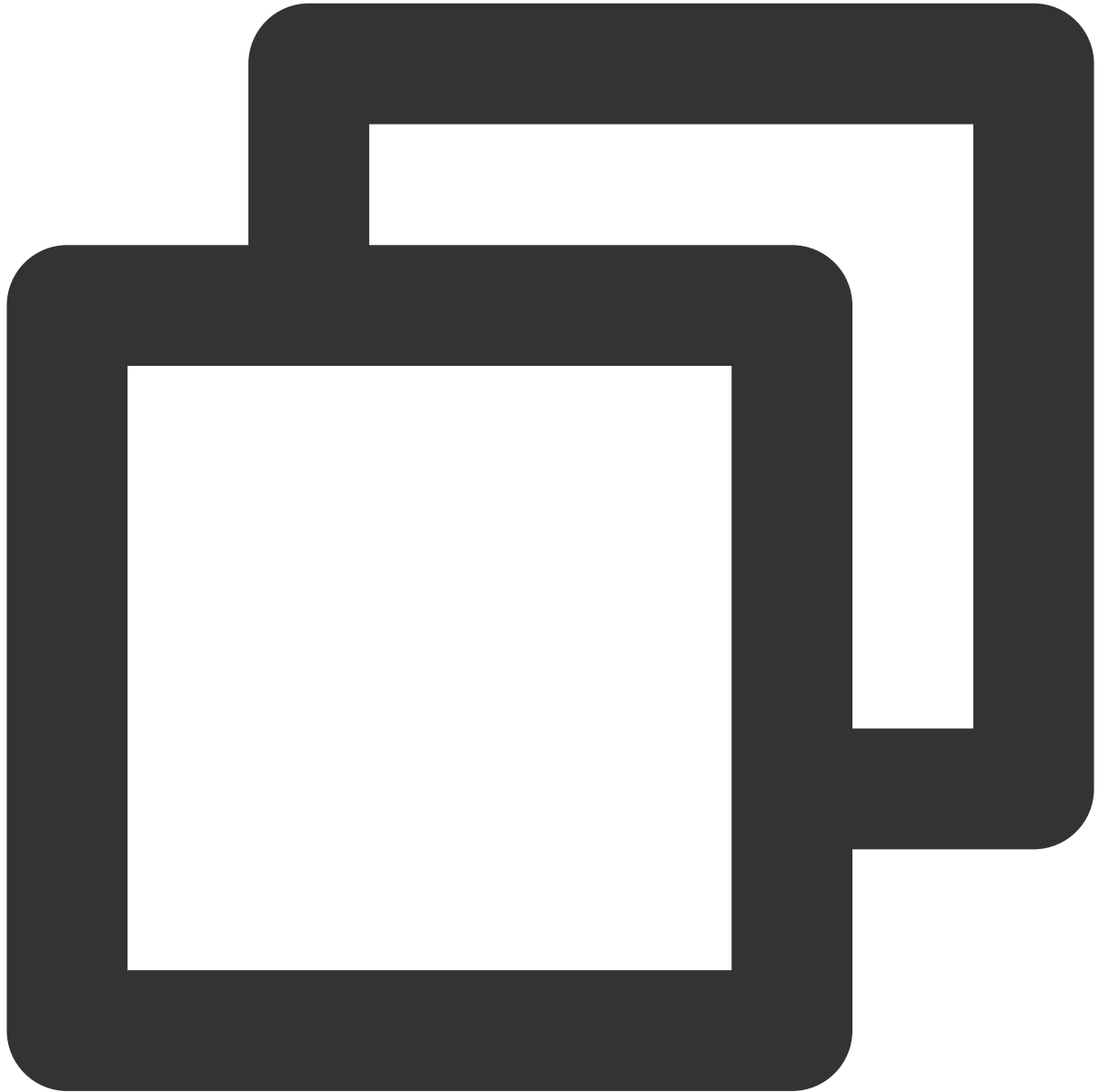


```
// reader.closed  
readonly closed: Promise<void>;
```

The `closed` attribute returns a Promise object. If the stream is closed, the status of the Promise object is `fulfilled`. If an exception occurs on the stream or the lock on the reader is released, the status of the Promise object is `rejected`.

## Methods

### read



```
reader.read(): Promise<{value: Chunk, done: boolean}>;
```

The `read()` method reads data from the stream.

**Note:**

You cannot initiate the next stream reading operation until the current stream reading operation ends.

## Returned values

The `reader.read` method returns a Promise object that contains the read data [Chunk](#) and the reading status.

If a chunk is available, the Promise object is in the `fulfilled` status and contains an object in the `{ value: theChunk, done: false }` format.

If the stream is closed, the Promise object is in the `fulfilled` status and contains an object in the `{ value: undefined, done: true }` format.

If an exception occurs on the stream, the Promise object is in the `rejected` status, and the relevant error information is included.

## Chunk

The `Chunk` parameter indicates the data to be read from the stream.



```
type Chunk = string | ArrayBuffer | ArrayBufferView;
```

**cancel**





```
reader.cancel(reason?: string): Promise<string>;
```

The `cancel()` method closes the stream and ends the reading operation.

### **releaseLock**



```
reader.releaseLock(): void;
```

The `releaseLock()` method cancels the association with the stream and releases the lock on the stream.

## References

[MDN documentation: ReadableStreamDefaultReader](#)

# TransformStream

Last updated : 2024-01-30 15:32:47

A **TransformStream** consists of a readable stream and a writable stream. It is designed based on the standard Web API [TransformStream](#).

## Constructor API



```
const { readable, writable } = new TransformStream(transformer?: any, writableStrat
```

## Parameters

Parameter	Type	Required	Description
transformer	any	No	This parameter is not supported. The values do not take effect and are ignored automatically.
writableStrategy	<a href="#">WritableStrategy</a>	No	The strategy for the writable side.

**WritableStrategy**

Parameter	Type	Required	Description
highWaterMark	number	Yes	The size of the writable buffer in bytes. Default value: 32K. Maximum value: 256K. If you enter a value greater than 256K, the value is changed to 256K automatically.

## Attributes

**readable**



```
readonly readable: ReadableStream;
```

The readable stream. For more information, see [ReadableStream](#).

## writable



```
readonly writable: WritableStream;
```

The writable stream. For more information, see [WritableStream](#).

## Sample Code



```
async function handleEnterRoom() {  
  // Generate readable streams and writeable streams.  
  const { readable, writable } = new TransformStream();  
  // Fetch a remote resource.  
  const response = await fetch('https://www.tencentcloud.com/');  
  // Respond to the client in streaming mode.  
  response.body.pipeTo(writable);  
  
  return new Response(readable, response);  
}
```



```
addEventListener('fetch', (event) => {  
  event.respondWith(handleEvent(event));  
});
```

## References

[MDN documentation: TransformStream](#)

[Sample Functions: Merging Resources and Responding in Streaming Mode](#)

[Sample Functions: Rewriting a m3u8 File and Configuring Authentication](#)

# WritableStream

Last updated : 2024-01-30 16:00:52

The **WritableStream** API represents a writable stream or writable side. It is designed based on the standard Web API [WritableStream](#).

## Note:

A `WritableStream` object cannot be constructed directly. You can use [TransformStream](#) to construct a `WritableStream` object.

## Overview



```
// Use TransformStream to construct a WritableStream object.  
const { writable } = new TransformStream();
```

## Attributes

**locked**



```
// writable.locked  
readonly locked: boolean;
```

The locked attribute indicates whether the stream is locked.

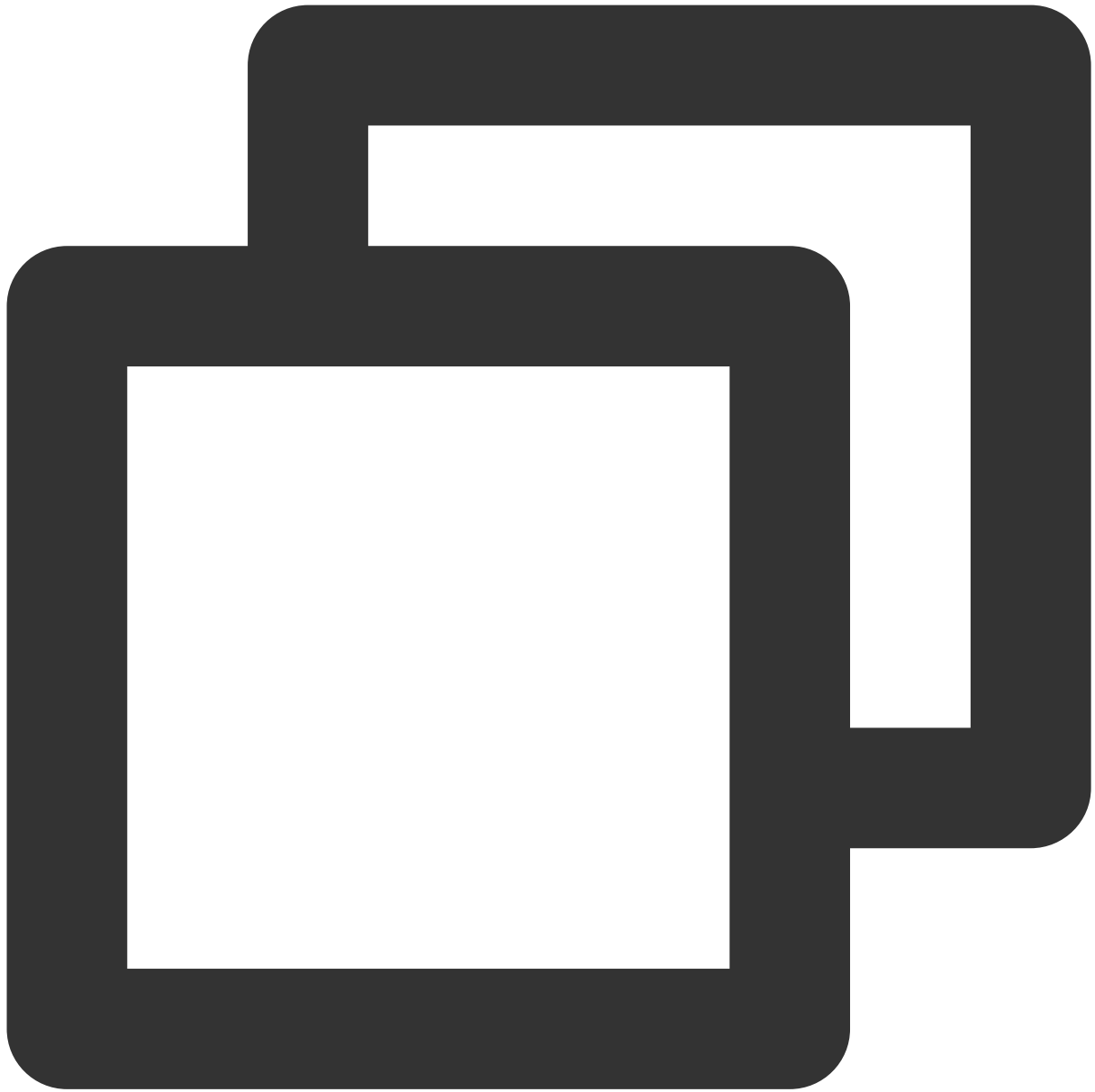
**Note:**

A stream is locked in the following scenarios:

The stream has no more than one activated `writer`. Before the `writer` calls the `releaseLock()` method, the stream is locked.

The stream is in being piped. The stream is locked until the piping ends.

## highWaterMark



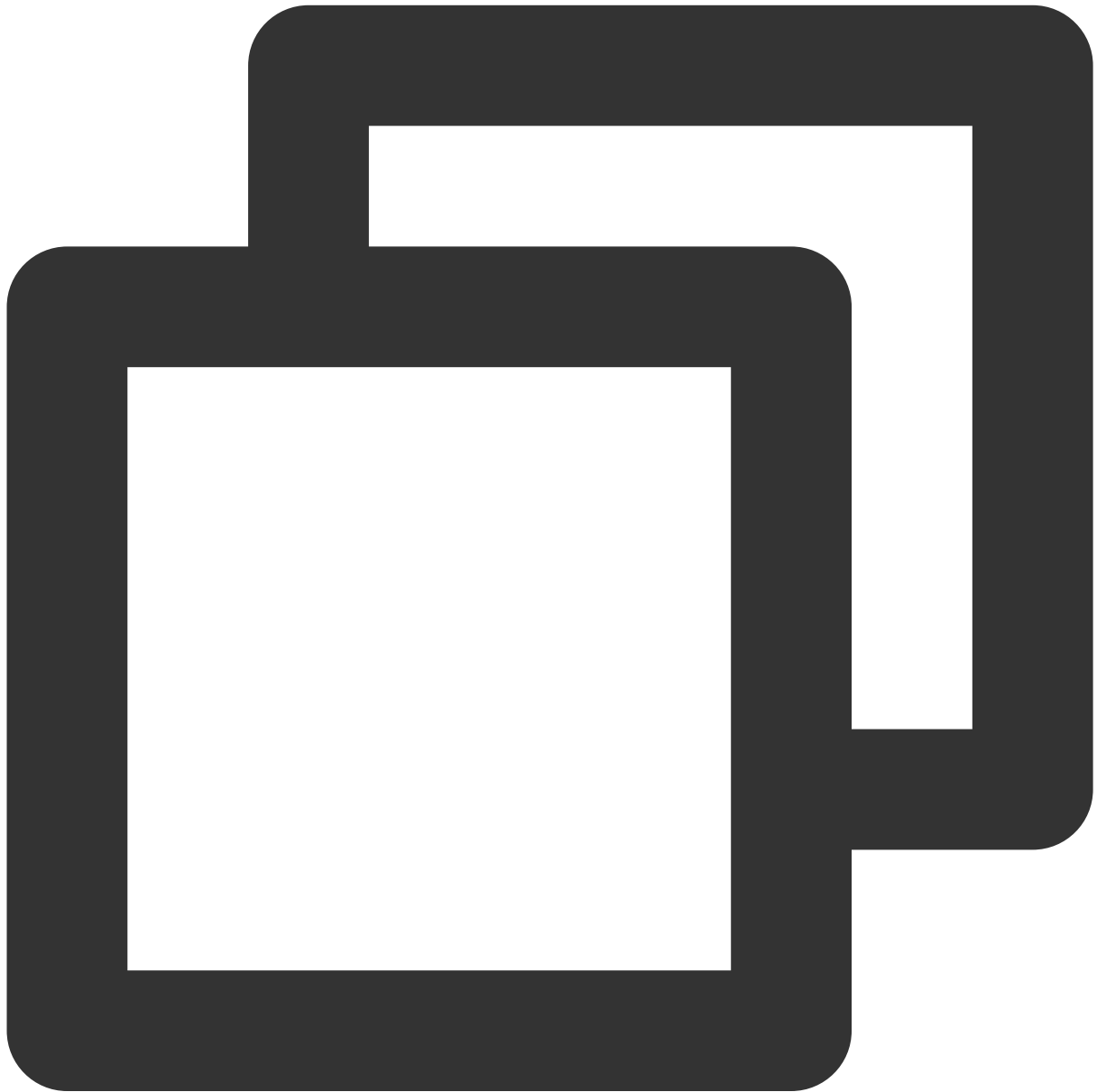
```
// writable.highWaterMark  
readonly highWaterMark: number;
```

The size of the writable buffer in bytes. Default value: 32K. Maximum value: 256K. If you enter a value greater than 256K, the value is changed to 256K automatically.

## Methods

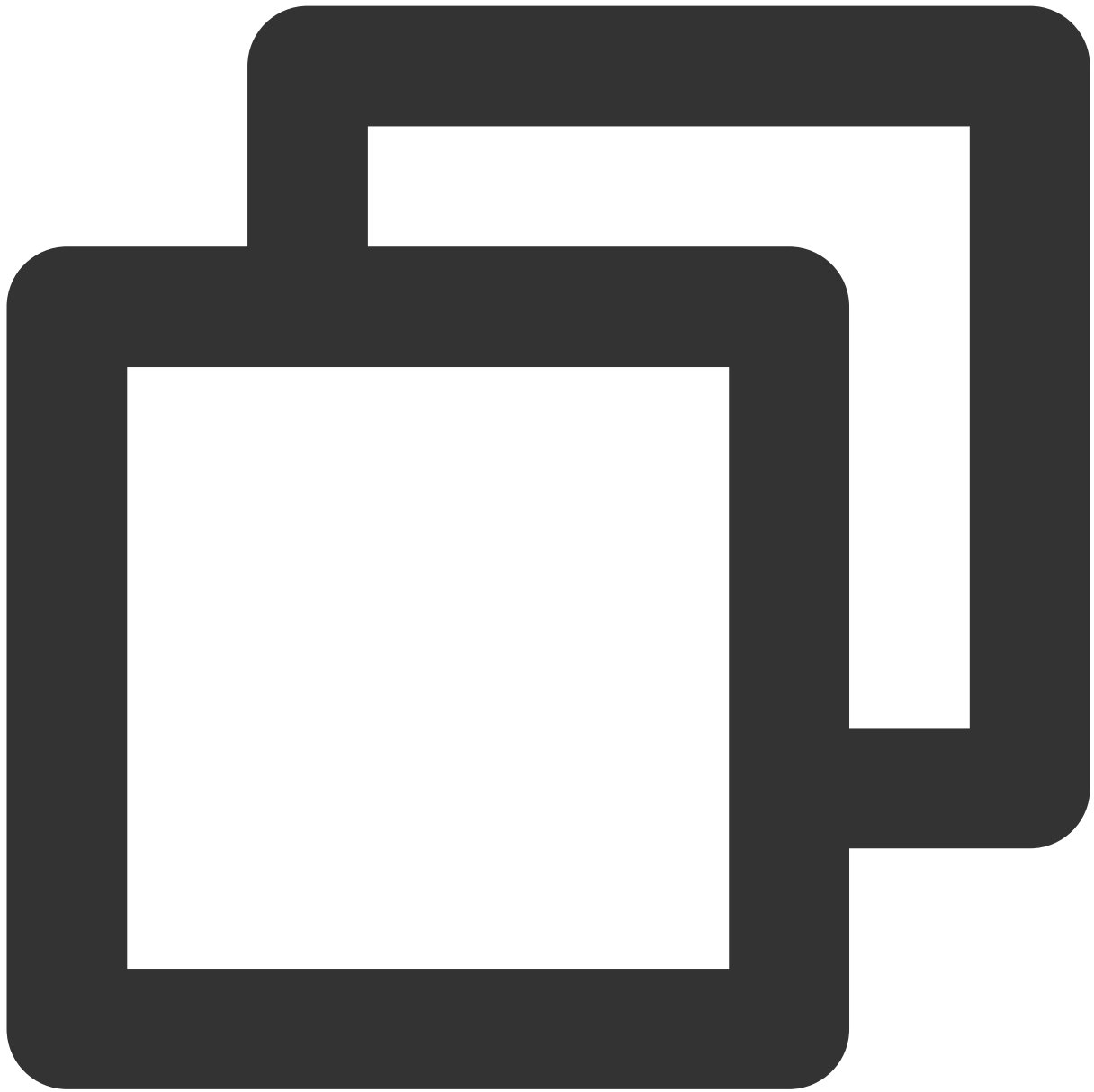
**Note:**

Before you use any of the following methods, make sure that the stream is not locked. Otherwise, an exception is returned.

**getWriter**

```
writable.getWriter(): WritableStreamDefaultWriter;
```

The `getWriter()` method creates a writer and locks the current stream until the writer calls the `releaseLock()` method. For more information about the returned values, see [WritableStreamDefaultWriter](#).

**close**

```
writable.close(): Promise<void>;
```

The `close()` method closes the current stream.

**abort**



```
writable.abort(reason?: string): Promise<string>;
```

The `abort()` method stops the current stream.

## References

[MDN documentation: WritableStream](#)

[Sample Functions: Merging Resources and Responding in Streaming Mode](#)



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[Sample Functions: Rewriting a m3u8 File and Configuring Authentication](#)

# WritableStreamDefaultWriter

Last updated : 2024-01-30 16:03:02

The **WritableStreamDefaultWriter** API defines a writer for a writable stream. It is designed based on the standard Web API [WritableStreamDefaultWriter](#).

## Note:

A `WritableStreamDefaultWriter` object cannot be constructed directly. You can use the [WritableStream.getWriter](#) method to construct a `WritableStreamDefaultWriter` object.

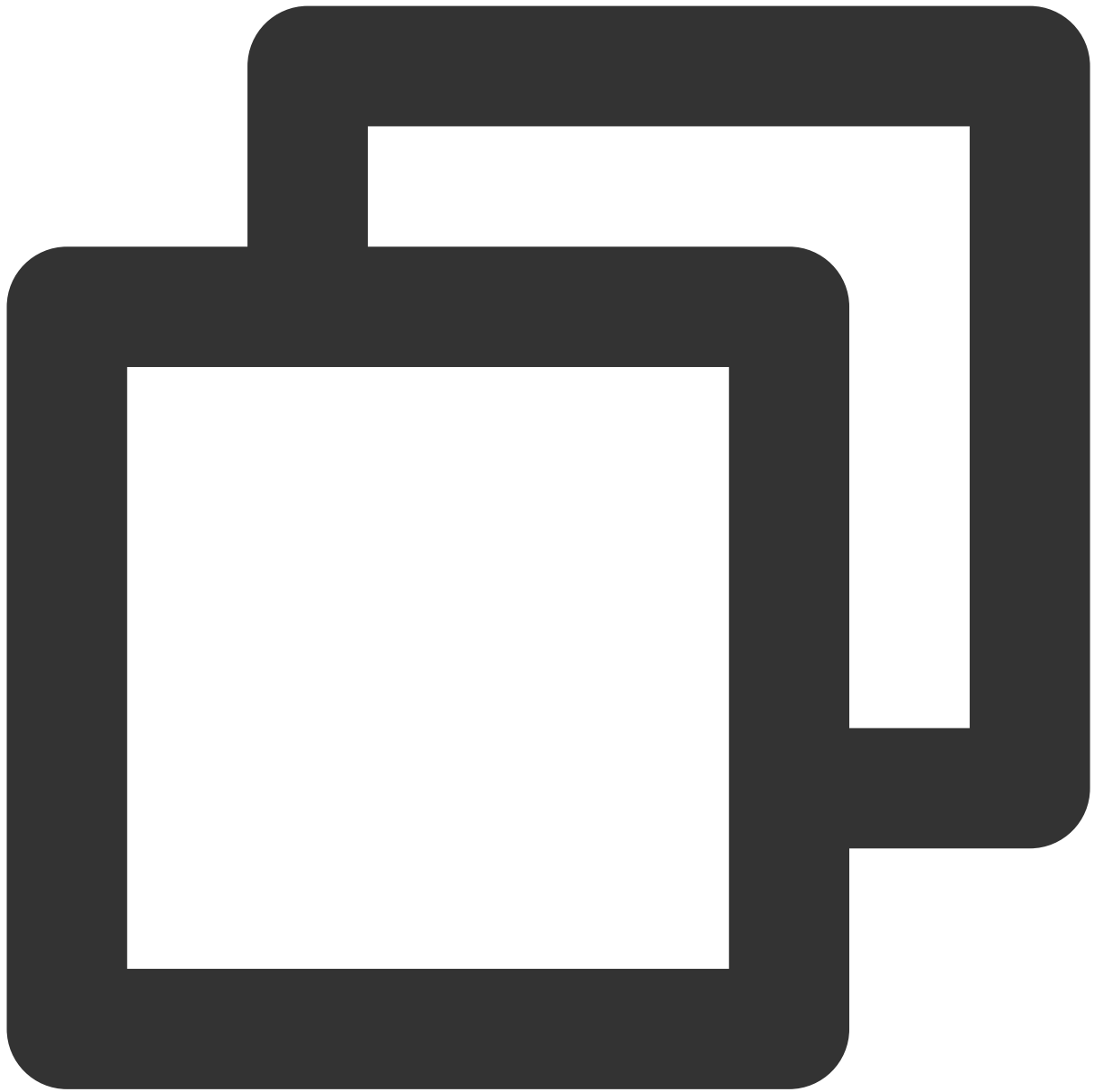
## Overview



```
// Use TransformStream to construct a WritableStream object.  
const { writable } = new TransformStream();  
  
// Use the WritableStream object to obtain the writer.  
const writer = writable.getWriter();
```

## Attributes

## closed



```
// writer.closed  
readonly closed: Promise<void>;
```

The `closed` attribute returns a Promise object. If the stream is closed, the status of the Promise object is `fulfilled` . If an exception occurs on the lock on the writer is released, the status of the Promise object is `rejected` .

## ready



```
// writer.ready  
readonly ready: Promise<void>;
```

The `ready` attribute returns a Promise object. When the size required by the internal queue of the stream changes from non-positive to positive, the Promise object is in the fulfilled status, indicating that it no longer applies backpressure.

### **desiredSize**

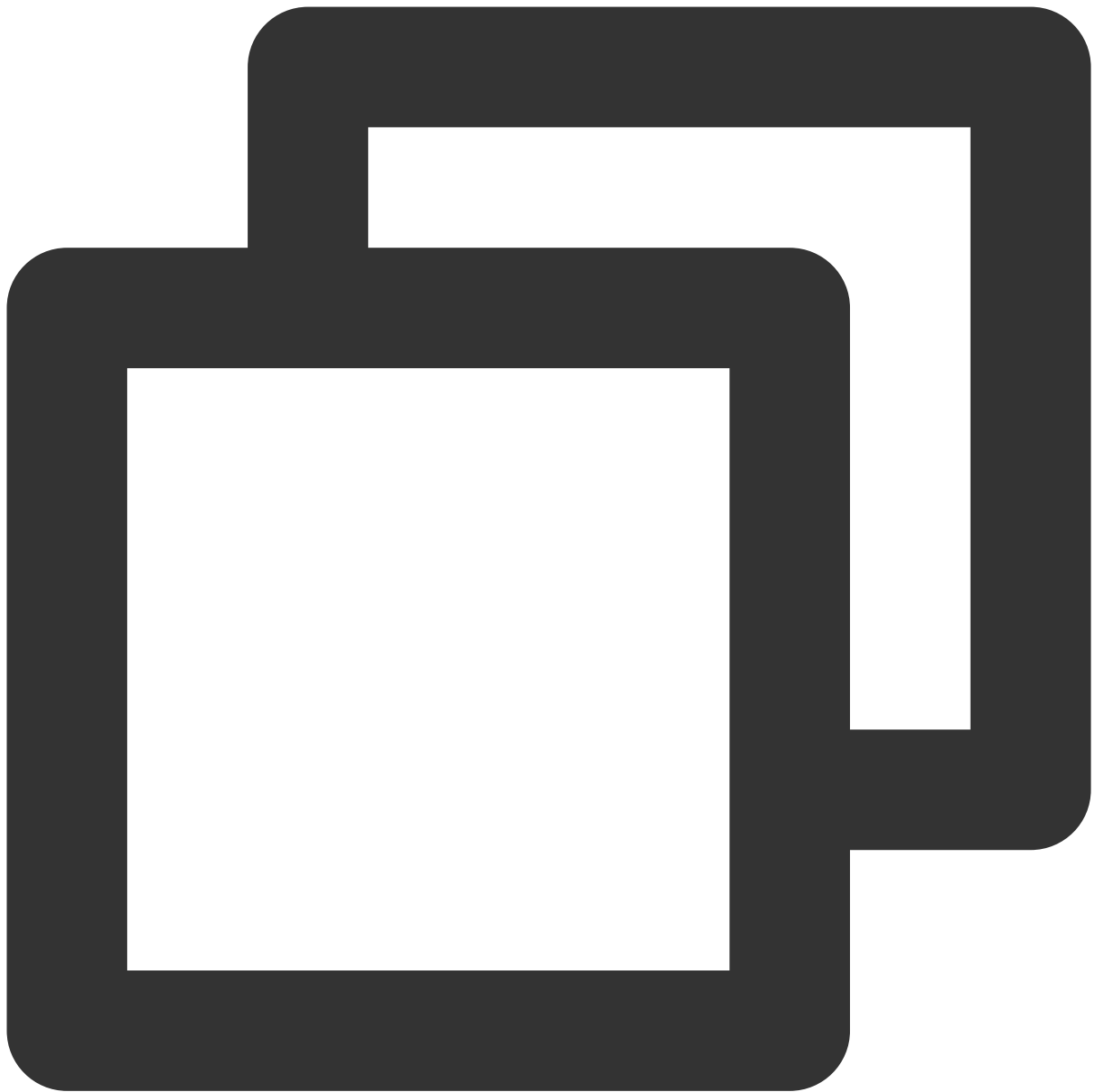


```
// writer.desiredSize  
readonly desiredSize: number;
```

The `desiredSize` attribute returns the size required to fill the internal queue of the stream.

## Methods

### **write**



```
writer.write(chunk: Chunk): Promise<void>;
```

The write() method writes the `Chunk` data to the stream.

**Note:**

You cannot call the `write` method to initiate the next stream writing operation until the current stream writing operation ends.

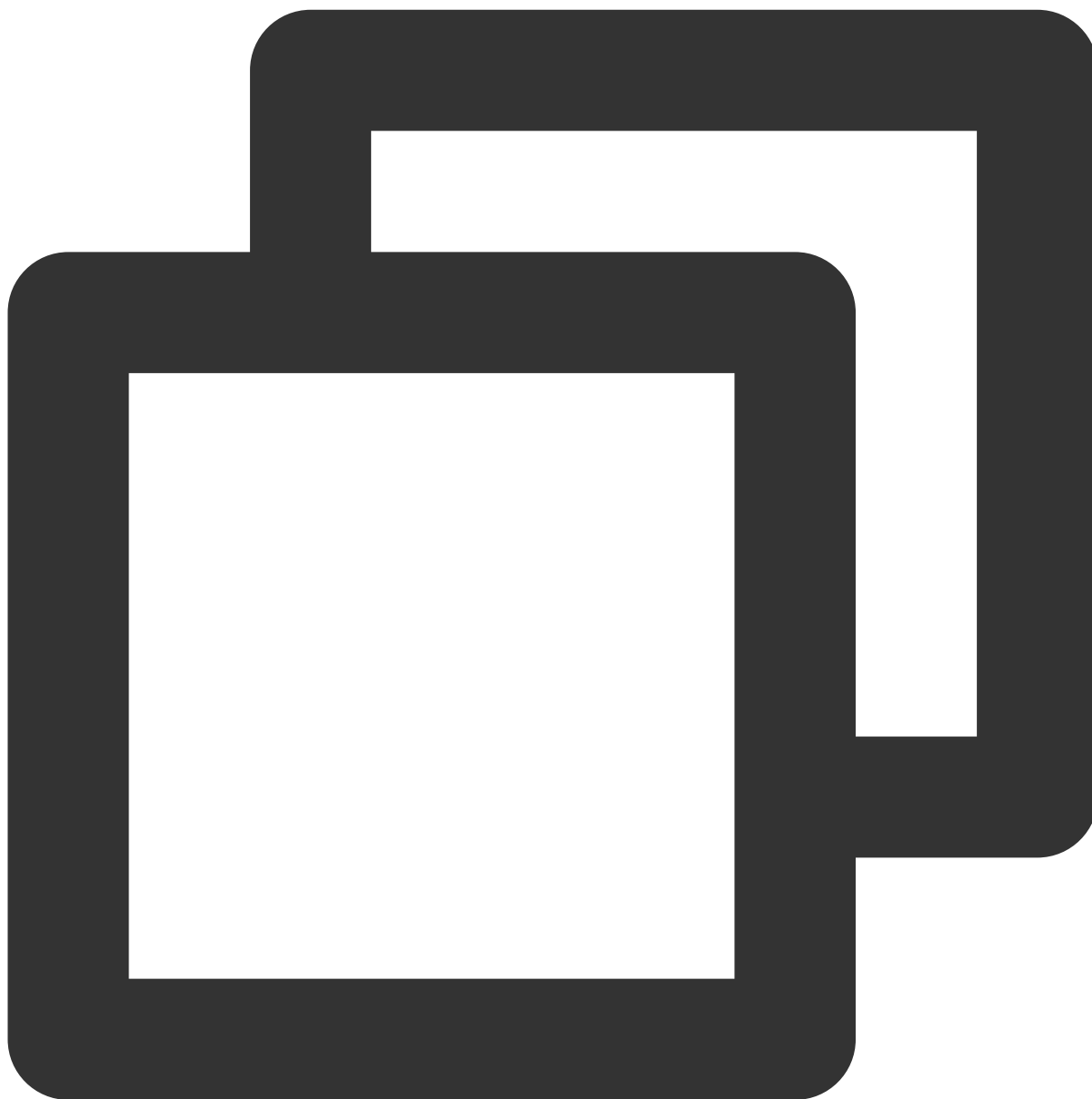
**Parameters**

Parameter	Type	Required	Description
-----------	------	----------	-------------

chunk	Chunk	Yes	The chunk of data to be written to the stream.
-------	-------	-----	--

## Chunk

The `Chunk` parameter indicates the data to be written to the stream.



```
type Chunk = string | ArrayBuffer | ArrayBufferView;
```

**close**





```
writer.close(): Promise<void>;
```

The `close()` method closes the current stream.

## **abort**



```
writer.abort(reason?: string): Promise<string>;
```

The `abort()` method stops the current stream.

### **releaseLock**



```
writer.releaseLock(): void;
```

The `releaseLock()` method cancels the association with the stream and releases the lock on the stream.

## References

MDN documentation: [WritableStreamDefaultWriter](#)

# Web Crypto

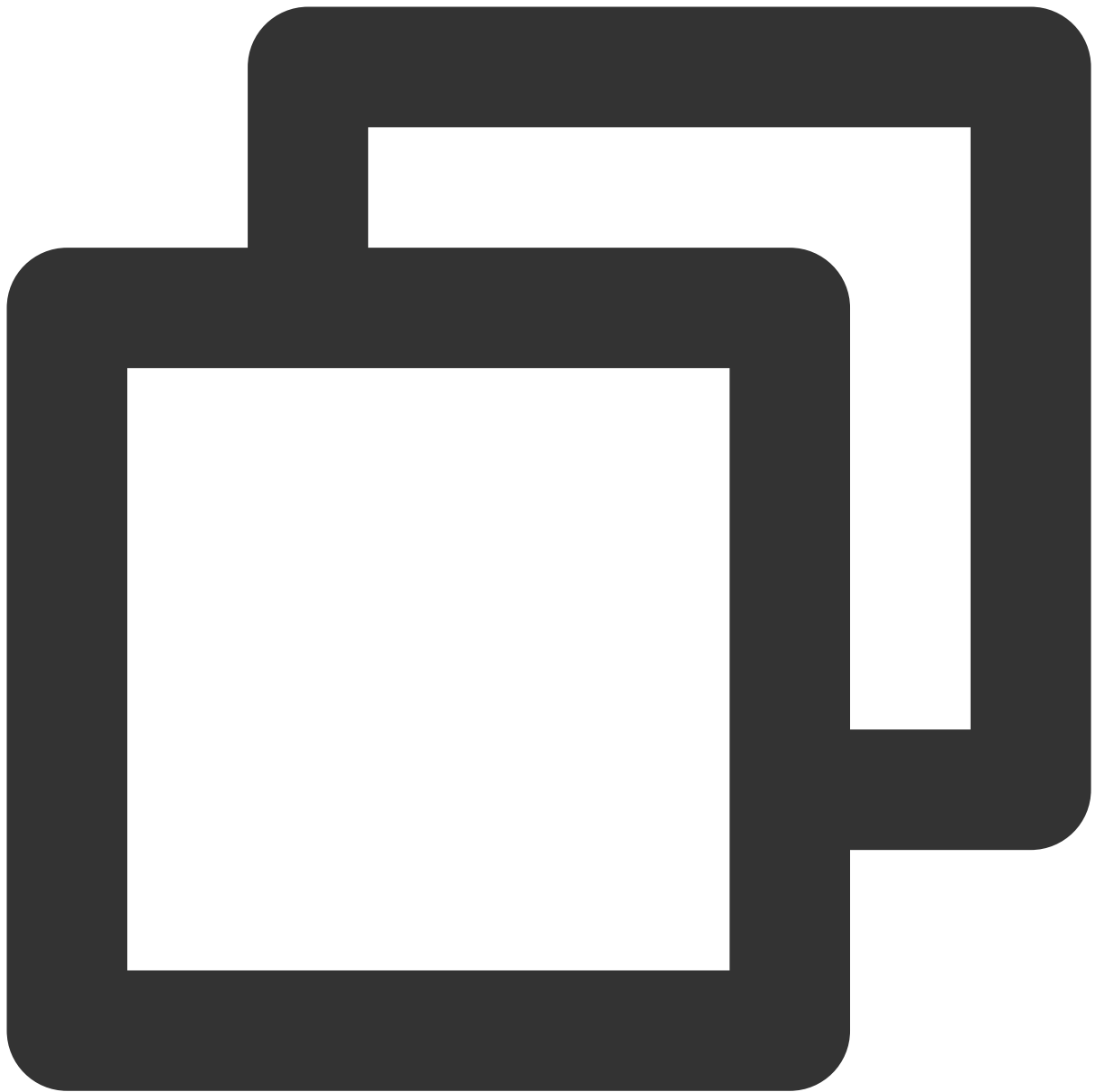
Last updated : 2024-01-30 14:51:12

The **Web Crypto API** is designed based on the standard Web API [Web Crypto API](#). The Web Crypto API provides a set of functions for common cryptographic operations. Performing cryptographic operations by using the Web Crypto API is significantly faster than performing them purely in JavaScript.

## Note:

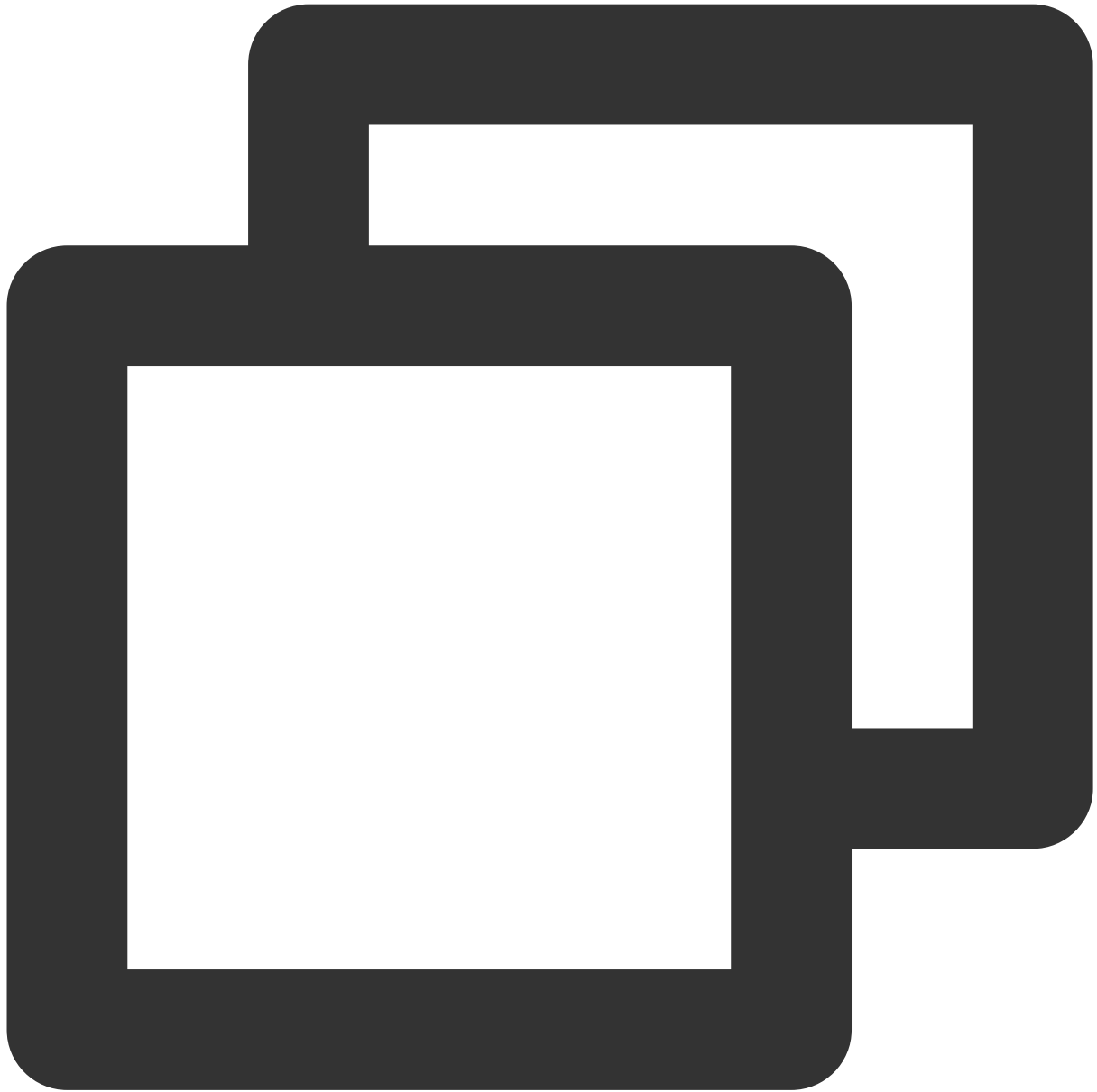
The `crypto` object cannot be constructed directly. It is globally injected during the runtime of edge functions. Directly use the global crypto instance.

## Overview



```
// Perform encoding.
const encodeContent = new TextEncoder().encode('hello world');
// Use crypto to perform SHA-256 hashing. The resulting hash is a promise that fulf
const sha256Content = await crypto.subtle.digest(
  { name: 'SHA-256' },
  encodeContent
);
const result = new Uint8Array(sha256Content);
```

## Attributes

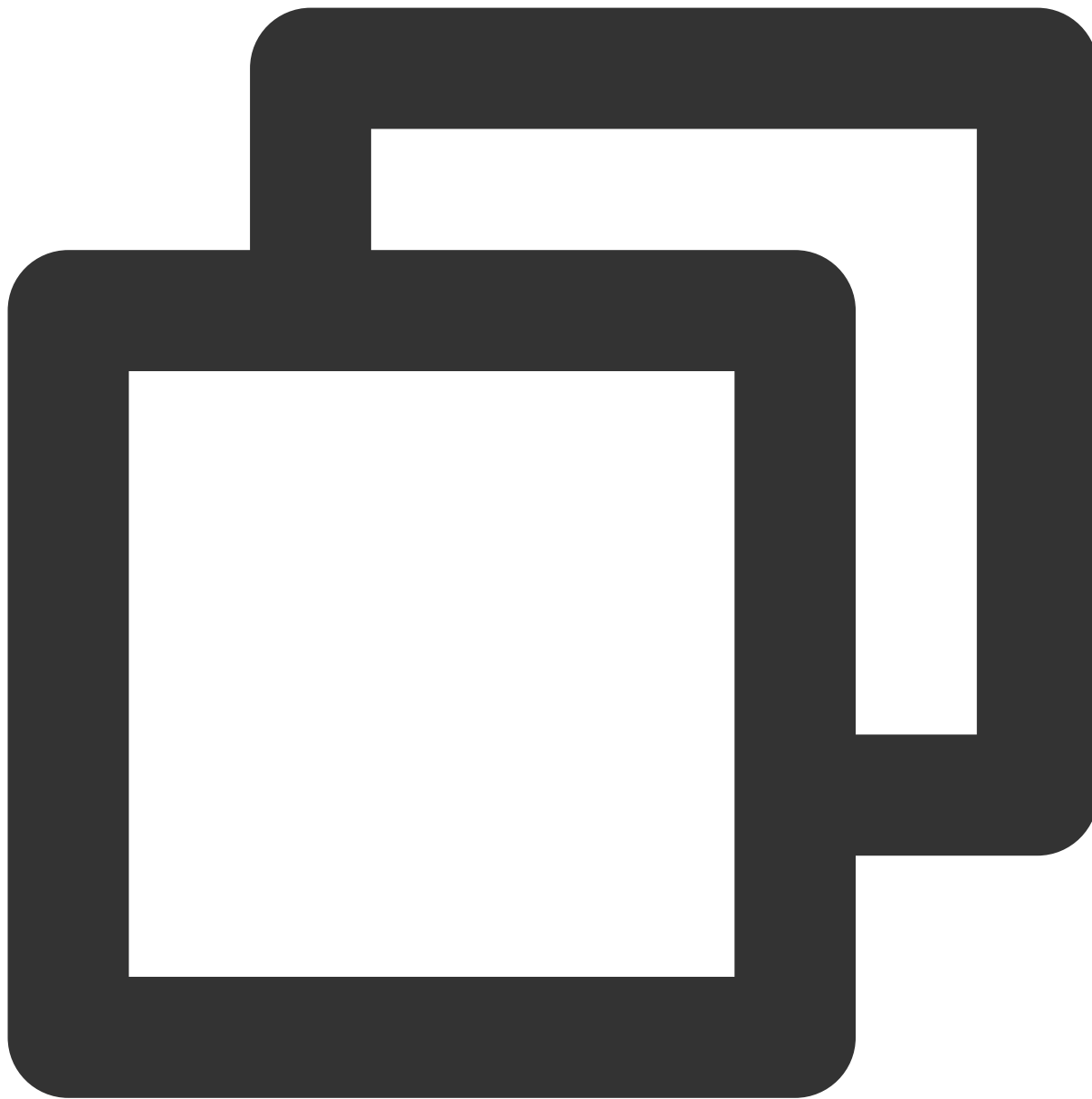


```
// crypto.subtle  
readonly subtle: SubtleCrypto;
```

The Web Crypto API supports common cryptographic operations, such as hashing, signature signing and verification, and encryption and decryption. For more information, see [SubtleCrypto](#).

