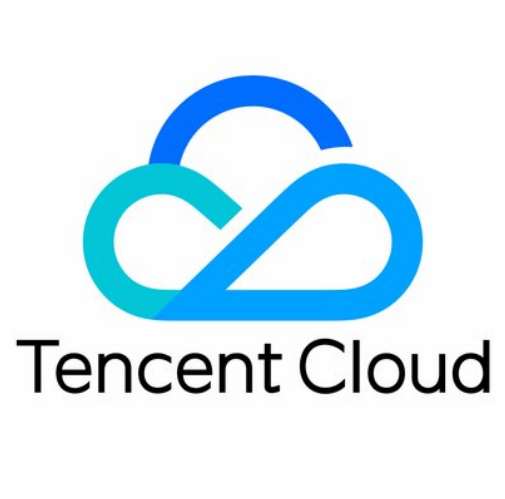
Tencent Cloud EdgeOne

QUIC SDK

Product Documentation



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Contents

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QUIC SDK
SDK Overview

Last updated：2023-06-29 11:21:46

Tencent Cloud EdgeOne QUIC SDK is a QUIC-based development toolkit that provides easy-to-use APIs for developers to integrate QUIC into their applications more quickly, enabling stable, high-quality network transfer. Supported platforms include Android and iOS.

About QUIC

QUIC (Quick UDP Internet Connections) is a new general-purpose, secure, and multiplexing transport layer network protocol. The standard HTTP/3 protocol is implemented based on QUIC, which supports 0-RTT connections, non-HOL blocking multiplexing and easy implementation of user-mode congestion control to transfer more data with a lower bandwidth, enabling high-quality data transfer even under poor network conditions with a high packet loss rate and network latency. It also supports connection migration that can guarantee an uninterrupted connection even if the network of a mobile device is switched frequently.

Must-Knows

EdgeOne QUIC SDK is free of charge during beta testing.

Supported Versions

EdgeOne QUIC SDK supports IETF QUIC and Google QUIC. See below for details:

Standard	Supported Version
Google QUIC (gQUIC)	QO43, Q046, Q050, Q051
IETF QUIC (iQUIC)	draft-29, RFC 9000

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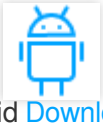
SDK Download and Integration

Last updated：2024-05-08 21:35:03

Downloading SDK

Tencent Cloud EdgeOne QUIC SDK supports iOS and Android operating systems.


Android Download ZIP


iOS Download ZIP

Directions

Access Android SDK

Access iOS SDK

1. Environment requirements:

Android Studio 2.0+

Android 5.0 (SDK API level 21) or above

2. Download `TQUIC_Android_SDK.zip` and compress the package. Copy the `AAR` file to the project directory (app/libs).

3. Include sdk and okhttp dependencies in the build.gradle file.

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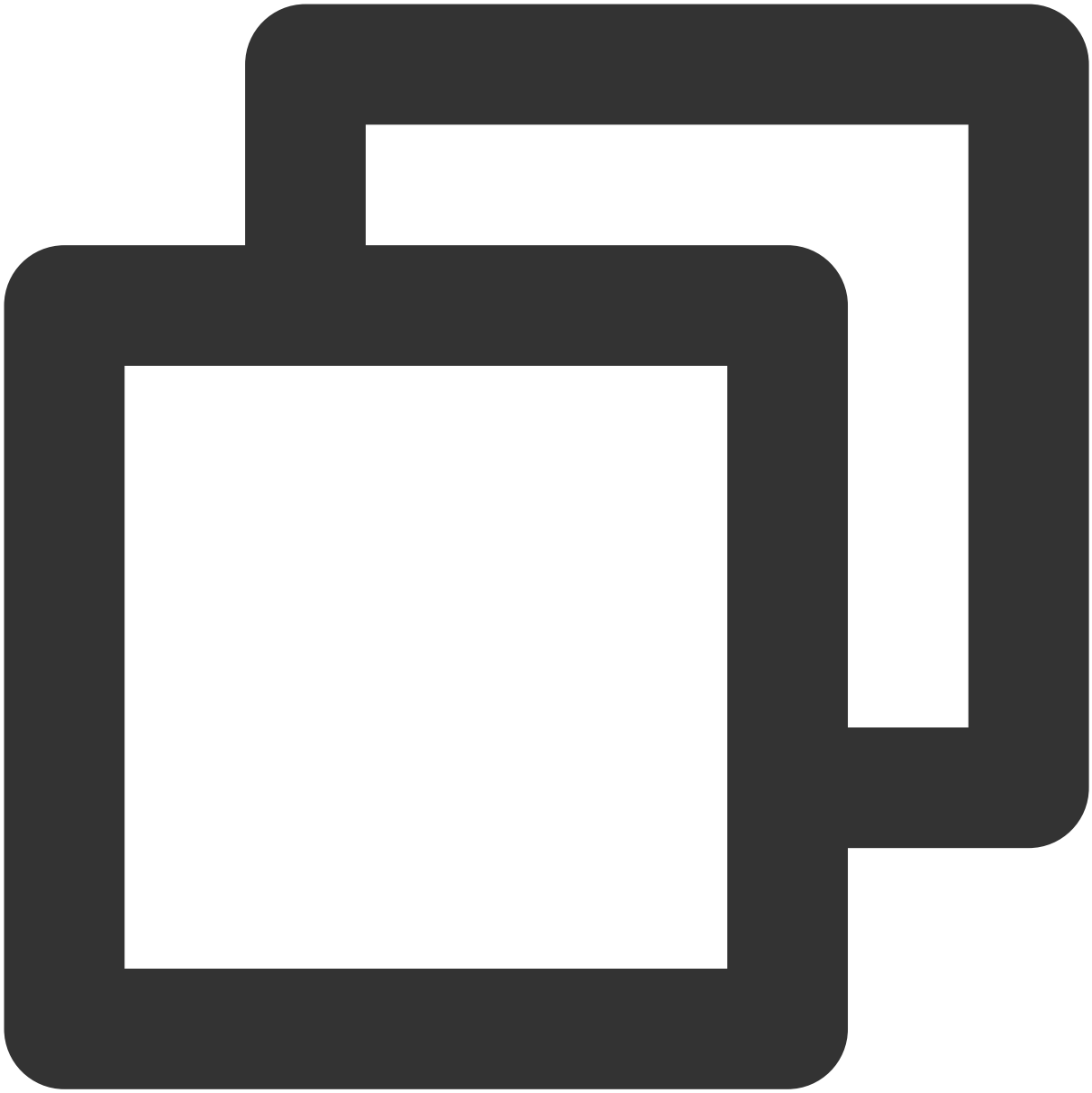

```
dependencies {
    ...
    implementation fileTree(dir: 'libs', include: ['*.aar']) //Add the *.aar file.
    implementation 'com.squareup.okhttp3:okhttp:3.11.0' //Add the okhttp dependenci
}
```

4. Configure permissions in `AndroidManifest.xml` . The QUIC SDK requires the following permissions:

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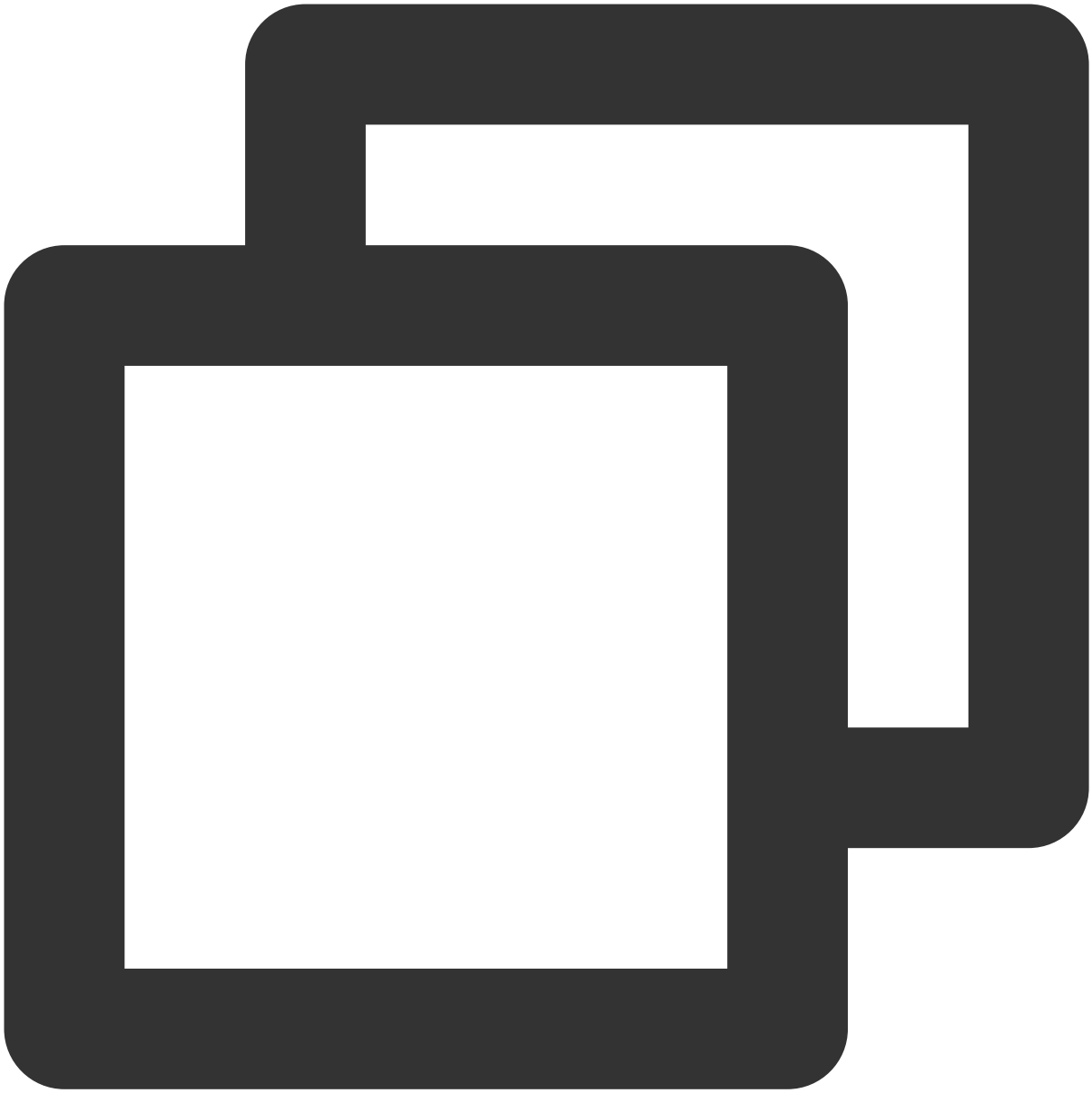

```
<uses-permission android:name="android.permission.INTERNET" />
```

1. Environment requirements:

Xcode 10.0+

iPhone or iPad on iOS 10.0 or above

A valid developer signature for your project

2. Download `TQUIC_iOS_SDK.zip` and compress the package. Copy the `framework` file to the project directory.

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3. Import TQUICiOS.framework and Tquic.framework to XCode.

Note

Tquic.framework is a dynamic library and needs to be embedded and signed.

4. Add `-ObjC, -l"c++”` to the compilation option **Other Linker Flags**.

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Sample Code
Android

Last updated：2023-06-29 11:20:56

The following code shows how to make QUIC requests with the Android client. For details of the API description, see Android APIs.