## Methods

## getRandomValues



```
crypto.getRandomValues(buffer: TypedArray): TypedArray;
```

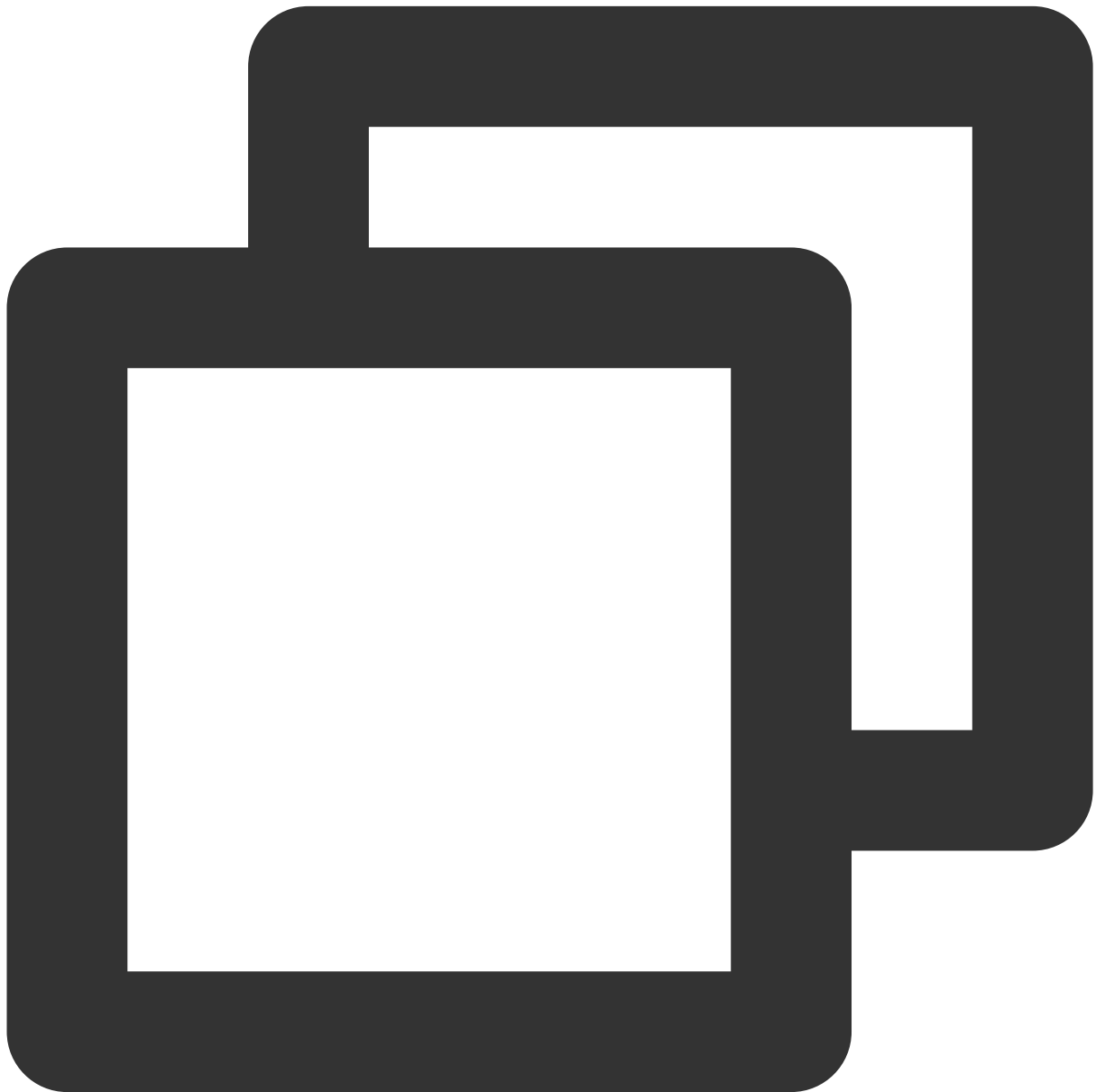
The `getRandomValues()` method generates a random value, fills the buffer with the random value, and returns the buffer.

### Parameters

Parameter	Type	Required	Description

buffer	<a href="#">Int8Array</a>   <a href="#">Uint8Array</a>   <a href="#">Uint8ClampedArray</a>   <a href="#">Int16Array</a>   <a href="#">Uint16Array</a>   <a href="#">Int32Array</a>   <a href="#">Uint32Array</a>   <a href="#">BigInt64Array</a>   <a href="#">BigUint64Array</a>	Yes	The buffer of random values. The value cannot exceed 65,536 bytes in length. For more information, see <a href="#">TypedArray</a> .
--------	---	-----	---

## randomUUID



```
crypto.randomUUID(): string;
```

The `randomUUID()` method generates a new random (version 4) UUID.



# SubtleCrypto

The SubtleCrypto API supports common cryptographic operations, such as hashing, signature signing and verification, and encryption and decryption. For more information, see [SubtleCrypto](#).

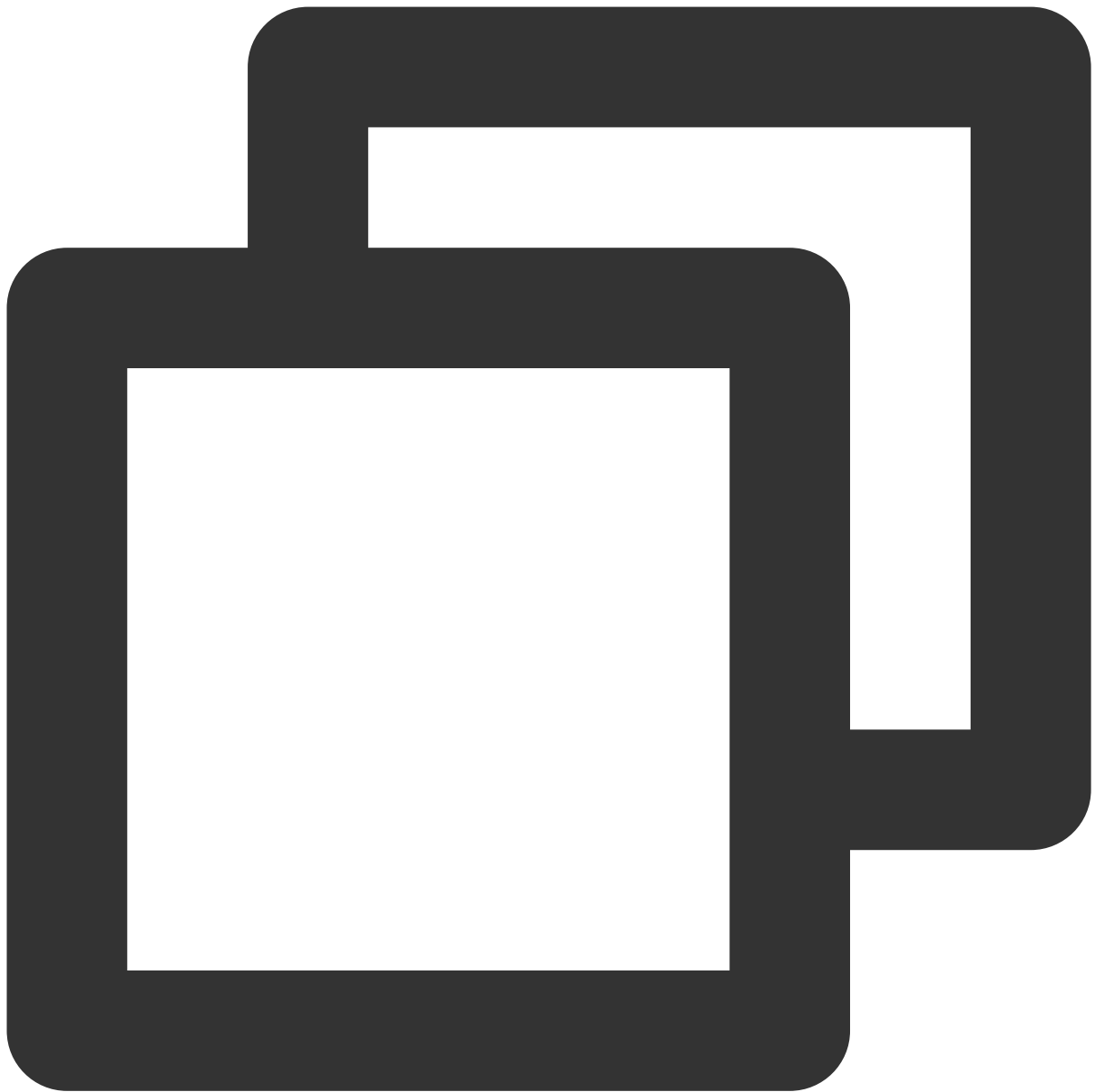
**Note:**

**SubtleCrypto** methods are classified into the following types based on features:

**Encryption methods:** `encrypt/decrypt` , `sign/verify` , and `digest` . Such methods can be used to implement security-related features such as privacy and identity verification.

**Key management methods:** `generateKey` , `deriveKey` , and `importKey/exportKey` . Such methods can be used to manage keys.

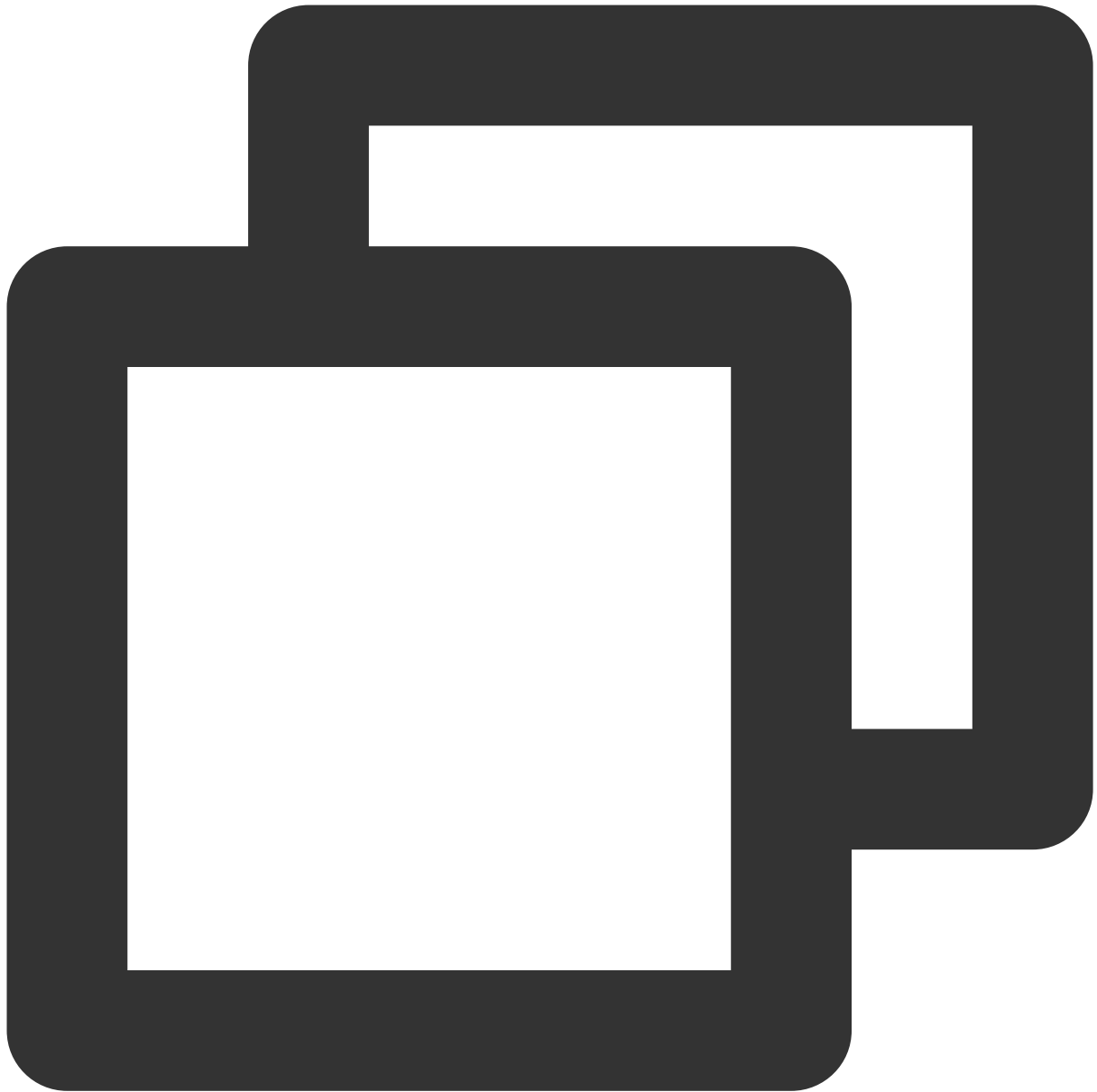
## digest



```
crypto.subtle.digest(algorithm: string | object, data: ArrayBuffer): Promise<ArrayB
```

The `decrypt()` method returns a Promise object that fulfills with the generated data digest (hash). For more information, see [SubtleCrypto.digest](#).

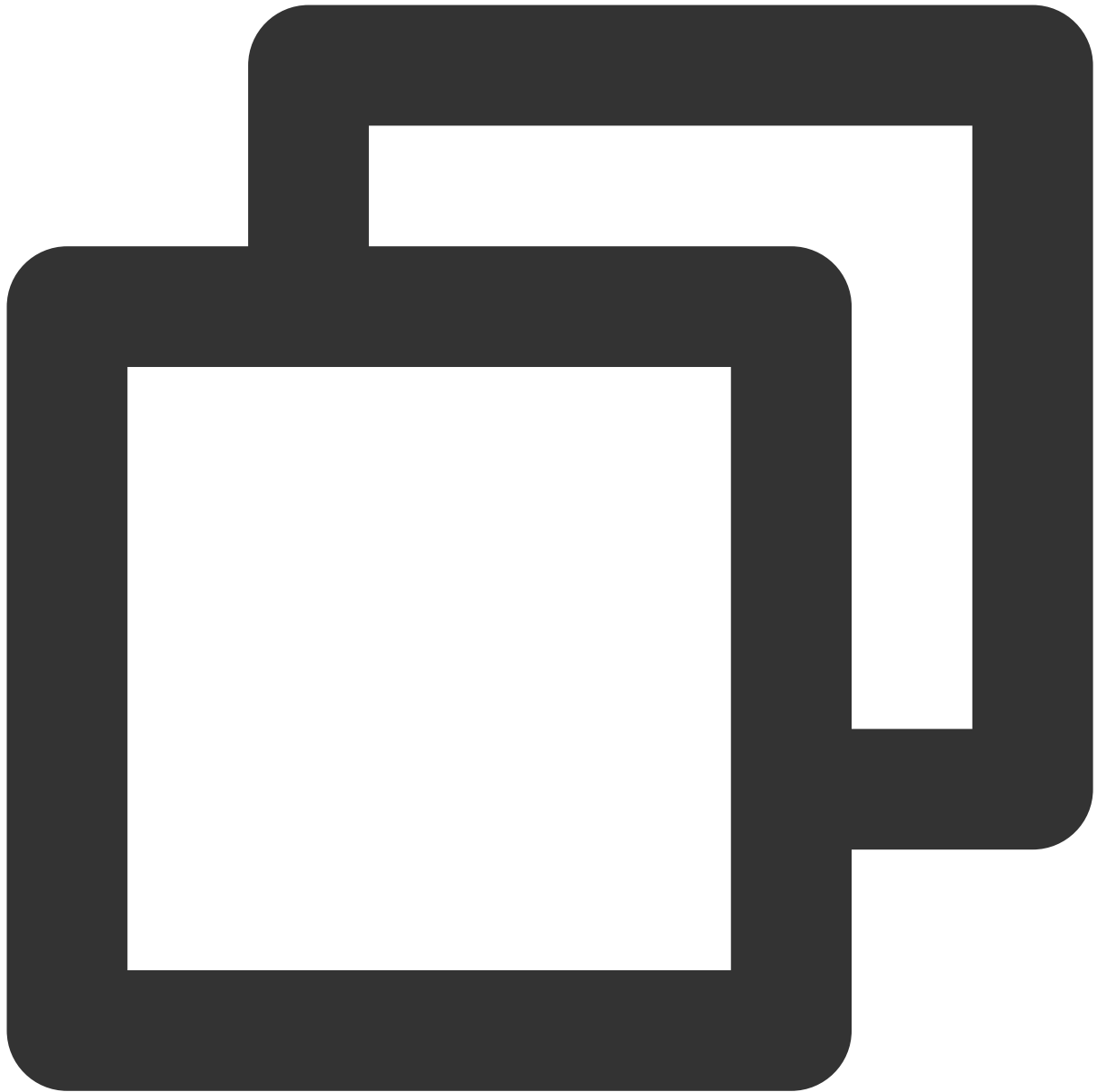
## encrypt



```
crypto.subtle.encrypt(algorithm: object, key: CryptoKey, data: ArrayBuffer): Promise
```

The `encrypt()` method returns a Promise object that fulfills with the encrypted data. For more information, see [SubtleCrypto.encrypt](#).

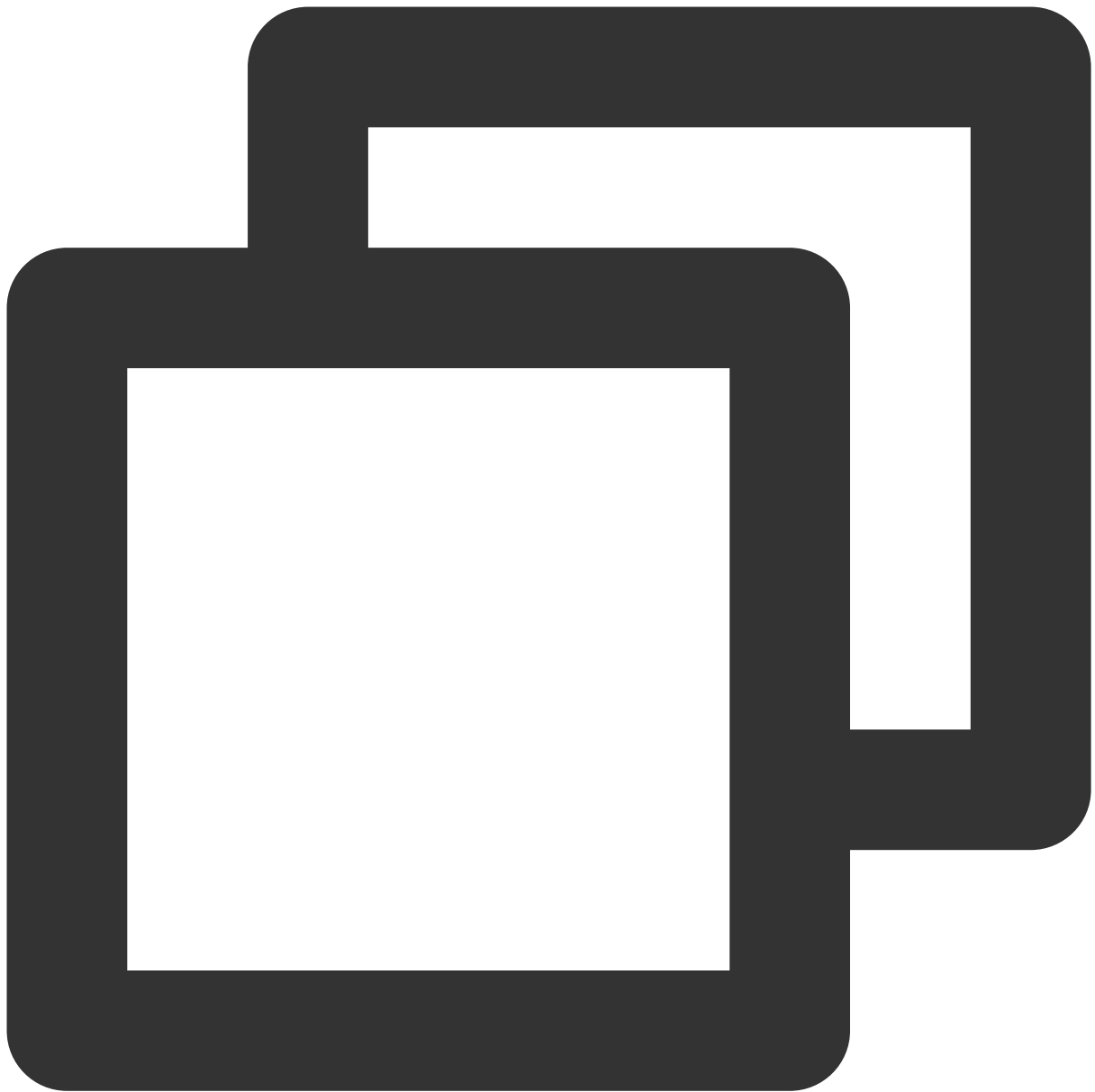
## decrypt



```
crypto.subtle.decrypt(algorithm: object, key: CryptoKey, data: ArrayBuffer): Promise
```

The `decrypt()` method returns a Promise object that fulfills with the decrypted data. For more information, see [SubtleCrypto.decrypt](#).

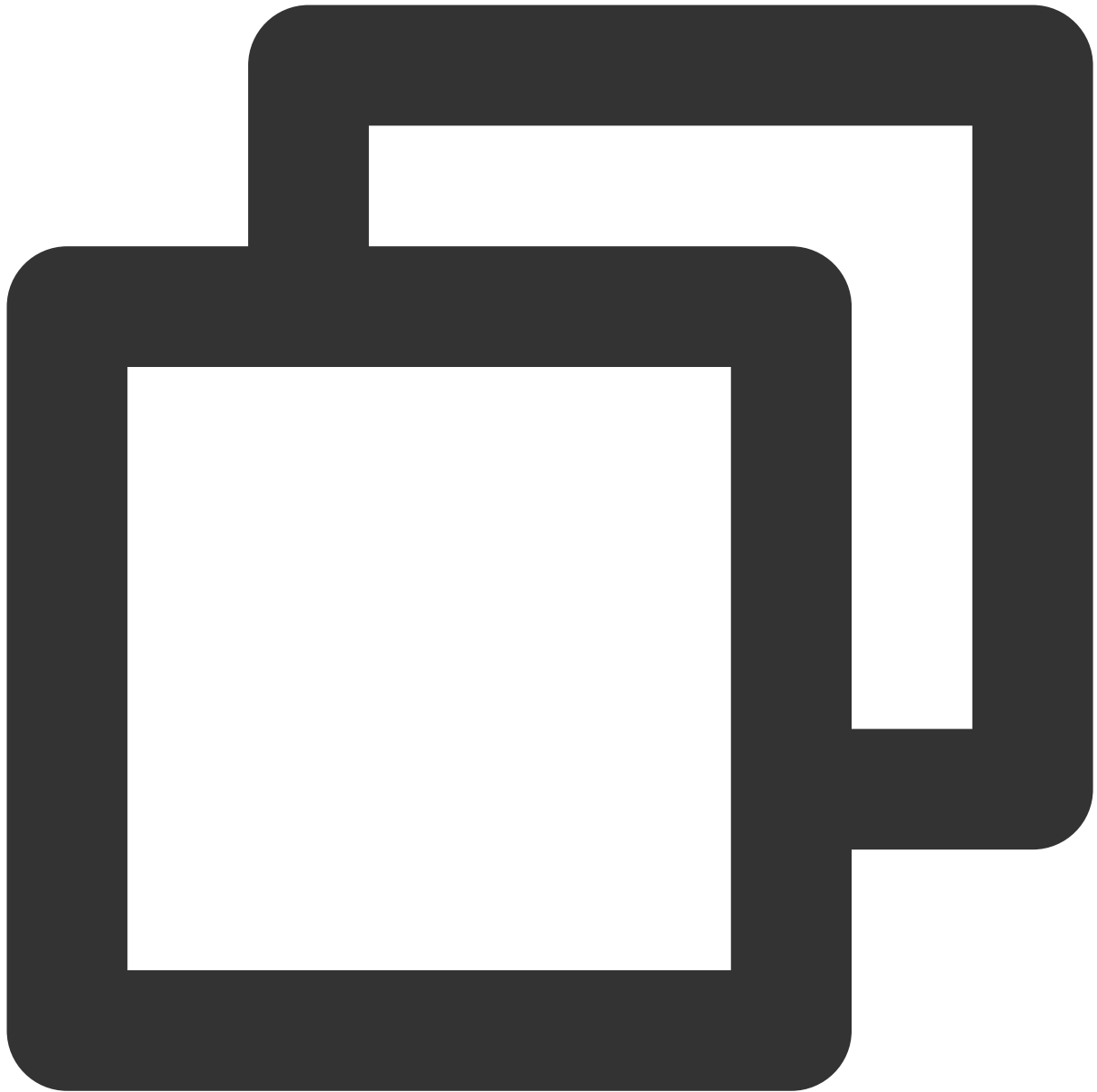
## sign



```
crypto.subtle.sign(algorithm: string | object, key: CryptoKey, data: ArrayBuffer):
```

The `sign()` method returns a Promise object that fulfills with the signature. For more information, see [SubtleCrypto.sign](#).

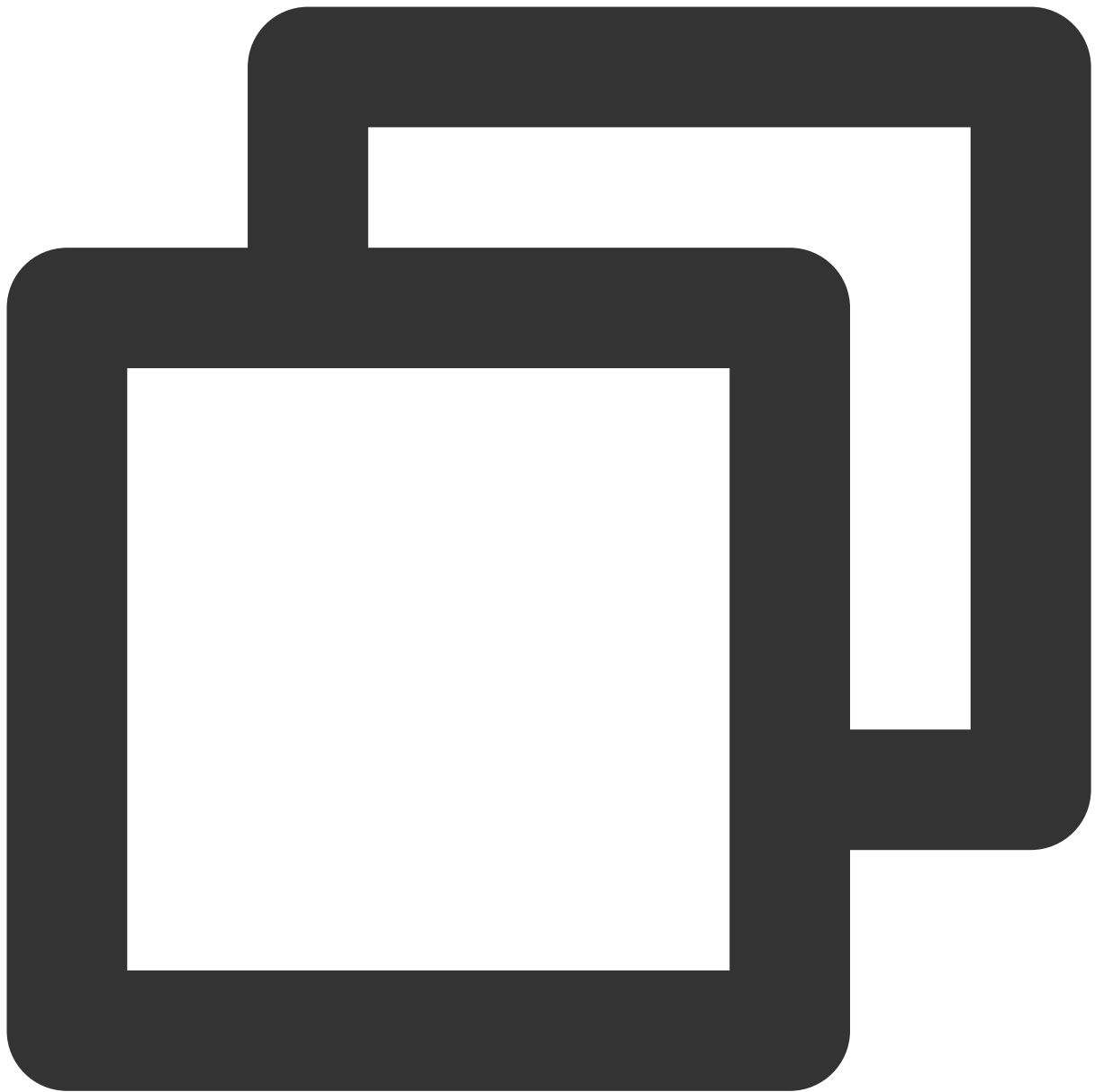
## verify



```
crypto.subtle.verify(algorithm: string | object, key: CryptoKey, signature: BufferS
```

The `verify()` method returns a Promise object that fulfills with the signature verification result. For more information, see [SubtleCrypto.verify](#).

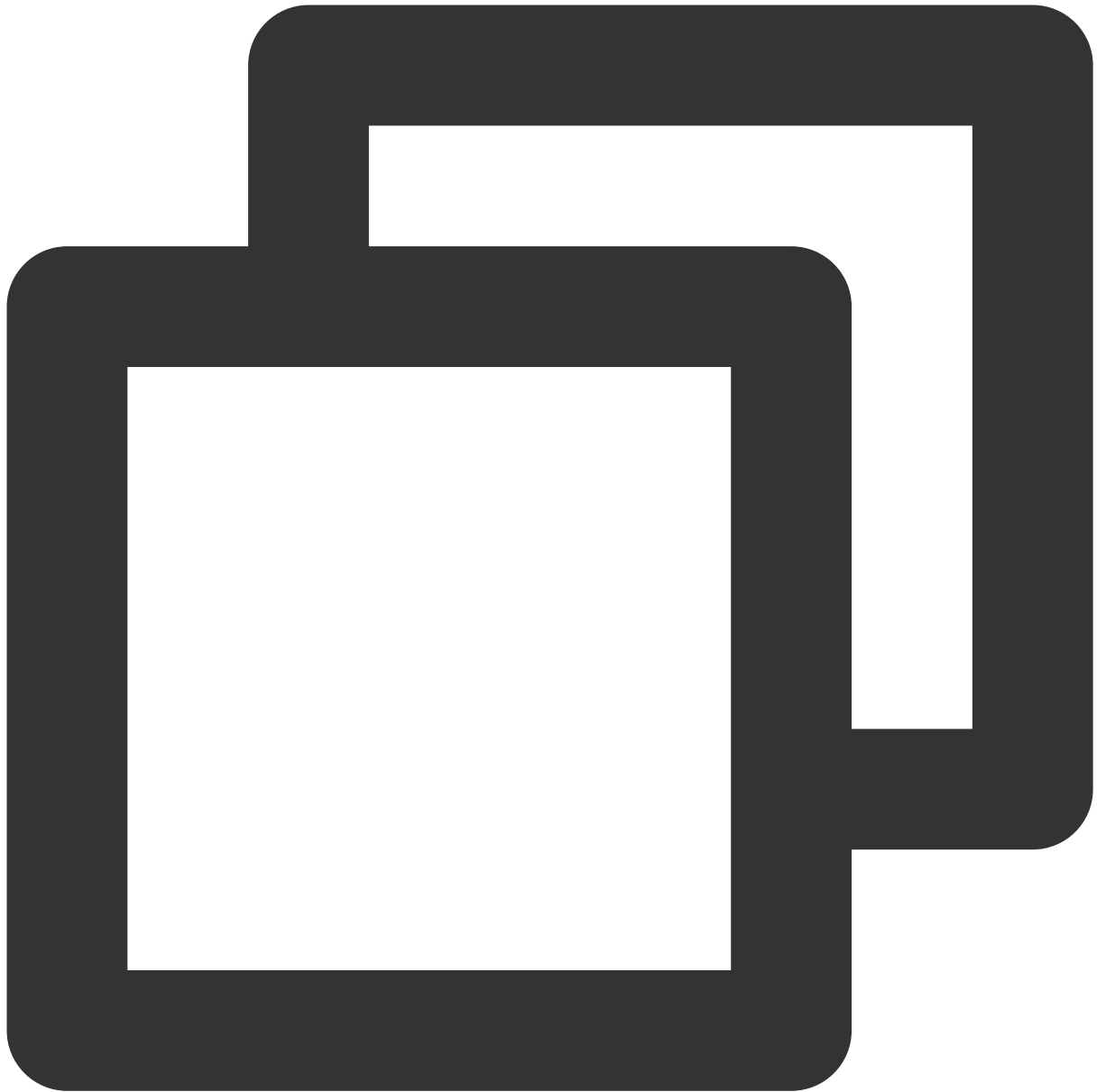
## **generateKey**



```
crypto.subtle.generateKey(algorithm: object, extractable: boolean, keyUsages: Array
```

The `generateKey()` method returns a Promise object that fulfills with a `CryptoKey` or a `CryptoKeyPair`. For more information, see [SubtleCrypto.generateKey](#).

## **deriveKey**

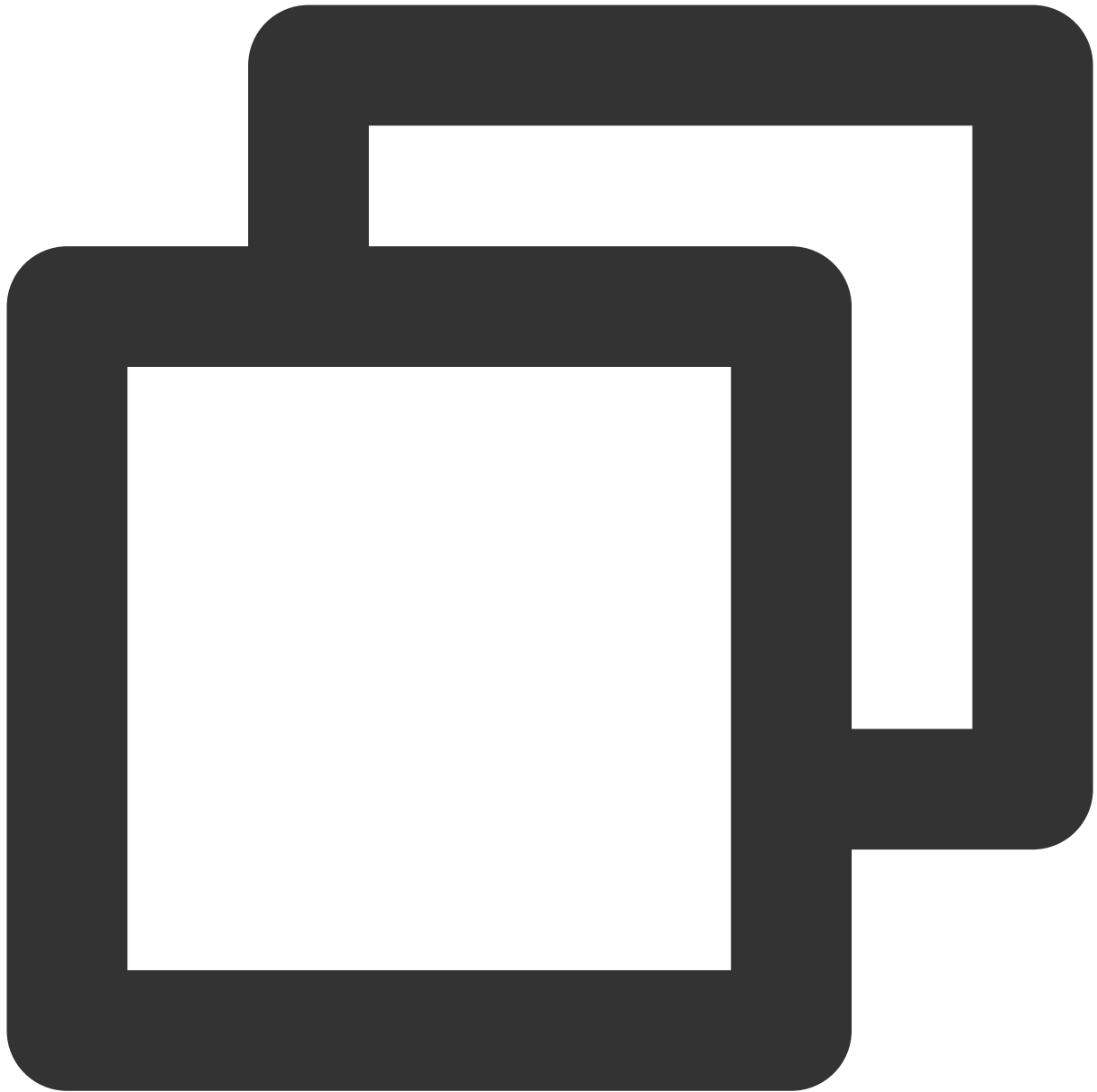


```
crypto.subtle.deriveKey(algorithm: object, baseKey: CryptoKey, derivedKeyAlgorithm:
```

The `deriveKey()` method returns a Promise object that fulfills with a `CryptoKey`. For more information, see [SubtleCrypto.deriveKey](#).

## **importKey**

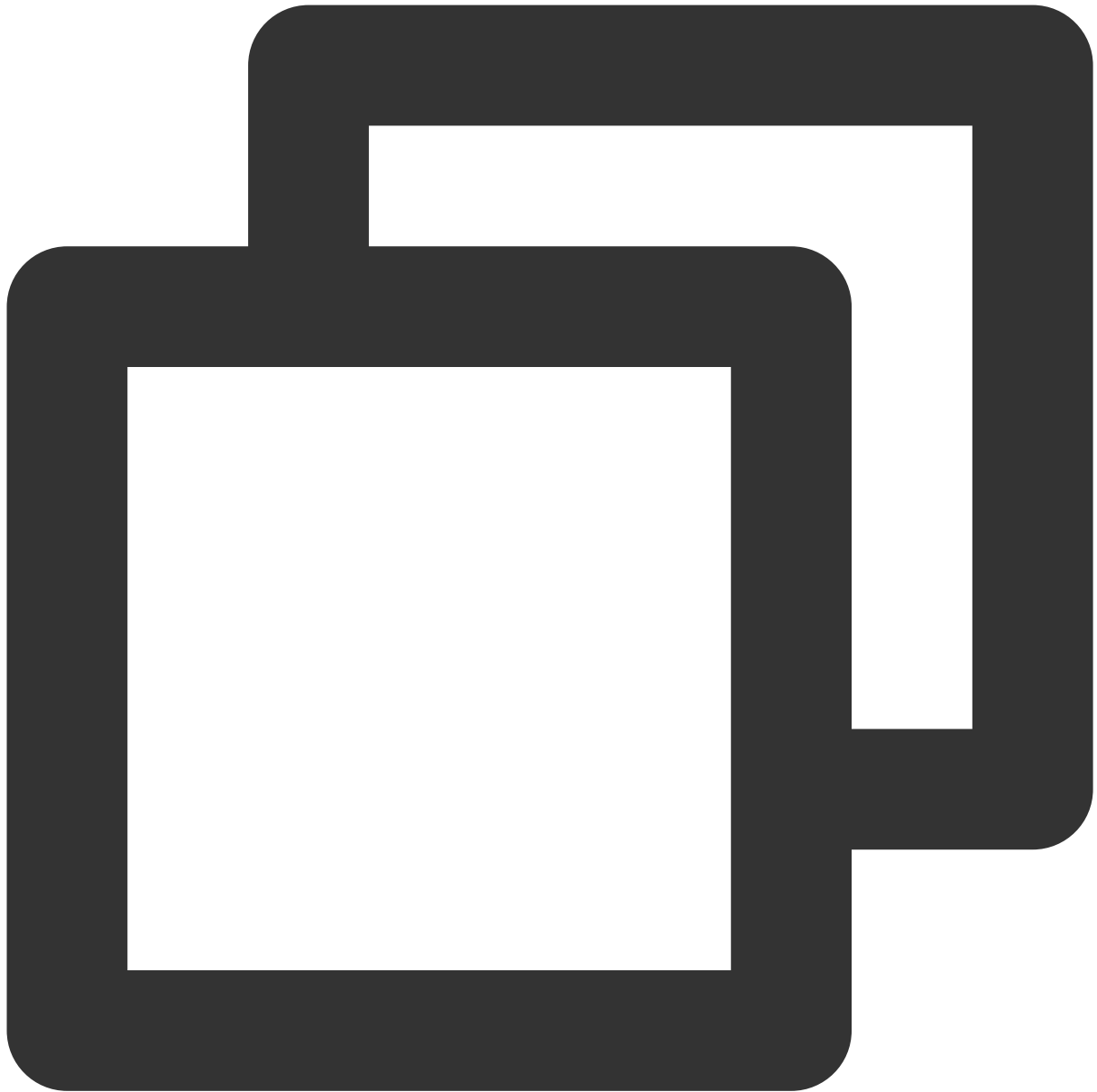




```
crypto.subtle.importKey(format: string, keyData: BufferSource, algorithm: string |
```

The `importKey()` method returns a Promise object that fulfills with a `CryptoKey`. For more information, see [SubtleCrypto.importKey](#).

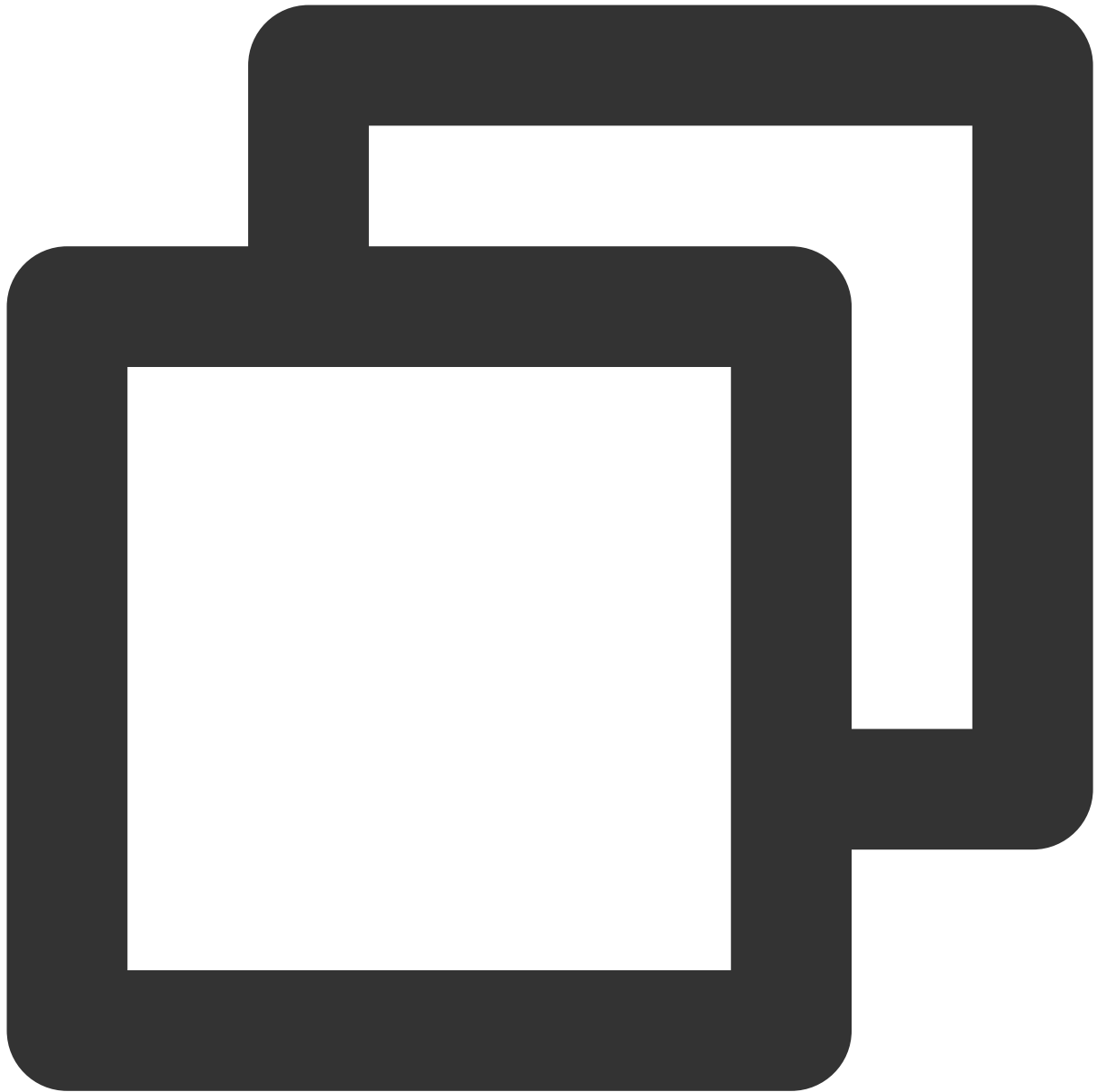
## **exportKey**



```
crypto.subtle.exportKey(format: string, key: CryptoKey): Promise<ArrayBuffer>;
```

The `exportKey()` method returns a Promise object that fulfills with an `ArrayBuffer` containing the key. For more information, see [SubtleCrypto.exportKey](#).

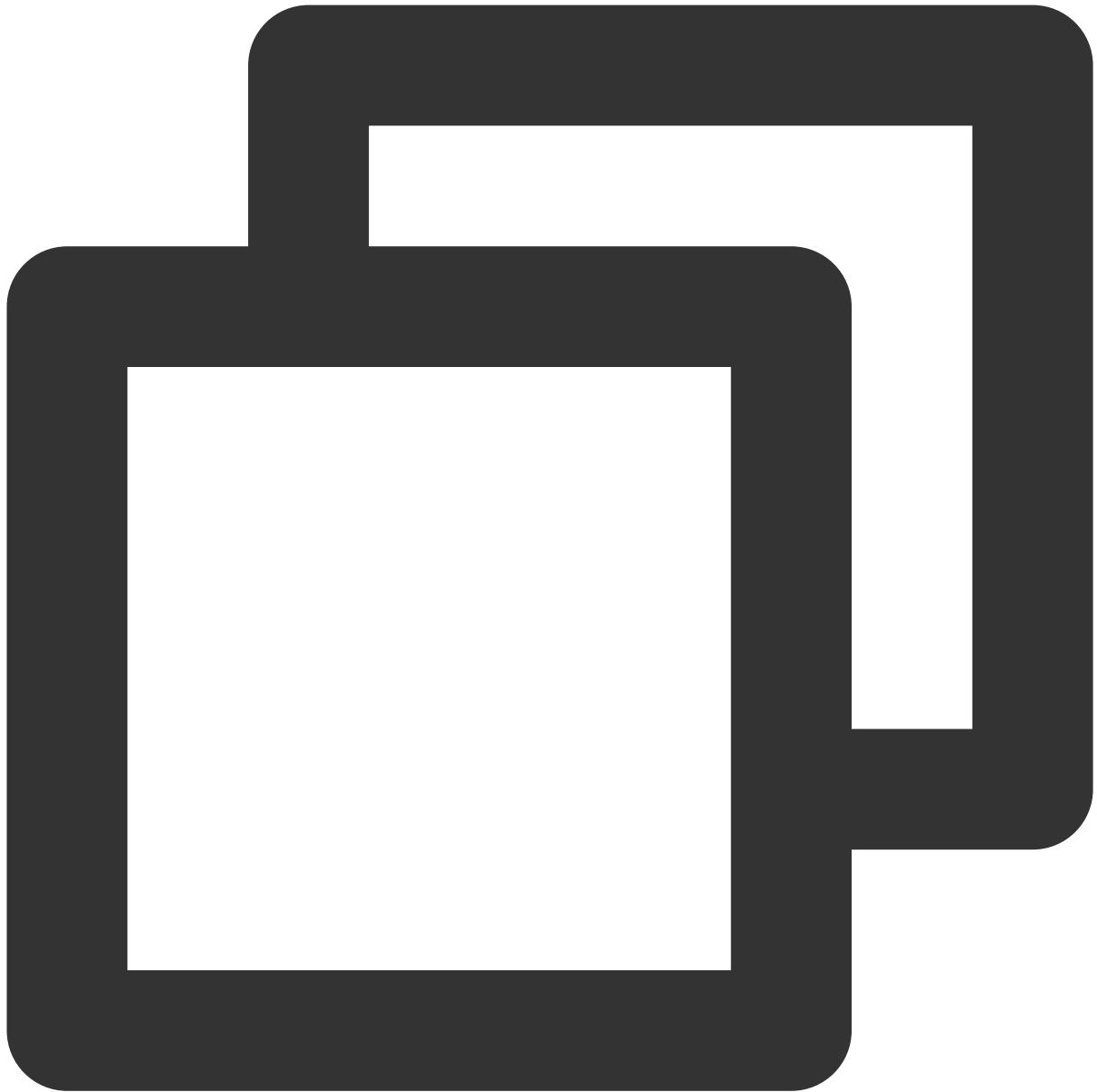
## deriveBits



```
crypto.subtle.deriveBits(algorithm: object, baseKey: CryptoKey, length: integer): P
```

The `deriveBits()` method returns a Promise object that fulfills with an `ArrayBuffer` of pseudo-random bits. For more information, see [SubtleCrypto.deriveBits](#).

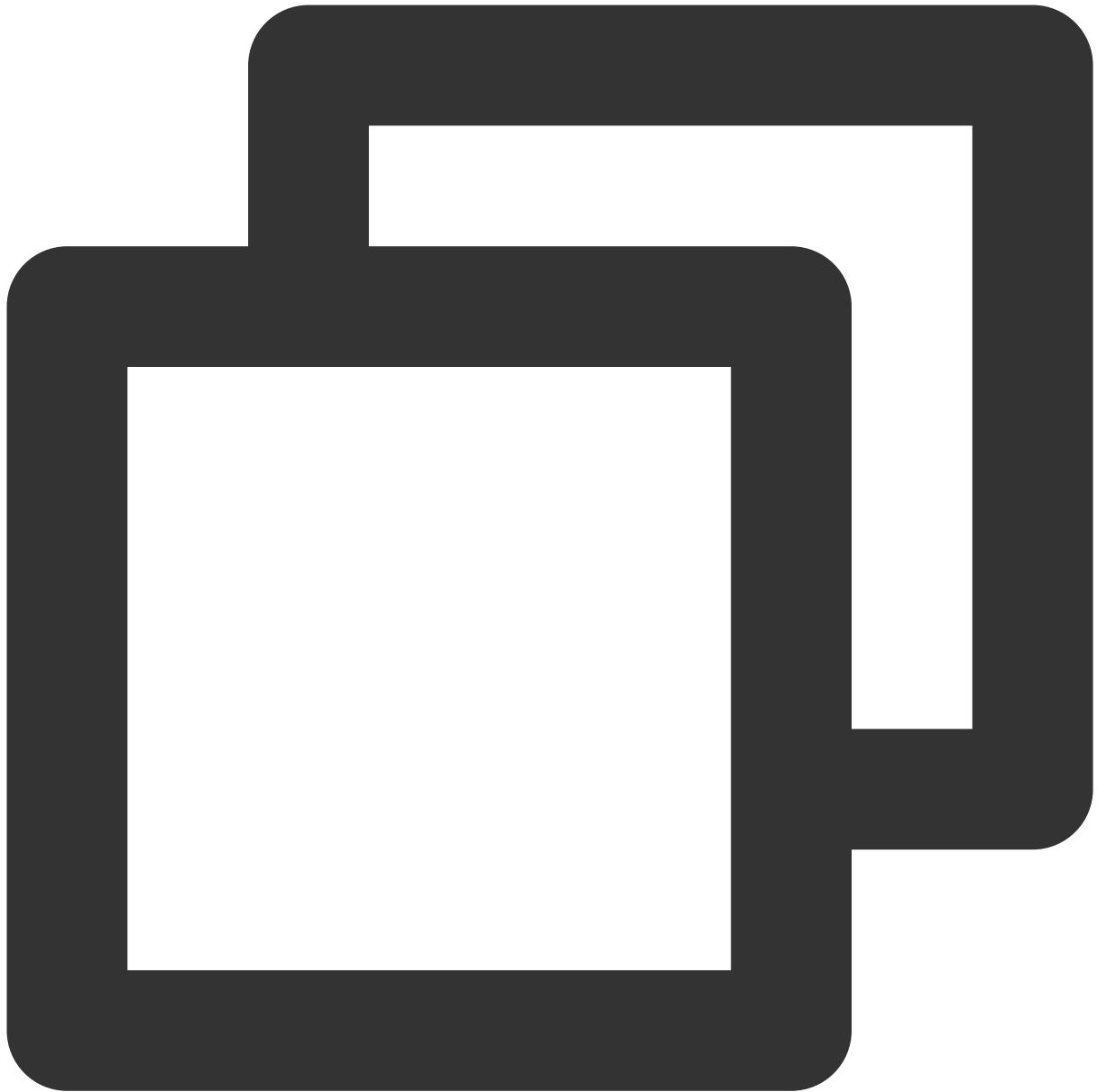
## **wrapKey**



```
crypto.subtle.wrapKey(format: string, key: CryptoKey, wrappingKey: CryptoKey, wrapA
```

The `wrapKey()` method returns a Promise object that fulfills with an `ArrayBuffer` containing the wrapped key. For more information, see [SubtleCrypto.wrapKey](#).

## **unwrapKey**



```
crypto.subtle.unwrapKey(format: string, wrappedKey: ArrayBuffer, unwrappingKey: Cry
```

The `unwrapKey()` method returns a Promise object that fulfills with the unwrapped `CryptoKey`. For more information, see [SubtleCrypto.unwrapKey](#).

## CryptoKey

A `CryptoKey` represents a key that is generated by using an encryption algorithm. For more information, see [CryptoKey](#). The `CryptoKey` object cannot be constructed directly. You can use the following methods to generate `CryptoKey` objects:

[crypto.subtle.generateKey](#)

[crypto.subtle.importKey](#)

[crypto.subtle.deriveKey](#)

[crypto.subtle.unwrapKey](#)

The following table describes the `CryptoKey` attributes.

Attribute	Type	Read-only	Description
type	string	Yes	The type of the key.
extractable	boolean	Yes	Specifies whether the key can be exported.
algorithm	object	Yes	The algorithm for which this key can be used and the associated parameters.
usages	Array<string>	Yes	The usage of the key.

## CryptoKeyPair

A `CryptoKeyPair` represents a key pair that is generated by using an encryption algorithm. For more information, see [CryptoKeyPair](#). The `CryptoKeyPair` object cannot be constructed directly. You can use the following method to generate `CryptoKeyPair` objects:

[crypto.subtle.generateKey](#)

The following table describes the `CryptoKeyPair` attributes.

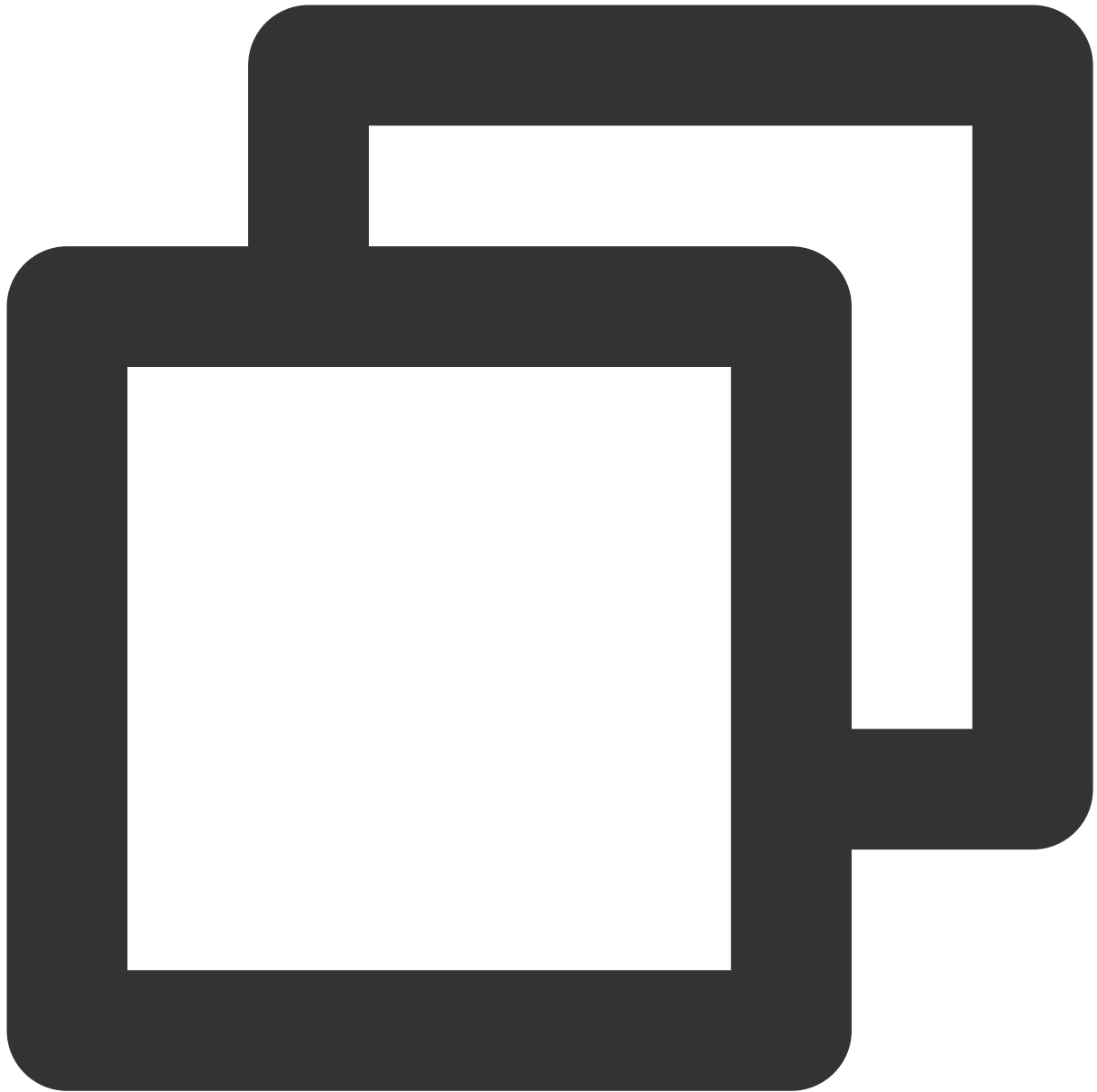
Attribute	Type	Read-only	Description
privateKey	<a href="#">CryptoKey</a>	Yes	The private key. For encryption and decryption algorithms, this key is used for decryption. For signature signing and verification algorithms, this key is used for signature signing.
publicKey	<a href="#">CryptoKey</a>	Yes	The public key. For encryption and decryption algorithms, this key is used for encryption. For signature signing and verification algorithms, this key is used for signature verification.

## Supported Algorithms

Edge Functions supports all algorithms that are defined in the [WebCrypto](#) specification. The following table describes the algorithms.

Algorithm	encrypt() decrypt()	sign() verify()	wrapKey() unwrapKey()	deriveKey() deriveBits()	generateKey()	importKey()	exportKey()
RSASSA-PKCS1-v1_5	-	✓	-	-	✓	✓	✓
RSA-PSS	-	✓	-	-	✓	✓	✓
RSA-OAEP	✓	-	✓	-	✓	✓	✓
ECDSA	-	✓	-	-	✓	✓	✓
ECDH	-	-	-	✓	✓	✓	✓
HMAC	-	✓	-	-	✓	✓	✓
AES-CTR	✓	-	✓	-	✓	✓	✓
AES-CBC	✓	-	✓	-	✓	✓	✓
AES-GCM	✓	-	✓	-	✓	✓	✓
AES-KW	-	-	✓	-	✓	✓	✓
HKDF	-	-	-	✓	-	✓	-
PBKDF2	-	-	-	✓	-	✓	-
SHA-1	-	-	-	-	-	-	-
SHA-256	-	-	-	-	-	-	-
SHA-384	-	-	-	-	-	-	-
SHA-512	-	-	-	-	-	-	-
MD5	-	-	-	-	-	-	-

## Sample Code



```
function uint8ArrayToHex(arr) {  
  return Array.prototype.map.call(arr, (x) => ((`0${x.toString(16)}`).slice(-2)))  
}  
  
async function handleEvent(event) {  
  const encodeArr = TextEncoder().encode('hello world');  
  // Execute MD5.  
  const md5Buffer = await crypto.subtle.digest({ name: 'MD5' }, encodeArr);  
  // Generate a hexadecimal string.  
  const md5Str = uint8ArrayToHex(new Uint8Array(md5Buffer));  
}
```



```
    const response = new Response(md5Str);  
    return response;  
}  
  
addEventListener('fetch', async (event) => {  
    event.respondWith(handleEvent(event));  
});
```

## References

[MDN documentation: Web Crypto API](#)

[MDN documentation: SubtleCrypto](#)

[MDN documentation: CryptoKey](#)

[MDN documentation: CryptoKeyPair](#)

[Sample Functions: Protecting Data from Tampering](#)

[Sample Functions: Rewriting a m3u8 File and Configuring Authentication](#)

[Sample Functions: Caching POST Requests](#)

# Web standards

Last updated : 2023-12-13 11:13:40

Edge Functions designs a serverless code execution environment based on the **V8 JavaScript engine** and provides the following standardized Web APIs.

## JavaScript Standard Built-in Objects

Edge Functions supports all JavaScript standard built-in objects. For more information, see [Standard built-in objects](#).

## URL



```
const urlInfo = new URL('https://www.tencentcloud.com/');
```

The URL API is used to parse, construct, standardize, and encode URLs. For more information, see [URL](#).

## Blob



```
const blob = new Blob(['hello', 'world'], { type: 'text/plain' });
```

The Blob API represents a file-like object of immutable and raw data. For more information, see [Blob](#).

## Base64

### btoa



```
function btoa(data: string | ArrayBuffer | ArrayBufferView): string;
```

The `btoa()` method performs Base64 encoding. Unicode strings are not supported. For more information, see [btoa\(\)](#).

## **atob**



```
function atob(data: string): string;
```

The `atob()` method performs Base64 decoding. Unicode strings are not supported. For more information, see [atob\(\)](#).

## **btoaUTF8**



```
function btoaUTF8(data: string): string;
```

The `btoaUTF8()` method performs Base64 encoding. Unicode strings are supported.

### **atobUTF8**



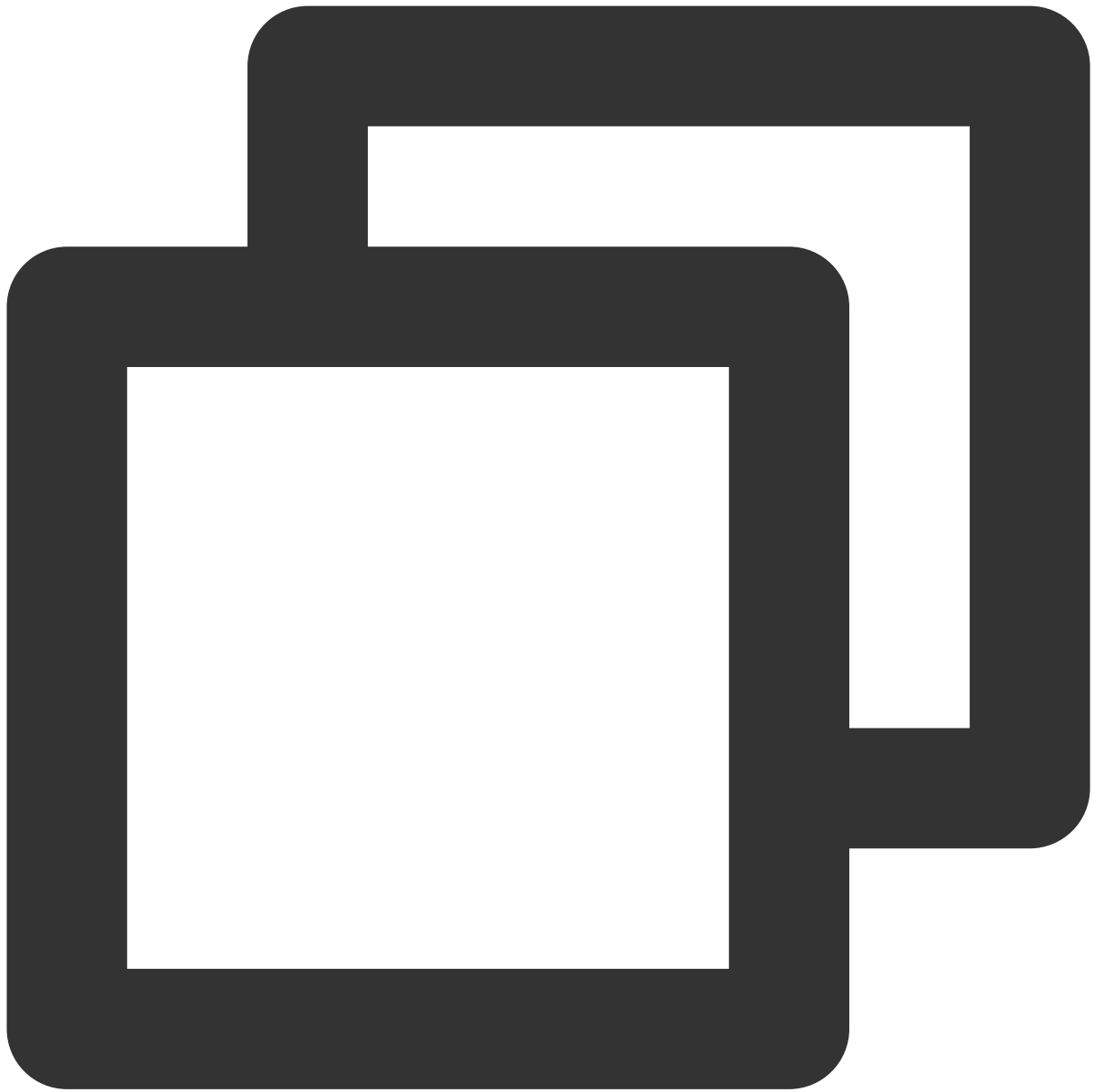
```
function atobUTF8(data: string): string;
```

The atobUTF8() method performs Base64 decoding. Unicode strings are supported.

## Timer



## setTimeout



```
setTimeout(func: function): number;  
setTimeout(func: function, delay: number): number;  
setTimeout(func: function, delay: number, ...args: any[]): number;
```

Functioning as an ordinary timer, it executes the designated function upon expiration. For more details, see [setTimeout](#).

## clearTimeout



```
clearTimeout(timeoutID: number): void;
```

It is an ordinary timer to clear the designated `timeoutID` . For more information, see [clearTimeout](#).

## setInterval



```
setInterval(func: function): number;  
setInterval(func: function, delay: number): number;  
setInterval(func: function, delay: number, ...args: any[]): number;
```

Functioning as a recurring timer, it implements the designated function upon expiration. For more information, see [setInterval](#).

## **clearInterval**



```
clearInterval(intervalID: number): void;
```

It is used to clear a recurring timer. For more details, see [clearInterval](#).

## setImmediate



```
setImmediate(func: function): number;  
setImmediate(func: function, ...args: any[]): number;
```

Functioning as an immediate timer, it executes the designated function after the EDGE-FUNCTION stack has been cleared. For more information, see [setImmediate](#).

### **clearImmediate**



```
clearImmediate(immediateID: number): void;
```

It is used to clear an immediate timer. For more information, see [setImmediate](#).

## EventTarget and Event

### EventTarget



```
const eventTarget = new EventTarget();
```

The EventTarget API allows objects to publish and subscribe to events. For more information, see [EventTarget](#).

## Event



```
const event = new Event('type name');
```

The Event API represents a basic event. For more information, see [Event](#).

## AbortSignal and AbortController

### AbortSignal





```
const signal = AbortSignal.abort();
```

The `AbortSignal` API represents a signal object that allows you to stop a request. For more information, see [AbortSignal](#).

## AbortController



```
const controller = new AbortController();
```

The `AbortController` API represents a controller object that allows you to stop a request. For more information, see [AbortController](#).

## CompressionStream and DecompressionStream

### CompressionStream



```
const { readable, writable } = new CompressionStream('gzip');
```

CompressionStream supports compression methods including `gzip` , `deflate` , and `br` . For more details, see [CompressionStream](#).

## DecompressionStream



```
const { readable, writable } = new DecompressionStream('gzip');
```

DecompressionStream supports decompression methods including `gzip` , `deflate` , and `br` . For more details, see [DecompressionStream](#).

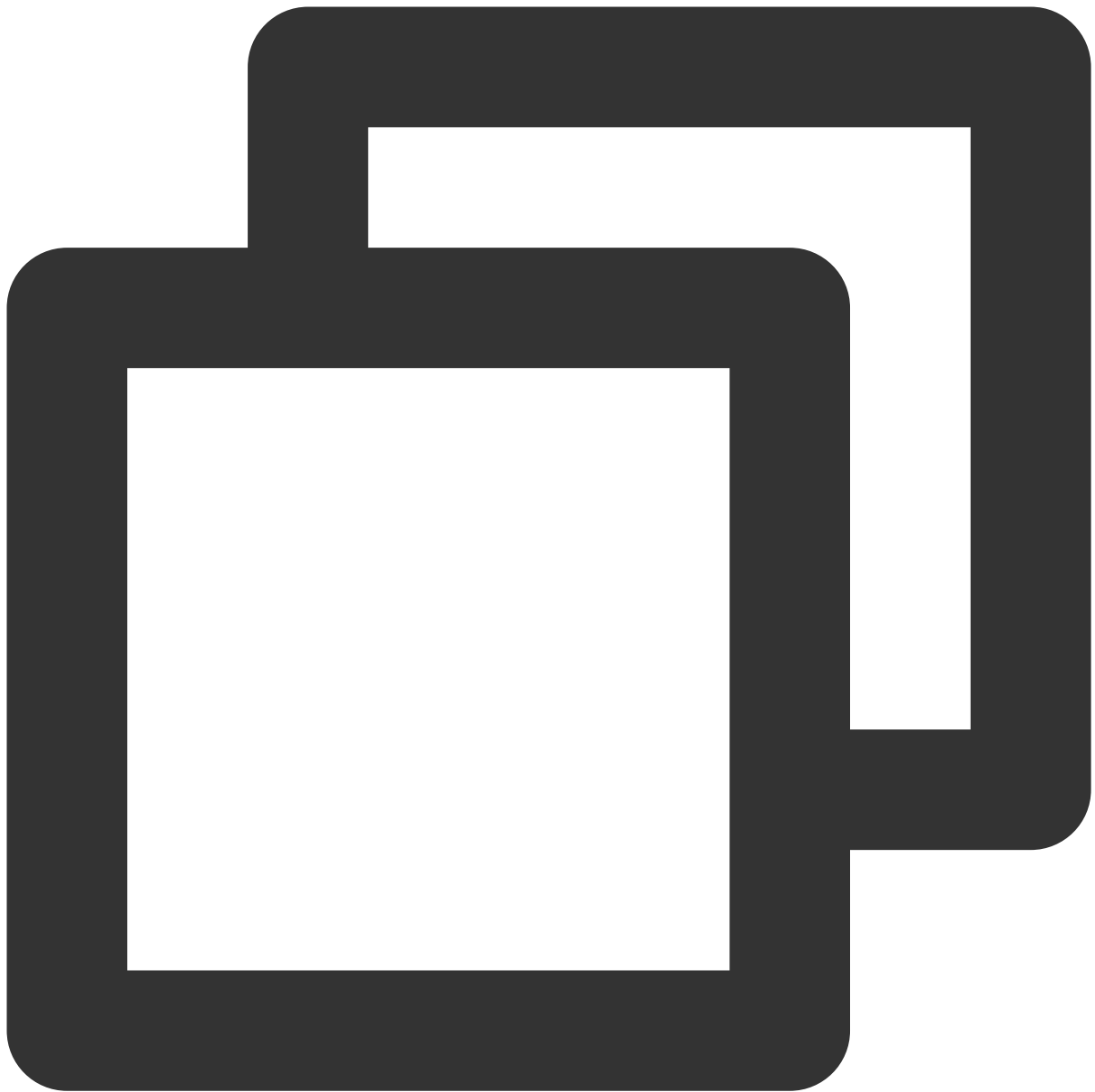
# Images

## ImageProperties

Last updated : 2024-05-24 16:52:27

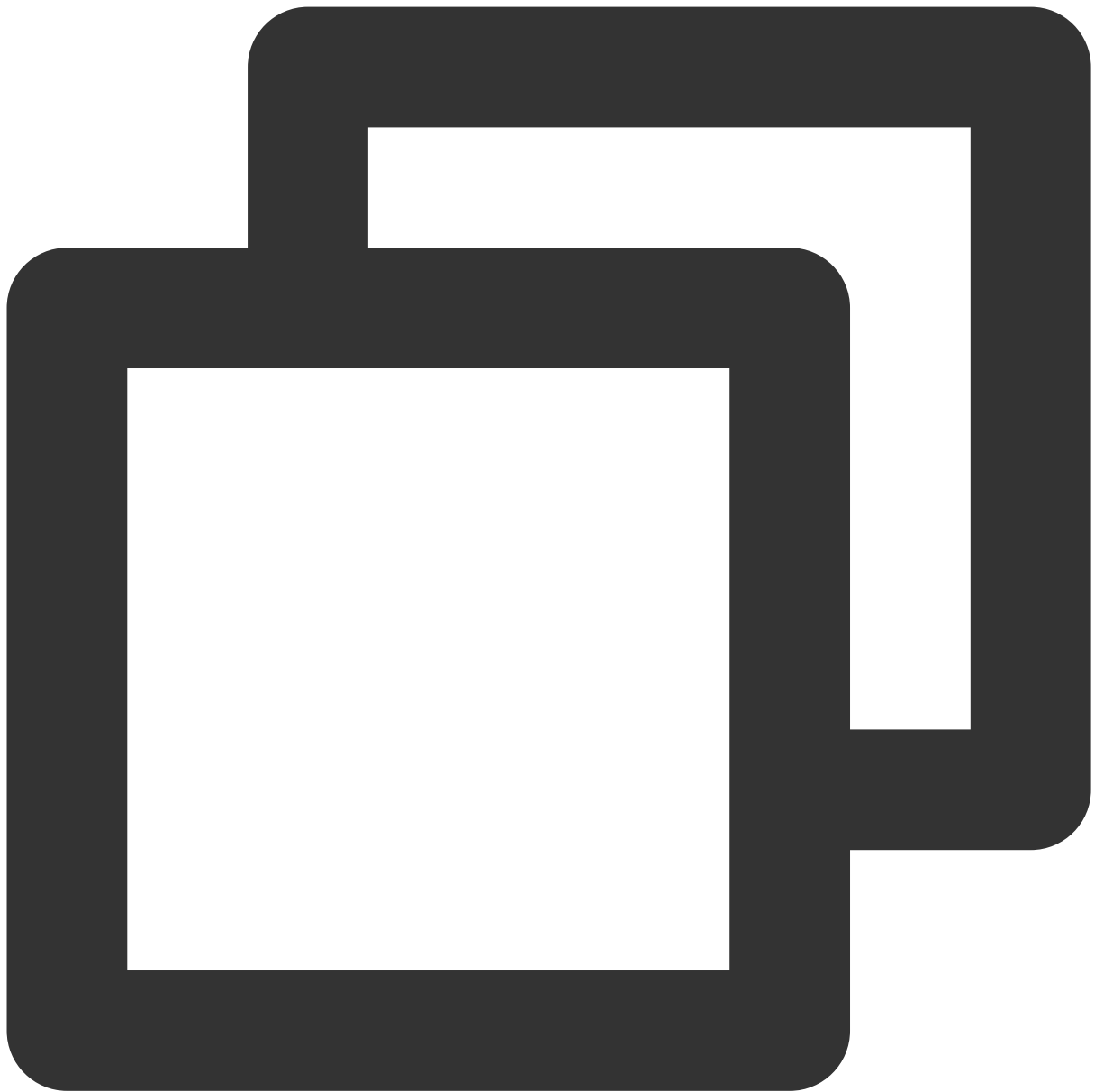
OrientationEdge functions support custom image processing behaviors when you initialize a [Fetch](#) request or initializing a [Request](#) object, through the ImageProperties parameter in [RequestInitEoProperties](#). ImageProperties is a non-standard option not included in the Web APIs. Here is how to use it.

When you initialize a [Fetch](#) request, set the ImageProperties parameter as follows:



```
addEventListener('fetch', (event) => {  
  const response = fetch(event.request, { eo: { image: { format: "avif" } } });  
  event.respondWith(response);  
});
```

When you initialize a [Request](#) object, set the ImageProperties parameter as follows:



```
async function handleRequest() {
  const request = new Request("https://www.example.com/test.jpg", { eo: { image: {
  const response = await fetch(request);
  return response;
}

addEventListener('fetch', (event) => {
  event.respondWith(handleRequest());
});
```

Edge Functions support multiple image processing capabilities by setting different ImageProperties parameters. This includes [Image Format Conversion](#), [Image Quality Conversion](#), [Image Scaling](#), [Image Cropping](#), with specific configurations as follows.

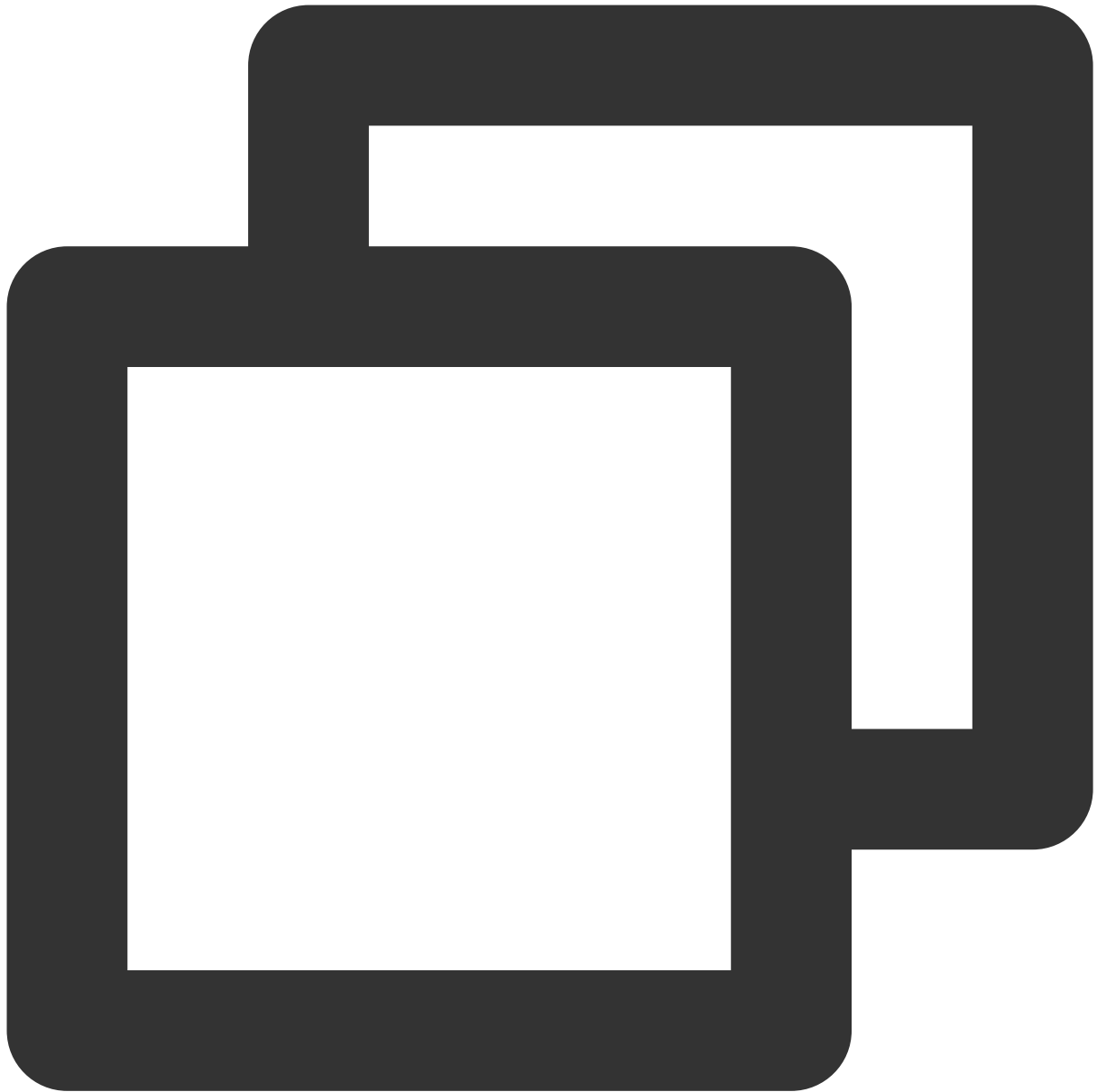
## Format Conversion

By specifying the `format` parameter, the original image is converted to the specified format.

Parameter Name	Type	Required	Description
<code>format</code>	string	No	Convert the original image to a specified format. Supports for <code>jpg</code> , <code>gif</code> , <code>png</code> , <code>bmp</code> , <code>webp</code> , <code>avif</code> , <code>jp2</code> , <code>jxr</code> , <code>heif</code> .
<code>avoidSizeIncrease</code>	boolean	No	When this parameter is set, if the processed image size exceeds that of the original, the original image will be returned without processing.

Example:





```
// Convert the original image to AVIF format.  
eo: { image: { format: "avif" } }
```

## Quality Conversion

By specifying the `quality` parameter, the quality of the image is adjusted.

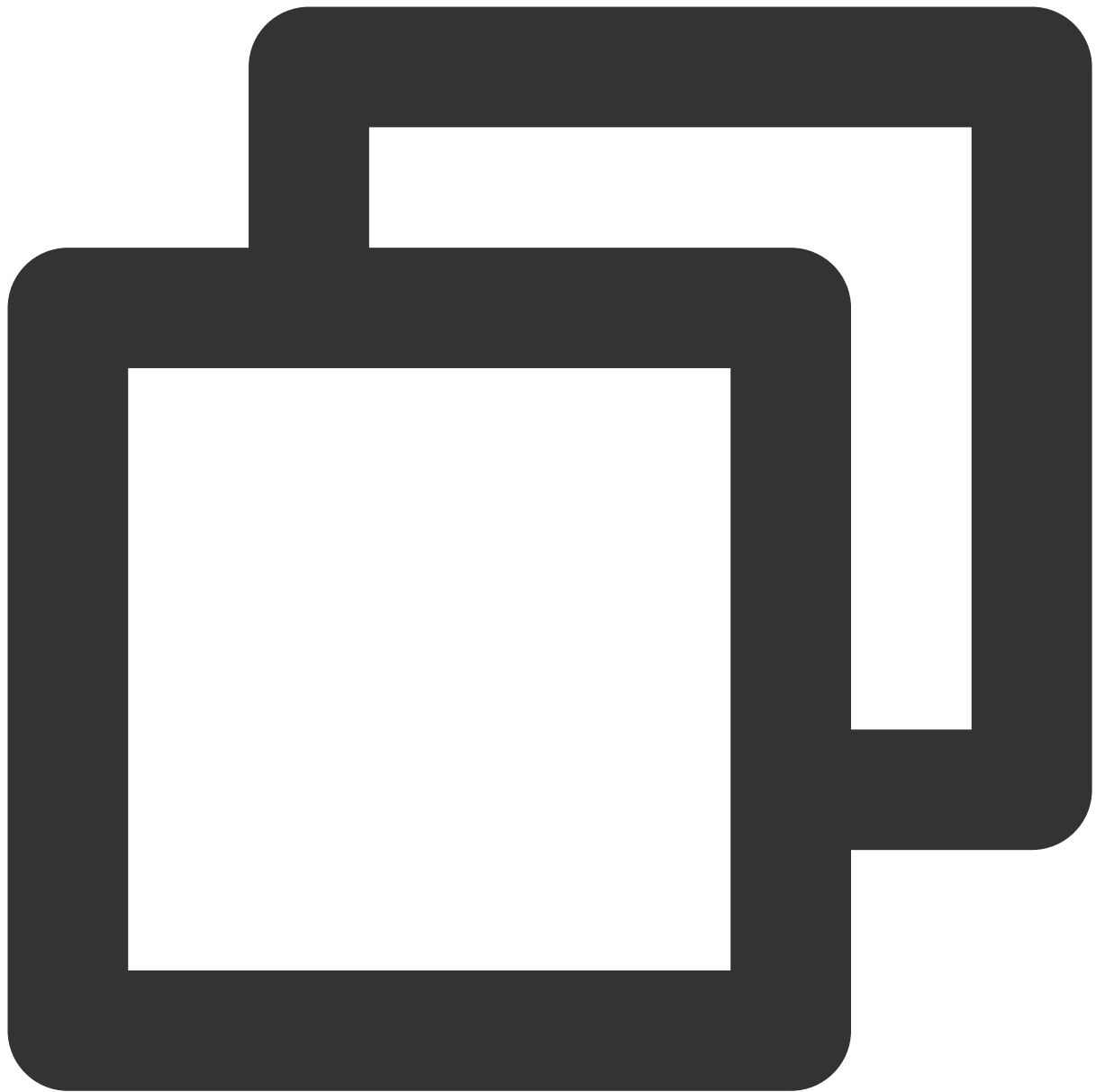
Parameter Name	Type	Required	Description

quality	string   number	No	The absolute quality of the image, with a value range of 0 to 100. Use the minimum value between the original image quality and the specified quality. Append "!" after quality to enforce the specified value, for example, "90!".
rquality	string   number	No	The relative quality of the image, with a value range of 0 to 100, is based on the original image quality. For example, if the original image quality is 80 and rquality is set to 80, the resulting processed image will have a quality of 64 (calculated as 80x80%).
lquality	string   number	No	The minimum quality of the image, with a value range of 0 to 100. Set the minimum value of the quality parameter for the result image. For example, if the original image quality is 85, and lquality is set to 80, the quality of the processed image remains at 85. For example, if the original image quality is 60, and lquality is set to 80, the quality of the processed image will be enhanced to 80.
avoidSizeIncrease	boolean	No	When this parameter is set, if the processed image size exceeds that of the original, the original image will be returned without processing.

**Note:**

The quality conversion parameters have an order of precedence. By default, `lquality` > `quality` > `rquality`. If all are configured simultaneously, only the parameter with the highest priority takes effect.

Example:



```
// Set the absolute quality of the image to 80.  
eo: { image: { quality: 80 } }
```

```
// Set the relative quality of the image to 80.  
eo: { image: { rquality: 80 } }
```

```
// Set the minimum quality of the image to 80.  
eo: { image: { lquality: 80 } }
```

## Image Scaling

Image scaling operations are controlled by the `fit` parameter. By setting different `fit` parameters, various types of scaling operations can be achieved.

Parameter Name	Type	Required	Description
<code>fit</code>	string	No	Set different image scaling and cropping modes, with the following supported values for the <code>fit</code> parameter: contain: (Default) Scale the image while maintaining its aspect ratio. cover: Scale the image without maintaining its aspect ratio according to pixel values. percent: Scale the image without maintaining its aspect ratio according to a percentage value.

### Note:

The behaviors corresponding to different `fit` parameters will be explained in detail below.