Creating GET Requests

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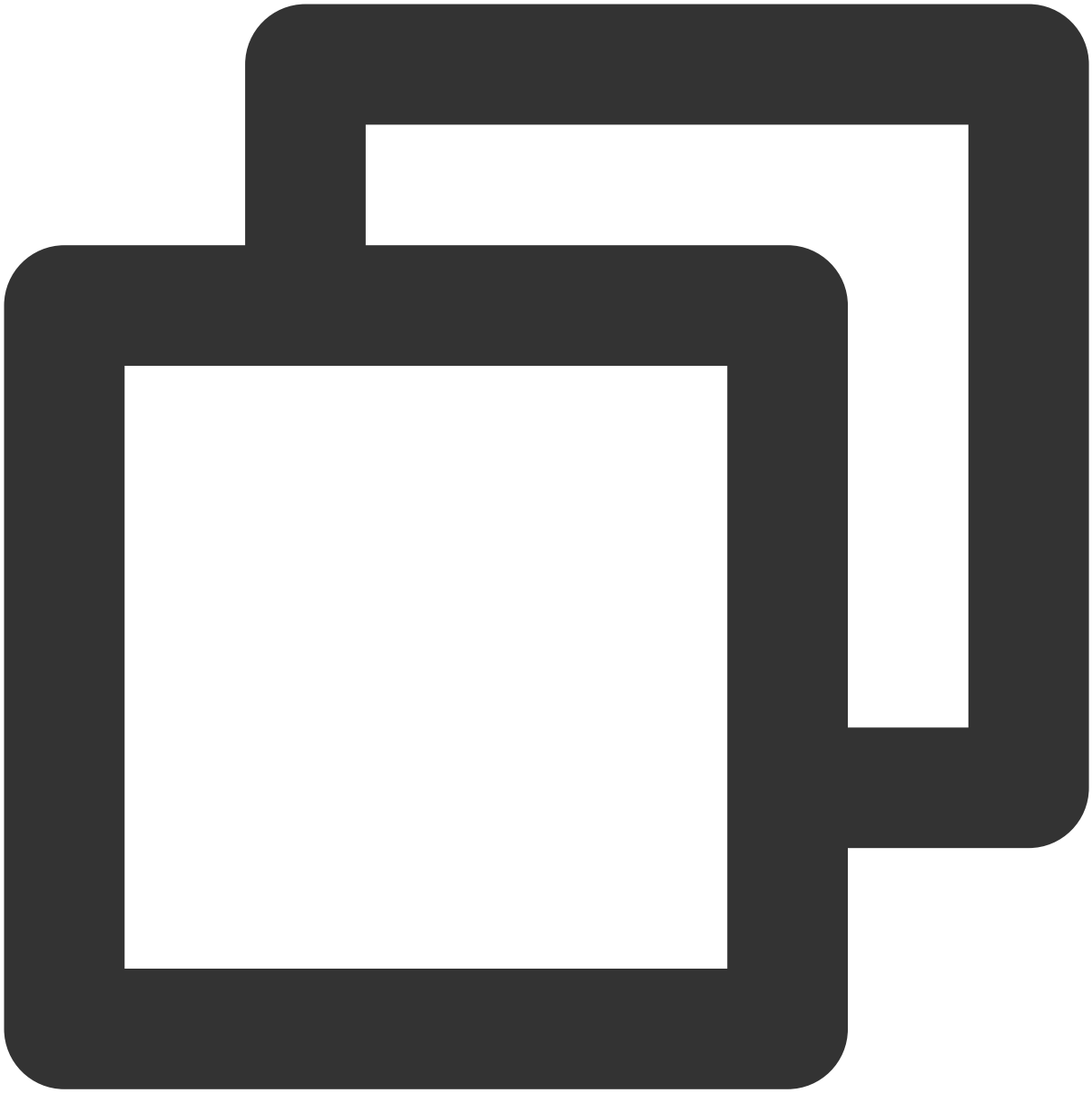

```
//Create QuicClient and initialize QUIC configuration. It is recommended to use Qui
QuicClient quicClient = new QuicClient.Builder()
                        .setCongestionType(QuicClient.CONGESTION_TYPE_BBR) //Use BB
                        .setConnectTimeoutMillis(6 * 1000)  //Configure connection
                        .build();

//Create QuicRequest and specify the request URL.
String url="";
QuicRequest request = new QuicRequest.Builder(url).get().build();

//Execute the request asynchronously and get the result. See %!s(<nil>) for instruc
```

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```
quicClient.newCall(request).enqueue(new QuicCallback() {
    @Override
    public void onResponse(QuicCall call, QuicResponse response) throws IOException
         //When the request is executed successfully, it  returns the response data
         ResponseBody body = response.body();
         if(body != null) {
             String res = body.string();
         }
    }

    @Override
    public void onFailed(QuicCall call, int errorCode, String error) {
        //When the request fails to be executed, it returns the error message.
    }
});
```

Creating POST Requests

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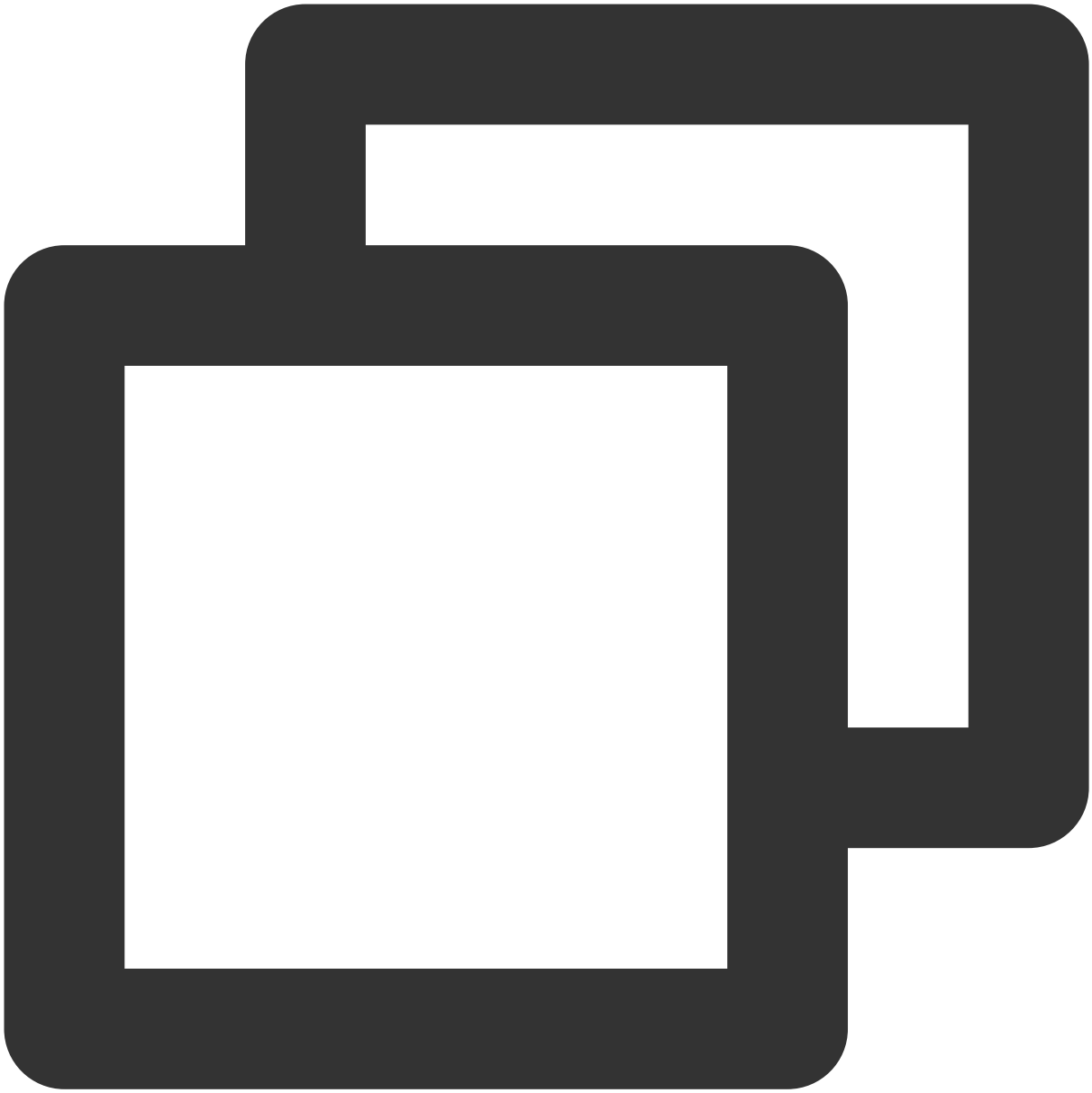

```
//Create QuicClient and initialize QUIC configuration. It is recommended to use Qui
QuicClient quicClient = new QuicClient.Builder()
                        .setCongestionType(QuicClient.CONGESTION_TYPE_BBR) //Use BB
                        .setConnectTimeoutMillis(3 * 1000)  //Configure connection
                        .build();

//Construct body data.
String body="your body string";
RequestBody requestBody = RequestBody.create(MediaType.parse("application/json"), b

//Create QuicRequest.
```

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```
String url="";
QuicRequest request = new QuicRequest.Builder(url).post(requestBody).build();

//Execute the request asynchronously and get the result. See %!s(<nil>) for instruc
quicClient.newCall(request).enqueue(new QuicCallback() {
    @Override
    public void onResponse(QuicCall call, QuicResponse response) throws IOException
         //When the request is executed successfully, it  returns the response data
         ResponseBody body = response.body();
         if(body != null) {
             String res = body.string();
         }
    }

    @Override
    public void onFailed(QuicCall call, int errorCode, String error) {
        //When the request fails to be executed, it returns the error message.
    }
});
```

Canceling Requests

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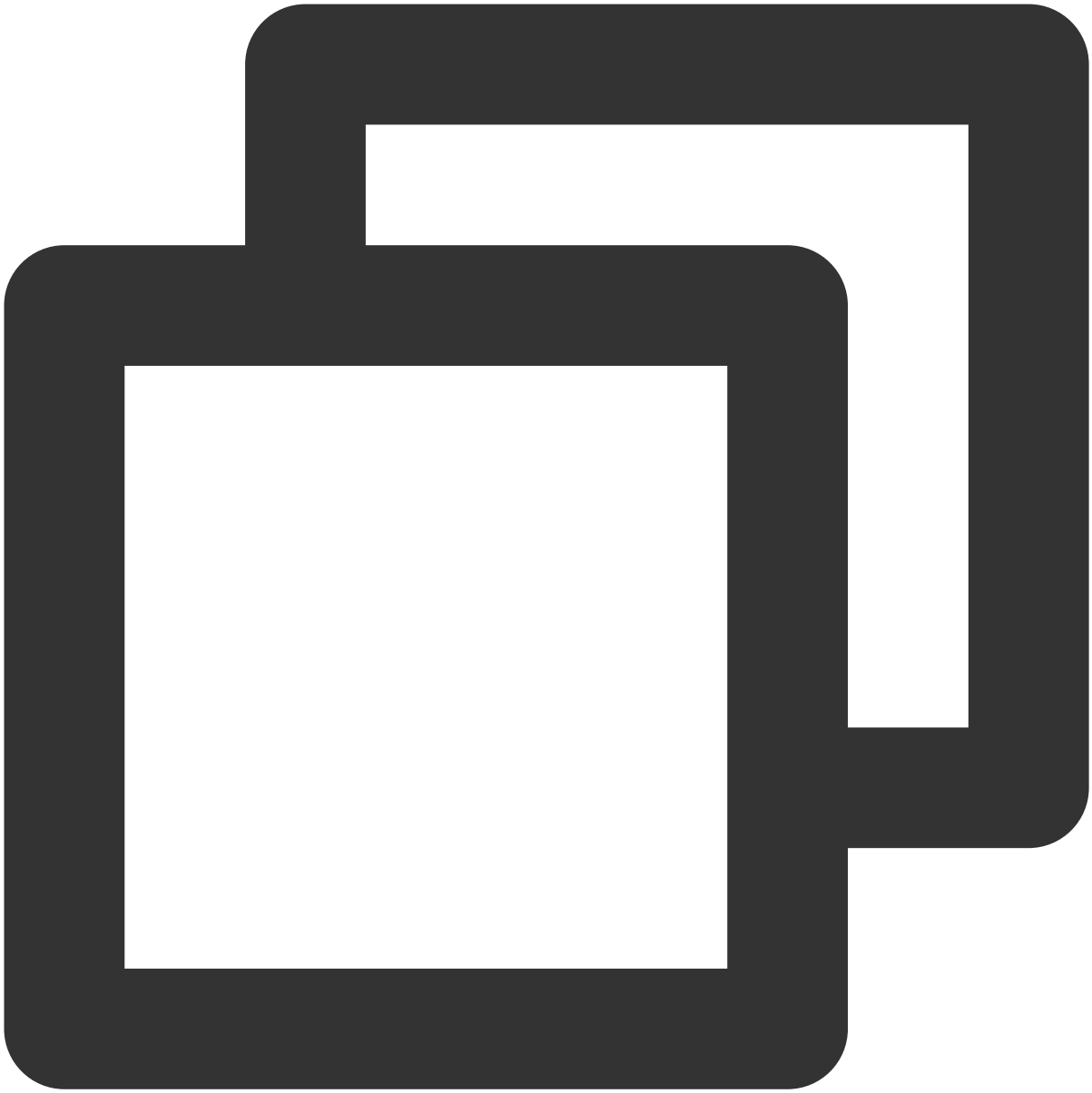

```
...
//Create QuicCall. See %!s(<nil>) for instructions.
QuicCall quicCall = quicClient.newCall(request);

// Initiate a request.
...

//Cancel the request using the cancel method via QuicCall.
quicCall.cancel();
```

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iOS

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The following code shows how to create QUIC requests with the iOS client. For details of the API description, see iOS APIs.