### Proportional Scaling

When the `fit` parameter is not set or the `fit` parameter is set to `contain`, the image is scaled while maintaining its aspect ratio.

Parameter Name	Type	Required	Description
<code>width</code>	string   number	No	Set the target image width to be scaled to width pixels. When only the width parameter is set, the height is scaled proportionally.
<code>height</code>	string   number	No	Set the target image height to be scaled to height pixels. When only the height parameter is set, the width is scaled proportionally.
<code>long</code>	string   number	No	Set the target image's long edge to be scaled to long pixels. Set the short edge to be scaled proportionally.
<code>short</code>	string   number	No	Set the target image's short edge to be scaled to short pixels. Set the long edge to be scaled proportionally.

### Note:

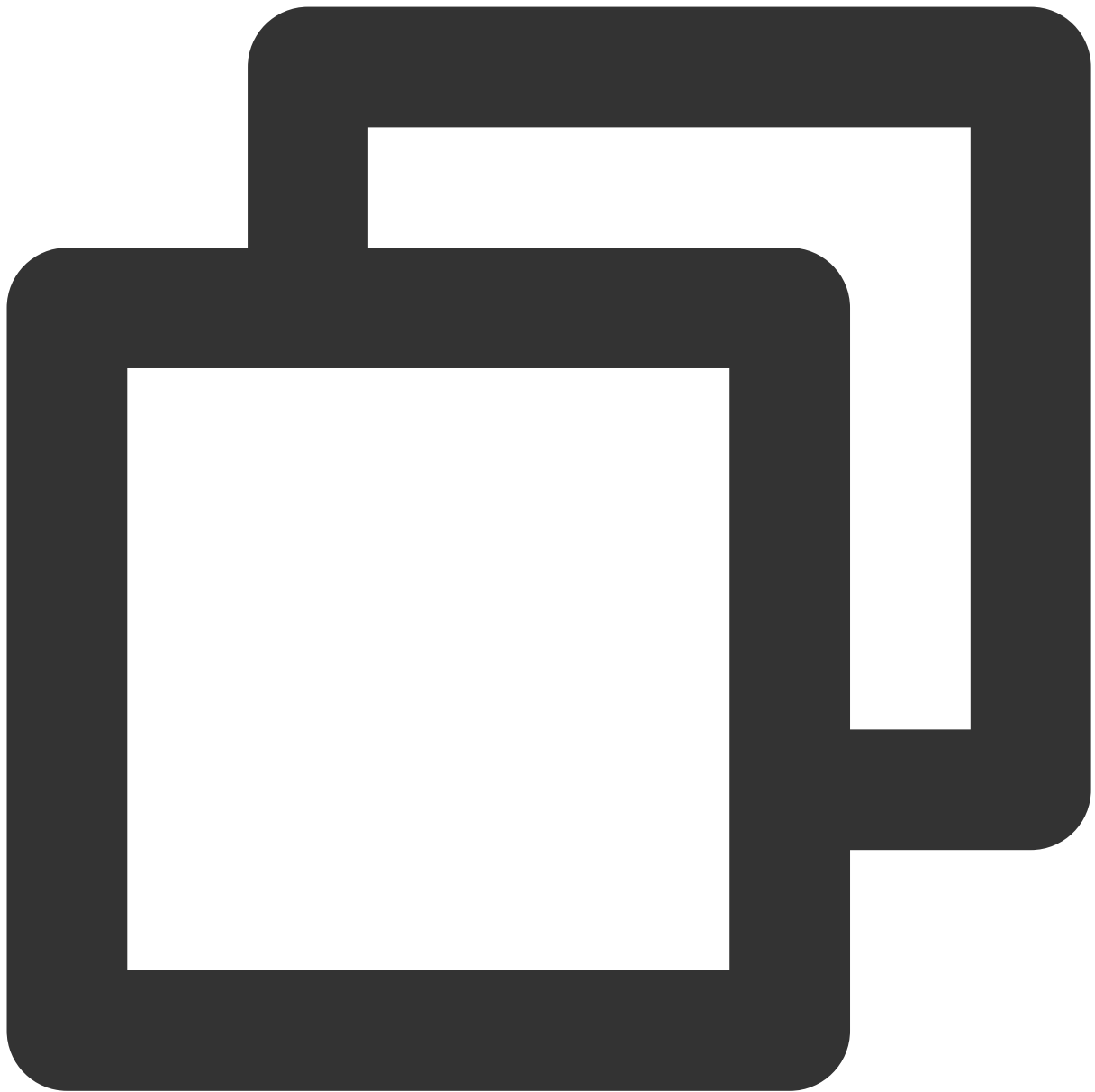
The above parameters have an order of precedence, with `long` > `short` > ( `width` | `height` ). If multiple parameters are set simultaneously, only the parameter with the highest priority takes effect.

If both `width` and `height` parameters are set simultaneously, they define the maximum dimensions ( `width` and `height` ) for the thumbnail, with both width and height being scaled proportionally.

In addition to the above features, proportional scaling based on the number of pixels is also supported.

Parameter Name	Type	Required	Description
<code>area</code>	string   number	No	For proportional scaling, the total number of pixels in the scaled image does not exceed area.

Example:



```
// Set proportional scaling based on the long edge, with the length of the scaled l  
eo: { image: { long: 100 } }
```

```
// Set proportional scaling based on the short edge, with the length of the scaled  
eo: { image: { short: 100 } }
```

```
// Set proportional scaling based on the width, with the scaled width being 100 px.  
eo: { image: { width: 100 } }
```

```
// Set proportional scaling based on the height, with the scaled height being 100 p  
eo: { image: { height: 100 } }
```

```
// Set proportional scaling based on both height and width, with the maximum scaled  
eo: { image: { width: 100, height: 100 } }  
  
// Set proportional scaling based on the total number of pixels, with the total sca  
eo: { image: { area: 10000 } }
```

## Non-Proportional Scaling

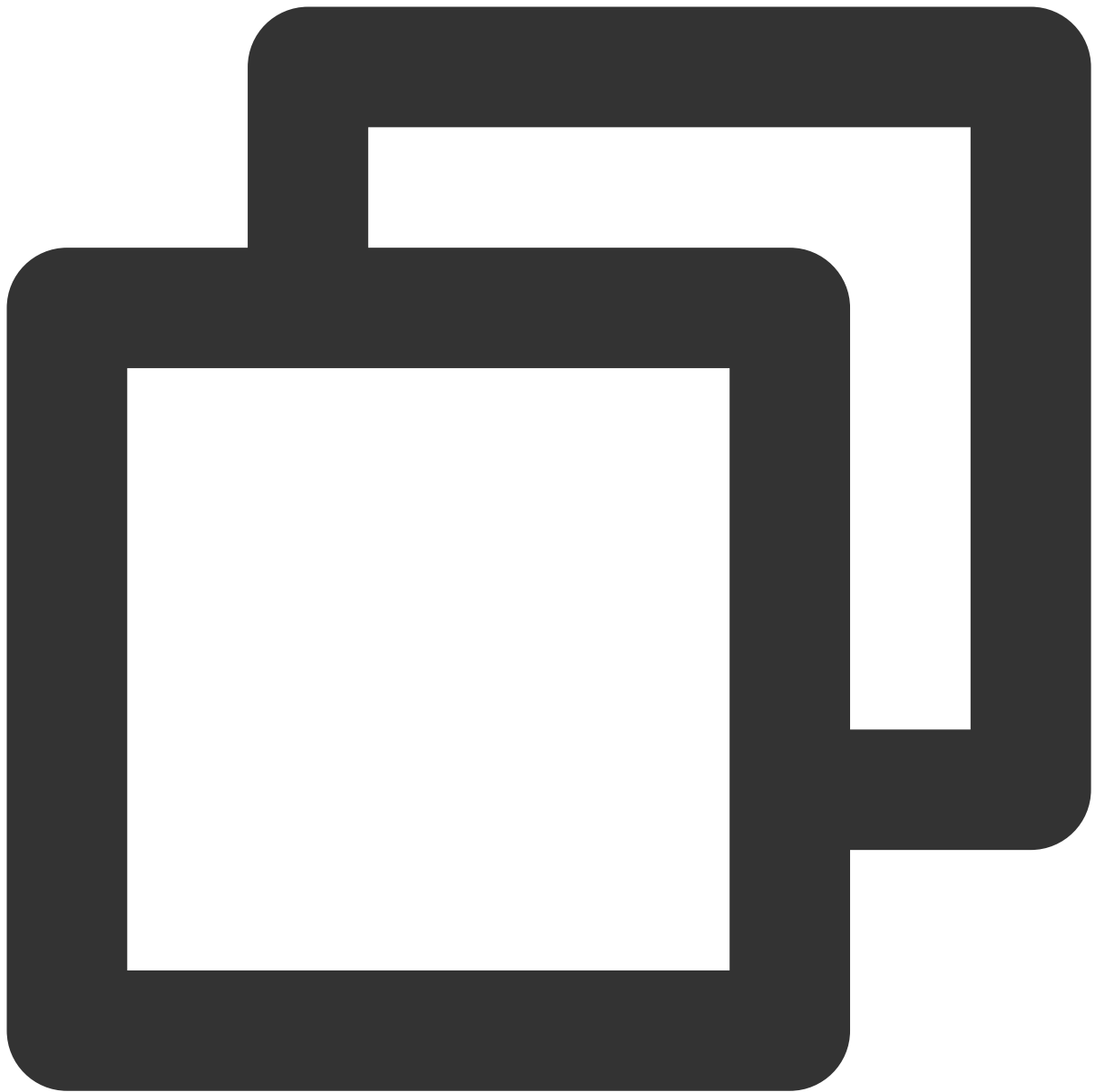
When the `fit` parameter is set to `cover`, the image is scaled without maintaining its aspect ratio according to pixel values.

Parameter Name	Type	Required	Description
width	string   number	No	Set the target image width to be scaled to width pixels.
height	string   number	No	Set the target image height to be scaled to height pixels.

### Note:

In this mode, both the `width` and `height` parameters must be set simultaneously. If only one is set, the image will be processed to either `width x width` or `height x height`.

Example:



```
// Set non-aspect ratio scaling based on pixel values, scaling the width to 100 px  
eo: { image: { fit: 'cover', width: 100, height: 100 } }
```

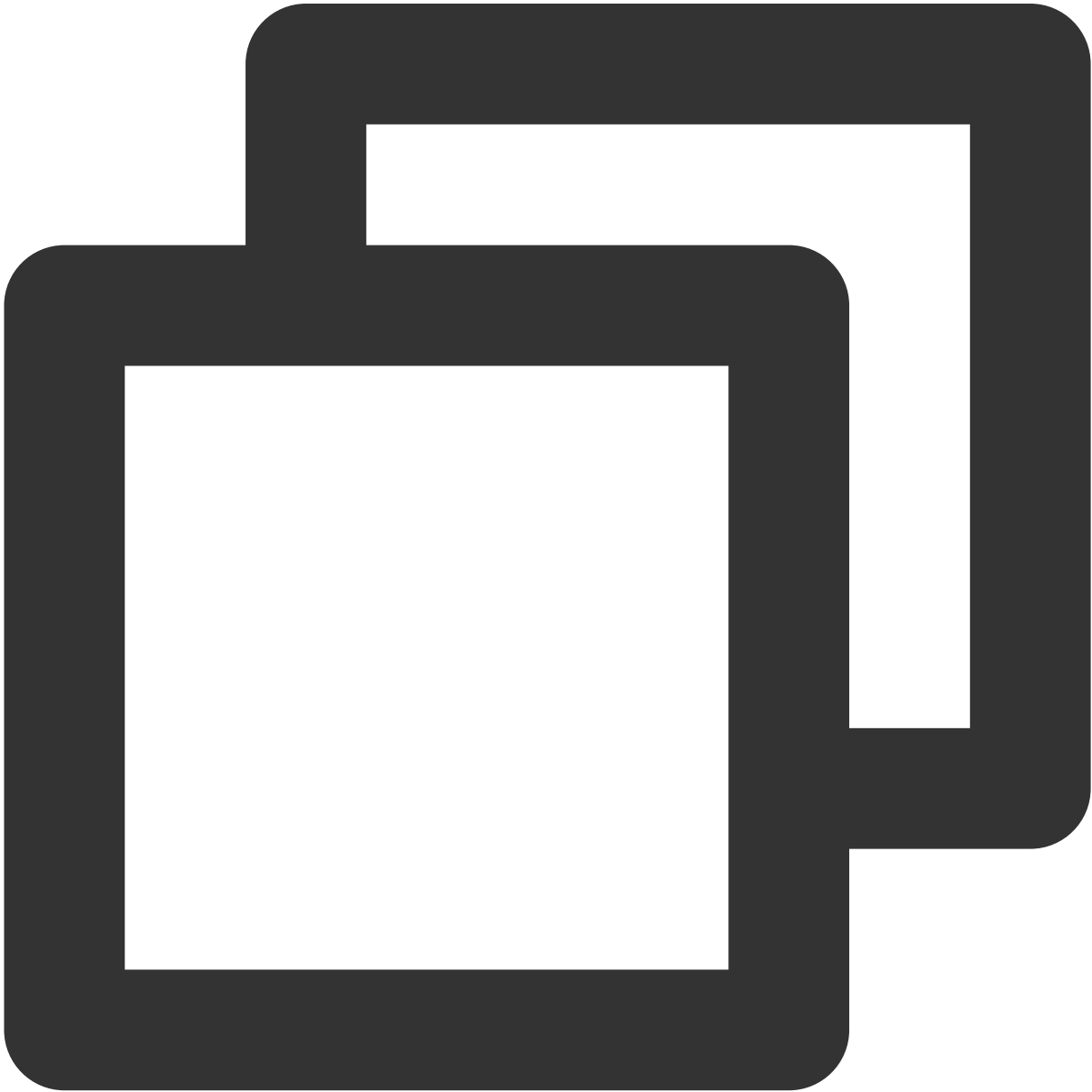
When the `fit` parameter is set to `percent`, the image is scaled without maintaining its aspect ratio according to a percentage value.

Parameter Name	Type	Required	Description
width	string   number	No	Set the target image width to be scaled to width%, with a value range of 0 to 100. When only the width parameter is set, the height



			remains unchanged.
height	string   number	No	Set the target image height to be scaled to height%, with a value range of 0 to 100. When only the height parameter is set, the width remains unchanged.

**Note:**  
In this mode, the `width` and `height` parameters operate independently. If both `width` and `height` are set simultaneously, the image will be processed to `width% x height%` .  
Example:



```
// Set non-proportional scaling based on width percentage, with the scaled width be
eo: { image: { fit: 'percent', width: 50 } }

// Set non-proportional scaling based on height percentage, with the scaled height
eo: { image: { fit: 'percent', height: 50 } }

// Set non-proportional scaling based on both width and height percentages, with th
eo: { image: { fit: 'percent', width: 50, height: 50 } }
```

## Image Cropping

Image cropping is controlled by the `fit` parameter. By setting different `fit` parameters, various types of cropping operations can be achieved.

Parameter Name	Type	Required	Description
<code>fit</code>	string	No	Set different image scaling and cropping modes, with the following supported values for the fit parameter: cut: Perform cropping to the image. crop: Perform scaling and cropping to the image.

### Note:

The behaviors corresponding to different `fit` parameters will be explained in detail below.

## Original Image Cropping

When the `fit` parameter is set to `cut`, the original image is cropped.

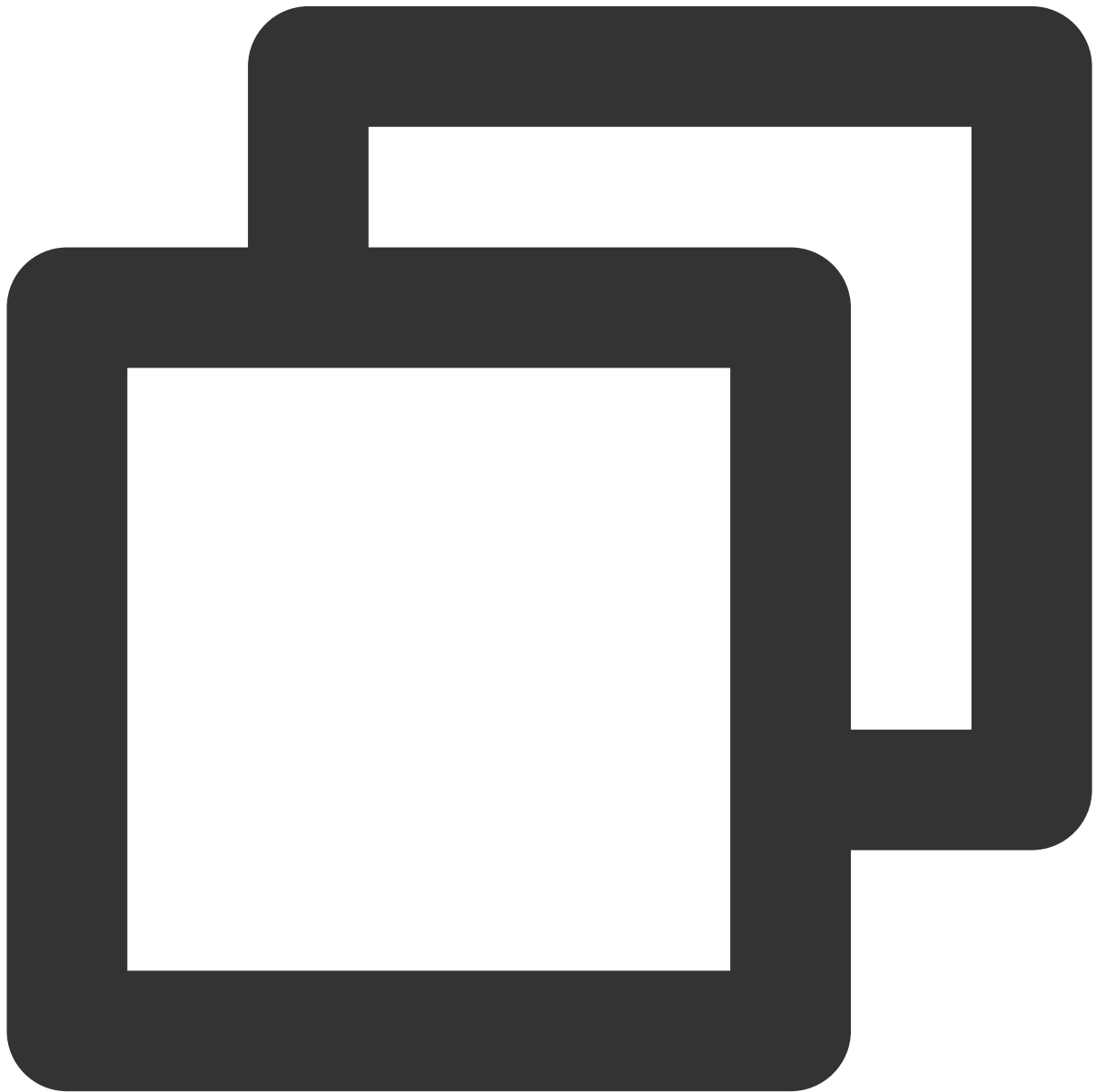
Parameter Name	Type	Required	Description
<code>width</code>	string   number	No	Crop the target image to a width of width pixels. When only the width parameter is set, the height remains unchanged.
<code>height</code>	string   number	No	Crop the target image to a height of height pixels. When only the height parameter is set, the width remains unchanged.
<code>gravity</code>	string   { [key: string]: number   string }	No	The anchor point for image cropping. Can be set to 3x3 grid orientation values or coordinate object. For orientation values, see the <a href="#">3x3 Grid Orientation Diagram</a> .

			The coordinate object is in the form of { x: 100, y: 100 }. x represents a horizontal offset of x pixels from the top-left corner of the image rightwards. y represents a vertical offset of y pixels from the top-left corner of the image downwards.
--	--	--	---

**Note:**

If the `gravity` parameter is not set, the default cropping will occur at the top-left corner (northwest).

Example:



```
// Set to perform original cropping based on width, with the cropped width being 100
eo: { image: { fit: 'cut', width: 100 } }

// Set to perform original cropping based on height, with the cropped height being 100
eo: { image: { fit: 'cut', height: 100 } }

// Set to perform original cropping based on both width and height, with the cropped width and height being 100
eo: { image: { fit: 'cut', width: 100, height: 100 } }

// Set to perform original cropping based on both width and height, specifying the gravity
eo: { image: { fit: 'cut', width: 100, height: 100, gravity: 'center' } }

// Set to perform original cropping based on both width and height, specifying the gravity and crop area
eo: { image: { fit: 'cut', width: 100, height: 100, gravity: { x: 100, y: 100 } } }
```

## Scaled Cropping

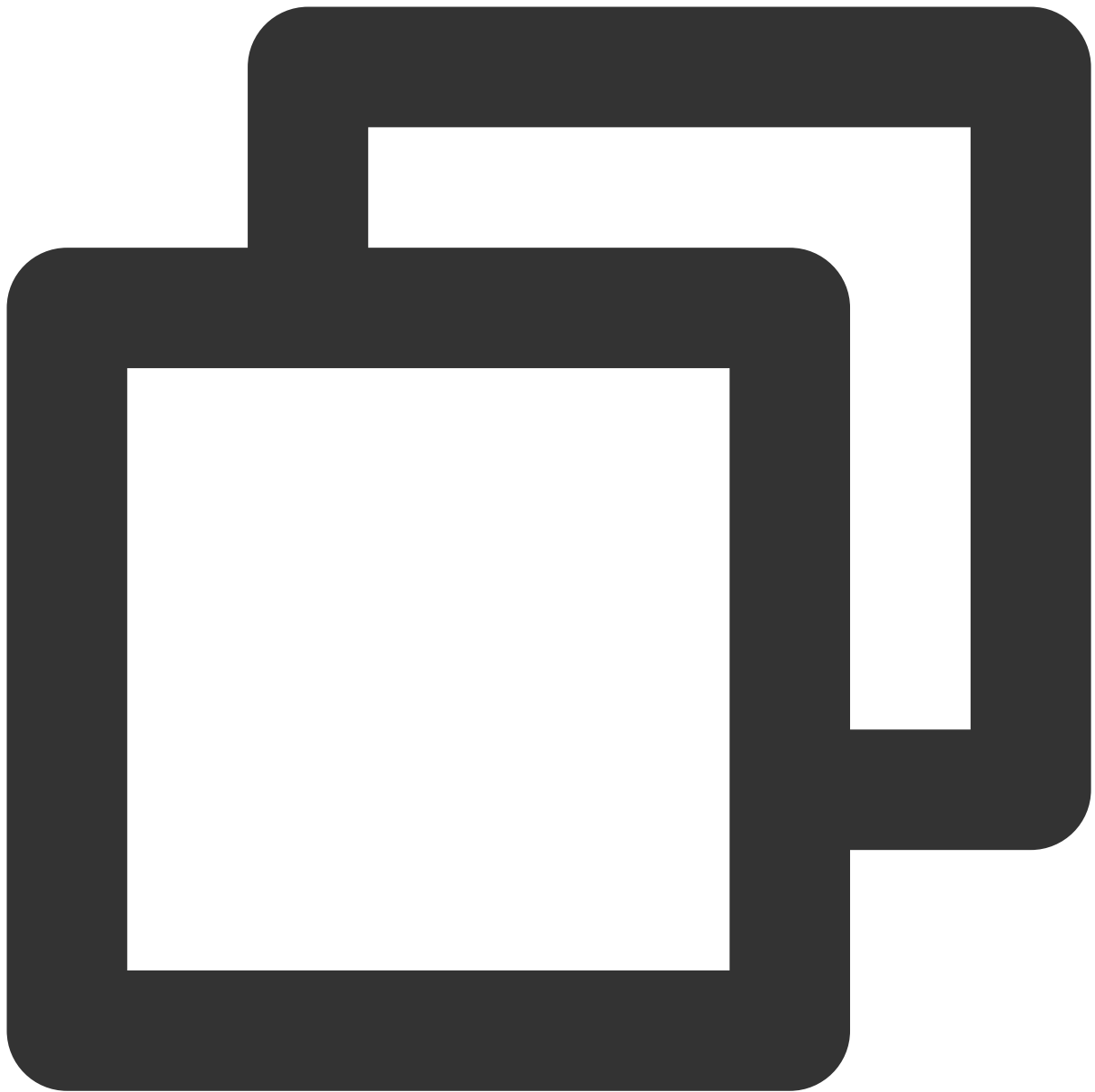
When the `fit` parameter is set to `crop`, the image is scaled and cropped.

Parameter Name	Type	Required	Description
width	string   number	No	Set the target image width to be cropped to width pixels. When only the width parameter is set, the height remains unchanged.
height	string   number	No	Set the target image height to be cropped to height pixels. When only the height parameter is set, the width remains unchanged.
gravity	string	No	The anchor point for image cropping. Can be set to 3x3 grid orientation values. For orientation values, see the <a href="#">3x3 Grid Orientation Diagram</a> .

### Note:

In this mode, the `gravity` parameter must be set to 3x3 grid orientation values. If the `gravity` parameter is not set, it defaults to be cropped at the center point (center).

Example:



```
// Set to perform scaled cropping based on width, with the cropped width being 100
eo: { image: { fit: 'crop', width: 100 } }

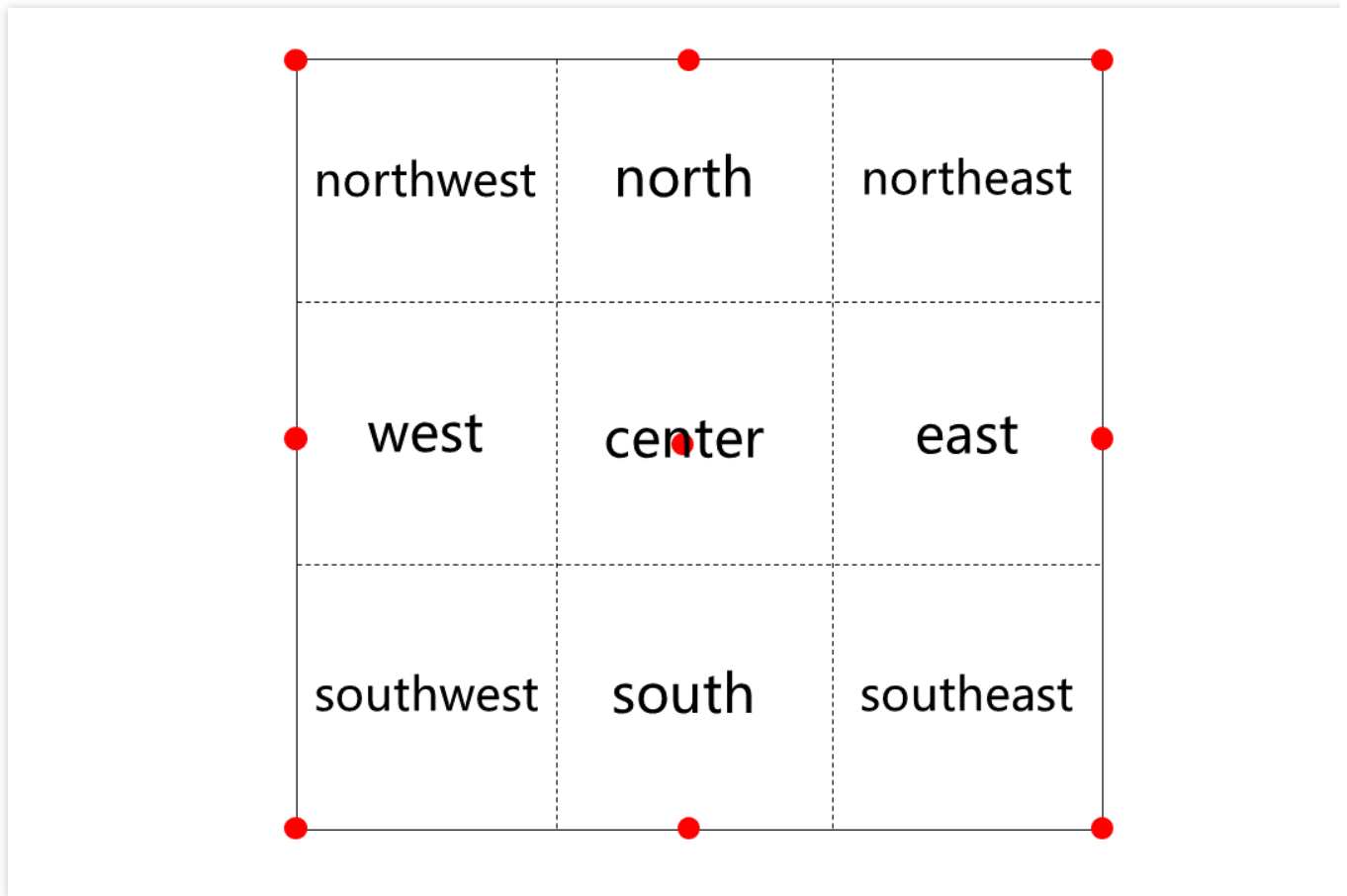
// Set to perform scaled cropping based on height, with the cropped height being 100
eo: { image: { fit: 'crop', height: 100 } }

// Set to perform scaled cropping based on both width and height, with the cropped
eo: { image: { fit: 'crop', width: 100, height: 100 } }

// Set to perform scaled cropping based on both width and height, specifying an anc
eo: { image: { fit: 'crop', width: 100, height: 100, gravity:'northwest' } }
```

### 3x3 Grid Orientation Diagram

The 3x3 grid orientation diagram provides positional references for various image operations. The red dots serve as origin points for each region (after regions being selected via the gravity parameter, displacement operations reference the respective origins).



# Sample Functions

## Returning an HTML Page

Last updated : 2024-01-25 14:29:07

In this example, an edge function is used to generate an HTML page, and the HTML page is accessed and previewed from a browser.

## Sample Code



```
const html = `  
  <!DOCTYPE html>  
  <body>  
    <h1>Hello World</h1>  
    <p>This markup was generated by TencentCloud Edge Functions.</p>  
  </body>  
`;  
  
async function handleRequest(request) {  
  return new Response(html, {  
    headers: {
```

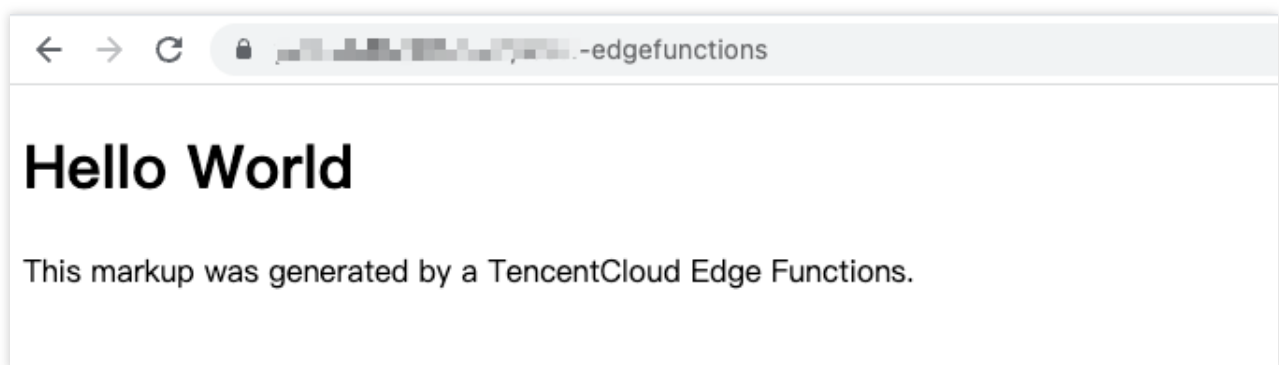


```
'content-type': 'text/html; charset=UTF-8',
  'x-edgesfunctions-test': 'Welcome to use Edge Functions.',
},
});
}

addEventListener('fetch', event => {
  event.respondWith(handleRequest(event.request));
});
```

## Sample Preview

In the address bar of the browser, enter a URL that matches a trigger rule of the edge function to preview the effect of the sample code.



## References

[Runtime APIs: addEventListener](#)

[Runtime APIs: Response](#)

[Runtime APIs: FetchEvent](#)

# Returning a JSON Object

Last updated : 2024-01-25 14:26:56

In this example, an edge function is used to generate a JSON object, and the JSON object is accessed and previewed from a browser.

## Sample Code



```
const data = {
  content: 'hello world',
};

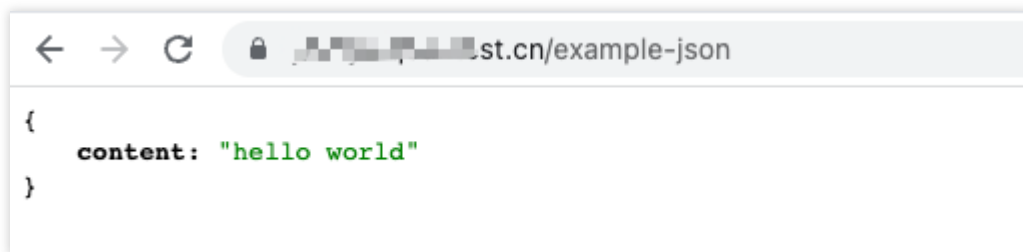
async function handleRequest(request) {
  // Convert the JSON object to the String format.
  const result = JSON.stringify(data, null, 2);

  return new Response(result, {
    headers: {
      'content-type': 'application/json; charset=UTF-8',
    },
  });
}
```

```
    },  
    });  
}  
  
addEventListener('fetch', event => {  
    return event.respondWith(handleRequest(event.request));  
});
```

## Sample Preview

In the address bar of the browser, enter a URL that matches a trigger rule of the edge function to preview the effect of the sample code.



## References

[Runtime APIs: addEventListener](#)

[Runtime APIs: Response](#)

# Fetch Remote Resources

Last updated : 2024-01-25 14:21:18

In this example, the [Fetch API](#) is called to fetch a remote jQuery.js resource and send the resource to a client in response to a request from the client.

## Sample Code



```
async function handleRequest(request) {  
  // Fetch a remote resource.  
  const response = await fetch('https://static.cloudcachetci.com/qcloud/main/script  
  return response;  
}  
  
addEventListener('fetch', event => {  
  return event.respondWith(handleRequest(event.request));  
});
```

## Sample Preview

In the address bar of the browser, enter a URL that matches a trigger rule of the edge function to preview the effect of the sample code.

The screenshot shows a browser window with the address bar displaying a URL ending in `.cn/fetch-resources`. The page content is the jQuery v3.2.1 library code. The Network tab is open, showing a request to `fetch-resources` with a status of 200. The response headers are visible, including `content-length: 86659` and `content-type: application/x-javascript`.

```
/*! jQuery v3.2.1 | (c) JS Foundation and other contributors |
jquery.org/license */
!function(a,b){"use strict";"object"===typeof module&&"object"===typeof
module.exports?module.exports=a.document?b(a,!0):function(a)
{if(!a.document)throw new Error("jQuery requires a window with a
document");return b(a)}:b(a)}("undefined"!==typeof window?
window:this,function(a,b){"use strict";var c=
[],d=a.document,e=Object.getPrototypeOf,f=c.slice,g=c.concat,h=c.push,i=c.
indexOf,j=
{},k=j.toString,l=j.hasOwnProperty,m=l.toString,n=m.call(Object),o=
{};function p(a,b){b=b||d;var
c=b.createElement("script");c.text=a,b.head.appendChild(c).parentNode.remo
veChild(c)}var q="3.2.1",r=function(a,b){return new
r.fn.init(a,b)},s="/^[\\s\\uFEFF\\xA0]+|^[\\s\\uFEFF\\xA0]+$|/g,t="/^ms-/,u="/-([a-
z])/g,v=function(a,b){return b.toUpperCase()};r.fn=r.prototype=
{jquery:q,constructor:r,length:0,toArray:function(){return
f.call(this)},get:function(a){return null==a?f.call(this):a<0?
this[a+this.length]:this[a]},pushStack:function(a){var
b=r.merge(this.constructor(),a);return
b.prevObject=this,b.each(function(a){return
r.each(this,a),map:function(a){return
this.pushStack(r.map(this,function(b,c){return
a.call(b,c,b)})),slice:function(){return
this.pushStack(f.apply(this,arguments))},first:function(){return
this.eq(0)},last:function(){return this.eq(-1)},eq:function(a){var
b=this.length,c=a+(a<0?b:0);return this.pushStack(c>=0&&c<b?[this[c]]:
[]),end:function(){return
this.prevObject||this.constructor()},push:h,sort:c.sort,splice:c.splice},r.
extend=r.fn.extend=function(){var a,b,c,d,e,f,g=arguments[0]||
{};h=1,i=arguments.length,j=1;for("boolean"===typeof g&&
(j=g,g=arguments[h]||{}),h++;)"object"===typeof g||r.isFunction(g)||!(g=
{}),h===i&&(g=this,h--);h<i;h++)if(null!=a=arguments[h])for(b in
a)c=g[b],d=a[b],g!==d&&(j&&d&&(r.isPlainObject(d)||r.isArray(d)))?
(e=!1,f=c&&r.isArray(c)?c:[]:f=c&&r.isPlainObject(c)?c:
{}),g[b]=r.extend(j,f,d):void 0!==d&&(g[b]=d);return
g},r.extend({expando:"jQuery"+
(q+Math.random()).replace(/D/g,""),isReady:!0,error:function(a){throw new
```

**Network Tab Details:**

- Name: fetch-resources
- Request URL: https://.../fetch-resources
- Request Method: GET
- Status Code: 200
- Remote Address: ...
- Referrer Policy: strict-origin-when-cross-origin

**Response Headers:**

- accept-ranges: bytes
- access-control-allow-credentials: true
- access-control-allow-methods: PUT, GET, POST, HEAD
- access-control-allow-origin: https://www.tencentcloud.com
- access-control-expose-headers: Content-Length, Content-Type,
- content-length: 86659**
- content-type: application/x-javascript
- date: Mon, 21 Nov 2022 09:51:08 GMT
- eo-cache-status: HIT
- eo-log-uuid: 16066500319245279906
- etag: "5917005106abb1ff00a6c51b3f6d39d-1"

## References

[Runtime APIs: Fetch](#)

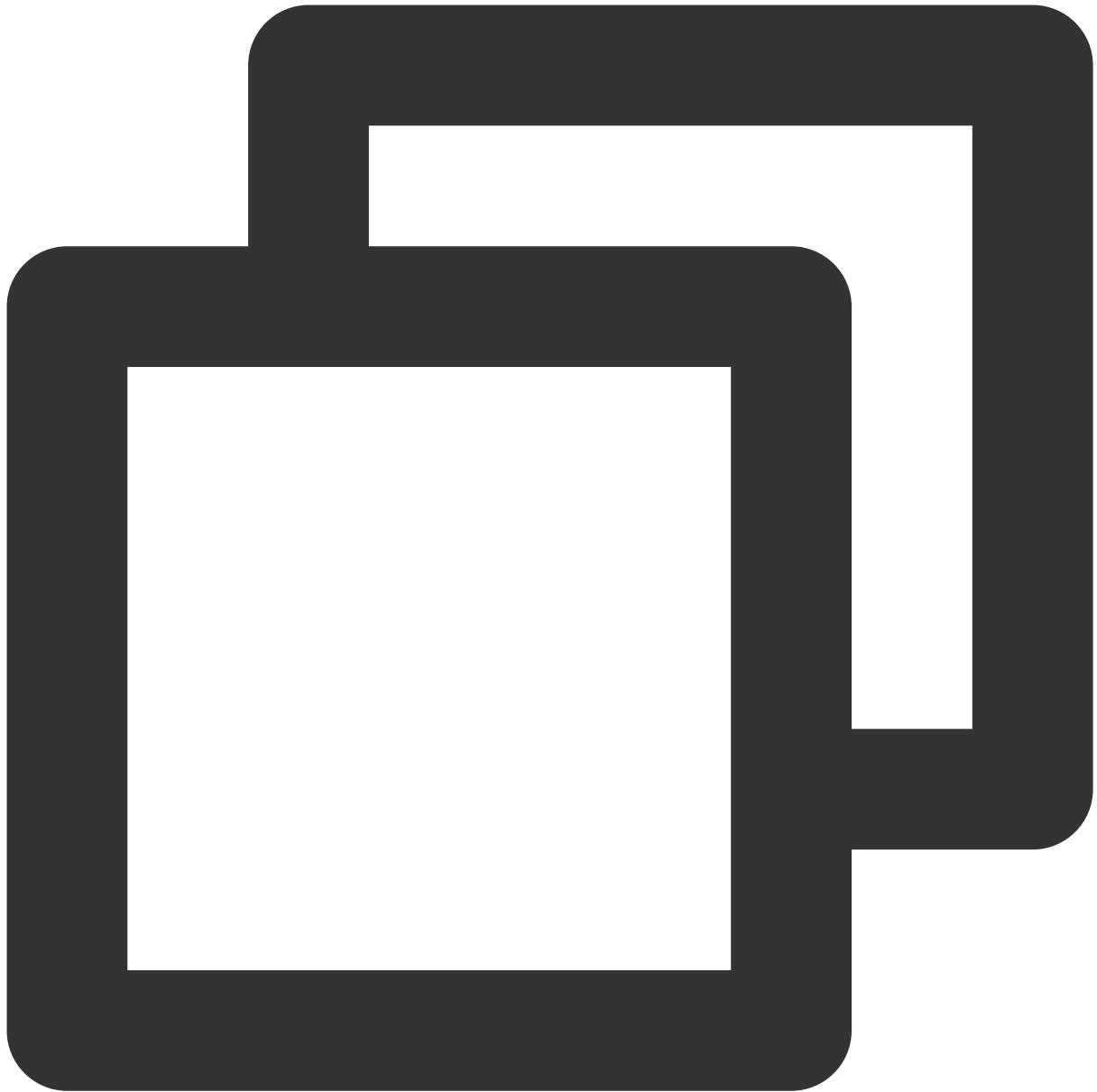
# Authenticating a Request Header

Last updated : 2024-01-25 11:43:50

This example demonstrates how to use an edge function to perform simple permission control by verifying the value of the `x-custom-token` request header. If the value is token-123456, access is allowed. Otherwise, access is denied.