Creating GET Requests

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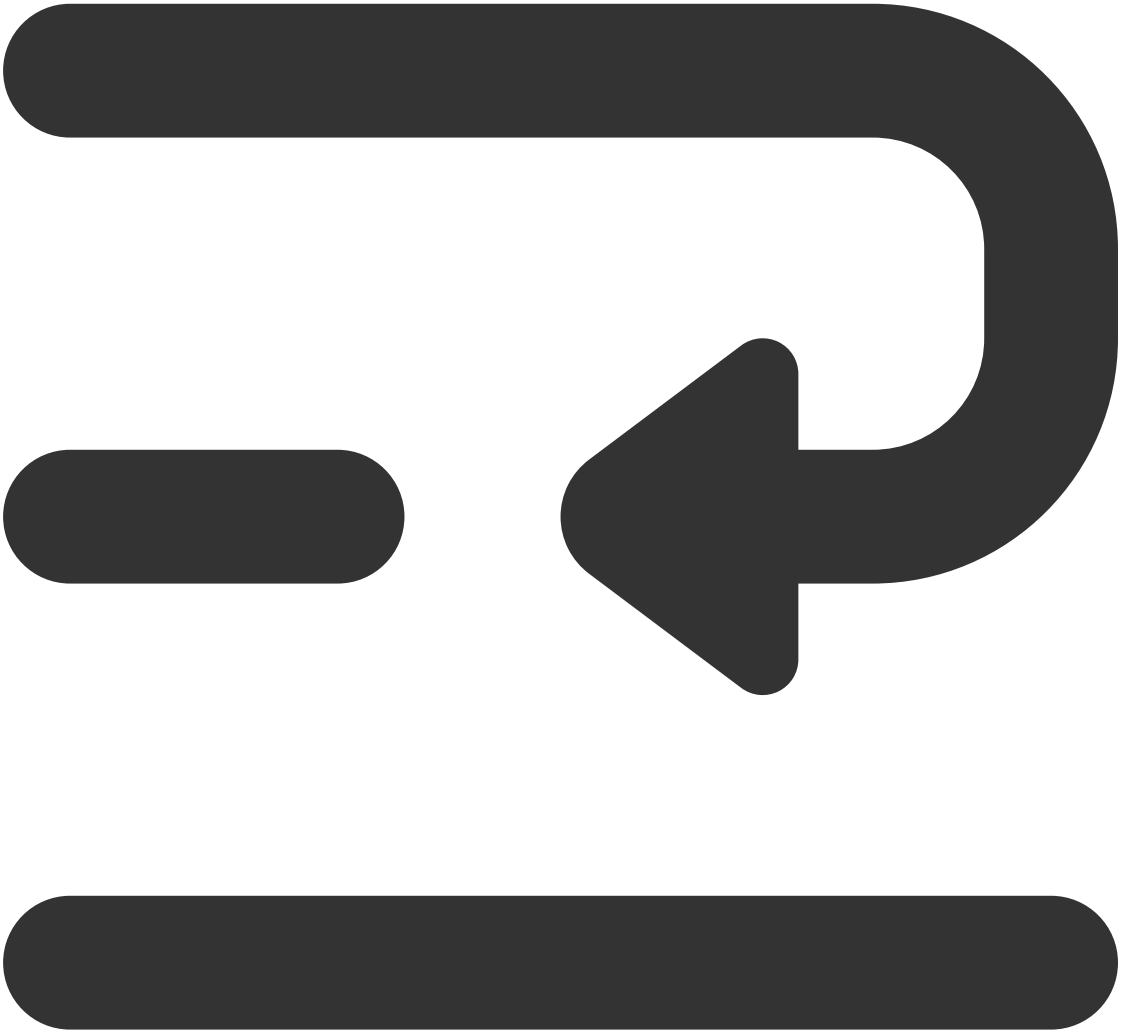

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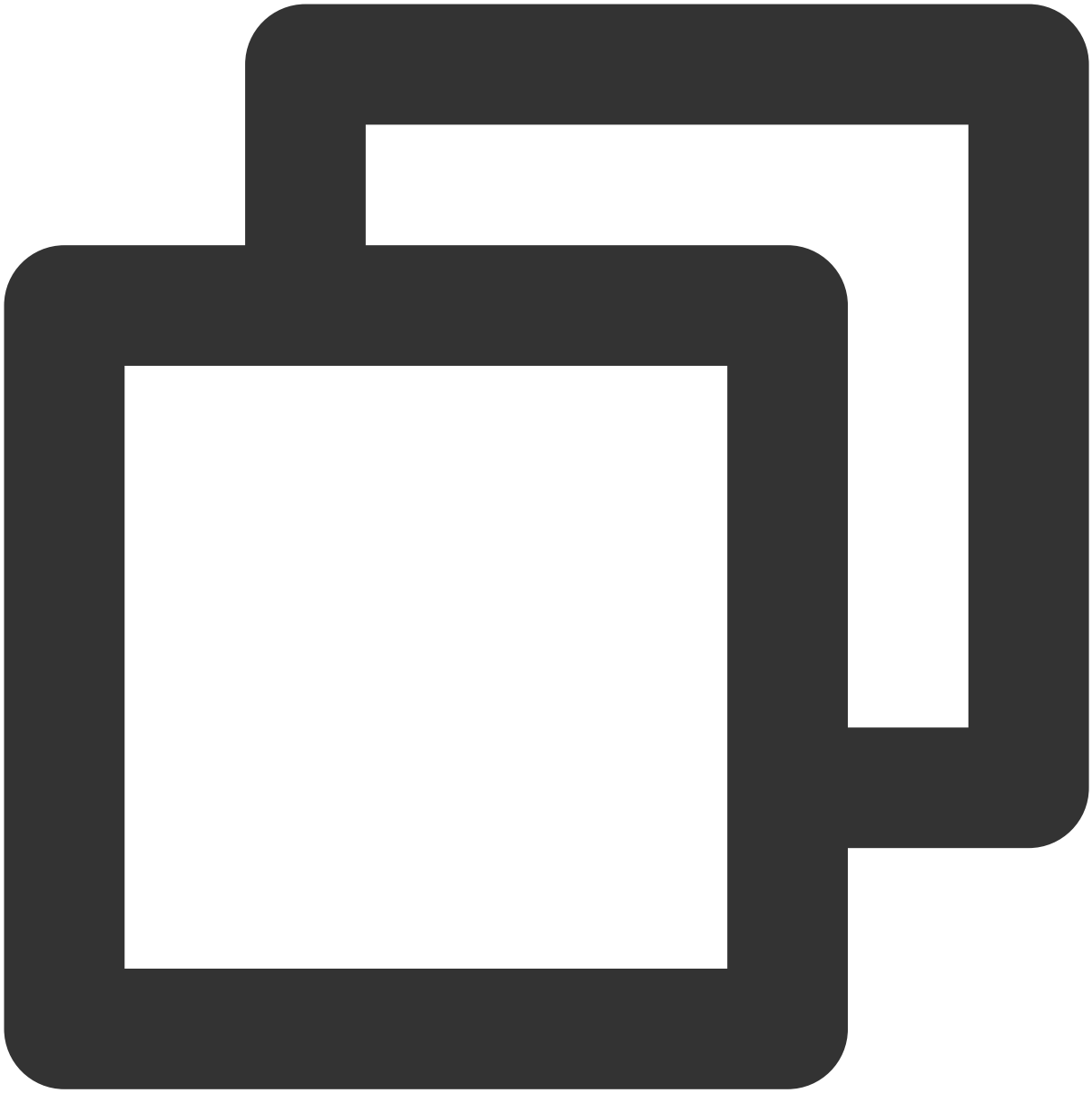

```
// Session configuration
TQUICURLSessionConfiguration *quicSessionConfiguration = [TQUICURLSessionConfigurat
// Congestion control algorithm
quicSessionConfiguration.congestionType = TQUICCongestionTypeBBR;
// Connection timeout
quicSessionConfiguration.connectTimeoutMillis = 6 * 1000;
// Create SessionManager. See %!s(<nil>) for instructions.
TQUICHTTPSessionManager *quicSessionManager = [[TQUICHTTPSessionManager alloc] init

// (Optional) Serialize via TQUICHTTPRequestSerializer/TQUICHTTPResponseSerializer.
```

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```
// Initiate a GET request.
[quicSessionManager GET:@"url"
             parameters:nil
                headers:nil
        timeoutInterval:0
       downloadProgress:nil
                success:^(TQUICURLSessionTask * _Nonnull task, id  _Nullable respon
        // When the request is executed successfully, it returns the response data.
        // Get the response headers. Since this is an HTTP response, it can be conv
        NSDictionary *headers = [(NSHTTPURLResponse *)task.response allHeaderFields
        // Get the response body.
        id body = responseObject;

        }      failure:^(TQUICURLSessionTask * _Nullable task, NSError * _Nonnull e
        // When the request fails to be executed, it returns the error message.
        NSInteger errorCode = error.code;
}];
```

Creating POST Requests

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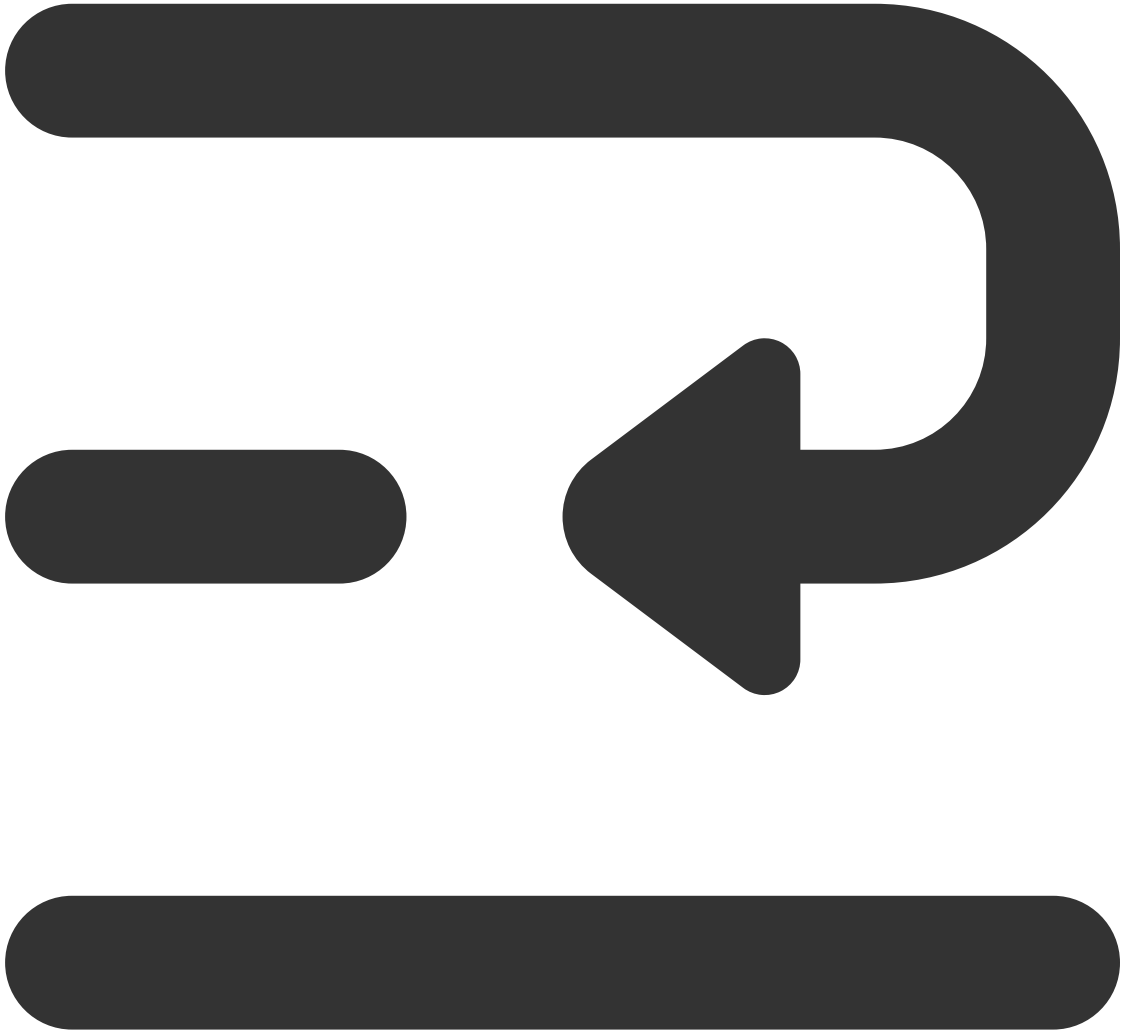

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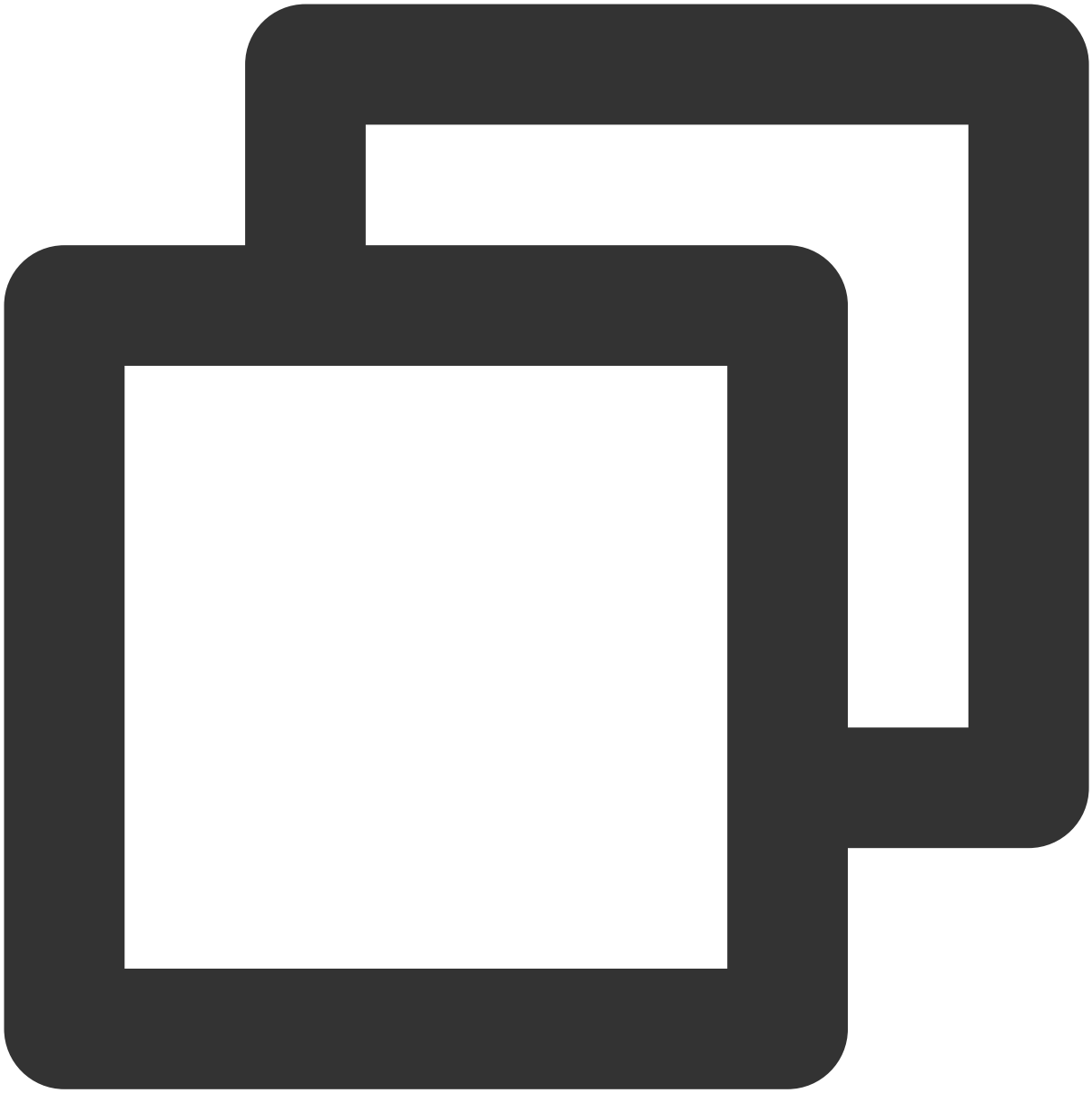

```
// Session configuration
TQUICURLSessionConfiguration *quicSessionConfiguration = [TQUICURLSessionConfigurat
// Congestion control algorithm
quicSessionConfiguration.congestionType = TQUICCongestionTypeBBR;
// Connection timeout
quicSessionConfiguration.connectTimeoutMillis = 6 * 1000;
// Create SessionManager. See %!s(<nil>) for instructions.
TQUICHTTPSessionManager *quicSessionManager = [[TQUICHTTPSessionManager alloc] init

// (Optional) Serialize via TQUICHTTPRequestSerializer/TQUICHTTPResponseSerializer.
```

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```
// Construct body data.
NSData *bodyData;
// Initiate a POST request.
[quicSessionManager POST:@"url"
                    body:bodyData
                    headers:nil
                    timeoutInterval:timeInterval
                    uploadProgress:^(NSProgress * _Nonnull uploadProgress) {

                    } success:^(TQUICURLSessionTask * _Nonnull task, id  _Nullable
                    // When the request is executed successfully, it returns the re
                    // Get the response body.
                    id body = responseObject;

                    } failure:^(TQUICURLSessionTask * _Nullable task, NSError * _No
                    // When the request fails to be executed, it returns the error
                    NSInteger errorCode = error.code;
}];
```

Canceling Requests

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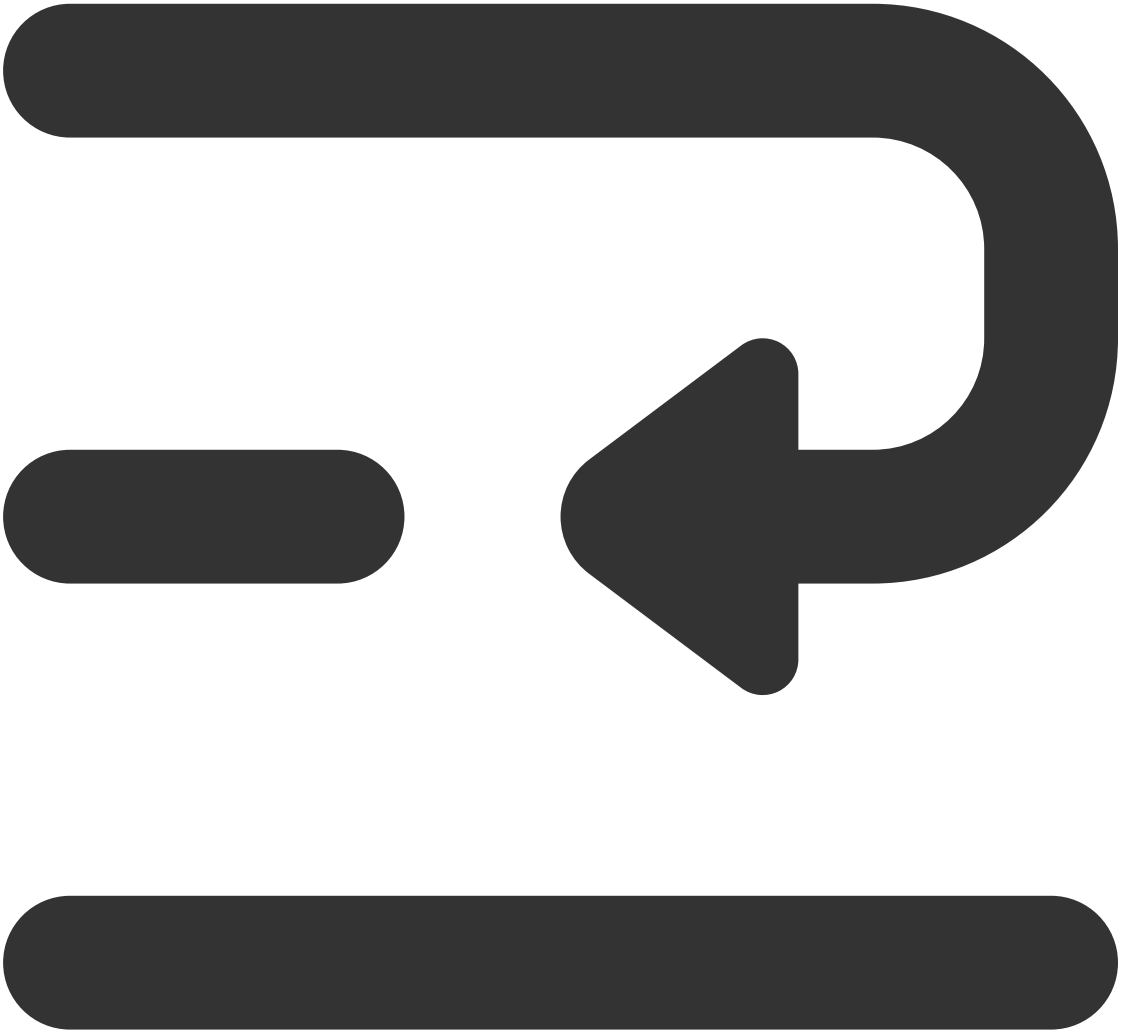

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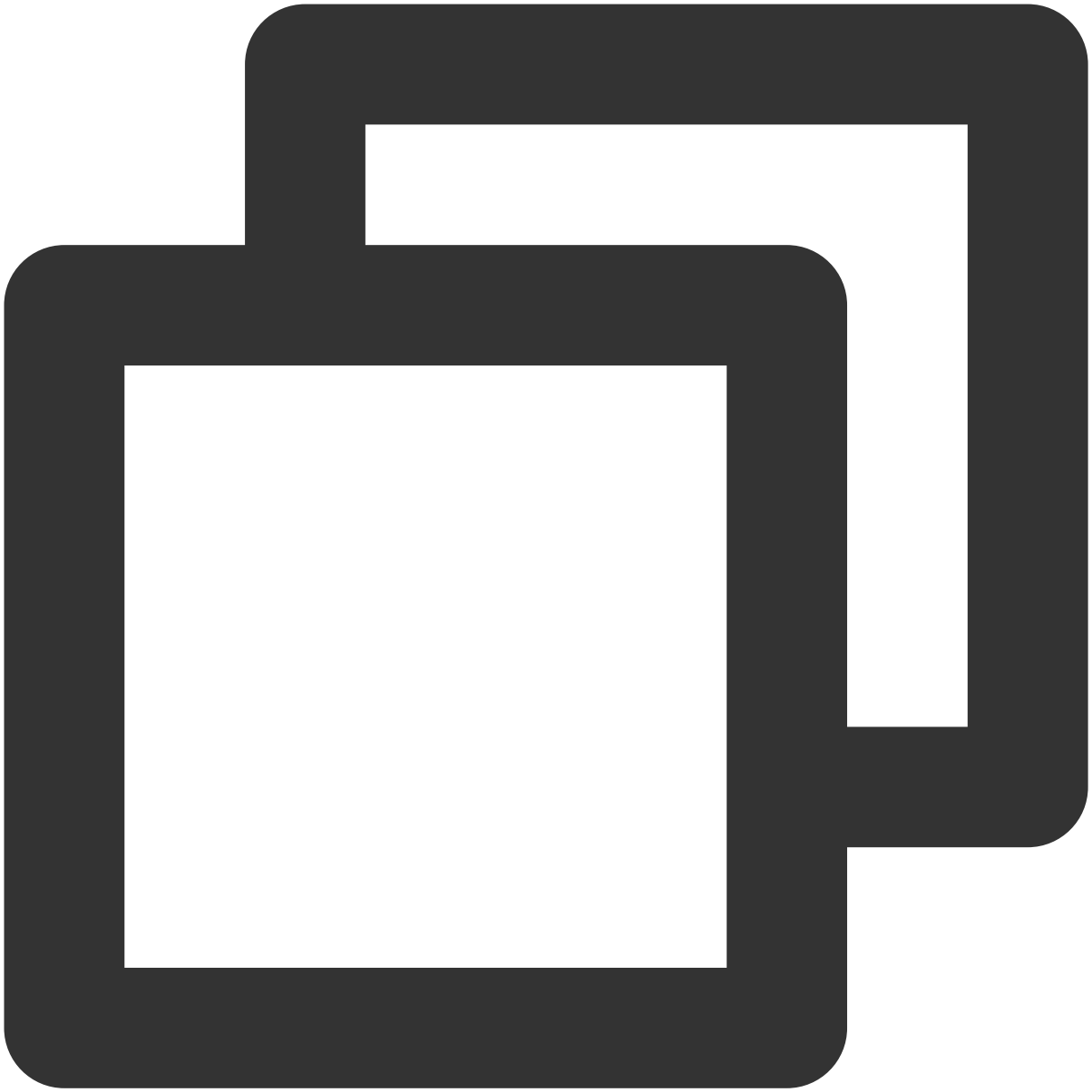

```
// Create SessionManager.

...
// Initiate a request via SessionDataTask. See %!s(<nil>) for instructions.
TQUICURLSessionDataTask *dataTask =
[quicSessionManager dataTaskWithRequest:request
                          uploadProgress:nil
                       downloadProgress:nil
                       completionHandler:^(NSURLResponse * _Nonnull response, id  _

        // Run callback after the request has finished.
```