## Sample Code





```
async function handleRequest(request) {
  const token = request.headers.get('x-custom-token');

  if (token === 'token-123456') {
    return new Response('hello world');
  }

  // Incorrect key supplied. Reject the request.
  return new Response('Sorry, you have supplied an invalid token.', {
    status: 403,
  });
};
```

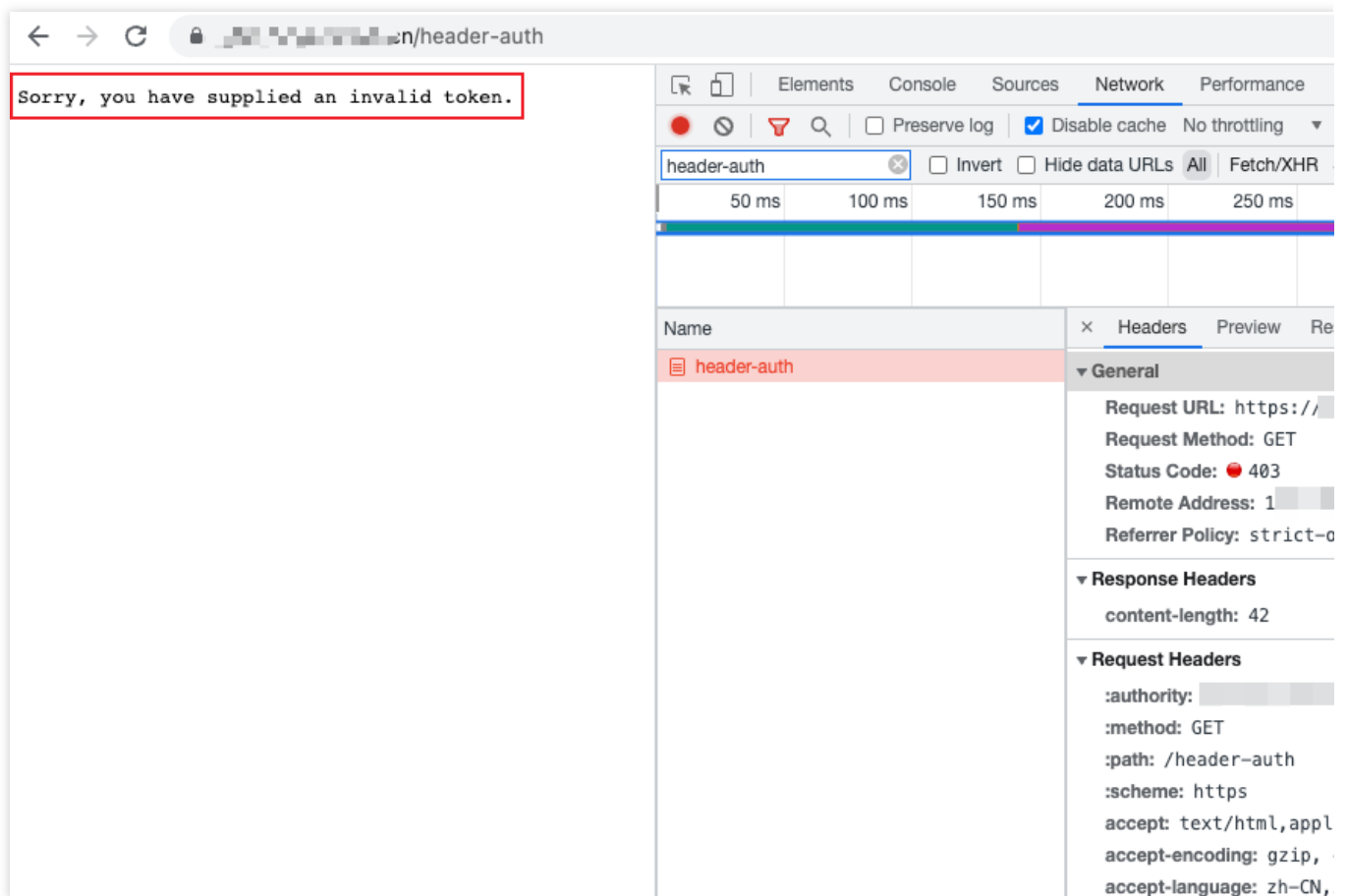
```
}

addEventListener('fetch', event => {
  event.respondWith(handleRequest(event.request));
});
```

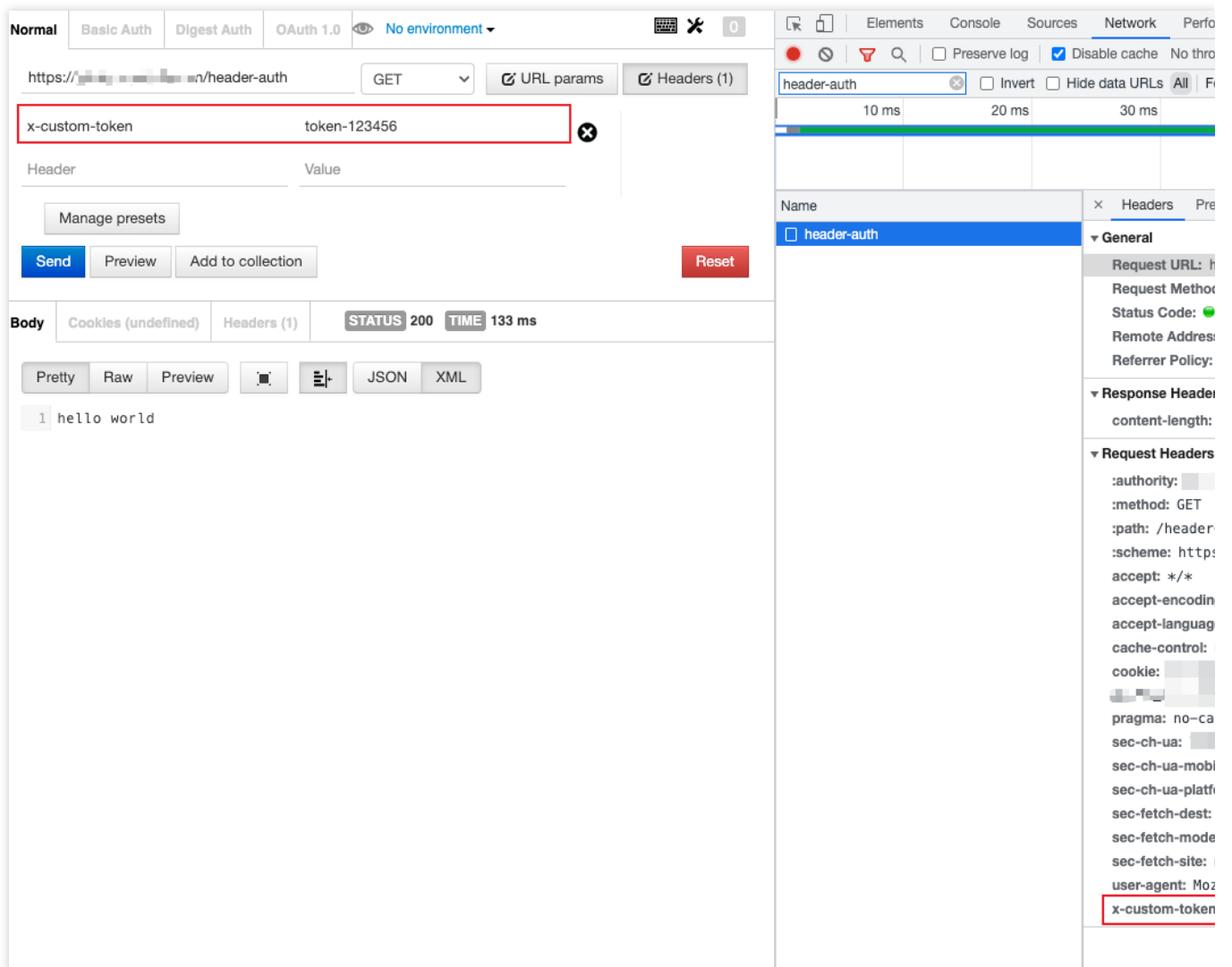
## Sample Preview

In the address bar of the browser, enter a URL that matches a trigger rule of the edge function to preview the effect of the sample code.

If authentication fails, access is denied.



If authentication is successful, access is allowed.



## References

[Runtime APIs: Headers](#)

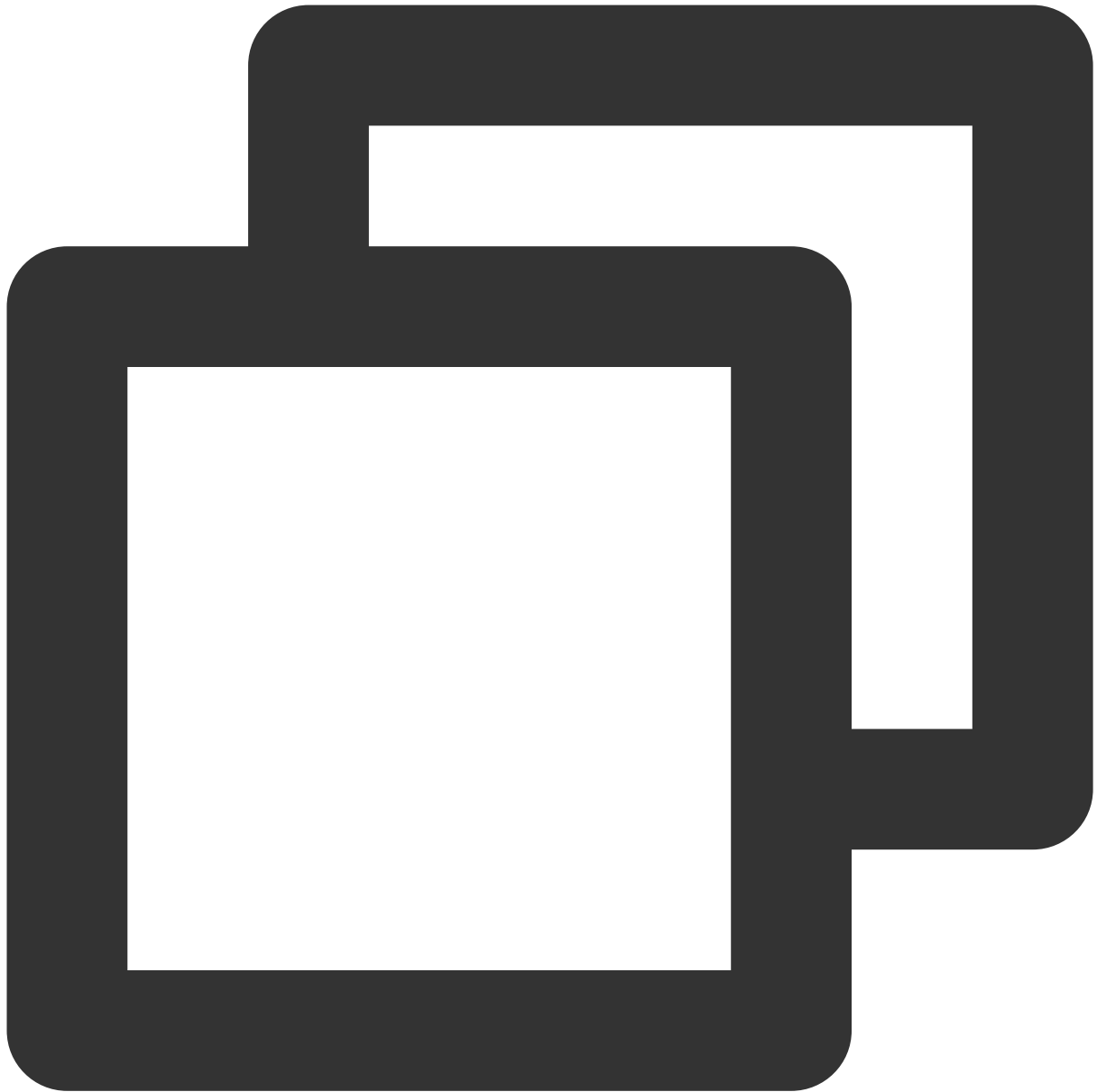
[Runtime APIs: Response](#)

# Modifying a Response Header

Last updated : 2023-11-24 15:10:13

This example uses the [Fetch API](#) to implement a reverse proxy for the domain name `www.example.com` of the site, and sets the HTTP response headers through Edge functions to achieve [CORS \(Cross-Origin Resource Sharing\)](#).

## Sample Code



```
async function handleRequest(event) {
  const { request } = event;
  const urlInfo = new URL(request.url);

  const proxyRequest = new Request(`https://www.example.com${urlInfo.pathname}${url
    method: request.method,
    body: request.body,
    headers: request.headers,
    copyHeaders: true,
  });
  proxyRequest.headers.set('Host', 'www.example.com');
```

```
// fetch reverse proxy
const response = await fetch(proxyRequest);

/** Add custom response headers */
// Specify which origins are allowed to access resources
response.headers.append('Access-Control-Allow-Origin', '*');
// Specify which HTTP methods (such as GET, POST, etc.) are allowed to access resources
response.headers.append('Access-Control-Allow-Methods', 'GET,POST');
// Specify which HTTP headers can appear in the request header
response.headers.append('Access-Control-Allow-Headers', 'Authorization');
// How long the result of the pre-flight request can be cached
response.headers.append('Access-Control-Max-Age', '86400');

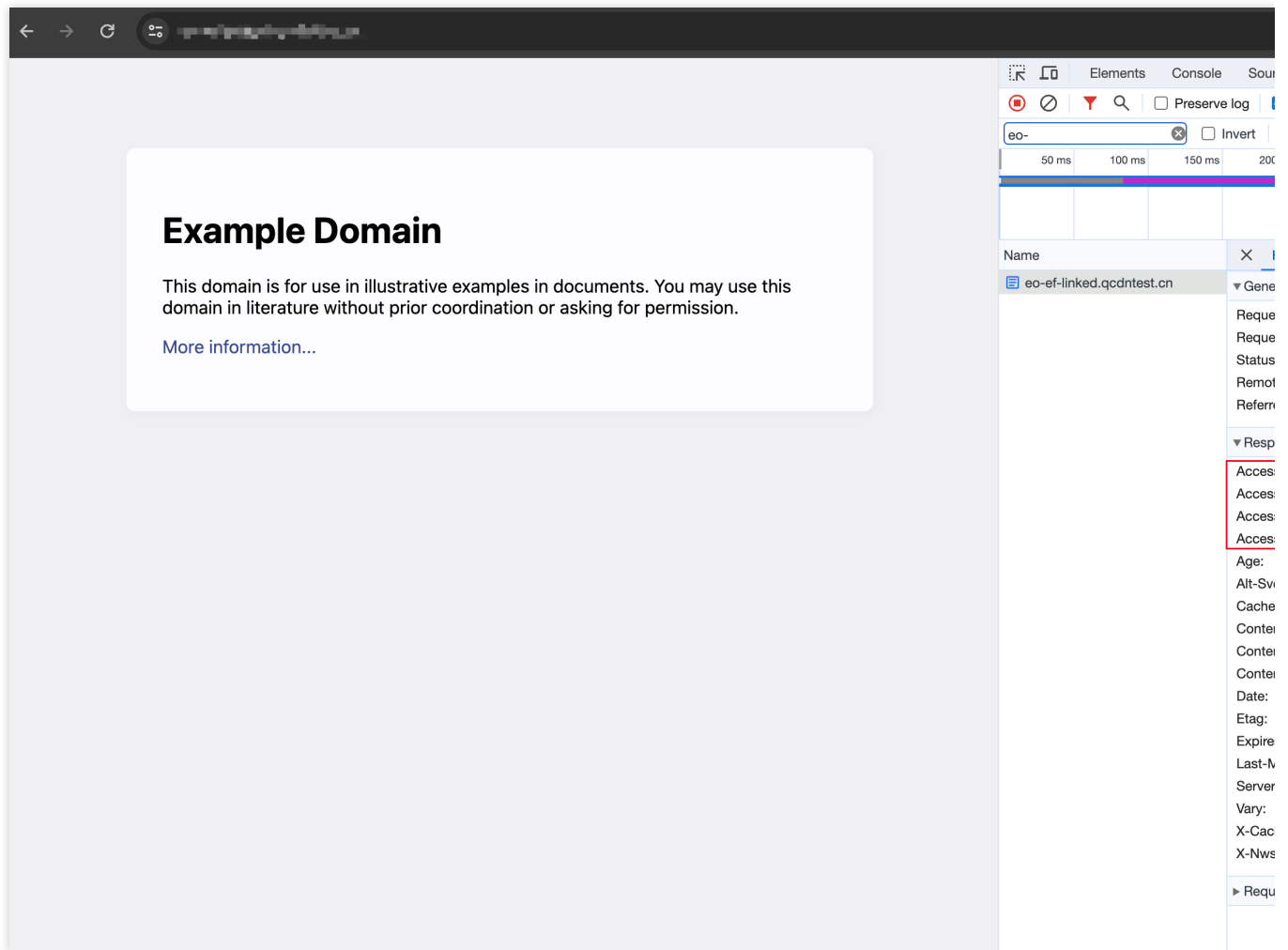
/** Delete response headers */
response.headers.delete('X-Cache');

return response;
}

addEventListener('fetch', event => {
  event.respondWith(handleRequest(event));
});
```

## Sample Preview

In the address bar of the browser, enter a URL that matches a trigger rule of the edge function to preview the effect of the sample code.



## References

[Runtime APIs: Headers](#)

[Runtime APIs: Response](#)

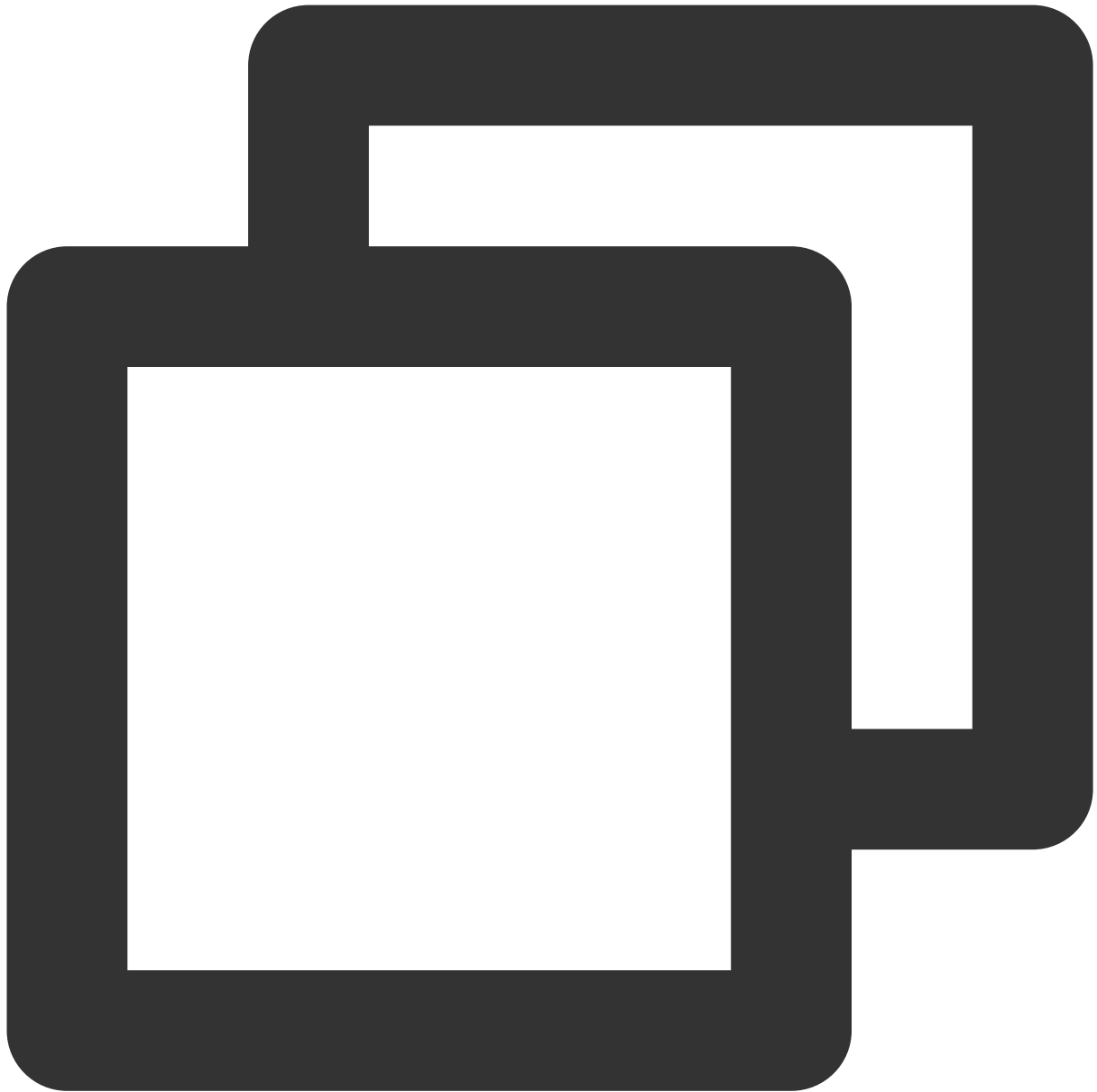
# Performing an A/B Test

Last updated : 2023-09-11 17:51:22

In this example, cookies are used to store session information and perform A/B testing on requests. This example demonstrates how to use an edge function to perform A/B testing.

## Sample Code





```
// cookie name
const COOKIE_NAME = 'ABTest';

// cookie value
const VALUE_A = 'index-a.html';
const VALUE_B = 'index-b.html';

// Root path, the origin must exist this path, and under this path, there are files
const BASE_PATH = '/abtest';

async function handleRequest(request) {
```

```
const urlInfo = new URL(request.url);

// Judge the URL path, if accessing non-abtest resources, directly responded.
if (!urlInfo.pathname.startsWith(BASE_PATH)) {
  return fetch(request);
}

// Collected the current request's Cookie.
const cookies = new Cookies(request.headers.get('cookie'));
const abTestCookie = cookies.get(COOKIE_NAME);
const cookieValue = abTestCookie?.value;

// If the Cookie value is A test, Return index-a.html.
if (cookieValue === VALUE_A) {
  urlInfo.pathname = `/${BASE_PATH}/${cookieValue}`;
  return fetch(urlInfo.toString());
}

// If the Cookie value is B test, Return index-b.html.
if (cookieValue === VALUE_B) {
  urlInfo.pathname = `/${BASE_PATH}/${cookieValue}`;
  return fetch(urlInfo.toString());
}

// If the Cookie information does not exist, randomly grant the current request t
const testValue = Math.random() < 0.5 ? VALUE_A : VALUE_B;

urlInfo.pathname = `/${BASE_PATH}/${testValue}`;

const response = await fetch(urlInfo.toString());

cookies.set(COOKIE_NAME, testValue, { path: '/', max_age: 60 });
response.headers.set('Set-Cookie', getSetCookie(cookies.get(COOKIE_NAME)));
return response;
}

// Concatenate Set-Cookie.
function getSetCookie(cookie) {
  const cookieArr = [
    `${encodeURIComponent(cookie.name)}=${encodeURIComponent(cookie.value)} `,
  ];

  const key2name = {
    expires: 'Expires',
    max_age: 'Max-Age',
    domain: 'Domain',
    path: 'Path',
  }
```

```
    secure: 'Secure',
    httponly: 'HttpOnly',
    samesite: 'SameSite',
  };

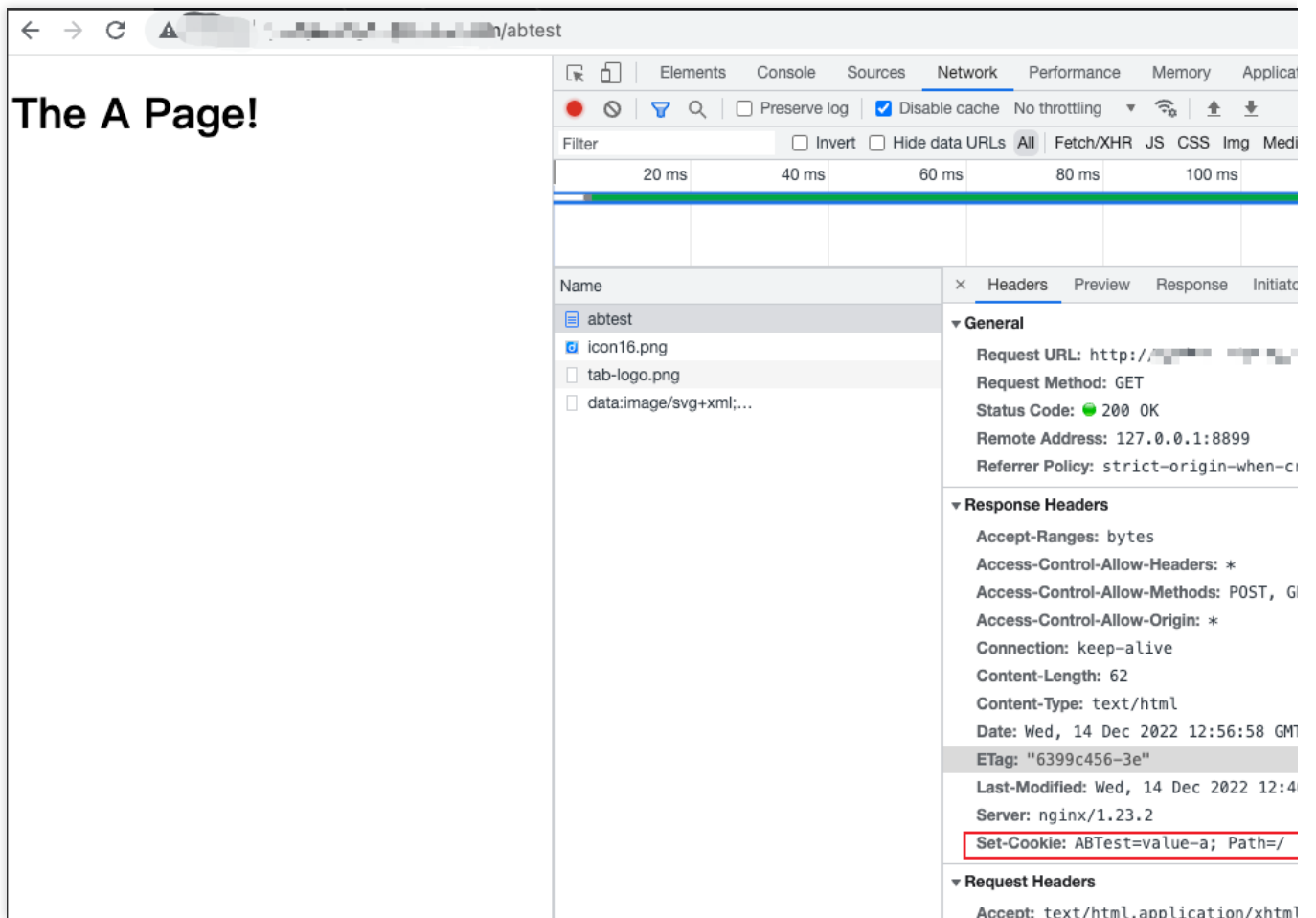
  Object.keys(key2name).forEach(key => {
    if (cookie[key]) {
      cookieArr.push(`${key2name[key]}=${cookie[key]}`);
    }
  });

  return cookieArr.join('; ');
}

addEventListener('fetch', event => {
  event.respondWith(handleRequest(event.request));
});
```

## Sample Preview

In the address bar of the browser, enter a URL that matches a trigger rule of the edge function to preview the effect of the sample code.



## References

[Runtime APIs: Cookies](#)

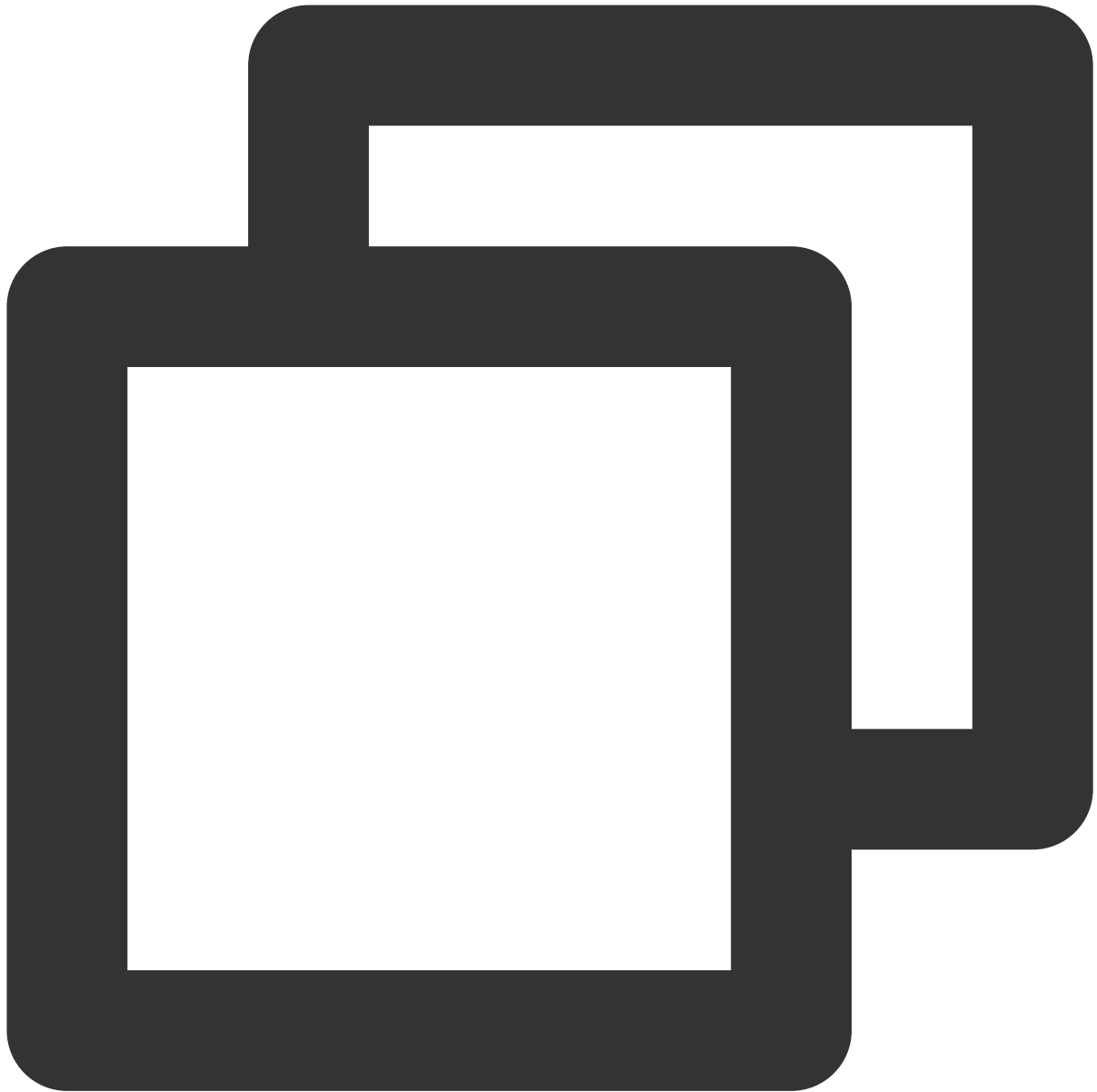
[Runtime APIs: Response](#)

# Setting Cookies

Last updated : 2023-09-11 17:49:21

In this example, cookies are used to count the number of access requests. When a browser accesses the Edge Functions service, the number of access requests is increased by 1.

## Sample Code



```
// cookie name
const COOKIE_NAME = 'count';

async function handleRequest(request) {
  // collected the current requests' Cookies and resolution into scope
  const cookies = new Cookies(request.headers.get('cookie'));
  const cookieCount = cookies.get(COOKIE_NAME);
  // count increment
  const count = Number(cookieCount && cookieCount.value || 0) + 1;
  // update Cookie's count
  cookies.set(COOKIE_NAME, String(count));
}
```

```
const response = new Response(`The count is: ${count}`);
// setting responded cookies
response.headers.set('Set-Cookie', getSetCookie(cookies.get(COOKIE_NAME)));
return response;
}

// concatenate Set-Cookie
function getSetCookie(cookie) {
  const cookieArr = [
    `${encodeURIComponent(cookie.name)}=${encodeURIComponent(cookie.value)} `,
  ];

  const key2name = {
    expires: 'Expires',
    max_age: 'Max-Age',
    domain: 'Domain',
    path: 'Path',
    secure: 'Secure',
    httponly: 'HttpOnly',
    samesite: 'SameSite',
  };

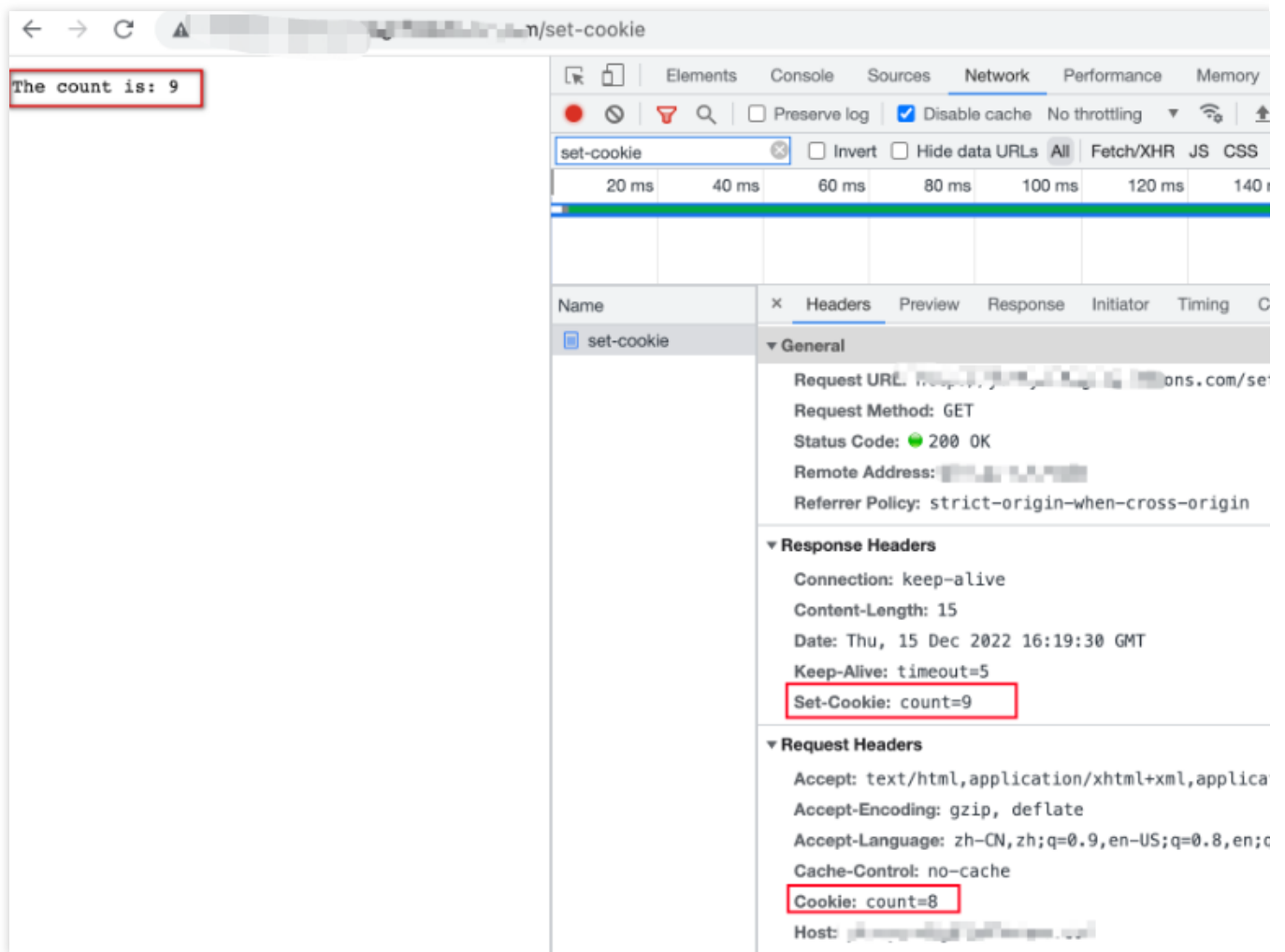
  Object.keys(key2name).forEach(key => {
    if (cookie[key]) {
      cookieArr.push(`${key2name[key]}=${cookie[key]} `);
    }
  });

  return cookieArr.join('; ');
}

addEventListener('fetch', (event) => {
  event.respondWith(handleRequest(event.request));
});
```

## Sample Preview

In the address bar of the browser, enter a URL that matches a trigger rule of the edge function to preview the effect of the sample code.



## References

[Runtime APIs: Cookies](#)

[Runtime APIs: Response](#)

[Runtime APIs: Request](#)

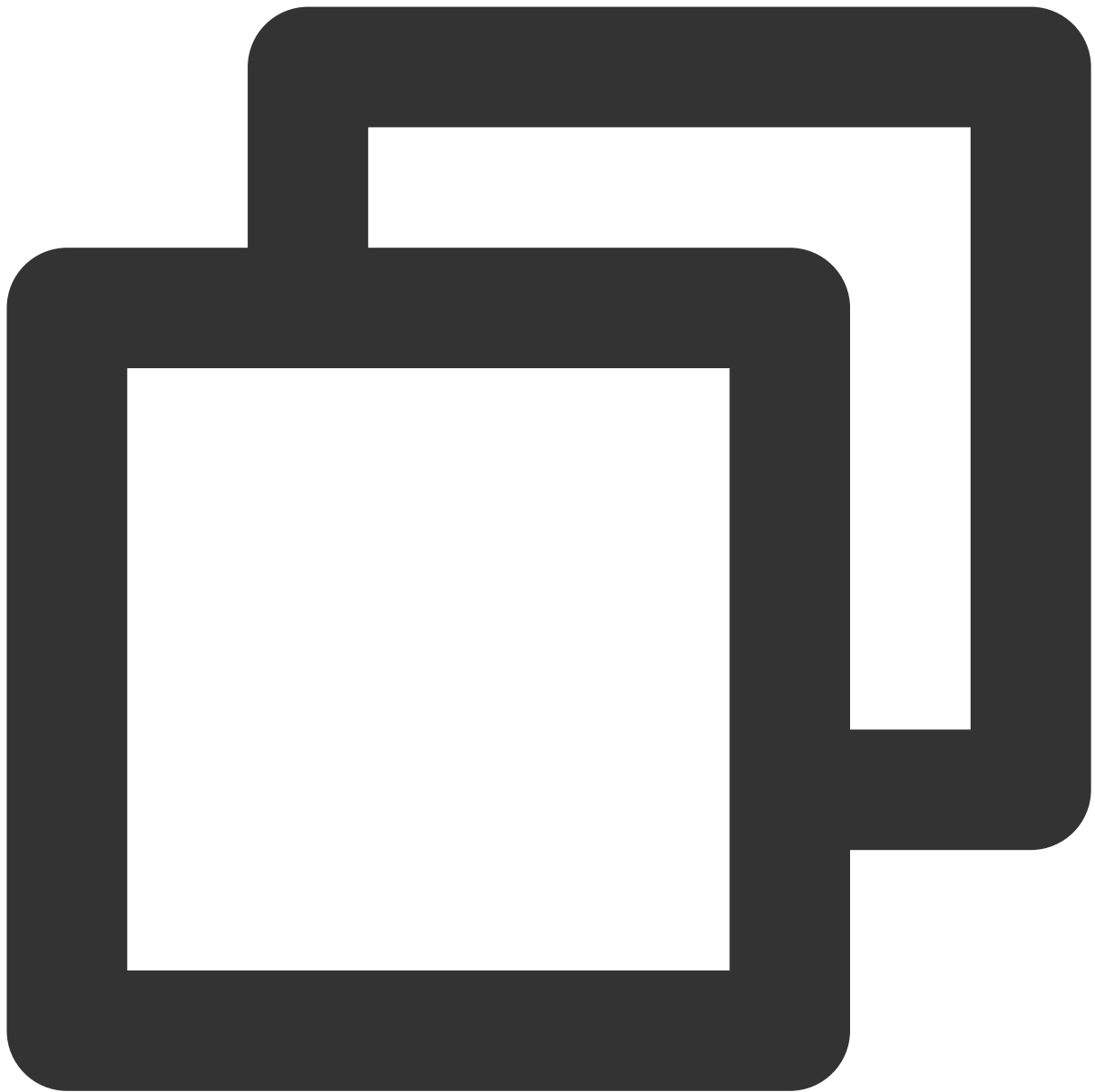


# Performing Redirect Based on the Request Location

Last updated : 2023-11-24 15:08:21

This example implements automatic redirection to the Target url of the region belonging to the Client by judging the region of the Client. It realizes the delivery of requests based on the region of the Client through Edge functions.

## Sample Code



```
// The collection of URLs in all regions.
const urls = {
  CN: 'https://www.example.com/zh-CN',
  US: 'https://www.example.com/en-US',
};

// The default redirect URL.
const defaultUrl = 'https://www.example.com/en-US';

/**
 * Redirect to the target URL based on the region of the current request.
```

```
* @param { Request } request
*/
function handleRequest(request) {
  // Obtain the region of the current request.
  const alpha2code = request.eo.geo.countryCodeAlpha2;
  // The target URL that you want to use for redirection.
  const url = urls[alpha2code] || defaultUrl;

  return Response.redirect(url, 302);
}

addEventListener('fetch', event => {
  event.respondWith(handleRequest(event.request));
});
```

## Sample Preview

In the address bar of the browser, enter a URL that matches a trigger rule of the edge function to preview the effect of the sample code.

The screenshot shows the MDN Web Docs website in a browser. The address bar displays the URL `zh-CN/docs/Web/API`. The page title is "mdn web docs". The breadcrumb navigation shows "Web" > "Web API". The main content area lists various Web APIs under two categories, B and C.

**Category B:**

- [Background Fetch API \(en-US\)](#)
- [Background Sync \(en-US\)](#)
- [Background Tasks](#)
- [Barcode Detection API \(en-US\)](#)
- [Battery API](#)
- [Beacon](#)
- [Bluetooth API \(en-US\)](#)
- [Broadcast Channel API](#)

**Category C:**

- [CSS Counter Styles \(en-US\)](#)
- [CSS Font Loading API](#)
- [CSS Painting API \(en-US\)](#)
- [CSS Properties and Values API \(en-US\)](#)

The browser's developer tools panel is open on the right, showing the "Headers" tab. The "Name" column lists various resources, including "geo-redirect", "API", "main.781c3...", "ga.js", "main.d4c88...", "search.ceb...", "theme-os-d...", "chevron.05...", "language.e4...", "note-info.0e...", "experiment...", "deprecated...", "nonstandar...", "Inter.var.c2f...", "twitter.cc5b...", "github-mark...", "analytics.js", "collect?v=1...", "collect?t=d...", "favicon-48x...", and "whoami". The "Headers" column shows the "General" section with fields for "Request UR", "Request Me", "Status Code", "Remote Ad", and "Referrer Pol". The "Response He" section shows "content-len" and "location: ht". The "Request Hear" section shows fields for ":authority:", ":method:", ":path:", ":scheme:", "accept: te", "accept-enc", "accept-lang", "cache-cont", "cookie: var", and "pragma: no".

## References

[Runtime APIs: Request](#)

[Runtime APIs: Response](#)

# Using the Cache API

Last updated : 2024-01-25 11:42:05

In this sample edge function, the [Fetch API](#) is called to fetch a remote jQuery.js resource, and the [Cache API](#) is called to cache the resource to an EdgeOne edge node. The cache duration is set to 10s.

## Sample Code



```
async function fetchJquery(event, request) {
  const cache = caches.default;
  // If the resource is not found in the cache, fetch the resource from the origin
  let response = await fetch(request);

  // Add the Cache-Control field to the response header and set the cache duration
  response.headers.append('Cache-Control', 's-maxage=10');
  event.waitUntil(cache.put(request, response.clone()));

  // Add an identifier indicating that the resource is not found in the cache to the
  response.headers.append('x-edgesfunctions-cache', 'miss');
```

```
    return response;
  }

  async function handleEvent(event) {
    // The resource URL, which is also used as the cache key.
    const request = new Request('https://static.cloudcachetci.com/qcloud/main/scripts
    // Obtain the default cache instance.
    const cache = caches.default;

    try {
      // Fetch the associated resource from the cache. If the resource is already cached,
      let response = await cache.match(request);

      // If the resource is not found in the cache, re-fetch the remote resource.
      if (!response) {
        return fetchJquery(event, request);
      }

      // Add an identifier indicating that the resource is found in the cache to the
      response.headers.append('x-edgesfunctions-cache', 'hit');

      return response;
    } catch (e) {
      await cache.delete(request);
      // If the cache duration of the resource times out or another error occurs, re-
      return fetchJquery(event, request);
    }
  }

  addEventListener('fetch', (event) => {
    event.respondWith(handleEvent(event));
  });
```

## Sample Preview

In the address bar of the browser, enter a URL that matches a trigger rule of the edge function to preview the effect of the sample code.

The resource is not found in the cache.

The screenshot shows a web browser's developer tools with the 'fetch-cache' request selected. The 'Headers' tab is active, displaying the 'General' and 'Response Headers' sections. The 'Response Headers' section includes the following information:

- Request URL: http://.../fetch-cache
- Request Method: GET
- Status Code: 200 OK
- Remote Address: ...
- Referrer Policy: strict-origin-when-cross-origin
- Cache-Control: s-maxage=10
- Connection: keep-alive
- Content-Length: 86659
- Date: Fri, 16 Dec 2022 03:27:15 GMT
- Keep-Alive: timeout=5
- x-edgefunctions-cache: miss

The resource is found in the cache.

The screenshot shows a web browser's developer tools with the 'fetch-cache' request selected. The 'Headers' tab is active, displaying the 'General' and 'Response Headers' sections. The 'Response Headers' section includes the following information:

- Request URL: http://.../fetch-cache
- Request Method: GET
- Status Code: 200 OK
- Remote Address: ...
- Referrer Policy: strict-origin-when-cross-origin
- Accept-Ranges: bytes
- Cache-Control: s-maxage=10
- Connection: keep-alive
- Content-Length: 86659
- Date: Fri, 16 Dec 2022 03:26:34 GMT
- Server: Lego Server
- x-edgefunctions-cache: hit

## References

[Runtime APIs: Cache](#)

[Runtime APIs: Fetch](#)

[Runtime APIs: FetchEvent](#)

[Runtime APIs: Response](#)



# Caching POST Requests

Last updated : 2024-01-25 11:39:35

In this example, an SHA-256 signature is calculated for the request body of a POST request and used as a part of the cache key, and the [Cache API](#) is called to cache the response content. If the content is already stored in the cache, the cached content is sent to the client. Otherwise, the [Fetch API](#) is called to initiate a subrequest to fetch a remote resource. This example demonstrates how to use an edge function to cache POST requests.