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```
}];

//Send the request.
[dataTask resume];

//Cancel the request.
[dataTask cancel];
```

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API Documentation
Android

Last updated：2023-06-29 11:20:56

API Overview

API	Description
QuicClient	The main function of QUIC, used to create QuicCall instances and QUIC configuration and get the version number etc.
QuicCall	Manage QUIC requests.
QuicRequest	Encapsulate requests.
QuicResponse	Encapsulate responses.
QuicCallback	Execute callbacks.
QuicNetStats	Get information about QUIC network status.

QuicClient

The main function of QUIC, used to create QuicCall instances and QUIC configuration and get the version number etc.

API	Description
newCall	Create a QuicCall instance.
Builder	Construct QUIC configuration .
getVersion	Get the SDK version number.

newCall

Create a QuicCall instance for each QUIC request.

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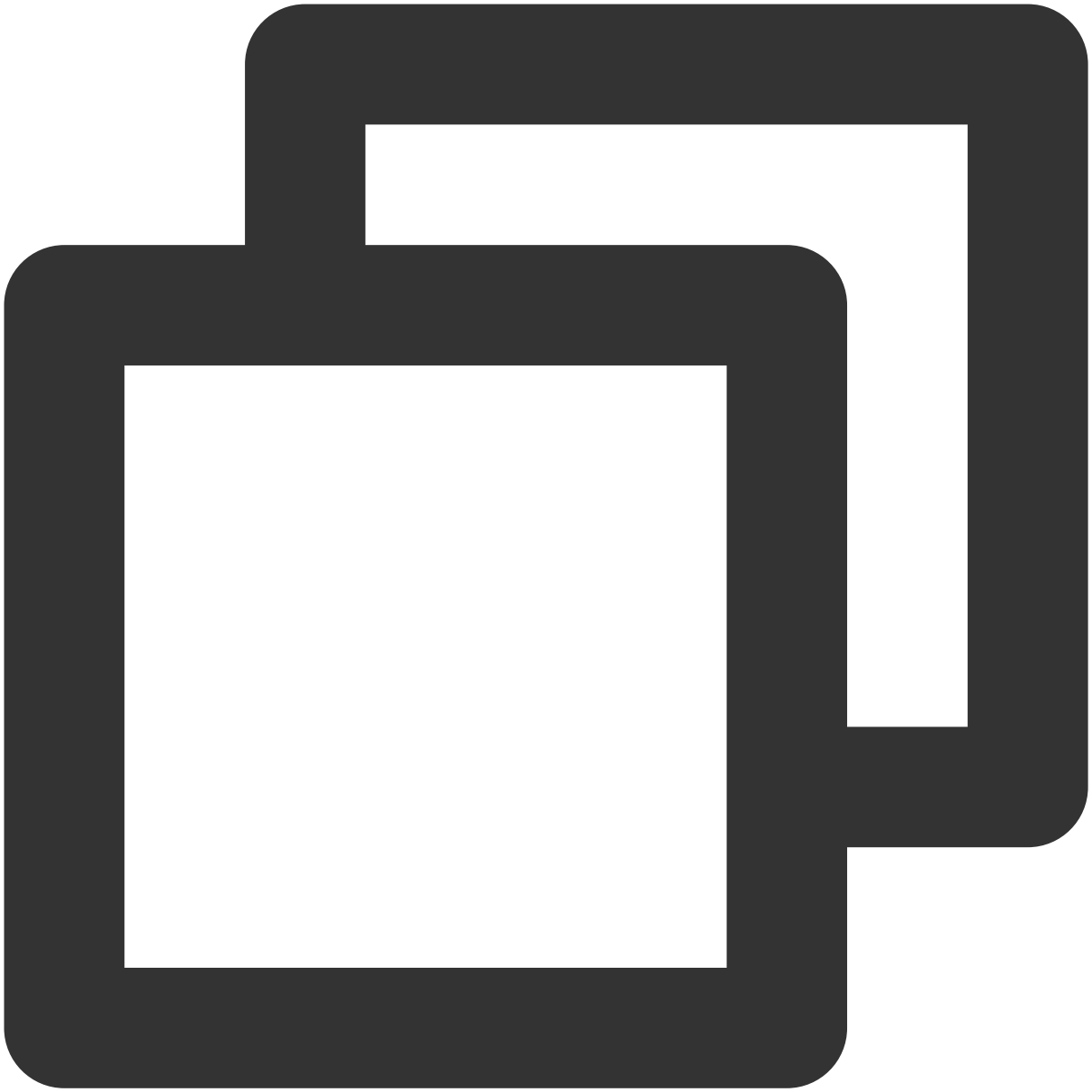

```
QuicCall newCall(QuicRequest request)
```

Parameter	Description
request	The request to be encapsulated. See QuicRequest.

getVersion

A static method that can get the SDK version number.

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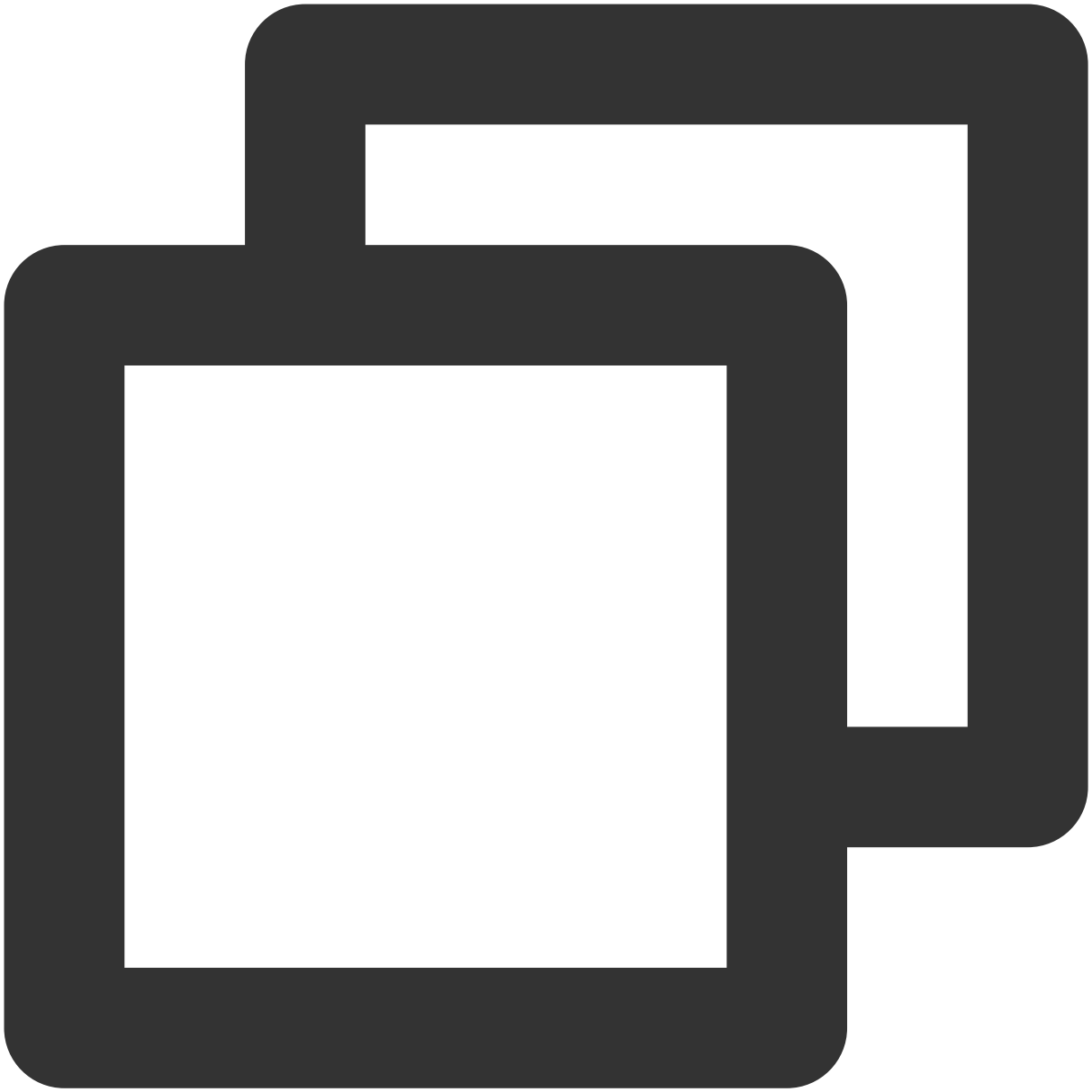

```
String getVersion()
```

Builder

QUIC configuration APIs

API	Description
setQuicVersion	Set the QUIC version.
setCongestionType	Set the congestion control algorithm.

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setConnectTimeoutMillis	Set the connection timeout.
setTotalTimeoutMillis	Set the total timeout for the request.
setIdleTimeoutMillis	Set the idle connection timeout.
setSupportIpV6	Whether to support IPv6.
build	Create QuicClient.

setQuicVersion

Set the QUIC version.

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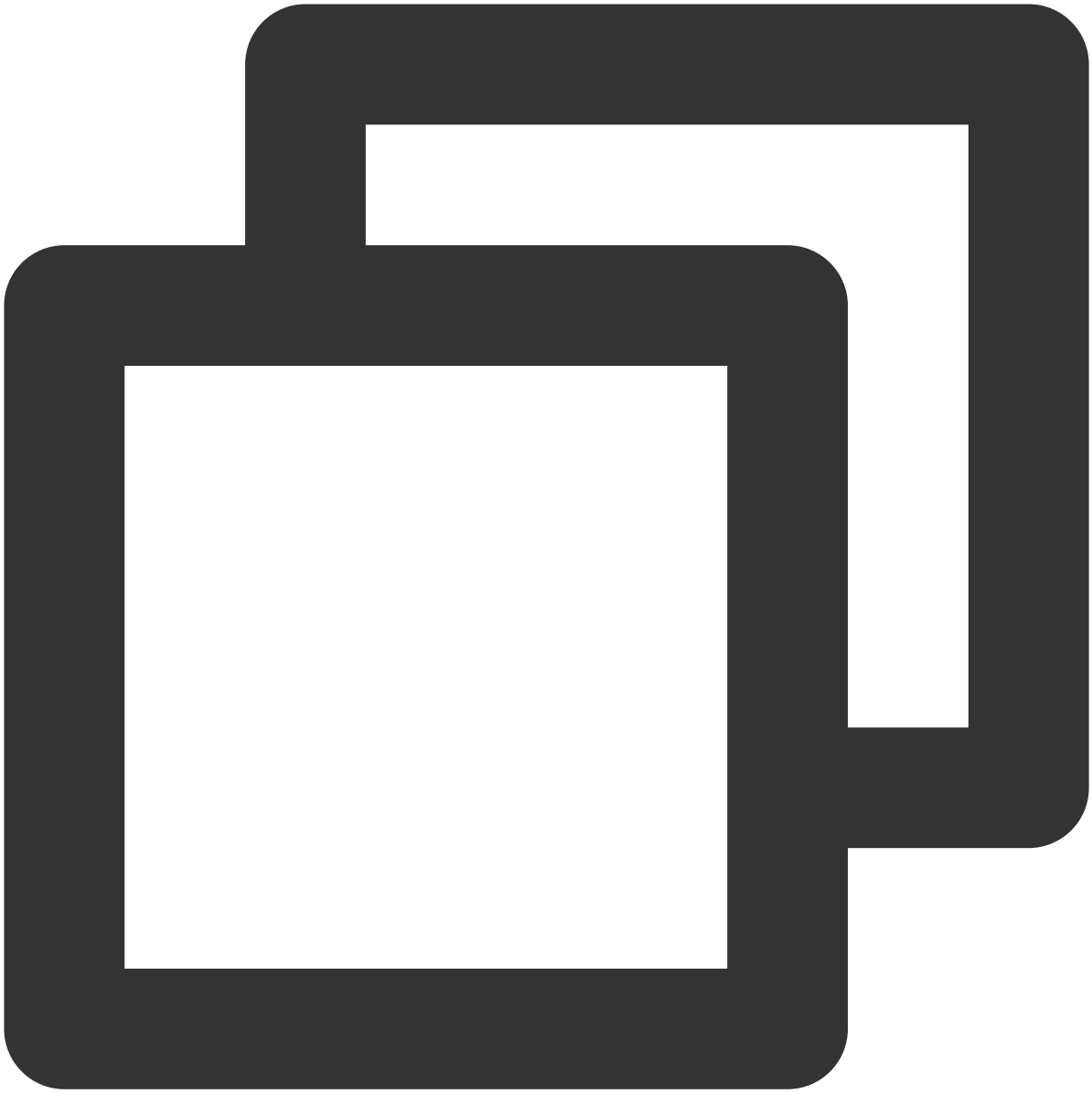

```
Builder setQuicVersion(int quicVersion)
```

Parameter	Description
quicVersion	Set the QUIC version. Supported versions: Q043, Q046, Q050, Q051, draft-29, RFC-V1 (RFC 9000). Values: QuicClient.QUIC_VERSION_Q43 (default) QuicClient.QUIC_VERSION_Q46 audio/video proxy QuicClient.QUIC_VERSION_Q50 audio/video proxy

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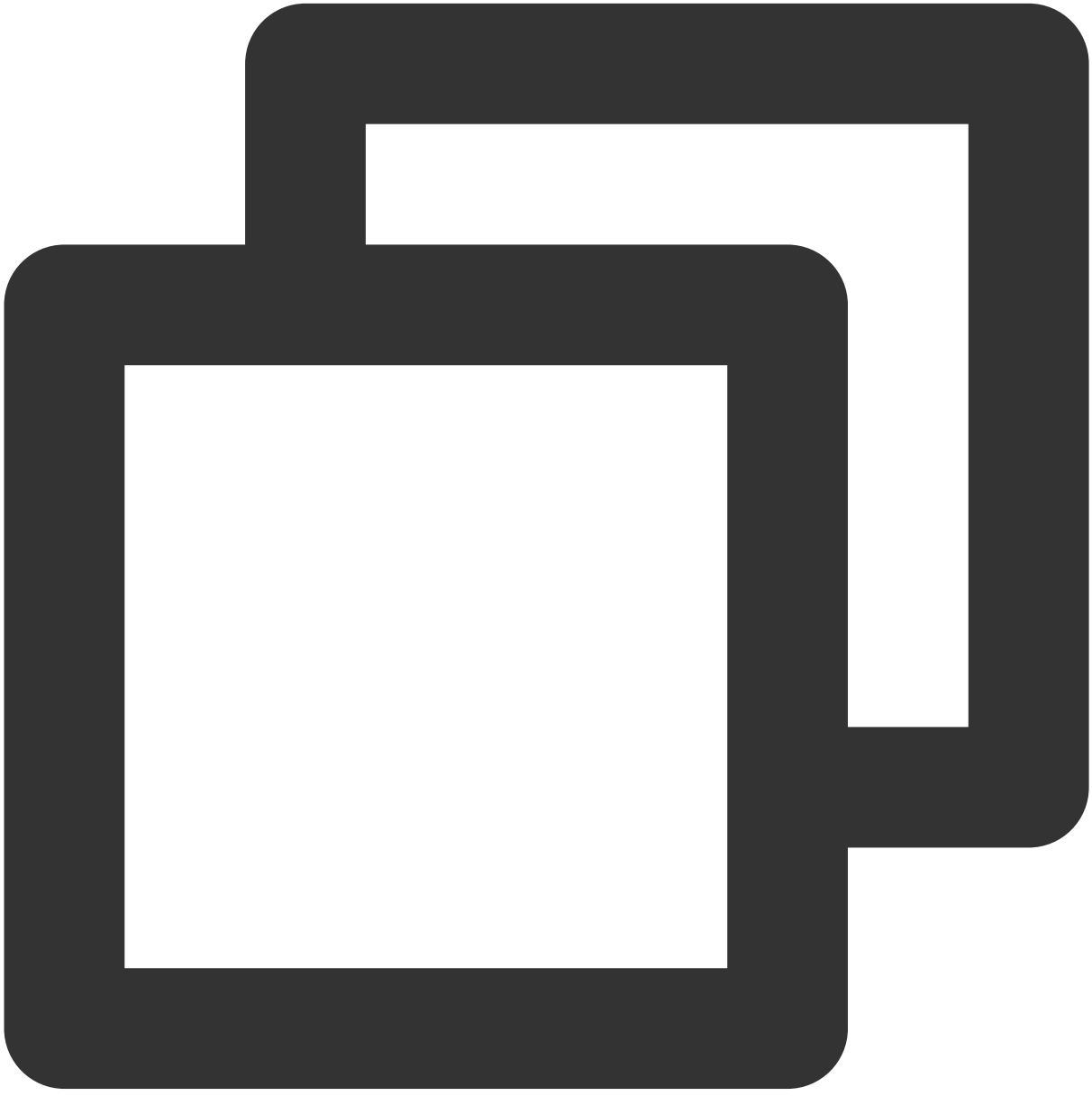
	QuicClient.QUIC_VERSION_Q51 audio/video proxy QuicClient.QUIC_VERSION_IETF_DRAFT_29 audio/video proxy QuicClient.QUIC_VERSION_IETF_RFC_V1 audio/video proxy

setCongestionType

Set the congestion control algorithm.



```
Builder setCongestionType(int congestionType)
```

Parameter	Description

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congestionType	Supported congestion control algorithms: CubicBytes, RenoBytes, BBR, PCC, GCC. Values: QuicClient.CONGESTION_TYPE_BBR (default) QuicClient.CONGESTION_TYPE_RENO_BYTES QuicClient.CONGESTION_TYPE_BBR QuicClient.CONGESTION_TYPE_PCC QuicClient.CONGESTION_TYPE_GCC

setConnectTimeoutMillis

Set the connection timeout.

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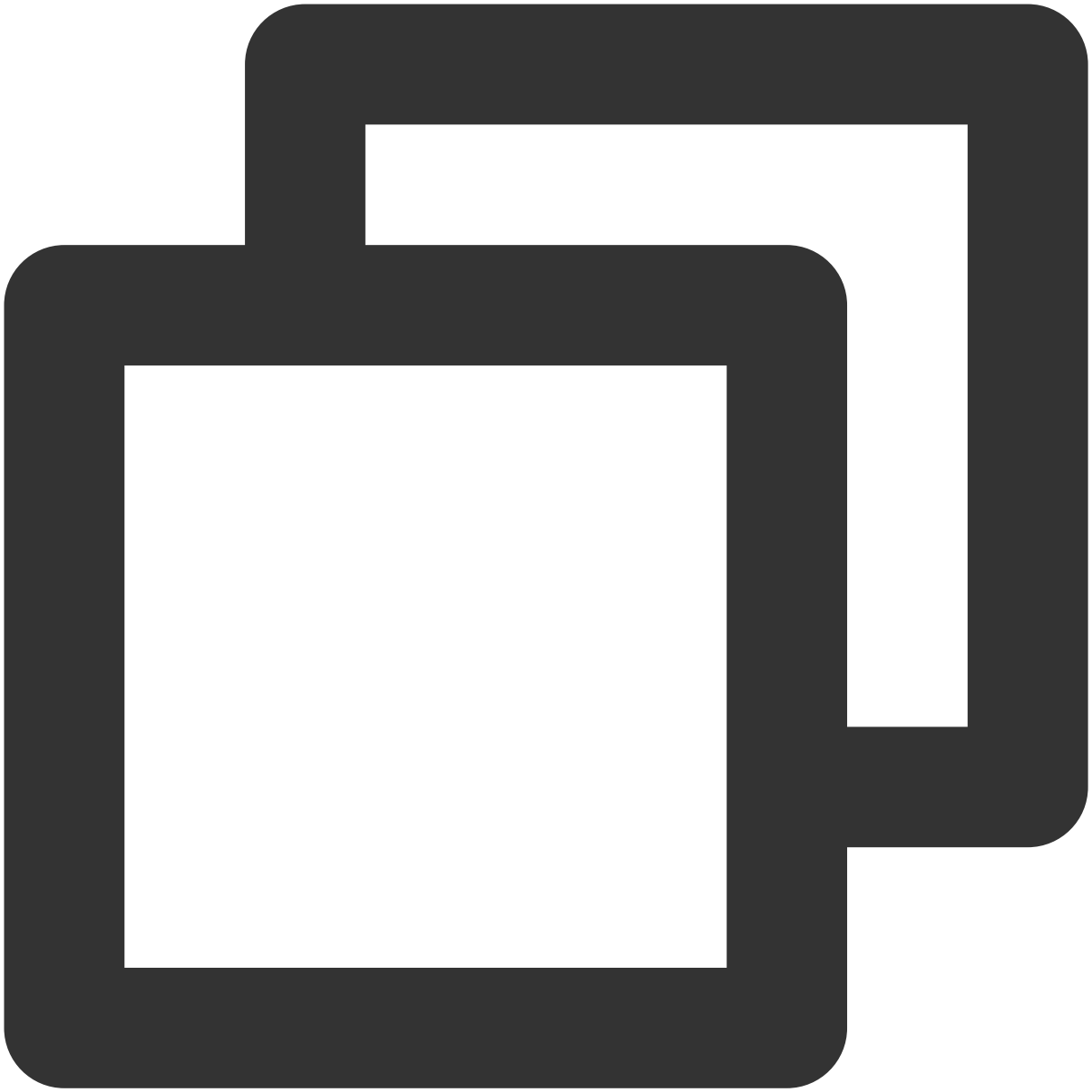

```
Builder setConnectTimeoutMillis(int connectTimeoutMillis)
```

Parameter	Description
connectTimeoutMillis	Set the connection timeout in milliseconds. Default value: 60000.

setTotalTimeoutMillis

Set the total timeout that covers data read and write.

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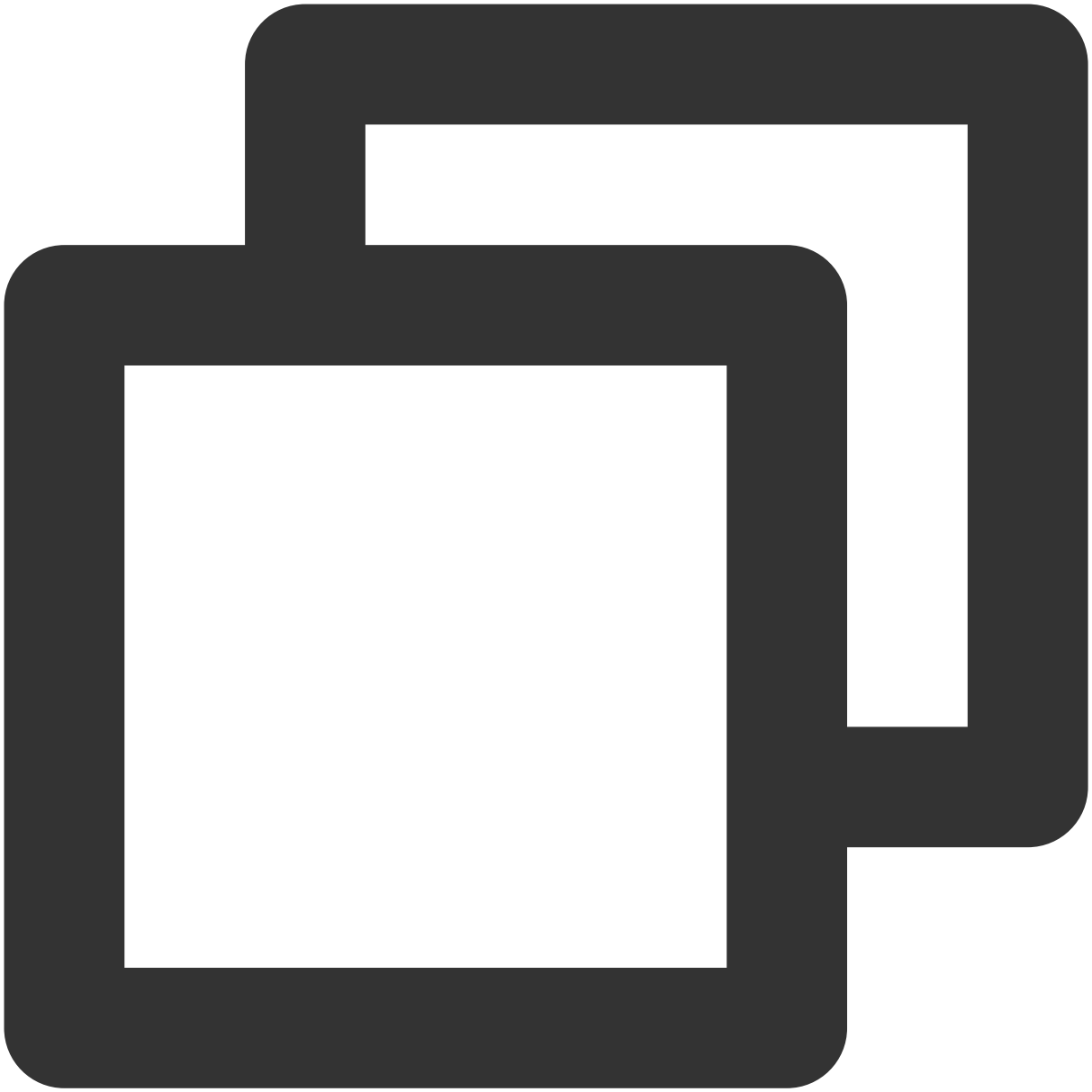