## Sample Code



```
function uint8ArrayToHex(arr) {  
  return Array.prototype.map.call(arr, (x) => (('0' + x.toString(16)).slice(-2))).join('');  
}  
  
// The SHA-256 signature digest.  
async function sha256(message) {  
  const msgBuffer = new TextEncoder().encode(message);  
  const hashBuffer = await crypto.subtle.digest('SHA-256', msgBuffer);  
  
  return uint8ArrayToHex(new Uint8Array(hashBuffer));  
}
```

```
async function fetchContent(event, cacheKey) {
  const cache = caches.default;

  // If the resource is not found in the cache, fetch the resource from the origin
  const response = await fetch(event.request);

  // Add the Cache-Control field to the response header and specify the cache duration
  response.headers.set('Cache-Control', 's-maxage=10');
  event.waitUntil(cache.put(cacheKey, response.clone()));

  // Add an identifier indicating that the resource is not found in the cache to the
  response.headers.append('x-edgefunctions-cache', 'miss');

  return response;
}

async function handleRequest(event) {
  const request = event.request;
  const body = await request.clone().text();

  // // Calculate the hash value based on the request body.
  const hash = await sha256(body);

  // Use the hash value that is calculated based on the request body as a part of the
  const cacheKey = `${request.url}${hash}`;

  const cache = caches.default;

  try {
    // Fetch the associated response content from the cache.
    let response = await cache.match(cacheKey);

    if (!response) {
      return fetchContent(event, cacheKey);
    }

    // Add an identifier indicating that the resource is found in the cache to the
    response.headers.append('x-edgefunctions-cache', 'hit');

    return response;
  } catch (error) {
    await cache.delete(cacheKey);
    // If the cache duration of the resource times out or the resource is not found
    return fetchContent(event, cacheKey);
  }
}
```

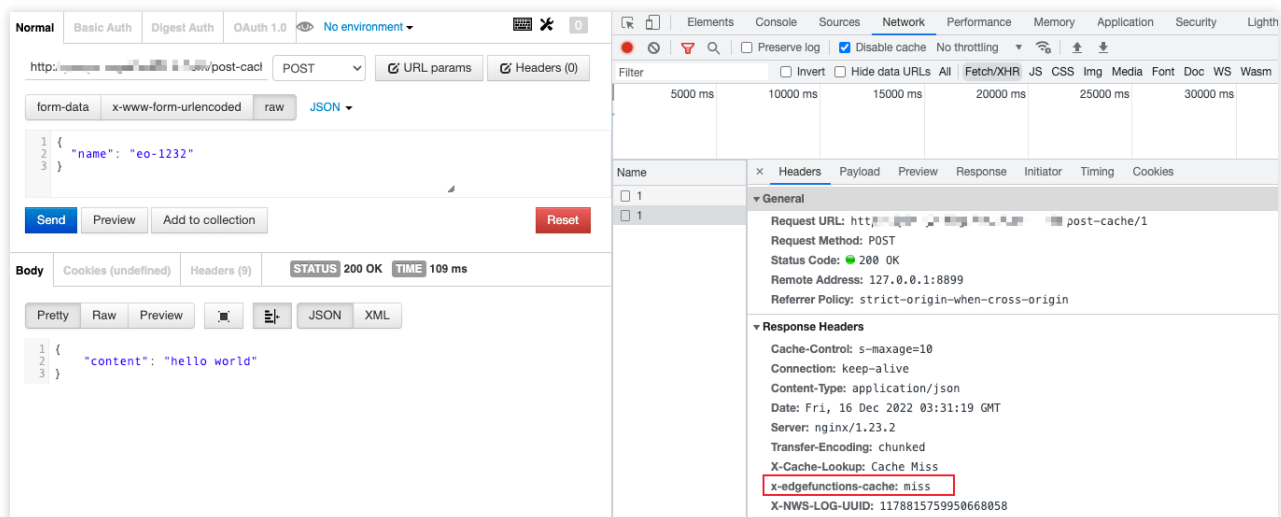
```
return response;
}

addEventListener('fetch', (event) => {
  try {
    const request = event.request;
    // Process a POST request.
    if (request.method.toUpperCase() === 'POST') {
      return event.respondWith(handleRequest(event));
    }
    // Non-POST request.
    return event.respondWith(fetch(request));
  } catch (e) {
    return event.respondWith(new Response('Error thrown ' + e.message));
  }
});
```

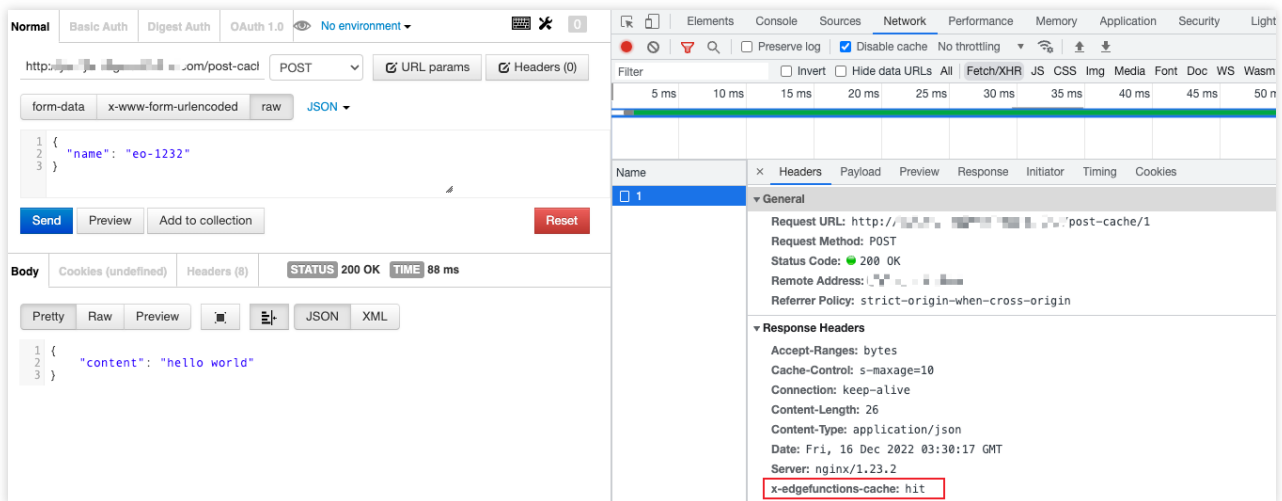
## Sample Preview

In the address bar of the browser, enter a URL that matches a trigger rule of the edge function to preview the effect of the sample code.

The resource is not found in the cache.



The resource is found in the cache.



## References

[Runtime APIs: Fetch](#)

[Runtime APIs: Cache](#)

[Runtime APIs: Web Crypto](#)

# Responding in Streaming Mode

Last updated : 2024-01-25 11:36:31

In this example, the [Fetch API](#) is called to fetch a remote jQuery.js resource, and the resource is sent to a client in streaming mode in response to a request from the client.

## Sample Code



```
async function handleRequest(request) {
  const response = await fetch('https://static.cloudcachetci.com/qcloud/main/script

  if (response.status !== 200) {
    return response;
  }

  // Generate readable streams and writeable streams.
  const { readable, writable } = new TransformStream();
  // Respond to the client in streaming mode.
  response.body.pipeTo(writable);
```

```
return new Response(readable, response);
}

addEventListener('fetch', event => {
  event.respondWith(handleRequest(event.request));
});
```

## Sample Preview

In the address bar of the browser, enter a URL that matches a trigger rule of the edge function to preview the effect of the sample code.

```
> GET http://...
> User-Agent: ...
> Host: ...
> Accept: */*
> Proxy-Connection: Keep-Alive
>
< HTTP/1.1 200 OK
< EO-Cache-Status: HIT
< EO-LOG-UUID: 5573999441187848225
< Access-Control-Expose-Headers: Content-Length, Content-Type, server_ip, x-nws-log-uuid
< Accept-Ranges: bytes
< Last-Modified: Tue, 18 Oct 2022 12:52:34 GMT
< x-cos-request-id: NjM3MjNkOWVfYTtk3NWI3MDlfMjN18xZTc2YzI3
< x-cos-hash-crc64ecma: 12262715282927589694
< Vary: Origin, Access-Control-Request-Headers, Access-Control-Request-Method
< Connection: keep-alive
< Date: Mon, 14 Nov 2022 13:07:42 GMT
< Access-Control-Allow-Methods: PUT,GET,POST,HEAD
< Access-Control-Allow-Credentials: true
< Server: tencent-cos
< Content-Type: application/x-javascript
< Access-Control-Allow-Origin: https://www.tencentcloud.com
< Etag: "5817005196ebbc1ff98e6c51baf6d38d-1"
< Transfer-Encoding: chunked
<
[data not shown]
```

## References

[Runtime APIs: TransformStream](#)

[Runtime APIs: Response](#)



# Merging Resources and Responding in Streaming Mode

Last updated : 2024-01-25 11:35:14

In this example, three video clips are merged into one video, and the merged video is played on a client based on the order in which the video clips are merged. This example demonstrates how to use an edge function to fetch multiple remote resources, read and merge the resources in streaming mode, and respond to a client request by using the merged resource in streaming mode.

## Sample Code



```
async function combine(readableVideos, destination) {
  for (const readable of readableVideos) {
    // Send a streaming response.
    await readable.pipeTo(destination, {
      preventClose: true
    });
  }

  const writer = destination.getWriter();
  writer.close();
  writer.releaseLock();
}
```

```
}

async function handleRequest(request) {
  // The URLs of the video clips.
  const urls = [
    'https://laputa-1257579200.cos.ap-guangzhou.myqcloud.com/stream-01.mov',
    'https://laputa-1257579200.cos.ap-guangzhou.myqcloud.com/stream-02.mov',
    'https://laputa-1257579200.cos.ap-guangzhou.myqcloud.com/stream-03.mov',
  ];

  const requests = urls.map(url => fetch(url));
  const responses = await Promise.all(requests);
  // Obtain the readable streams of the video clips.
  const readableVideos = responses.map(res => res.body);

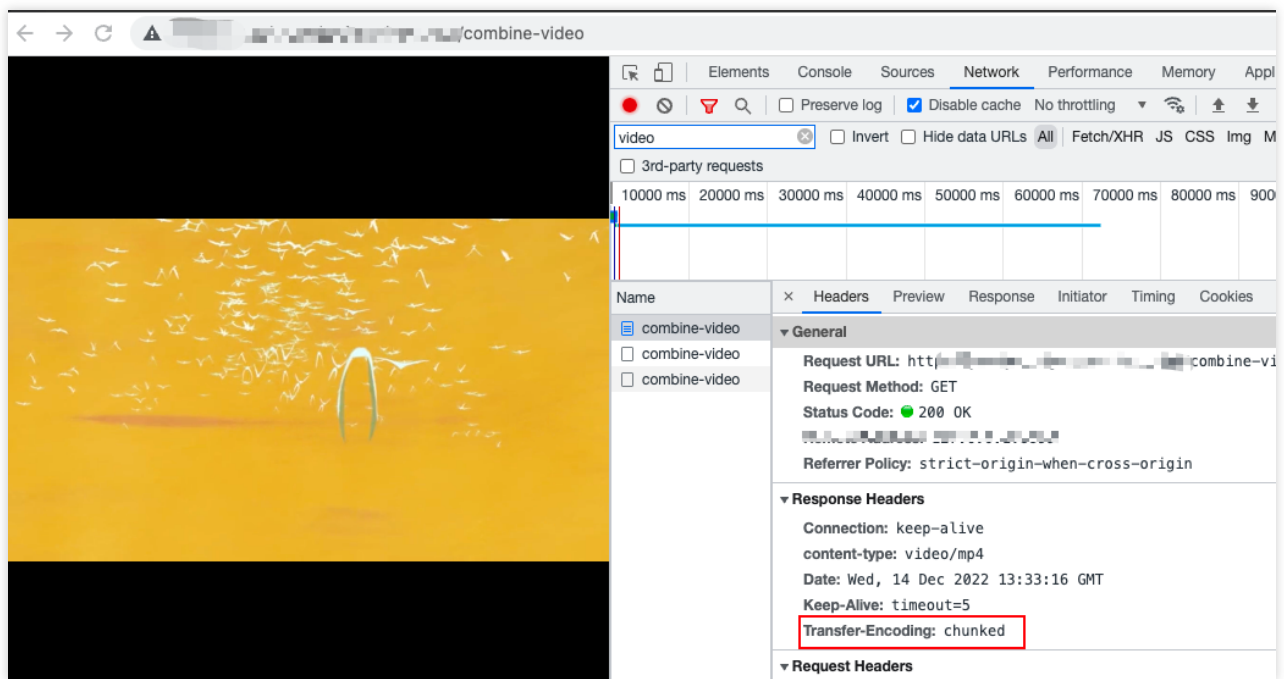
  const { readable, writable } = new TransformStream();
  // Merge the video clips.
  combine(readableVideos, writable);

  return new Response(readable, {
    headers: {
      'content-type': 'video/mp4',
    }
  });
}

addEventListener('fetch', event => {
  event.respondWith(handleRequest(event.request));
});
```

## Sample Preview

In the address bar of the browser, enter a URL that matches a trigger rule of the edge function to preview the merged video. View the response header and verify that the video is transferred in chunked mode.



## References

[Runtime APIs: TransformStream](#)

[Runtime APIs: Response](#)

# Protecting Data from Tampering

Last updated : 2024-01-25 11:32:07

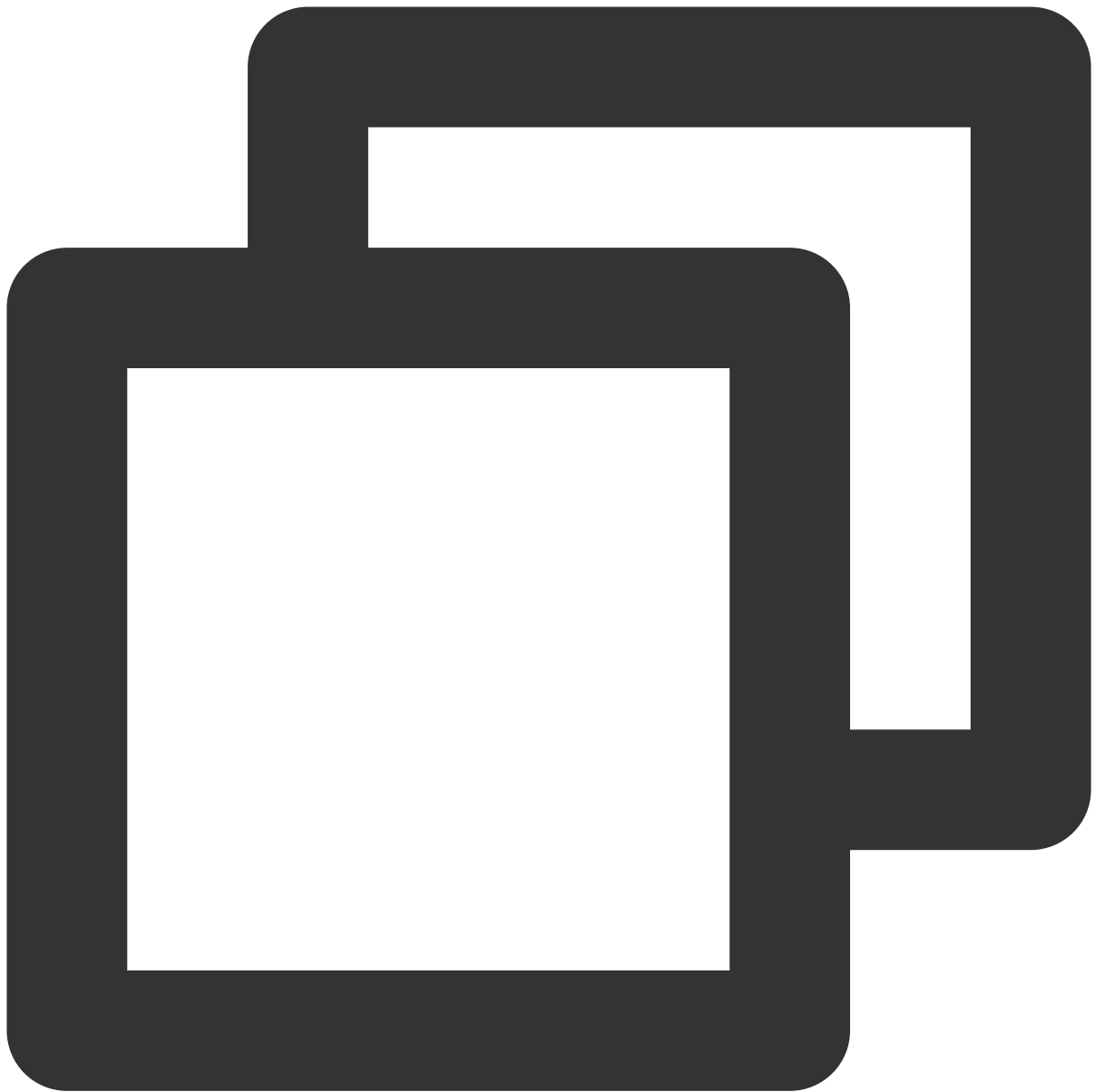
In this example, an SHA-256 signature is calculated for a request body and compared with the signature that is generated by the origin server. If the signatures are the same, the response content is not tampered with. Otherwise, a 416 status code is returned, indicating that the response content is tampered with. This example demonstrates how to use an edge function to verify whether the response content sent from the origin server is tampered with.

## Note:

Make sure that the origin server uses the same signature algorithm and tamper-proofing rules that are used in this example.

To use the tamper-proofing rules described in this example in the production environment, perform sorting on the calculated signature to prevent the signature from being cracked by attackers.

## Sample Code



```
// The supported text file formats.
const textFileTypes = [
  'application/javascript',
  'text/html; charset=utf-8',
  'text/css; charset=utf-8',
  'text/xml; charset=utf-8'
];

// The supported image file format.
const imageFileTypes = [
  'image/jpeg'
```

```
];

function uint8ArrayToHex(arr) {
  return Array.prototype.map
    .call(arr, (x) => (('0' + x.toString(16)).slice(-2)))
    .join('');
}

/**
 * The following algorithms are supported: MD5, SHA-1, SHA-256, SHA-384, and SHA-51
 * Note: When you calculate a signature on the origin server, do not directly sign
 * Use the same method in the sample code to calculate the signature for comparison
 */
async function checkAndResponse(response, hash, algorithm) {
  const headers = response.headers;

  let checkHash = 'sorry! not match';
  let data = null;
  const contentType = headers.get('Content-Type');
  if (textFileTypes.includes(contentType) || imageFileTypes.includes(contentType))
    data = await response.arrayBuffer();
  }
  let ret = await crypto.subtle.digest({name: algorithm}, data);
  checkHash = uint8ArrayToHex(new Uint8Array(ret));

  headers.append(`X-Content-${algorithm}-Check`, checkHash);
  // Compare the signature that is calculated in real time with the signature that
  if (checkHash !== hash) {
    return new Response(null, {
      headers,
      status: 416
    });
  }

  return new Response(data, {
    headers,
    status: 200
  });
}

async function handleEvent(event) {
  // Obtain the content that is returned by the origin server. If the content is ca
  const response = await fetch(event.request);
  if (response.status === 200) {
    const headers = response.headers;
    // The signature header of the content that is returned by the origin server.
    const hash = headers.get('X-Content-Sha256');
```

```

    if (hash) {
      // Check whether the calculated signature is the same as the signature that i
      return checkAndResponse(response, hash, 'Sha-256');
    }
  }

  return response;
}

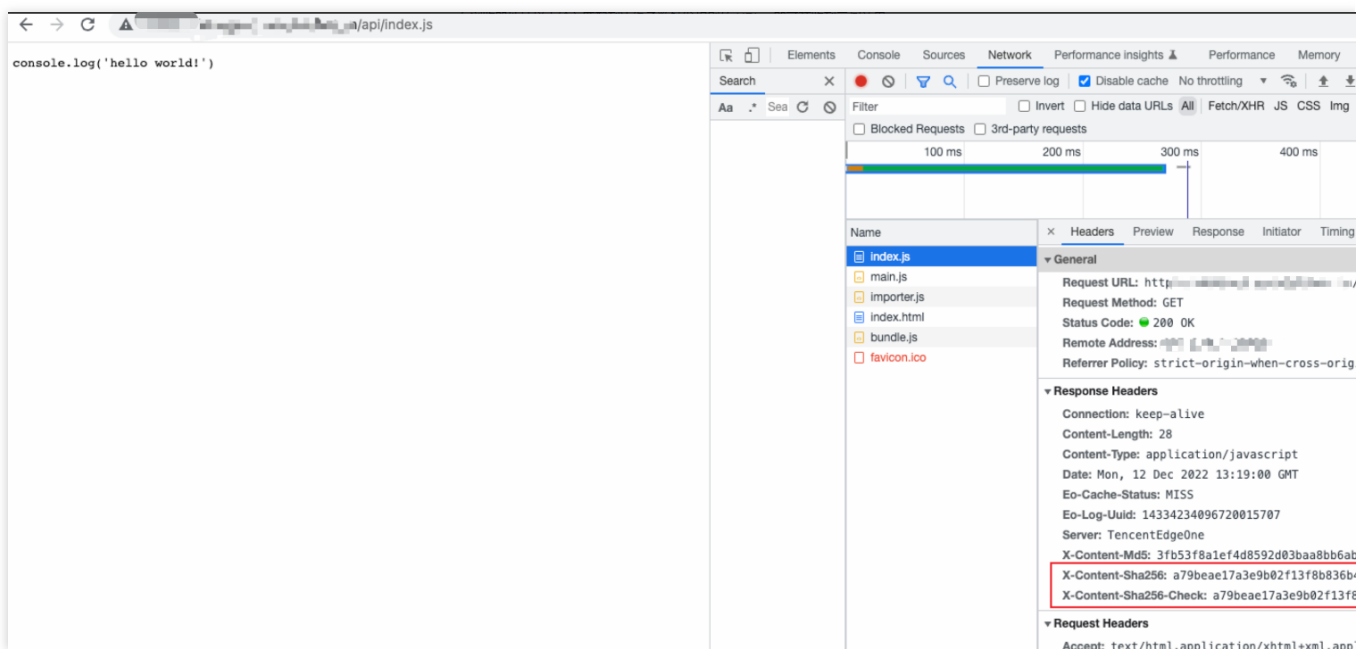
addEventListener('fetch', event => {
  event.respondWith(handleEvent(event));
});

```

## Sample Preview

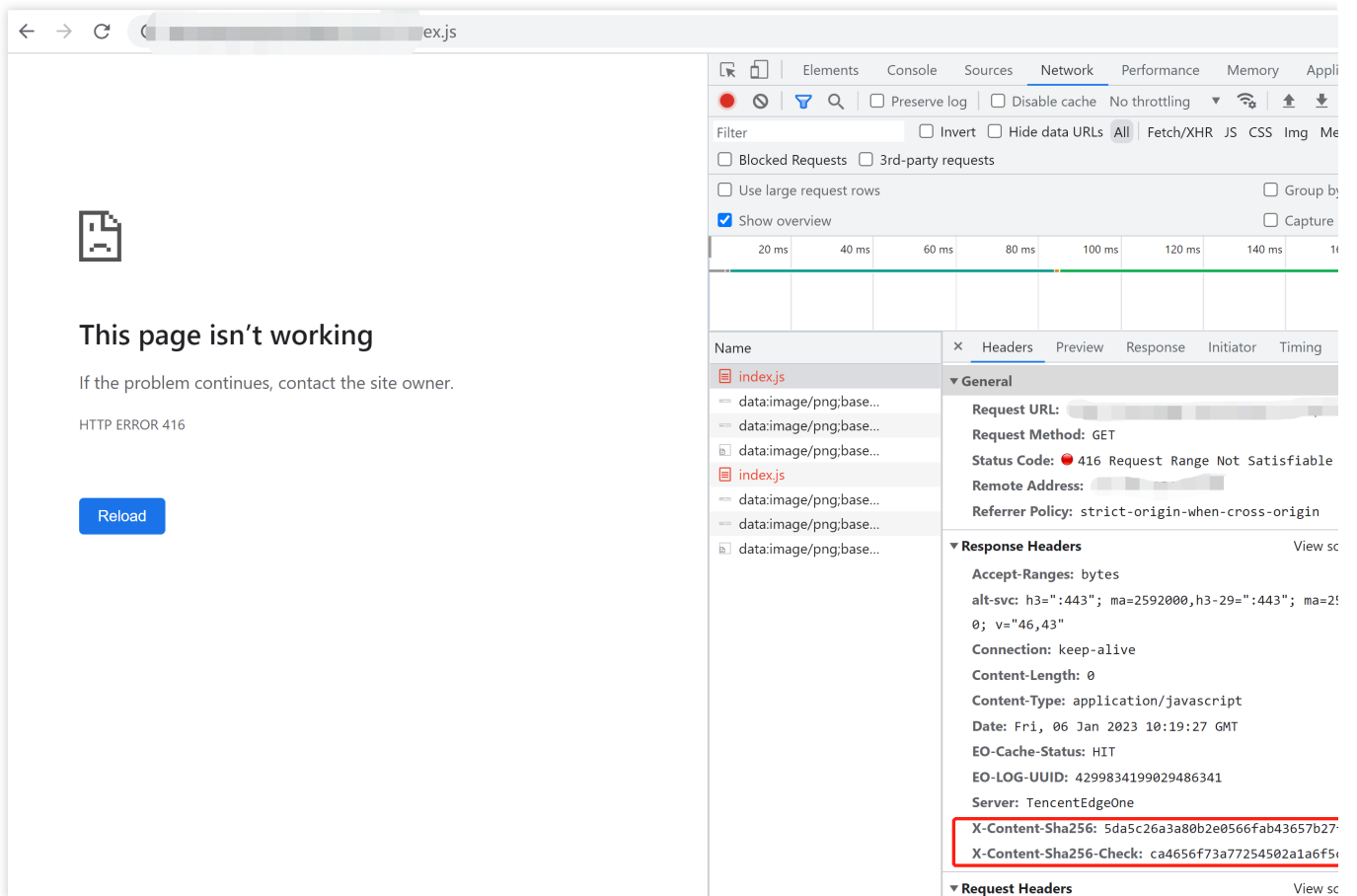
In the address bar of the browser, enter a URL that matches a trigger rule of the edge function to preview the effect of the sample code.

The signature that is calculated by the edge function is the same as the signature that is provided by the origin server.



The signature that is calculated by the edge function is different from the signature that is provided by the origin server, and a 416 status code is returned.





## References

[Runtime APIs: Fetch](#)

[Runtime APIs: Web Crypto](#)

[Runtime APIs: Headers](#)

[Runtime APIs: Response](#)

# Rewriting a m3u8 File and Configuring Authentication

Last updated : 2023-04-13 11:14:30

In this example, a .m3u8 file is rewritten to support TypeA authentication that controls access to .m3u8 files and .ts segments. You can modify the code as needed to support other authentication methods.

## Sample Code



```
// The private key for TypeA authentication. Specify the key as needed and make sur
const PK = '0123456789';
// The validity period of the key for encryption and verification, in seconds.
const TTL = 60;
const KEY_NAME = 'key';
const UID = 0;
const SUFFIX_LIST = ['.m3u8', '.ts'];

addEventListener('fetch', (event) => {
  event.respondWith(handleEvent(event));
});
```

```
async function handleEvent(event) {
  try {
    const { request } = event;
    const urlInfo = new URL(request.url);
    const suffix = getSuffix(urlInfo.pathname);

    // Check whether the file extension is .m3u8 or .ts.
    if (!SUFFIX_LIST.includes(suffix)) {
      return fetch(request);
    }

    // TypeA authentication.
    const checkResult = await checkTypeA(urlInfo);
    if (!checkResult.flag) {
      return new Response(checkResult.message, {
        status: 403,
        headers: {
          'X-Auth-Err': checkResult.message
        },
      });
    }

    // Rewrite the .m3u8 file and respond.
    if (suffix === '.m3u8') {
      return fetchM3u8({
        request,
        querySign: {
          basePath: urlInfo.pathname.substring(0, urlInfo.pathname.lastIndexOf('/'))
            ...checkResult.querySign,
        },
      });
    }

    // Respond with .ts resources.
    if (suffix === '.ts') {
      return fetchTs(request);
    }
  } catch (error) {
    return new Response(error.stack, { status: 544 });
  }

  return fetch(request);
}

async function checkTypeA(urlInfo) {
  const sign = urlInfo.searchParams.get(KEY_NAME) || '';
}
```

```
const elements = sign.split('-');

if (elements.length !== 4) {
  return {
    flag: false,
    message: 'Invalid Sign Format',
  };
}

const [ts, rand, uid, md5hash] = elements;
if (ts === undefined || rand === undefined || uid === undefined || md5hash === un
  return {
    flag: false,
    message: 'Invalid Sign Format',
  };
}

if (!isNumber(ts)) {
  return {
    flag: false,
    message: 'Sign Expired',
  };
}

if (Date.now() > (Number(ts) + TTL) * 1000) {
  return {
    flag: false,
    message: 'Sign Expired',
  };
}

const hash = await md5([urlInfo.pathname, ts, rand, uid, PK].join('-'));
if (hash !== md5hash) {
  return {
    flag: false,
    message: 'Verify Sign Failed',
  };
}
return {
  flag: true,
  message: 'success',
  querySign: {
    rand,
    uid,
    md5hash,
    ts,
  },
}
```

```
};  
}  
  
async function fetchM3u8({ request, querySign }) {  
  request.headers.delete('Accept-Encoding');  
  let response = null;  
  try {  
    response = await fetch(request);  
    if (response.status !== 200) {  
      return response;  
    }  
  } catch (error) {  
    return new Response('', {  
      status: 504,  
      headers: { 'X-Fetch-Err': 'Invalid Origin' }  
    });  
  }  
  
  const content = await response.text();  
  const lines = content.split('\n');  
  
  const contentArr = await Promise.all(  
    lines.map(line => rewriteLine({ line, querySign }))  
  );  
  
  return new Response(contentArr.join('\n'), response);  
}  
  
async function fetchTs(request) {  
  let response = null;  
  try {  
    response = await fetch(request);  
    if (response.status !== 200) {  
      return response;  
    }  
  } catch (error) {  
    return new Response('', {  
      status: 504,  
      headers: { 'X-Fetch-Err': 'Invalid Origin' }  
    });  
  }  
  return response;  
}  
  
async function rewriteLine({ line, querySign }) {  
  // Skip empty lines.  
  if (/^\s*$/.test(line)) {
```

```
    return line;
  }

  if (line.charAt(0) === '#') {
    // Process #EXT-X-MAP.
    if (line.startsWith('#EXT-X-MAP')) {
      const key = await createSign(querySign, line);
      line = line.replace(/URI="([^"]+)"/, (matched, p1) => {
        return p1 ? matched.replace(p1, `${p1}?key=${key}`) : matched;
      });
    }
    return line;
  }

  const key = await createSign(querySign, line);

  return `${line}?${KEY_NAME}=${key}`;
}

async function createSign(querySign, line) {
  const { ts, rand, uid = 0 } = querySign;
  const pathname = `${querySign.basePath}/${line}`;

  const md5hash = await md5([pathname, ts, rand, uid, PK].join('-'));
  const key = [ts, rand, uid, md5hash].join('-');

  return key;
}

function getSuffix(pathname) {
  const suffix = pathname.match(/\\.m3u8|\\.ts$/);
  return suffix ? suffix[0] : null;
}

function isNumber(num) {
  return Number.isInteger(Number(num));
}

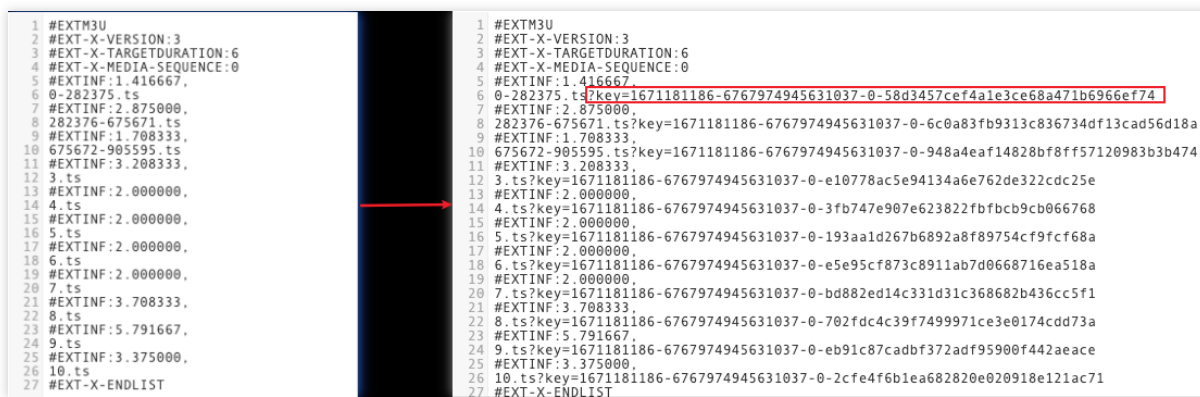
function bufferToHex(arr) {
  return Array.prototype.map
    .call(arr, (x) => (x >= 16 ? x.toString(16) : '0' + x.toString(16)))
    .join('');
}

async function md5(text) {
  const buffer = await crypto.subtle.digest('MD5', TextEncoder().encode(text));
  return bufferToHex(new Uint8Array(buffer));
}
```

```
}
```

## Sample Preview

In the address bar of the browser, enter a URL that matches a trigger rule of the edge function to preview the effect of the sample code. Sample URL: 如：http://www.example.com/index.m3u8?key=1678873033-123456-0-32f4xxxxcabcx1602xxxx6756d8f4.



```
1 #EXTM3U
2 #EXT-X-VERSION:3
3 #EXT-X-TARGETDURATION:6
4 #EXT-X-MEDIA-SEQUENCE:0
5 #EXTINF:1.416667,
6 0-282375.ts
7 #EXTINF:2.875000,
8 282376-675671.ts
9 #EXTINF:1.708333,
10 675672-905595.ts
11 #EXTINF:3.208333,
12 3.ts
13 #EXTINF:2.000000,
14 4.ts
15 #EXTINF:2.000000,
16 5.ts
17 #EXTINF:2.000000,
18 6.ts
19 #EXTINF:2.000000,
20 7.ts
21 #EXTINF:3.708333,
22 8.ts
23 #EXTINF:5.791667,
24 9.ts
25 #EXTINF:3.375000,
26 10.ts
27 #EXT-X-ENDLIST
```

```
1 #EXTM3U
2 #EXT-X-VERSION:3
3 #EXT-X-TARGETDURATION:6
4 #EXT-X-MEDIA-SEQUENCE:0
5 #EXTINF:1.416667,
6 0-282375.ts?key=1671181186-6767974945631037-0-58d3457cef4a1e3ce68a471b6966ef74
7 #EXTINF:2.875000,
8 282376-675671.ts?key=1671181186-6767974945631037-0-6c0a83fb9313c836734df13cad56d18a
9 #EXTINF:1.708333,
10 675672-905595.ts?key=1671181186-6767974945631037-0-948a4eaf14828bf8ff57120983b3b474
11 #EXTINF:3.208333,
12 3.ts?key=1671181186-6767974945631037-0-e10778ac5e94134a6e762de322cdc25e
13 #EXTINF:2.000000,
14 4.ts?key=1671181186-6767974945631037-0-3fb747e907e623822fbfbcb9cb066768
15 #EXTINF:2.000000,
16 5.ts?key=1671181186-6767974945631037-0-193aa1d267b6892a8f89754cf9fcf68a
17 #EXTINF:2.000000,
18 6.ts?key=1671181186-6767974945631037-0-e5e95cf873c8911ab7d0668716ea518a
19 #EXTINF:2.000000,
20 7.ts?key=1671181186-6767974945631037-0-bd882ed14c331d31c368682b436cc5f1
21 #EXTINF:3.708333,
22 8.ts?key=1671181186-6767974945631037-0-702fdc4c39f7499971ce3e0174cdd73a
23 #EXTINF:5.791667,
24 9.ts?key=1671181186-6767974945631037-0-eb91c87cadbf372adf95900f442aeace
25 #EXTINF:3.375000,
26 10.ts?key=1671181186-6767974945631037-0-2cfe4f6b1ea682820e020918e121ac71
27 #EXT-X-ENDLIST
```

## References

[Runtime APIs: Fetch](#)

[Runtime APIs: Web Crypto](#)

[Runtime APIs: Response](#)

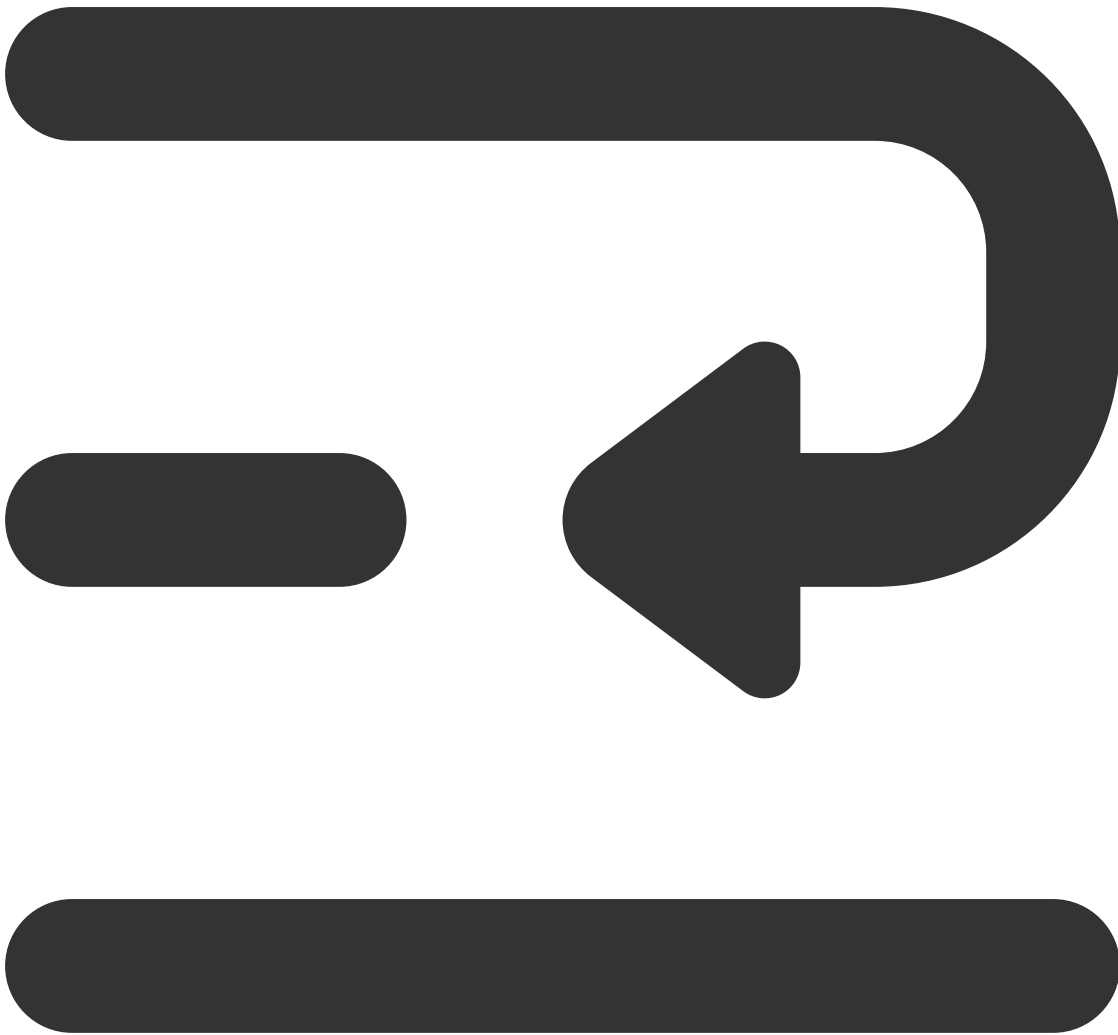
[TypeA](#)



# Adaptive Image Resize

Last updated : 2023-07-06 17:20:26

In this document, we demonstrate how to identify the client type via `User-Agent` in the request header, use [fetch API](#) to get the image from the origin, and convert it to the format required by the browser.





```
addEventListener('fetch', event => {  
  // If the function code throws an unhandled exception, Edge Functions forwards th  
  event.passThroughOnException();  
  event.respondWith(handleEvent(event));  
});  
  
async function handleEvent(event) {  
  const { request } = event;  
  const urlInfo = new URL(request.url);  
  const userAgent = request.headers.get('user-agent');
```

```
// Request a non-image resource
if (!/\.(jpe?g|png)$/.test(urlInfo.pathname)) {
  return fetch(request);
}

// Image width on the mobile device
let width = 480;
const isPcClient = isPc(userAgent);

// Image width on the PC
if (isPcClient) {
  width = 1280;
}

// Scale the image
const response = await fetch(request, {
  eo: {
    image: {
      width,
    }
  }
});

// Set the response header
response.headers.set('x-ef-client', isPcClient ? 'pc' : 'mobile');
return response;
}

// Identify the request client type
function isPc(userAgent) {
  const regex = /(phone|pad|pod|iPhone|iPod|ios|iPad|Android|Mobile|BlackBerry|IEMo

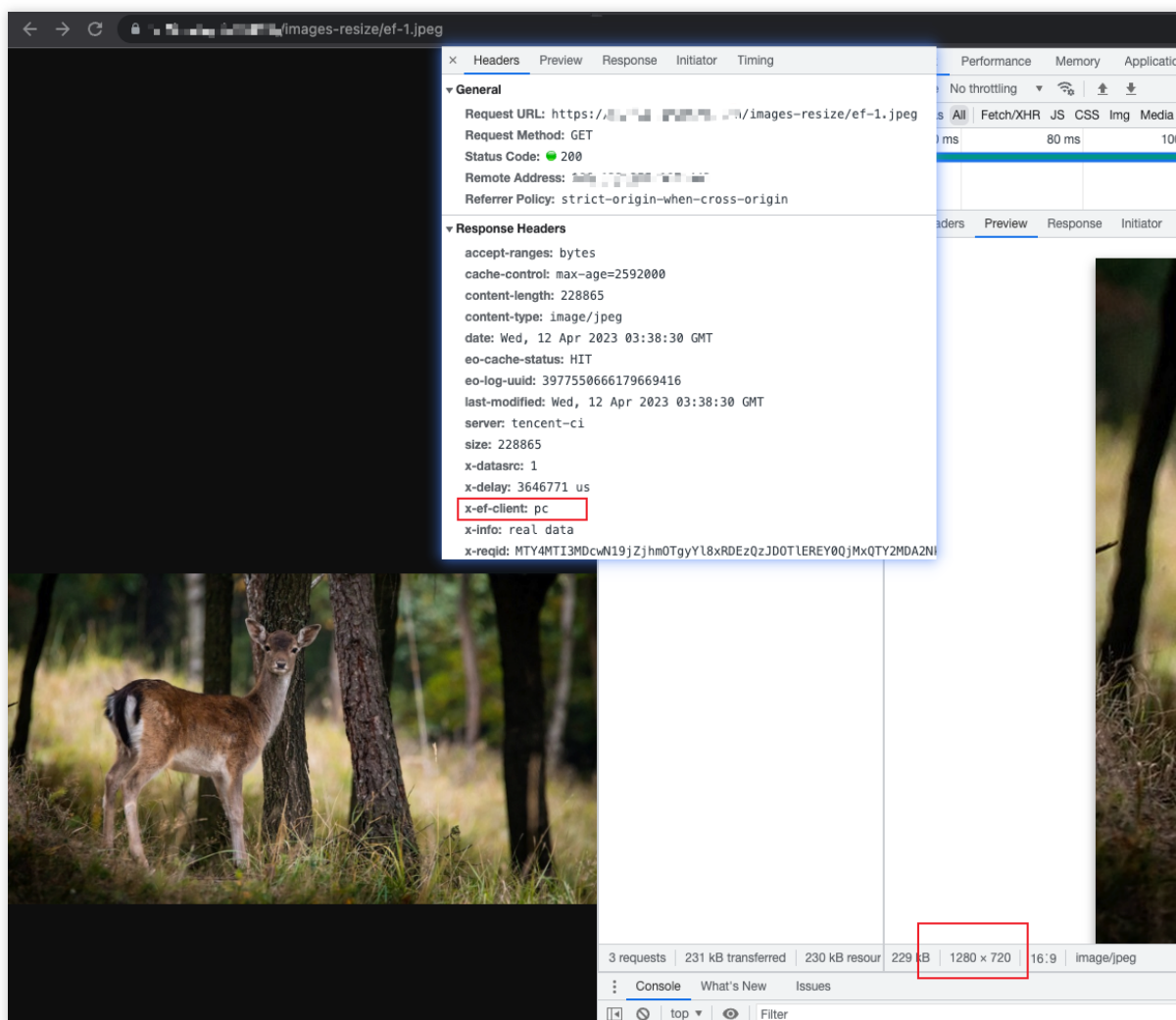
  if(regex.test(userAgent)) {
    return false;
  }

  return true;
}
```

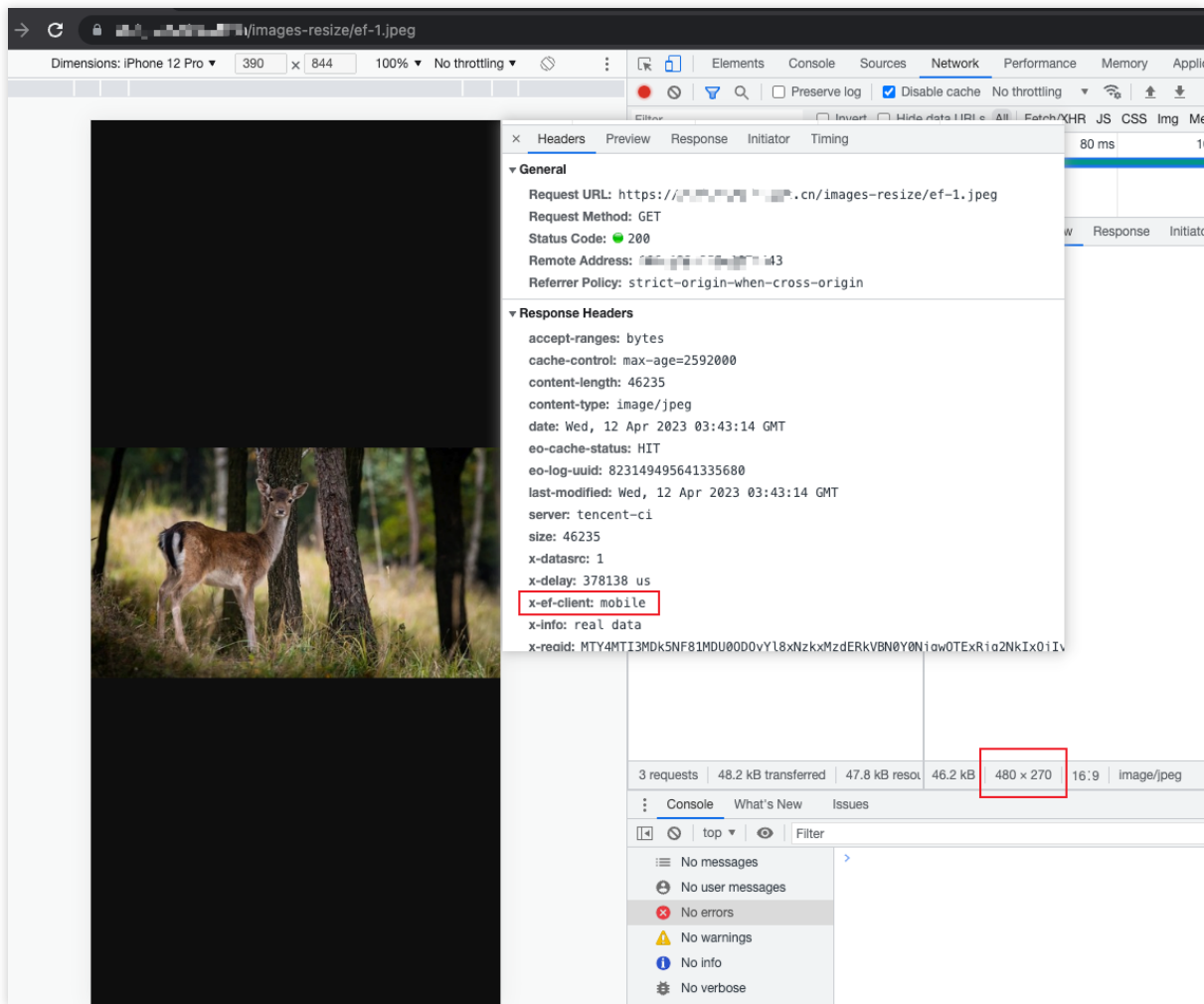
## Sample Preview

In the address bar of the browser, enter a URL (such as `https://example.com/images-resize/ef-1.jpeg`) that matches a trigger rule of the edge function to preview the effect of the sample code.