```
Builder setTotalTimeoutMillis(int totalTimeoutMillis)
```

Parameter	Description
totalTimeoutMillis	Set the total timeout in milliseconds. Default value: 0 (no timeout).

setIdleTimeoutMillis

Set the idle connection timeout. When the timeout expires, connections are closed and cannot be reused.

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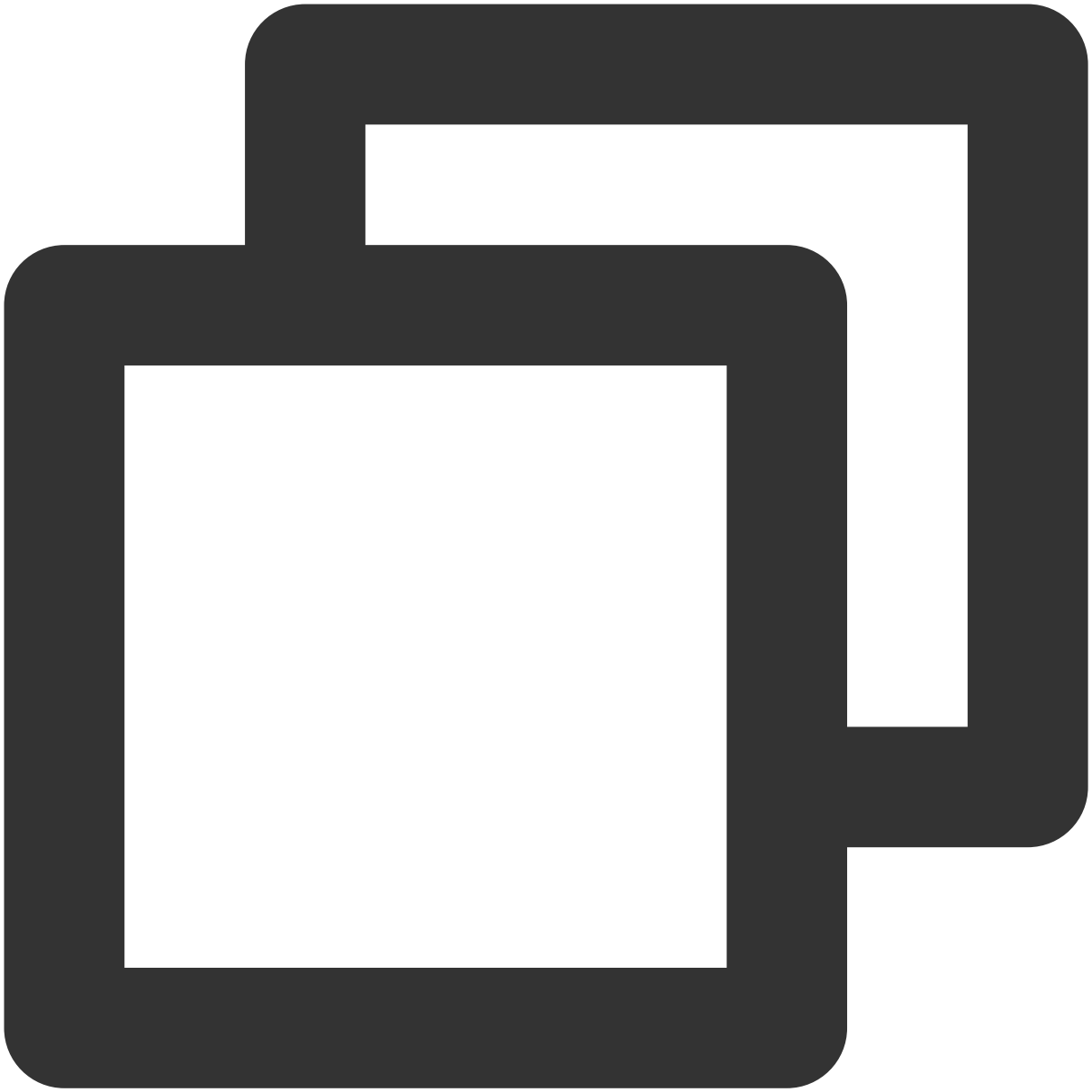

```
Builder setIdleTimeoutMillis(int idleTimeoutMillis)
```

Parameter	Description
idleTimeoutMillis	The idle connection timeout in milliseconds. Default value: 90000.

setSupportIpV6

Whether to support IPv6.

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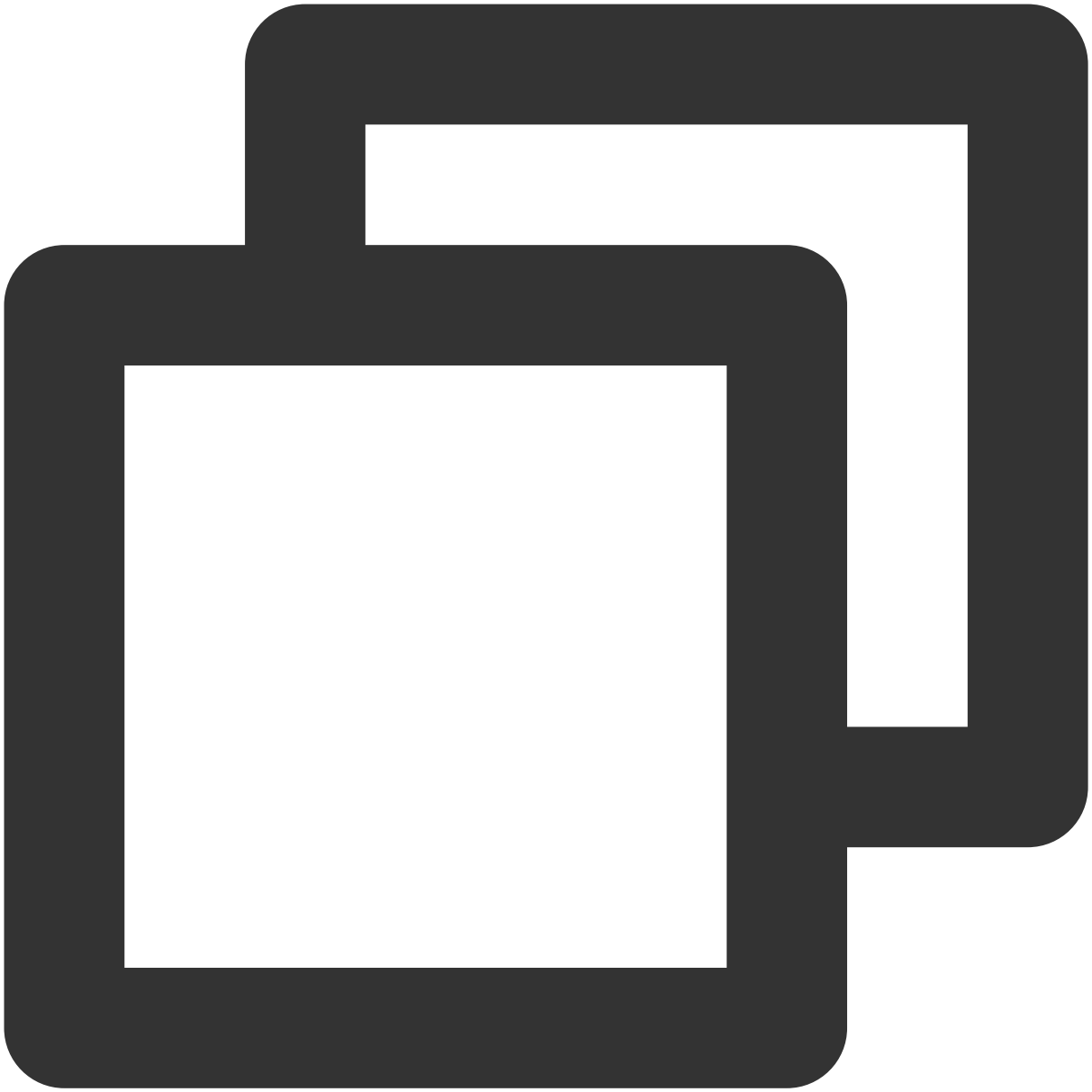

```
Builder setSupportIpV6(boolean supportIpV6)
```

Parameter	Description
supportIpV6 audio/video proxy	Whether to support IPv6. Values: `true` , `false` . Default value: `false` .

build

Create QuicClient.

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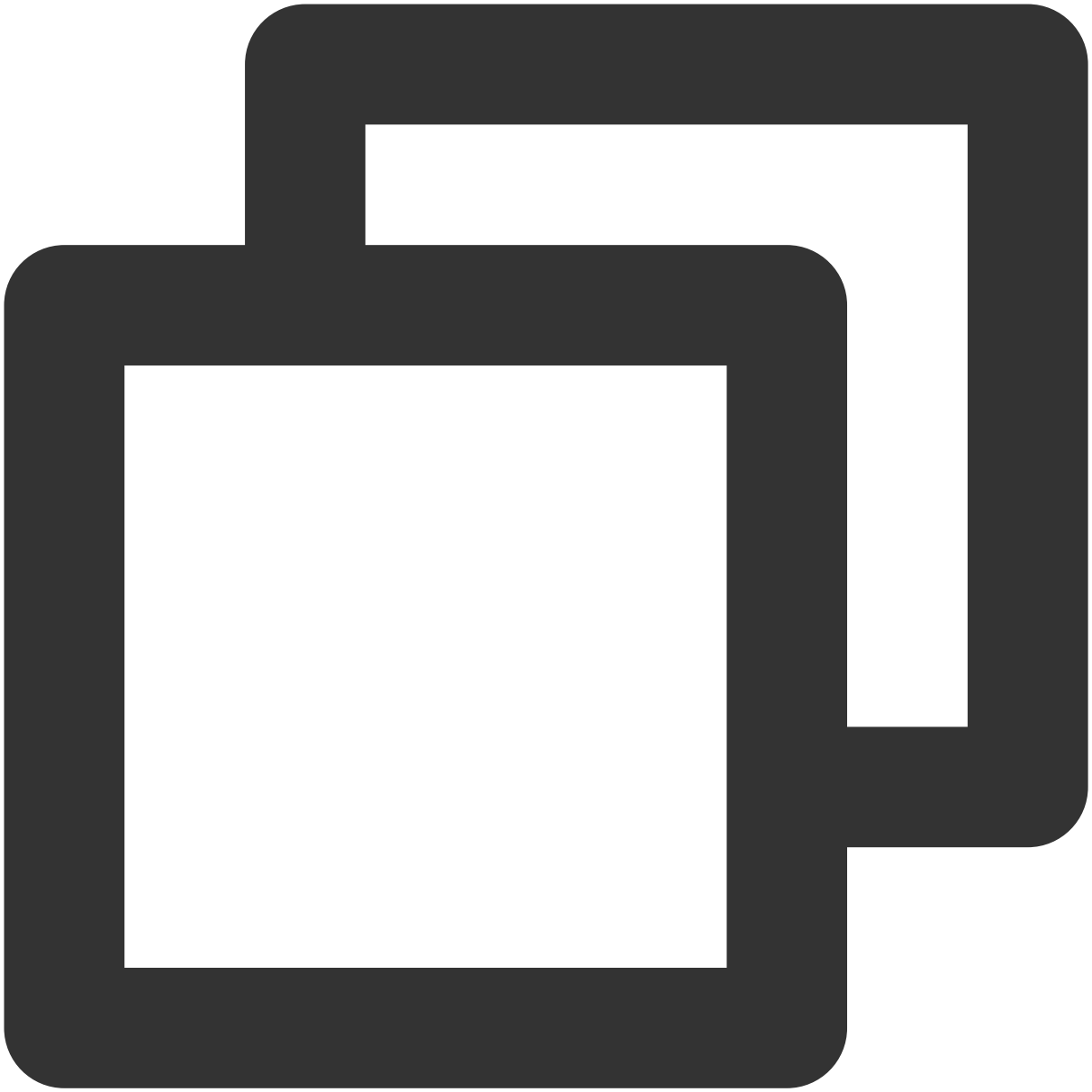