For displaying on PC, scale the image to 1280 x 720.



For displaying on mobile devices, scale the image to 480 x 270.



## References

[Runtime APIs: Fetch](#)

[Runtime APIs: Headers](#)

[Runtime APIs: Response](#)

[Runtime APIs: Request](#)

# Image Adaptive WebP

Last updated : 2023-10-30 17:41:37

This example determines whether the request header `Accept` contains `image/webp`. If so, the Edge function will automatically convert the image format to `WebP` and cache it on the EdgeOne edge node. If your Web application displays a large amount of `PNG` and `JPEG` format images and you want to automatically optimize the images at the edge to reduce traffic bandwidth costs, you can use Edge functions to implement a smooth upgrade, automatically converting `PNG` and `JPEG` format images to `WebP` format with 0 changes to the business code. For more image conversion formats, please refer to [ImageProperties](#).



```
async function handleEvent(event) {
  const { request } = event;

  // Get the image type supported by the client
  const accept = request.headers.get('Accept');
  const option = { eo: { image: {} } };

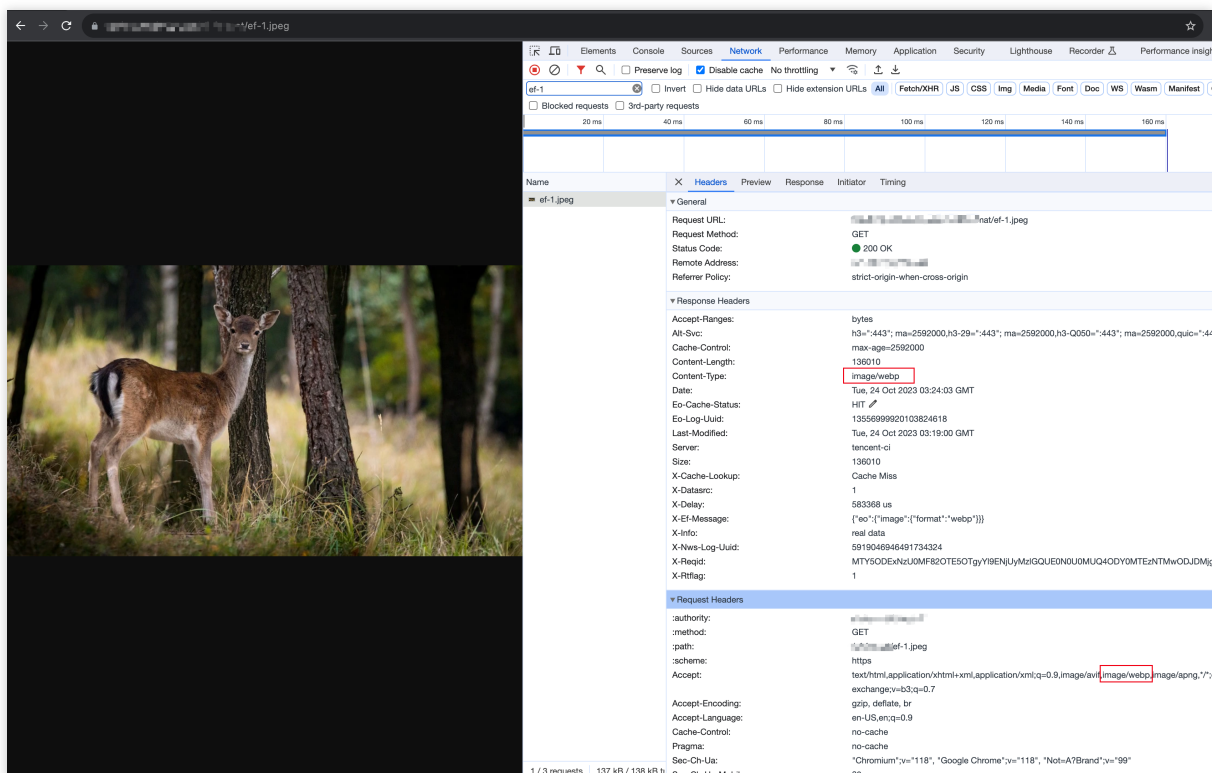
  // Check whether the client supports WebP format images, if not, respond with th
  if (accept && accept.includes('image/webp')) {
    option.eo.image.format = 'webp';
  }
}
```

```
const response = await fetch(request, option);
return response;
}

addEventListener('fetch', event => {
  // When the function code throws an unhandled exception, the Edge function trans
  event.passThroughOnException();
  event.respondWith(handleEvent(event));
});
```

## Example Preview

Enter the URL that matches the triggering rules of the Edge function in the address bar of the browser on the PC side and mobile side (e.g., `https://example.com/images-format/ef-1.jpeg`), and the image will be automatically converted to Webp format.



## Related References



[Runtime APIs: Fetch](#)

[Runtime APIs: Headers](#)

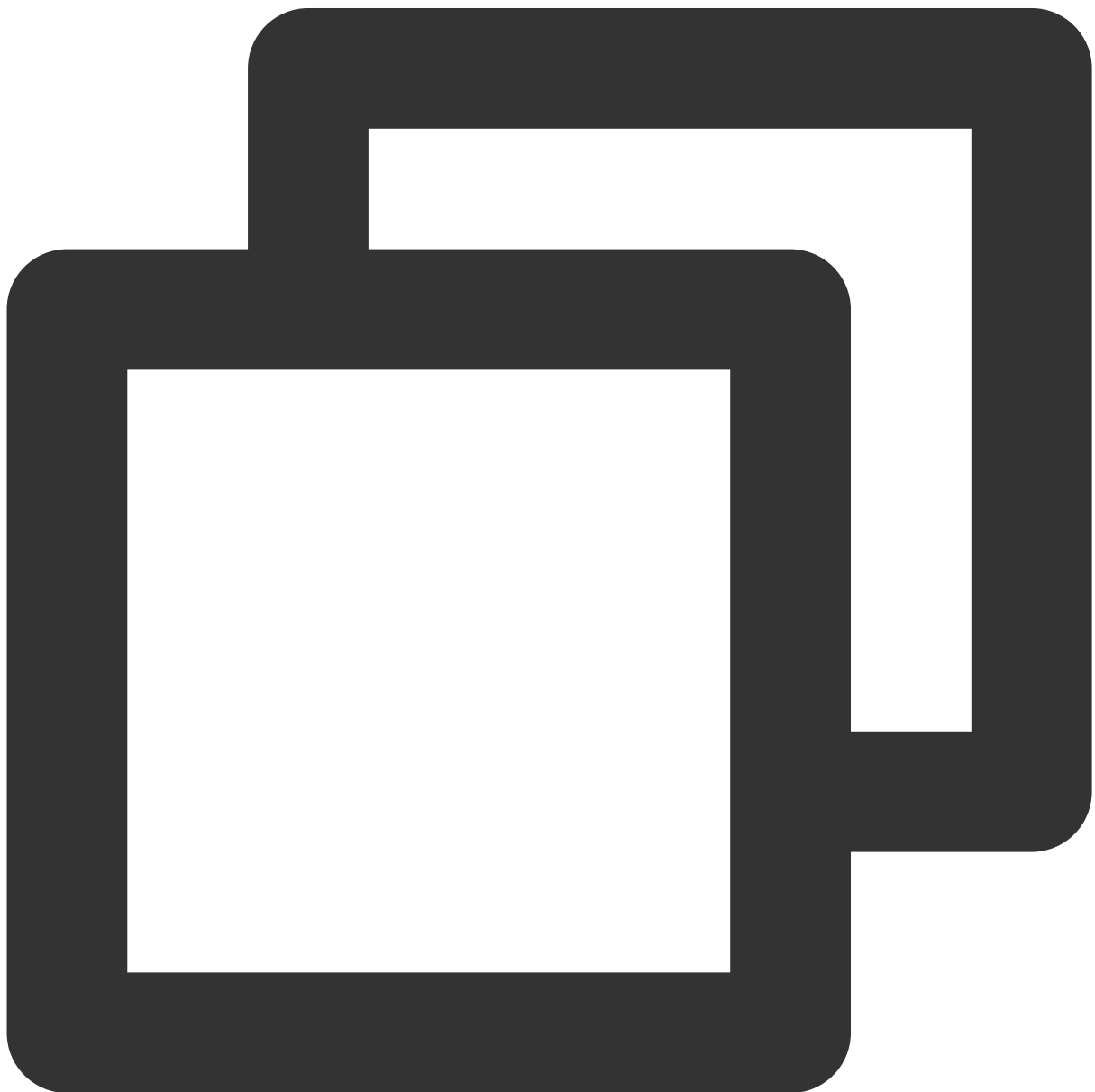
[Runtime APIs: Request](#)

[Runtime APIs: FetchEvent](#)

# Customize Referer restriction rules

Last updated : 2024-07-16 16:35:32

Referer anti-leeching technology is a strategy adopted by websites to protect their resources and prevent other websites from illegally using their content. This example determines the request sources by checking the `Referer` field in the `HTTP` request header. You can flexibly customize the matching rules for this `Referer`. If the `Referer` does not exist or does not match the allowed domain list, the Edge functions will reject the request and return a 403 status code.



```
async function handleRequest(request) {
  // Collect the Referer
  const referer = request.headers.get('Referer');

  // If the Referer is empty, access is denied
  if (!referer) {
    return new Response(null, { status: 403 });
  }

  const urlInfo = new URL(request.url);
  const refererRegExp = new RegExp(`^https?:\\/\\/\\/${urlInfo.hostname}\\/t-[0-9a-z]{

  // If the Referer is not on the allowlist, access is denied
  if (!refererRegExp.test(referer)) {
    return new Response(null, { status: 403 });
  }

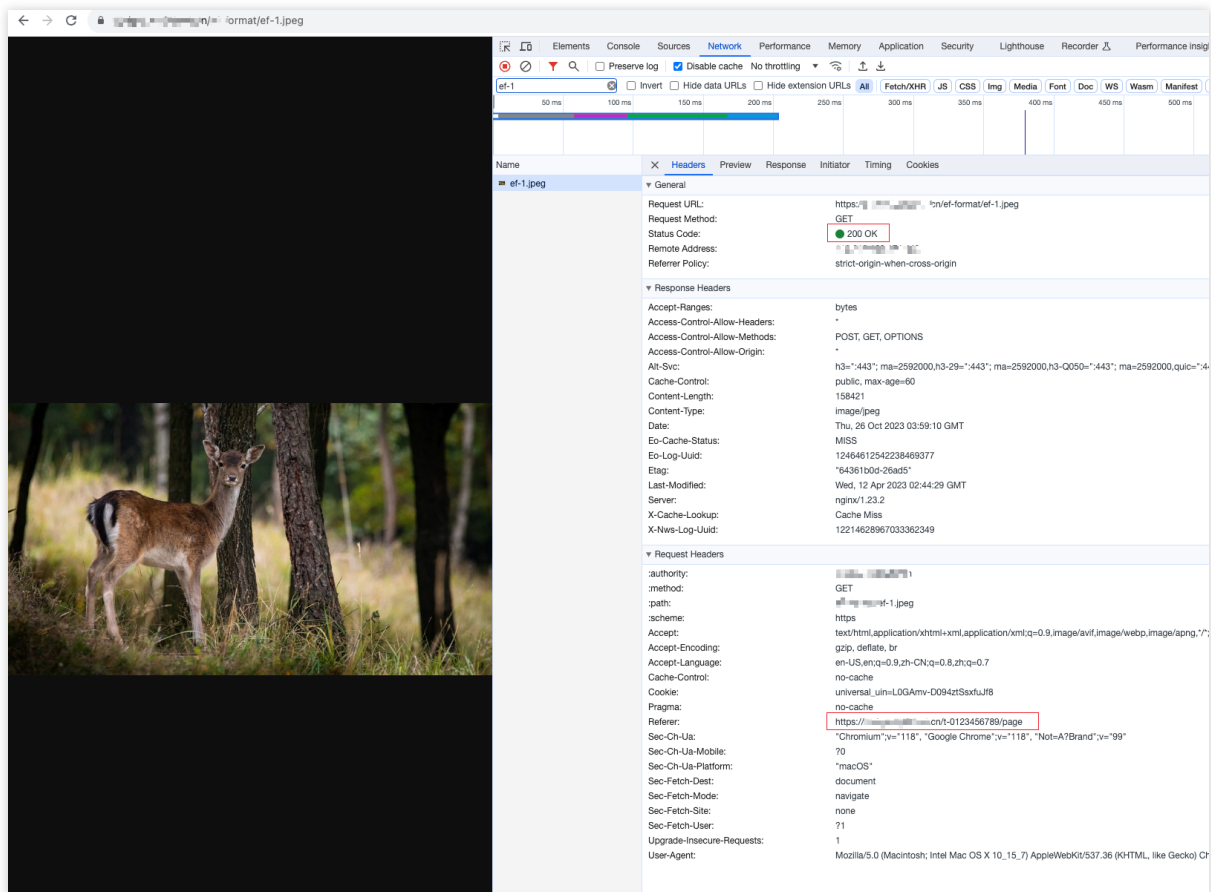
  // Normal request, access EdgeOne node cache or origin-pull
  return fetch(request);
}

addEventListener('fetch', event => {
  // When the function code throws an unhandled exception, the Edge function transm
  event.passThroughOnException();
  event.respondWith(handleRequest(event.request));
});
```

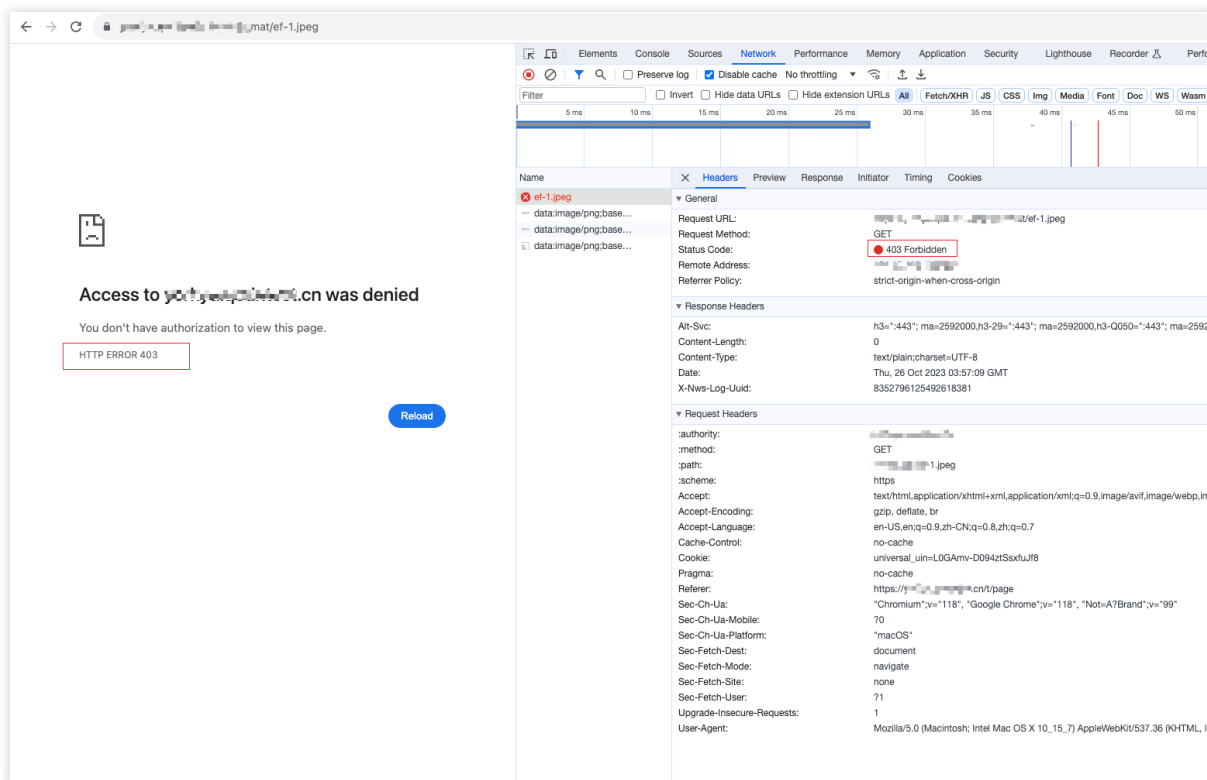
## Example Preview

Enter the URL that matches the Edge function triggering rules in the address bar of the browser on the PC end and mobile end (e.g., `https://example.com/images/ef-1.jpeg` ) to preview the example effect.

HTTP request header `Referer` is `https://example.com/t-0123456789/page`, and the Edge function responds normally to the image.



HTTP request header `Referer` is not on the allowlist, and the Edge function identifies it as a leeching link and responds with a 403 status code.



## Related References

[Runtime APIs: Fetch](#)

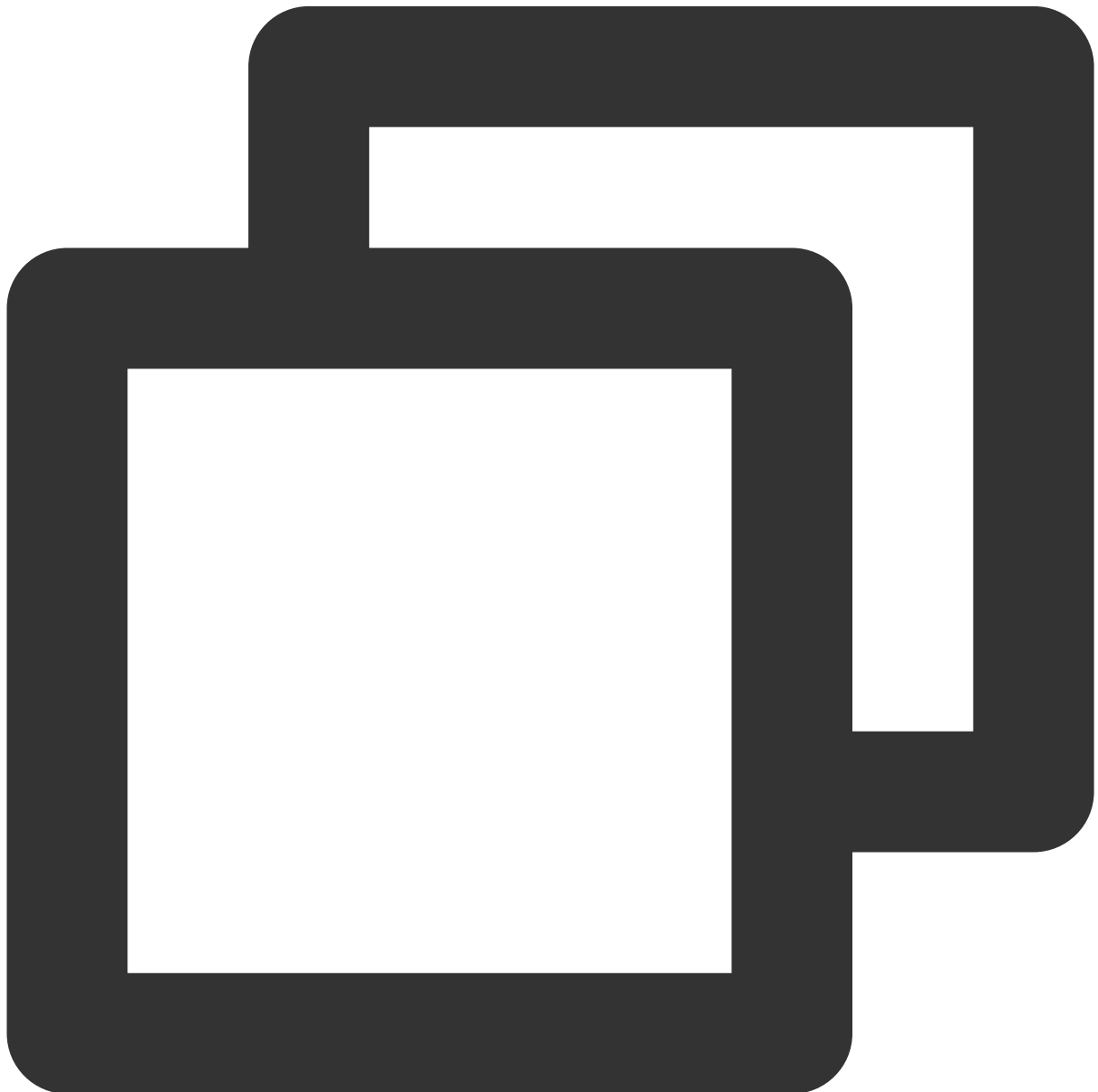
[Runtime APIs: Headers](#)

[Runtime APIs: Response](#)

# Remote Authentication

Last updated : 2023-10-30 17:46:16

In order to avoid customers' resources being accessed by illegal users, this example transmits the request to the customer-specified remote authentication server. The authentication server verifies the user's request, and the Edge functions decide whether to allow access to the target resources based on the check result returned by the remote authentication server. If the authentication fails, the client will be responded with a 403 status code.



```
async function handleRequest(request) {
```

```
// Remote authentication API address
const checkAuthUrl = 'https://www.example.com/';
// Initiate remote authentication
const checkAuthRes = await fetch(checkAuthUrl);

// Authentication passed, normal access to resources
if (checkAuthRes.status === 200) {
  return fetch(request, {
    headers: request.headers,
  });
}

// Authentication failed, prohibit access to resources
return new Response(null, {
  status: 403
});
}

addEventListener('fetch', e => {
  e.respondWith(handleRequest(e.request));
});
```

## Example preview

Enter the URL that matches the triggering rules of the Edge functions in the address bar of the browser on both PC and mobile (e.g., `https://example.com/app/index.html` ) to preview the example effect.

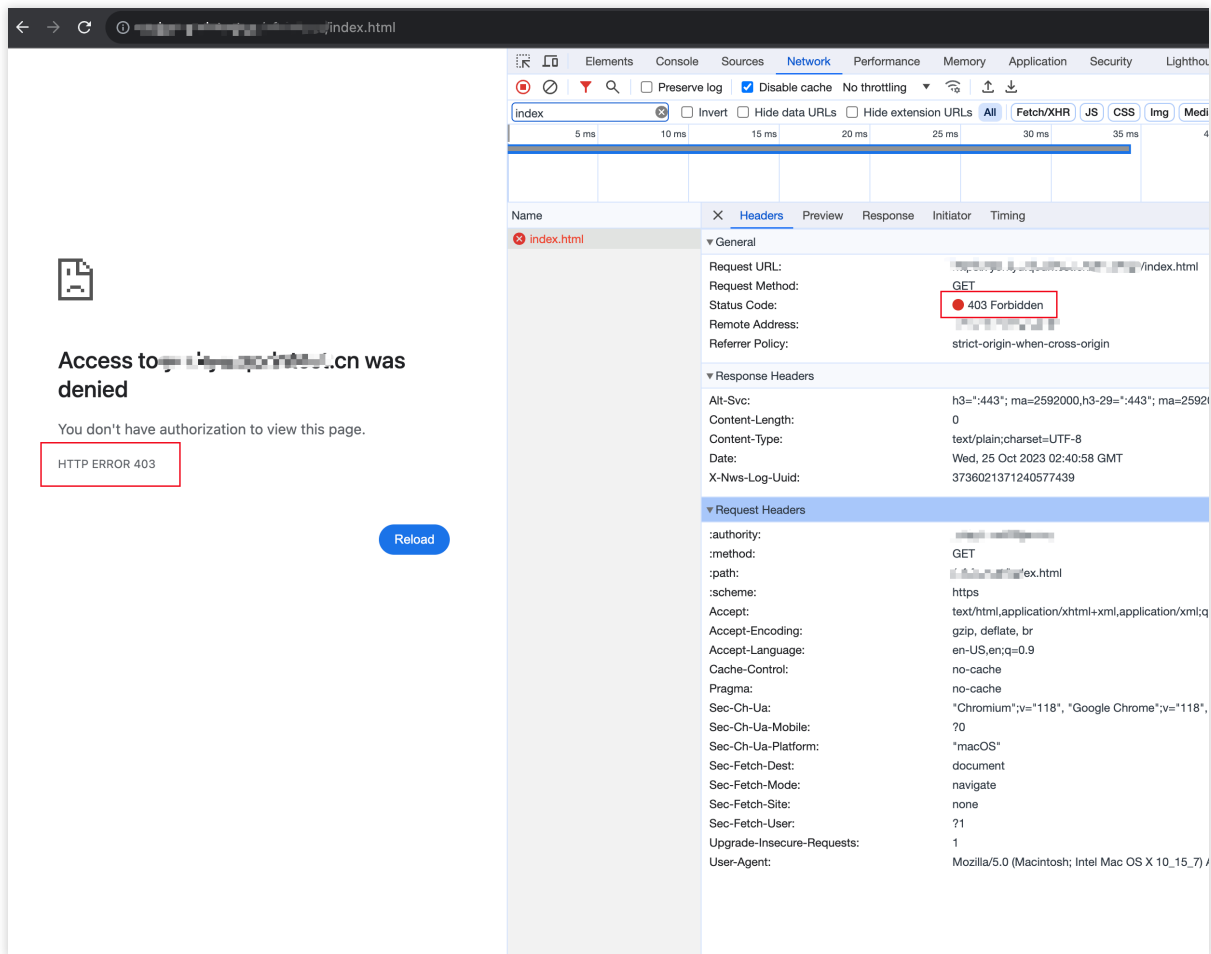
Authentication passed, normal access to resources.

The screenshot shows a web browser window with the URL `yorkyu.qcdntest.cn/ef-format/index.html`. The page content displays "Hello World" and a message: "This markup was generated by TencentCloud Edge Functions". The Network tab in Chrome DevTools is open, showing a single request for `index.html`. The request details are as follows:

Name	Headers	Preview	Response	Initiator	Timing
index.html	<p><b>General</b></p> <p>Request URL: <code>yorkyu.qcdntest.cn/ef-format/index.html</code></p> <p>Request Method: <code>GET</code></p> <p>Status Code: <code>200 OK</code></p> <p>Remote Address: <code>yorkyu.qcdntest.cn</code></p> <p>Referrer Policy: <code>strict-origin-when-cross-origin</code></p> <p><b>Response Headers</b></p> <p>Accept-Ranges: <code>bytes</code></p> <p>Access-Control-Allow-Headers: <code>*</code></p> <p>Access-Control-Allow-Methods: <code>POST, GET, OPTIONS</code></p> <p>Access-Control-Allow-Origin: <code>*</code></p> <p>Alt-Svc: <code>h3=":443"; ma=2592000,h3-29=":443"; ma=2592000,h3-Q050=":443"; m</code></p> <p>Cache-Control: <code>public, max-age=60</code></p> <p>Content-Length: <code>156</code></p> <p>Content-Type: <code>text/html</code></p> <p>Date: <code>Wed, 25 Oct 2023 02:36:27 GMT</code></p> <p>Eo-Cache-Status: <code>HIT</code></p> <p>Eo-Log-Uid: <code>12228985287400250878</code></p> <p>Etag: <code>"65387ecc-9c"</code></p> <p>Last-Modified: <code>Wed, 25 Oct 2023 02:34:52 GMT</code></p> <p>Server: <code>nginx/1.23.2</code></p> <p>X-Cache-Lookup: <code>Cache Miss</code></p> <p>X-Nws-Log-Uid: <code>10415756719013211268</code></p> <p><b>Request Headers</b></p> <p>:authority: <code>yorkyu.qcdntest.cn</code></p> <p>:method: <code>GET</code></p> <p>:path: <code>/ef-format/index.html</code></p> <p>:scheme: <code>https</code></p> <p>Accept: <code>text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/</code></p> <p>Accept-Encoding: <code>gzip, deflate, br</code></p> <p>Accept-Language: <code>en-US,en;q=0.9</code></p> <p>Cache-Control: <code>no-cache</code></p> <p>Pragma: <code>no-cache</code></p> <p>Sec-Ch-Ua: <code>"Chromium";v="118", "Google Chrome";v="118", "Not=A?Brand";v="99"</code></p> <p>Sec-Ch-Ua-Mobile: <code>70</code></p> <p>Sec-Ch-Ua-Platform: <code>"macOS"</code></p> <p>Sec-Fetch-Dest: <code>document</code></p> <p>Sec-Fetch-Mode: <code>navigate</code></p> <p>Sec-Fetch-Site: <code>none</code></p> <p>Sec-Fetch-User: <code>?</code></p> <p>Upgrade-Insecure-Requests: <code>1</code></p> <p>User-Agent: <code>Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/118.0.5993.118 Safari/537.36</code></p>				

Authentication failed, prohibit access to resources.





## Related references

[Runtime APIs: Fetch](#)

[Runtime APIs: Response](#)

# HMAC Digital Signature

Last updated : 2023-12-13 10:54:00

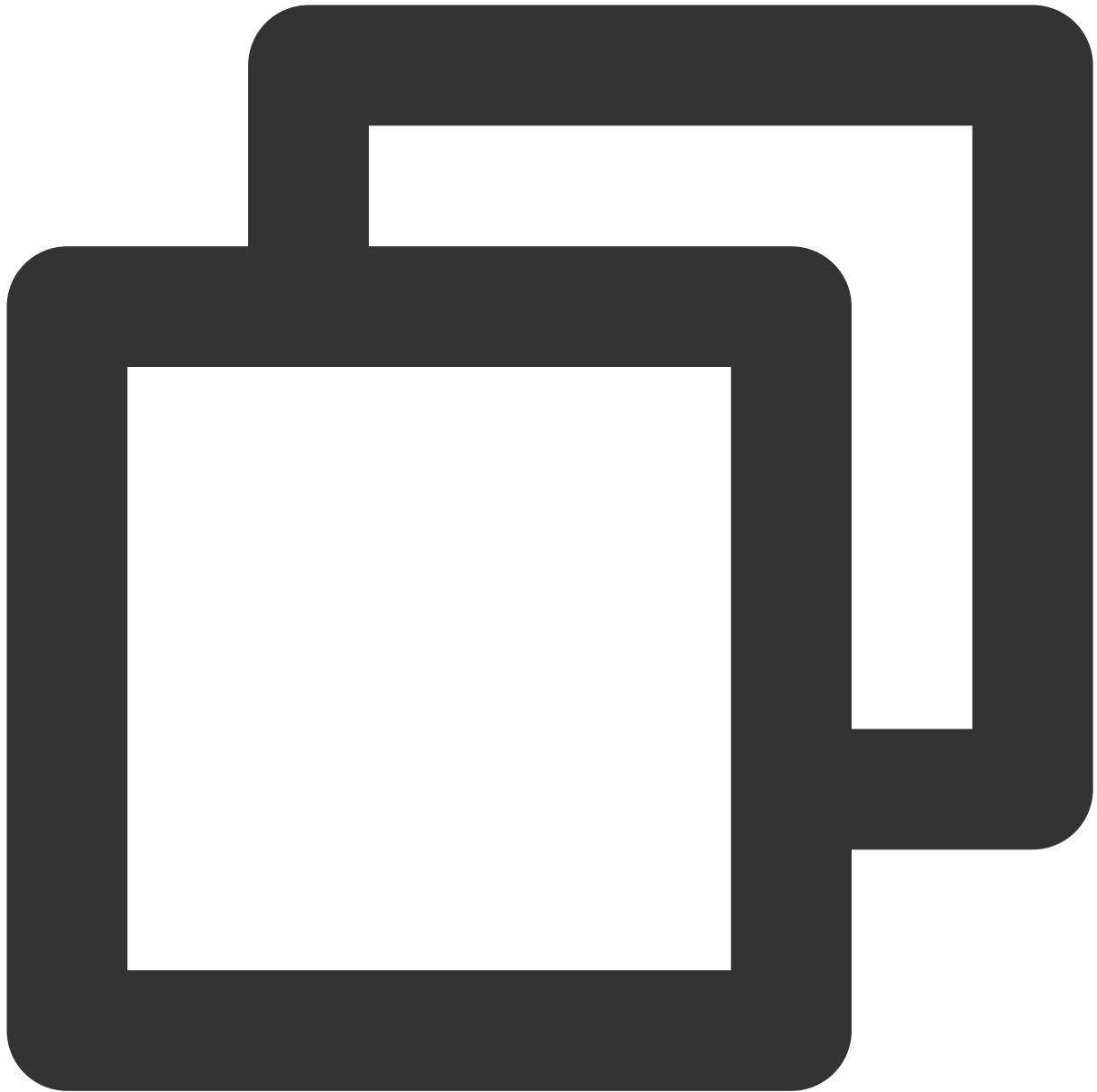
Hash-based Message Authentication Code (HMAC) is a kind of message authentication code based on hash function, mainly used to verify data integrity and identity authentication. `Web Crypto API` is used in this example to achieve HMAC-SHA256 signature and store the signature information in a request header. It achieves data integrity or identity authentication collaborating with origin server. Developers can modify the code based on their specific needs.

## Note

Cooperation with the origin server is required in this example, which means that the origin server must possess the corresponding signature verification algorithm.

For live network use of the code provided in this example, modification must be made in accordance with the comments.

## Sample code



```
function uint8ArrayToHex(uint8Array) {  
  return Array.prototype.map.call(uint8Array, x => ('0' + x.toString(16)).slice(-2))  
}  
  
async function generateHmac({ secretKey, message, hash }) {  
  const encoder = new TextEncoder();  
  const secretKeyBytes = encoder.encode(secretKey);  
  const messageBytes = encoder.encode(message);  
  
  const key = await crypto.subtle.importKey('raw', secretKeyBytes, { name: 'HMAC',
```

```
const signature = await crypto.subtle.sign('HMAC', key, messageBytes);
const signatureArray = new Uint8Array(signature);
return uint8ArrayToHex(signatureArray);
}

async function handleRequest(request) {
  const secretKey = 'YOUR_SECRET_KEY';
  // Please modify the message to the information that needs to be signed, generally
  const message = 'YOUR_MESSAGE';

  // Choose one from SHA-1, SHA-256, SHA-384, and SHA-512 for hash.
  const hmac = await generateHmac({ secretKey, message, hash: 'SHA-256' });
  request.headers.set('Authorization', `HMAC-SHA256 ${hmac}`);

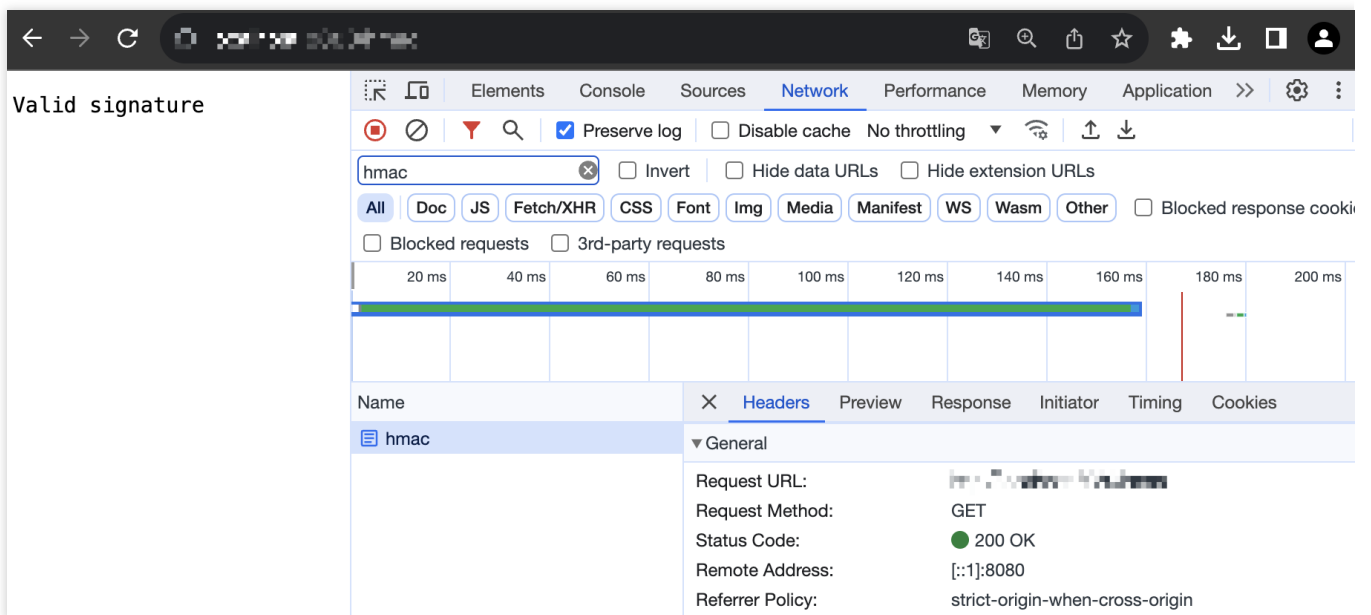
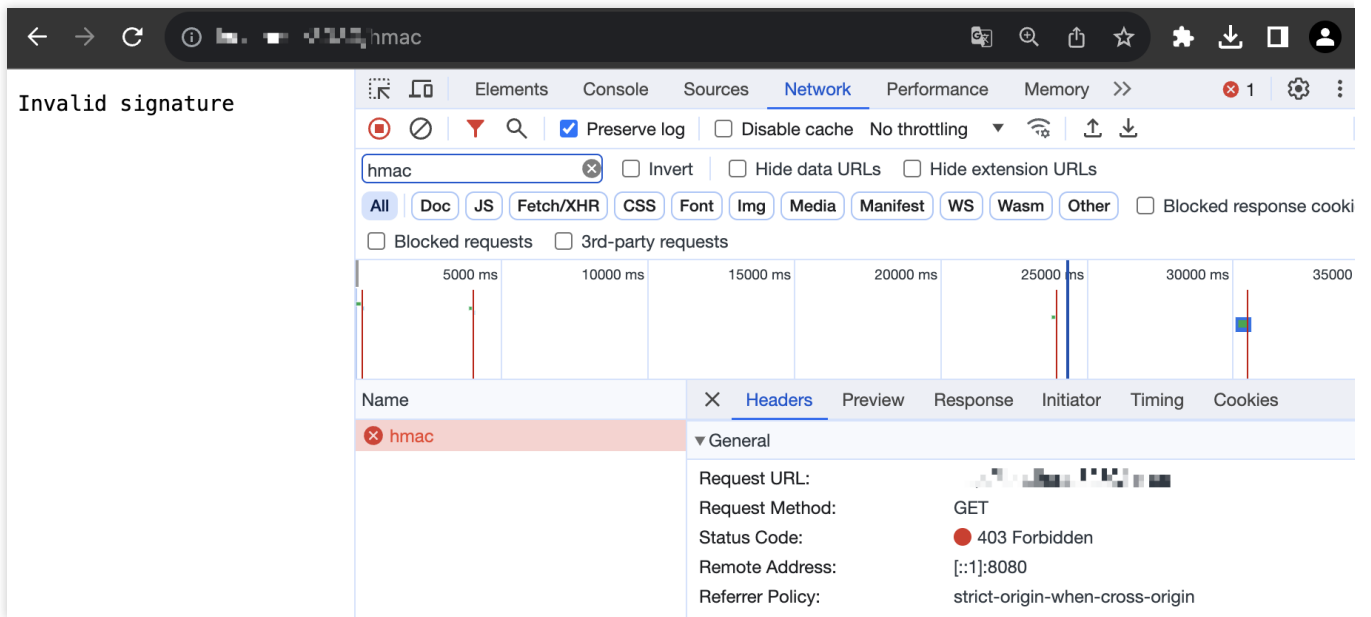
  return fetch(request);
}

addEventListener('fetch', event => {
  event.passThroughOnException();
  event.respondWith(handleRequest(event.request));
});
```

## Sample Preview

Enter a URL (such as `https://example.com/hmac` ) that matches the trigger rule of edge function in the address bar of a browser on both the PC and mobile terminal to preview the example effect.

Identity verification failed.



## Related References

[Runtime APIs: Fetch](#)

[Runtime APIs: Web Crypto](#)

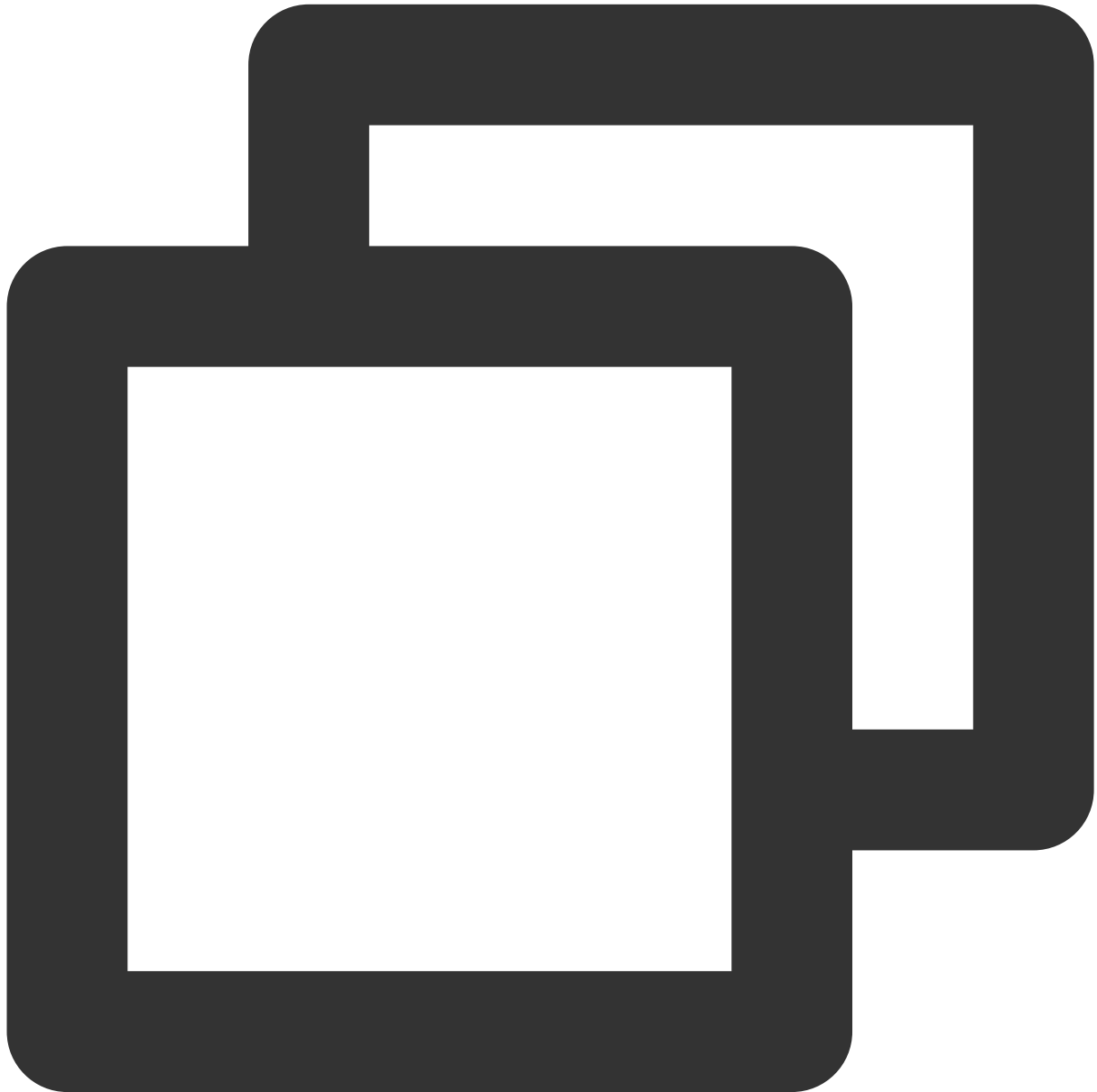
[Runtime APIs: Headers](#)

[Runtime APIs: Response](#)

# Naming a Downloaded File

Last updated : 2023-12-13 10:55:46

In this example, the modification of the [Content-Disposition](#) in the response headers achieves the modification of the downloaded file name according to the `fileName` parameter in the request URL.



```
addEventListener('fetch', event => {  
  event.passThroughOnException();  
  event.respondWith(handleRequest(event.request));  
});
```

```
});

async function handleRequest(request) {
  const url = new URL(request.url);
  const fileName = url.searchParams.get('fileName');

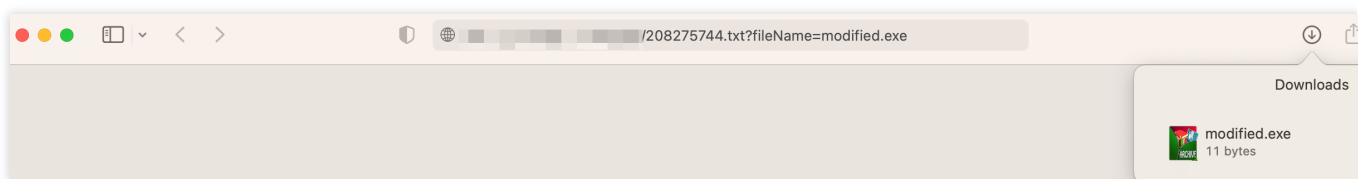
  const response = await fetch(request);

  // Evaluate the response status code and the search parameter
  if (response.status !== 200 || !fileName) {
    return response;
  }

  // Modify the Content-Disposition response header
  response.headers.append('Content-Disposition', `attachment; filename="${fileName}"`);
  return response;
}
```

## Sample Preview

Enter a URL (such as `https://example.com/origin.exe?fileName=modified.exe`) that matches the trigger rule of edge function in the address bar of the browser on both the PC and mobile terminal to preview the example effect.



## Related References

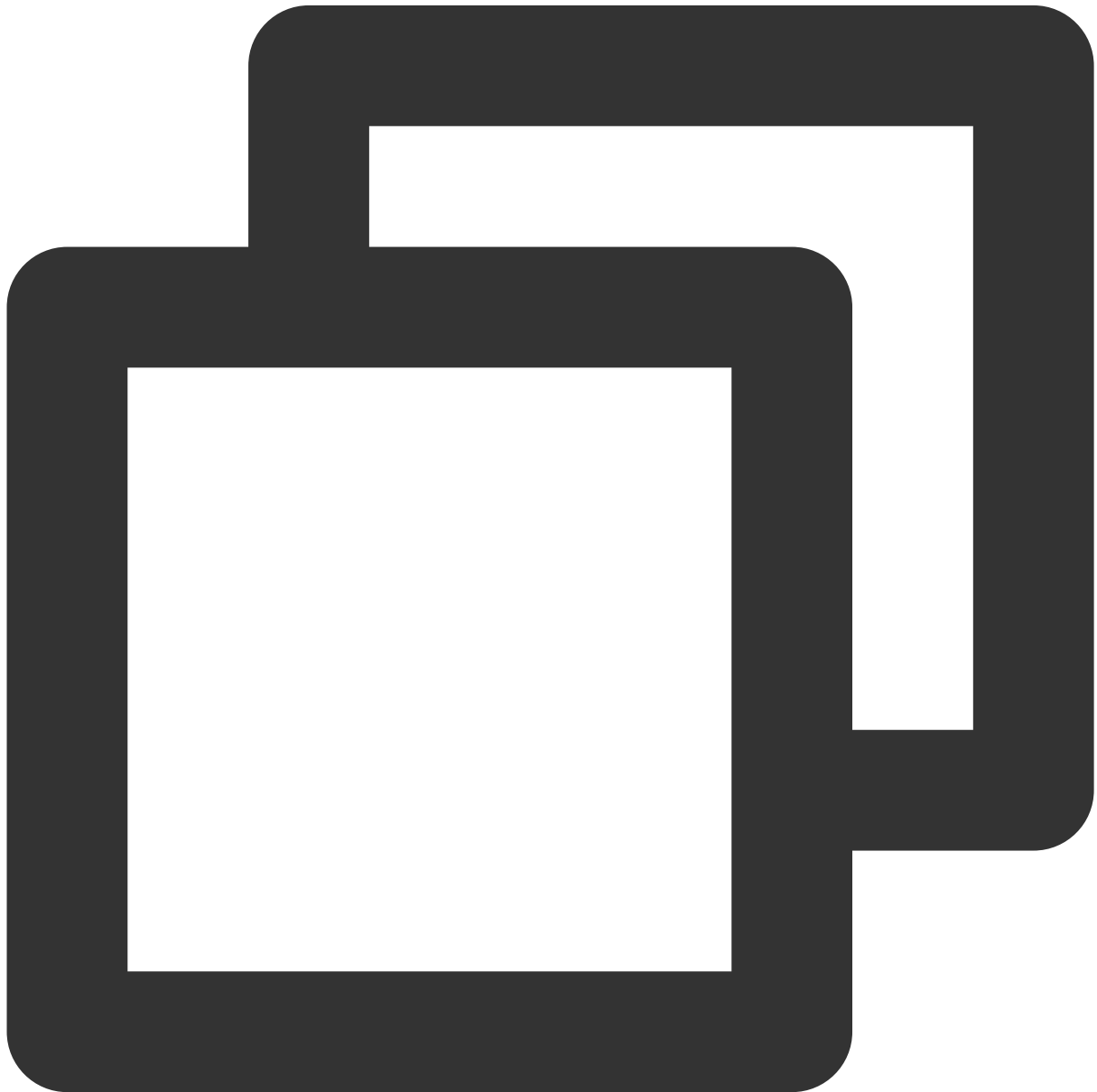
[Runtime APIs: Fetch](#)

[Runtime APIs: Response](#)

# Obtaining Client IP Address

Last updated : 2023-12-13 10:57:07

Since the front end cannot directly obtain the client IP address, it's often necessary to obtain the client IP address through the server side or third-party services in multiple business scenarios. The client IP address is obtained in this example through client IP header `EO-Client-IP` activated in the [rule engine](#), and assembled into data in the form of JSON to respond to the clients, which succeeds in obtaining client IP address by the use of edge function.



```
addEventListener('fetch', event => {
```



```
event.respondWith(handleRequest(event.request));
});

function handleRequest(request) {
  // Obtain the client IP through the EO-Client-IP header
  const ip = request.headers.get('EO-Client-IP') || '';
  // Respond with JSON data
  return new Response(JSON.stringify({ ip }), {
    headers: { 'content-type': 'application/json' },
  });
}
```

## Sample Preview

Firstly, activate the client IP switch of the domain name that needs to trigger the edge function and set the header name as `EO-Client-IP` in the [Rule Engine](#) configuration.



Once the configuration is effective, enter a URL (such as `https://example.com/ip`) which matches the trigger rule of the edge function in the address bar of the browser on both the PC and mobile terminal to obtain the client's IP address:



## Related References

[Runtime APIs: Fetch](#)

[Runtime APIs: Response](#)

# Best Practices

## Adaptive Image Format Conversion via Edge Functions

Last updated : 2023-07-10 09:48:54

This document describes how to convert image format by using edge functions without changing the original client request URL. Edge functions can automatically convert the image according to the `User-Agent` header in the client request.

## Background

For sites providing lots of images, adapting the image for different browser is a must. At the same time, they need to compress the images without losing quality, so as to reduce the cost on data transfer. For example, they need to:

- Return webp images for Chrome, Opera, Firefox and Edge browsers.

- Return jp2 images for the Safari browser.

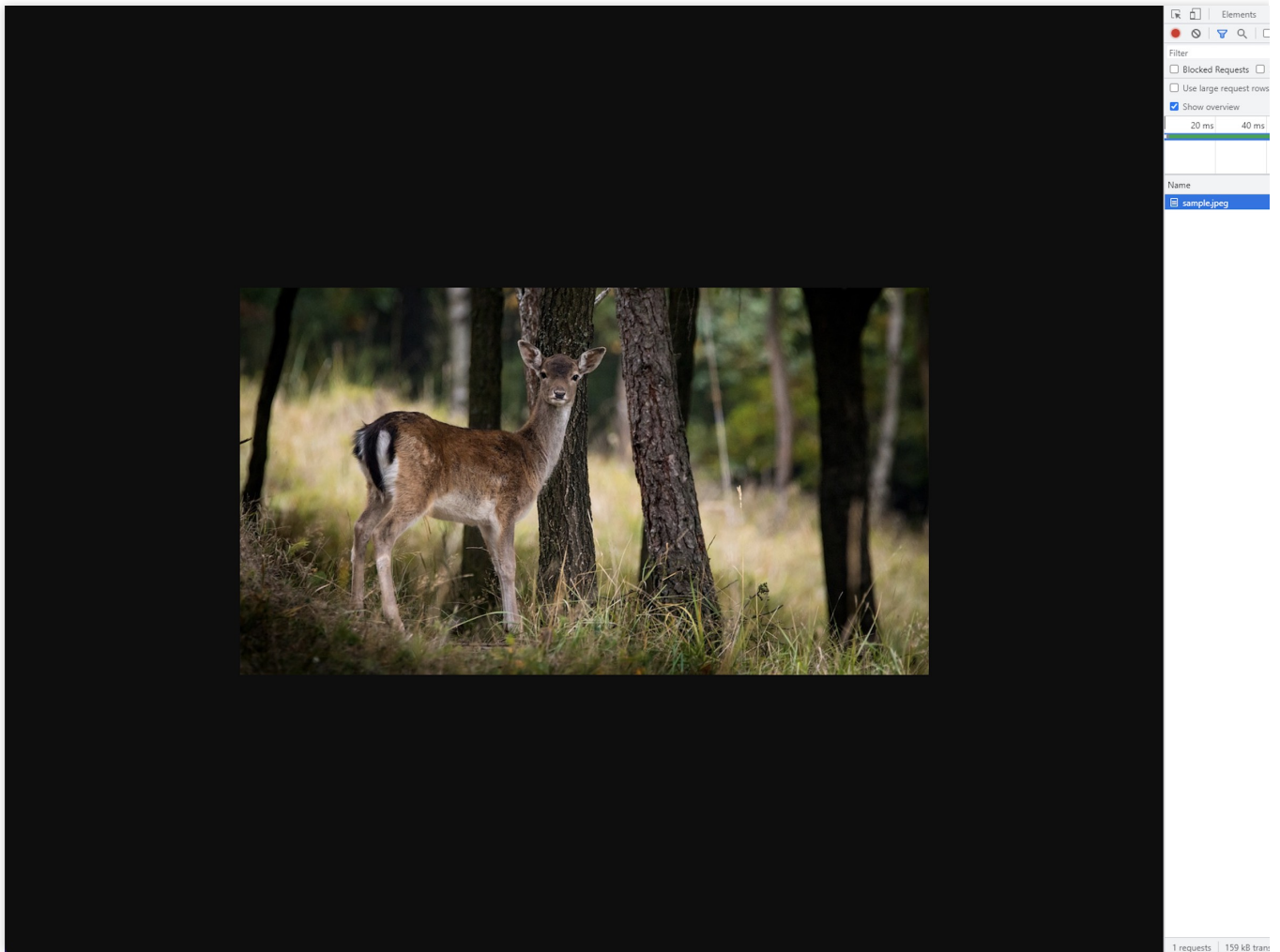
- Return jxr images for the IE browser.

- Return webp images for all the other browsers.

Edge functions can automatically convert the image according to the `User-Agent` header in the client request. If you want to proactively convert the image format in the request URL, you can also use the [image processing](#) feature.

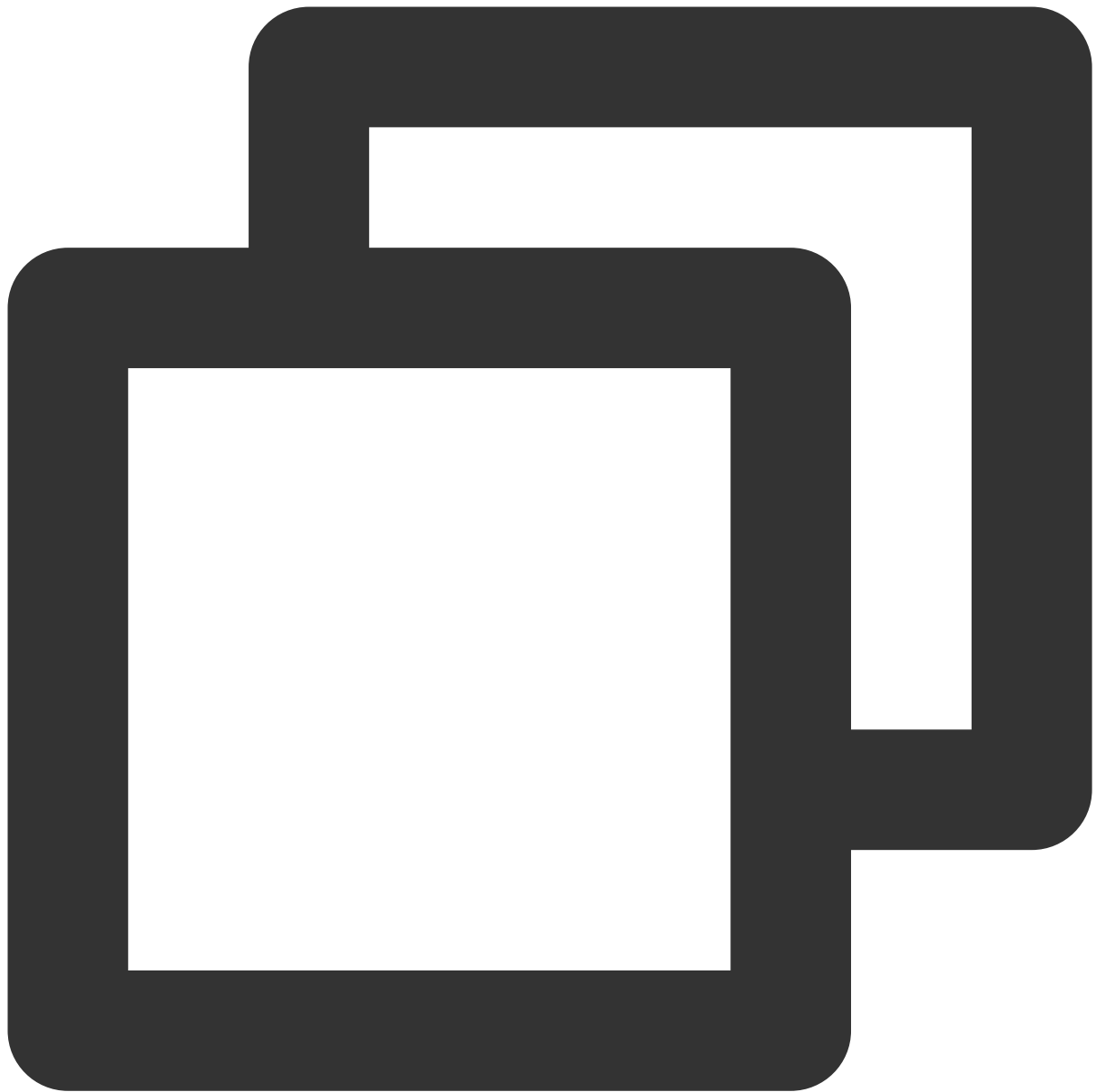
## Use Cases

`example.com` is connected to EdgeOne, with all the images stored under `http://image.example.com/image/`. You need to automatically convert all image files under this directory according to the browser type of the client. `https://image.example.com/image/test.jpg` is taken as the test image.



## Directions

1. Log in to the [EdgeOne console](#) and click the target site in the site list to display second-level menus for site management.
2. In the left sidebar, click **Edge Functions > Function Management**.
3. On the **Function management** page, click **Create function**.
4. On the function creation page, enter the function name, description and codes. See below for the sample codes:



```
// Browser image format
const browserFormat = {
  Chrome: 'webp',
  Opera: 'webp',
  Firefox: 'webp',
  Safari: 'jpg',
  Edge: 'webp',
  IE: 'jpeg'
};

addEventListener('fetch', event => {
```

```
// If the function code throws an unhandled exception, Edge Functions forwards the
event.passThroughOnException();
event.respondWith(handleEvent(event));
});

async function handleEvent(event) {
  const { request } = event;
  const userAgent = request.headers.get('user-agent');
  const bs = getBrowser(userAgent);
  const format = browserFormat[bs];

  // Do not convert the image format
  if (!format) {
    return fetch(request);
  }

  // Convert image format
  const response = await fetch(request, {
    eo: {
      image: {
        format
      }
    }
  });

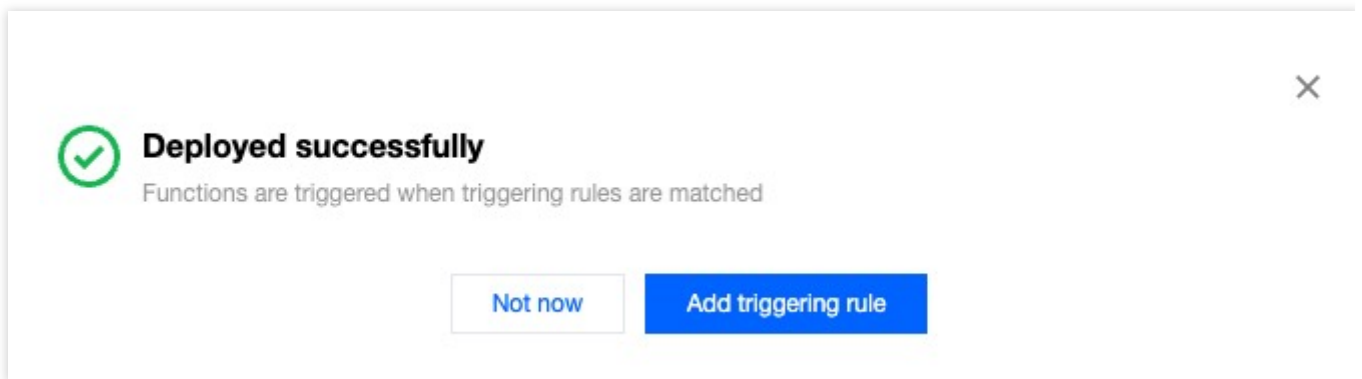
  // Set the response header
  response.headers.set('x-ef-format', format);

  return response;
}

function getBrowser(userAgent) {
  if (/Edg/i.test(userAgent)) {
    return 'Edge'
  }
  if (/Trident/i.test(userAgent)) {
    return 'IE'
  }
  if (/Firefox/i.test(userAgent)) {
    return 'Firefox';
  }
  if (/Chrome/i.test(userAgent)) {
    return 'Chrome';
  }
  if (/Opera|OPR/i.test(userAgent)) {
    return 'Opera';
  }
}
```

```
if (/Safari/i.test(userAgent)) {  
    return 'Safari'  
}  
}
```

5. Click **Create and deploy function**. Wait till the deployment completed. Click **Add trigger rule**.

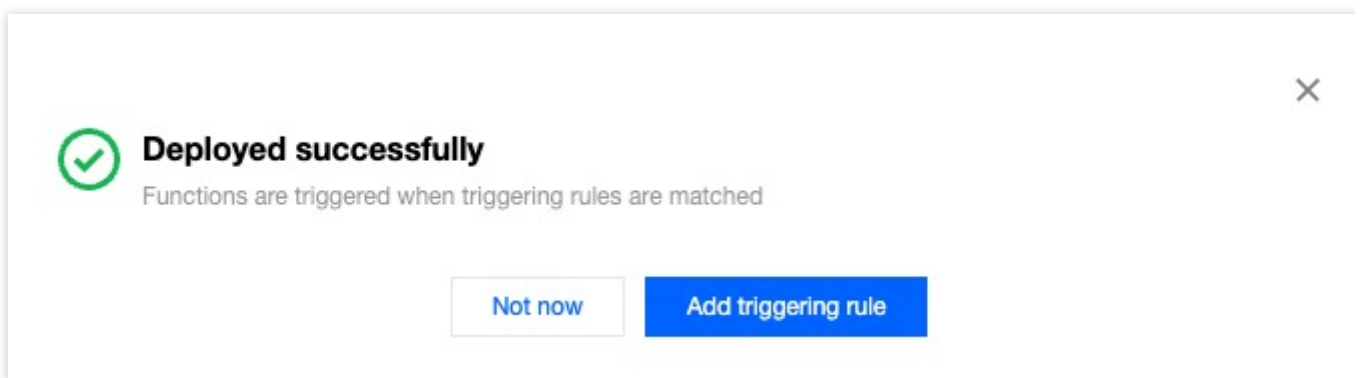


6. Configure the condition to trigger this function. In this case, you can configure two conditions, which are combined with AND.

When the request HOST equals to `Image.example.com` .

When the request URL Path equals to `/image/*` .

When both the conditions are met, the edge function is triggered to process the image automatically.



7. Click **Save**.

8. You can verify the functions in two ways:

Using curl to test

Browser Access Test

You can run a curl command with the specified User-Agent to test.

Chrome

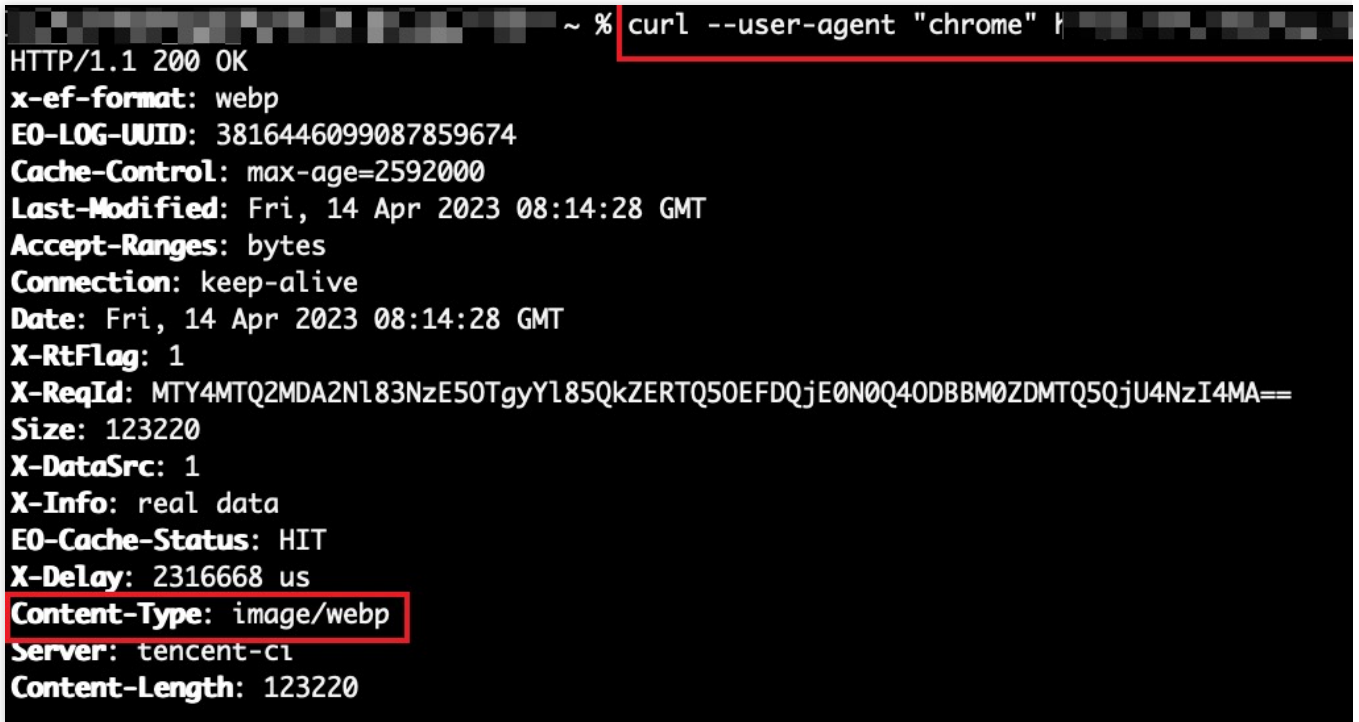
Safari

IE

To test on Chrome browser on Mac/Linux OS, run the following command on the device: `curl --user-agent`

`"chrome" https://image.example.com/image/test.jpg -i`

Check if `Content-Type` in the response is `image/webp` .

A terminal window with a black background and white text. The command `curl --user-agent "chrome" https://image.example.com/image/test.jpg -i` is entered. The output shows various HTTP headers. The `Content-Type: image/webp` header is highlighted with a red rectangular box.

```
~ % curl --user-agent "chrome" https://image.example.com/image/test.jpg -i
HTTP/1.1 200 OK
x-ef-format: webp
E0-LOG-UUID: 3816446099087859674
Cache-Control: max-age=2592000
Last-Modified: Fri, 14 Apr 2023 08:14:28 GMT
Accept-Ranges: bytes
Connection: keep-alive
Date: Fri, 14 Apr 2023 08:14:28 GMT
X-RtFlag: 1
X-ReqId: MTY4MTQ2MDA2Nl83NzE5OTgyYl85QkZERTQ5OEFDQjE0N0Q4ODBBM0ZDMTQ5QjU4NzI4MA==
Size: 123220
X-DataSrc: 1
X-Info: real data
E0-Cache-Status: HIT
X-Delay: 2316668 us
Content-Type: image/webp
Server: tencent-cl
Content-Length: 123220
```

On Mac/Linux OS, run the following command on the device: `curl --user-agent "safari"`

`https://image.example.com/image/test.jpg -i`

Check if `Content-Type` in the response is `image/jp2` .

```
~ % curl --user-agent "safari"
HTTP/1.1 200 OK
x-ef-format: jp2
EO-LOG-UUID: 299090522723185511
Cache-Control: max-age=2592000
Last-Modified: Fri, 14 Apr 2023 08:42:27 GMT
Accept-Ranges: bytes
Connection: keep-alive
Date: Fri, 14 Apr 2023 08:42:27 GMT
X-RtFlag: 1
X-ReqId: MTY4MTQ2MTc0NV83NzE5OTgyYl8zRjRCOD1E0DM2NDg0RTEyQTJGRTYyNTZDODI1MkEyMg==
Size: 121014
X-DataSrc: 1
X-Info: real data
EO-Cache-Status: MISS
X-Delay: 2747522 us
Content-Type: image/jp2
Server: tencent-ci
Content-Length: 121014
```

On Mac/Linux OS, run the following command on the device: `curl --user-agent "Trident"`

`https://image.example.com/image/test.jpg -i`

Check if `Content-Type` in the response is `image/vnd.ms-photo`.

```
~ % curl --user-agent "Trident"
HTTP/1.1 200 OK
x-ef-format: jxr
EO-LOG-UUID: 16823953457232177833
Cache-Control: max-age=2592000
Last-Modified: Fri, 14 Apr 2023 08:49:50 GMT
Accept-Ranges: bytes
Connection: keep-alive
Date: Fri, 14 Apr 2023 08:49:50 GMT
X-RtFlag: 1
X-ReqId: MTY4MTQ2MjE5MF83NzE5OTgyYl80MDU1MjdGMjJDMTQ0RjEwOD1BNjRFREFBMUUzMkVwNQ==
Size: 138140
X-DataSrc: 1
X-Info: real data
EO-Cache-Status: MISS
X-Delay: 97009 us
Content-Type: image/vnd.ms-photo
Server: tencent-ci
Content-Length: 138140
```

Access the test image address `https://image.example.com/image/test.jpg` with different browsers.

Check the format for image returned to see whether the edge function works properly.

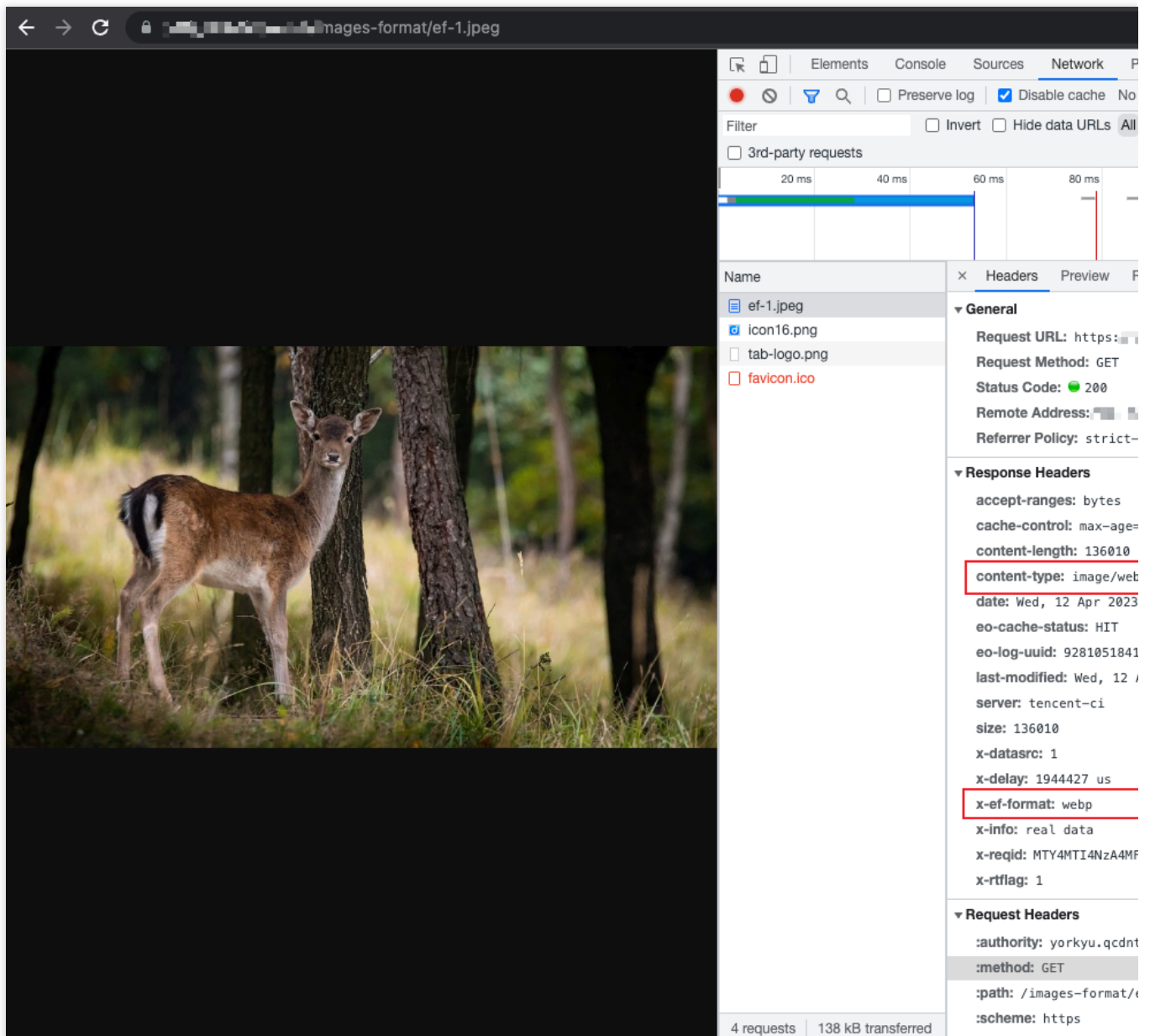
Chrome

Safari

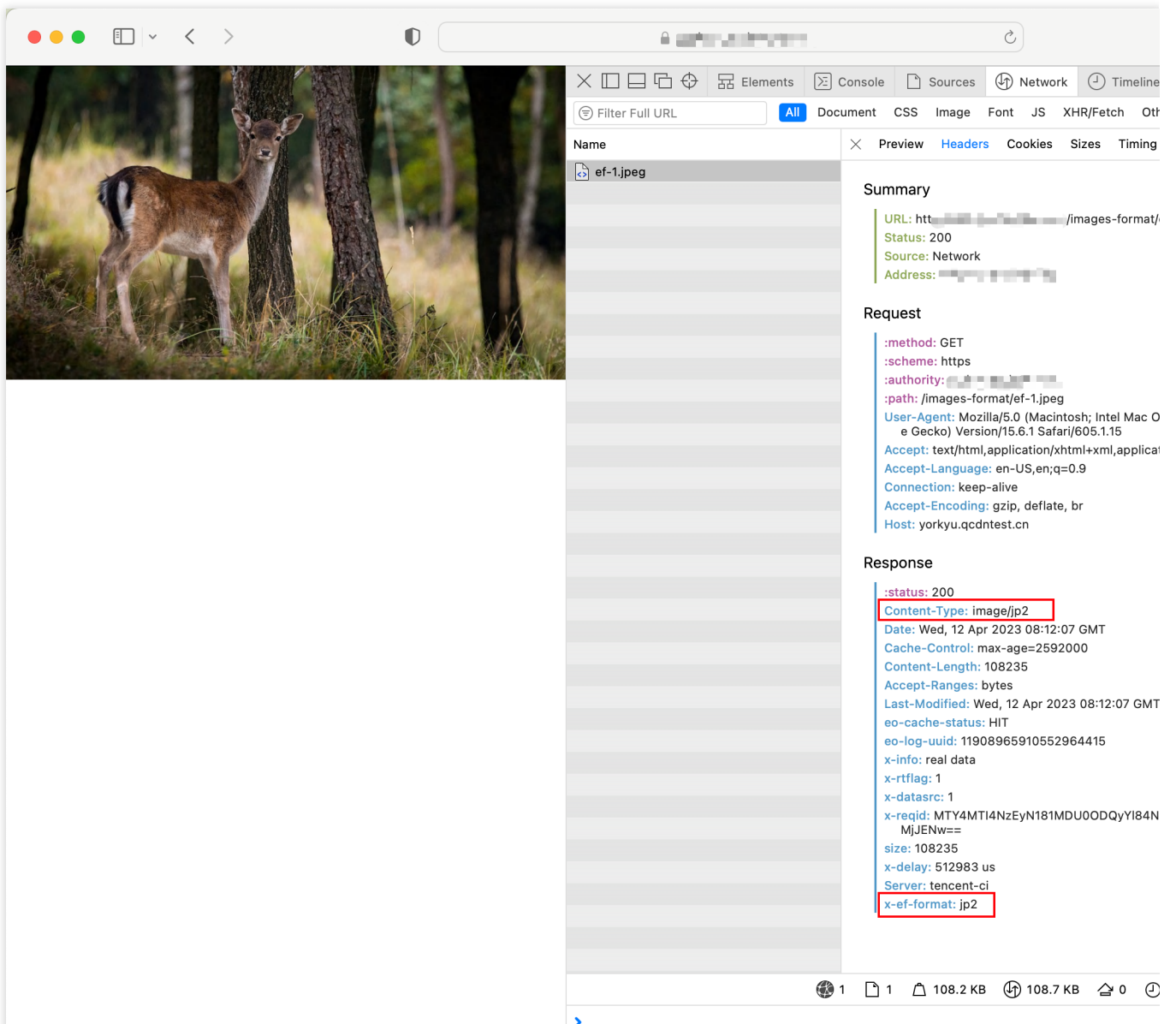
IE



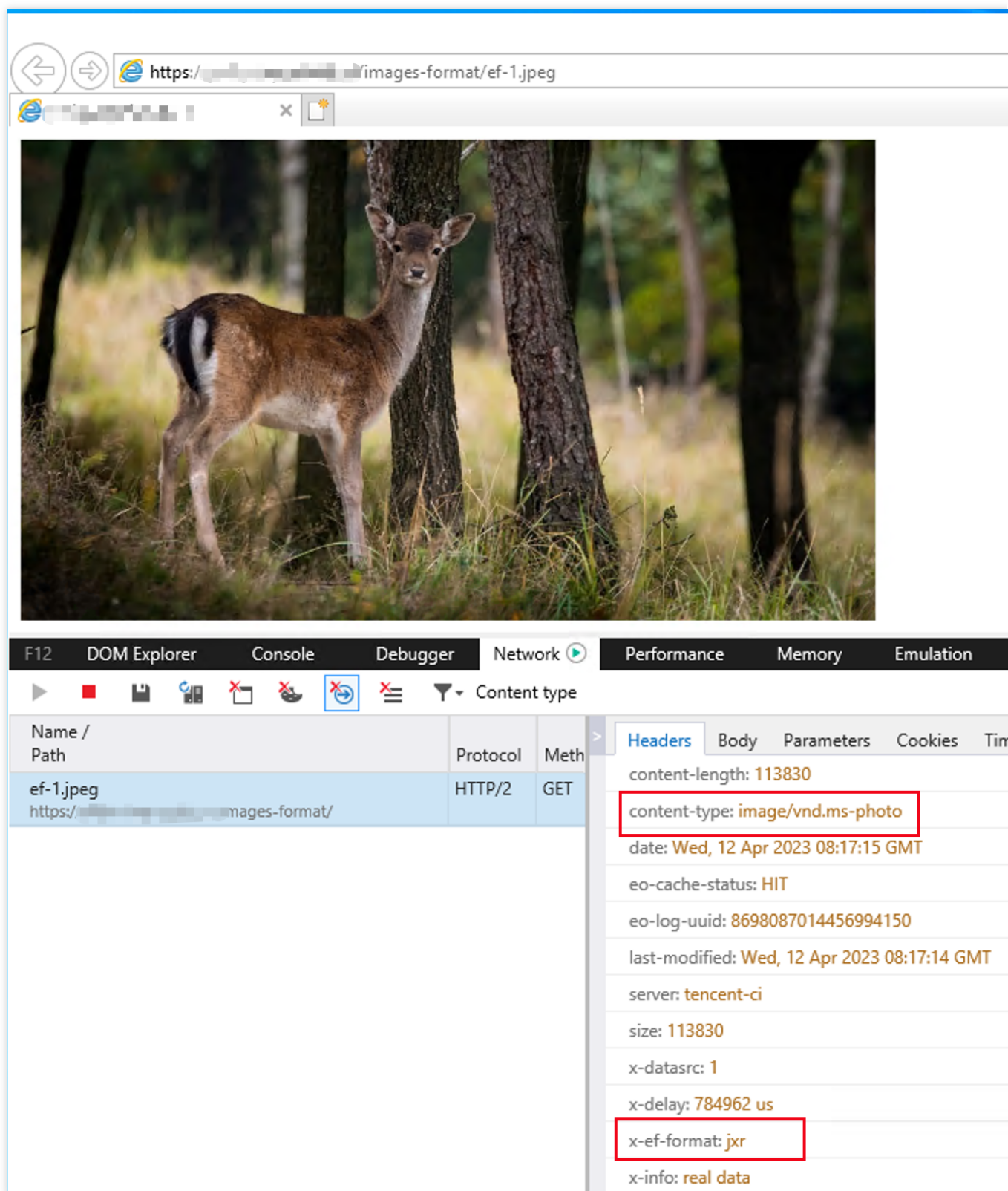
Access the test image address `https://image.example.com/image/test.jpg` with Chrome browser. The responded image should be in webp format.



Access the test image address `https://image.example.com/image/test.jpg` with Safari browser. The responded image should be in jp2 format.



Access the test image address `https://image.example.com/image/test.jpg` with IE browser. The responded image should be in jxr format.



The screenshot shows a web browser window with a URL bar displaying `https://[redacted]images-format/ef-1.jpeg`. The main content area shows a photograph of a deer standing in a forest. Below the browser window, the Network tab is selected in the developer tools. The network log shows a single request for `ef-1.jpeg` via HTTP/2 GET. The request details are expanded, showing the following headers:

Name / Path	Protocol	Method
<code>ef-1.jpeg</code> <code>https://[redacted]images-format/</code>	HTTP/2	GET

The response headers are listed on the right:

- `content-length: 113830`
- `content-type: image/vnd.ms-photo` (highlighted with a red box)
- `date: Wed, 12 Apr 2023 08:17:15 GMT`
- `eo-cache-status: HIT`
- `eo-log-uuid: 8698087014456994150`
- `last-modified: Wed, 12 Apr 2023 08:17:14 GMT`
- `server: tencent-ci`
- `size: 113830`
- `x-datasrc: 1`
- `x-delay: 784962 us`
- `x-ef-format: jxr` (highlighted with a red box)
- `x-info: real data`

## Relevant Documentation

[Sample function: Image auto-adaptation](#)

[Resizing and Converting Images](#)