```
QuicClient build()
```

QuicCall

Manage QUIC requests.

API	Description
enqueue	Initiate an asynchronous QUIC network request.

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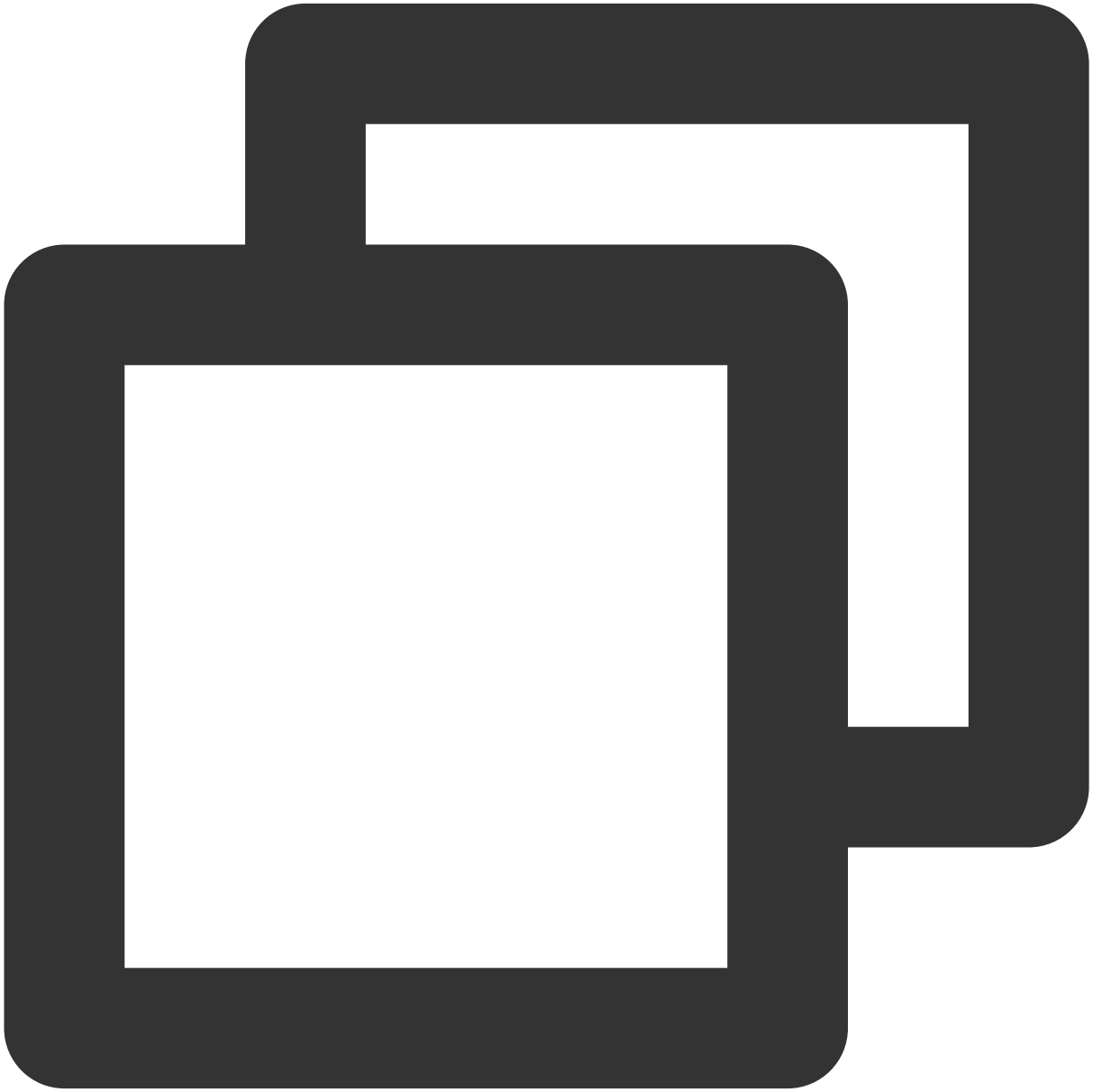
cancel	Cancel requests.
getQuicNetStats	Get information about QUIC network status. For more details, see QuicNetStats.

enqueue

Add an asynchronous QUIC request to the queue. You can get response from the callback function.



```
void enqueue(QuicCallback callback)
```

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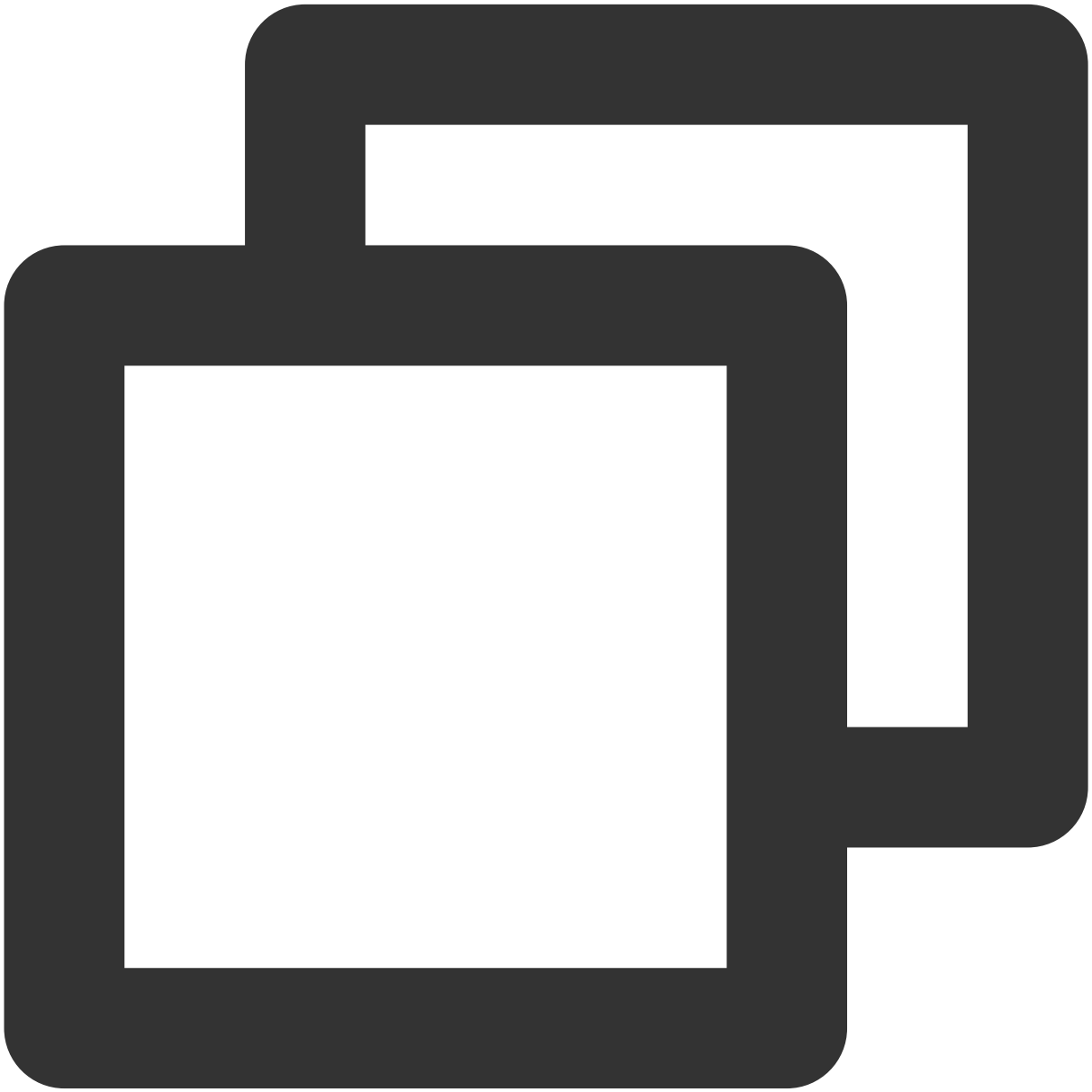
Parameter	Description
callback	Return response from the callback function. For more details, see QuicCallback.

cancel

Cancel requests.



```
void cancel()
```

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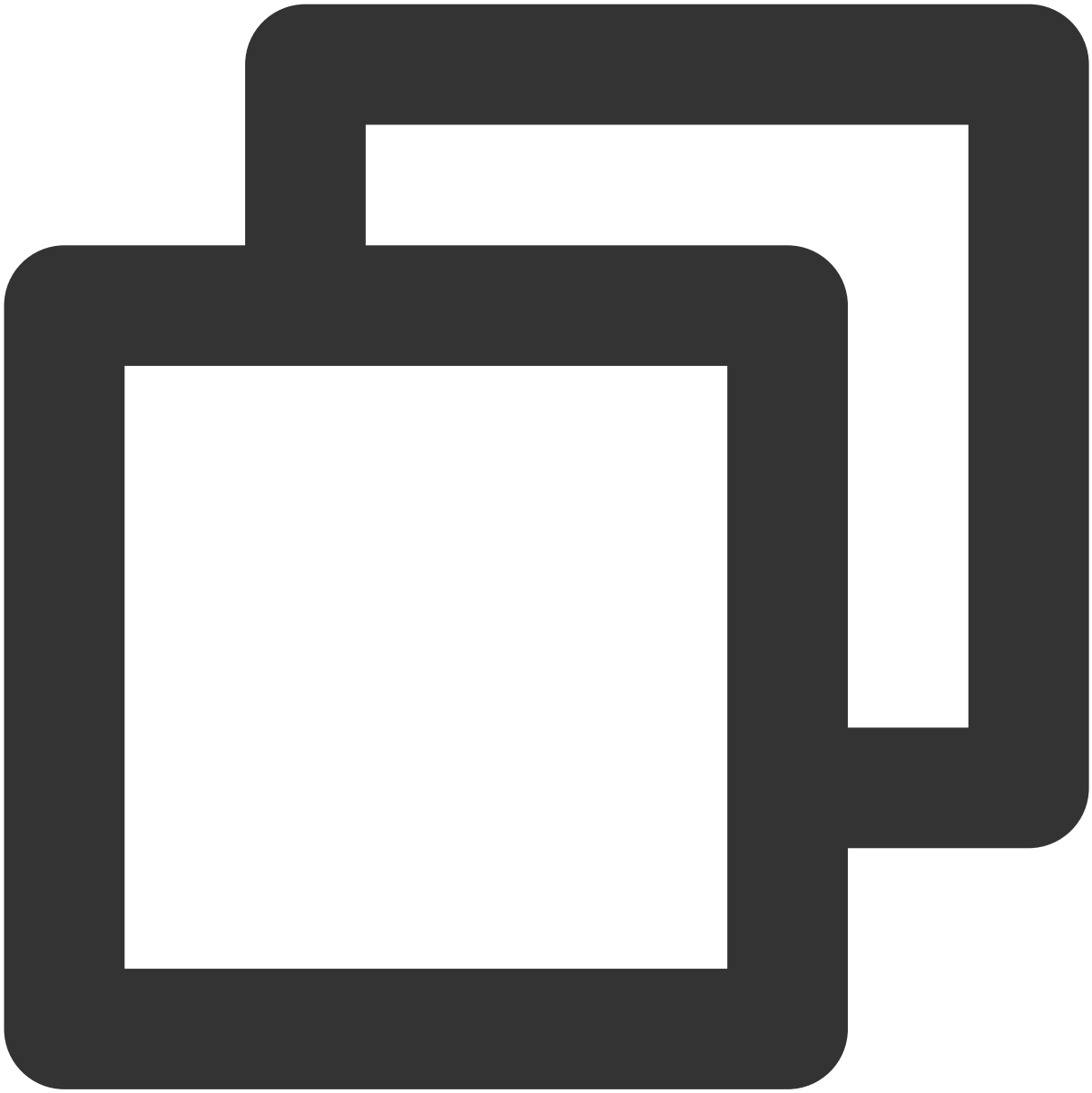
getQuicNetStats

Get information about QUIC network status.



```
QuicNetStats getQuicNetStats()
```

QuicRequest

Request parameter

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API	Description
Builder	Construct a request parameter.

Builder

API	Description
setUrl	Set the request URL.
setIp	Set the request IP.
addHeader	Add the request header
get	Set the request type to GET.
post	Set the request type to POST.
method	Set other request parameters.
build	Create a QuicRequest object.

setUrl

Set the request URL.

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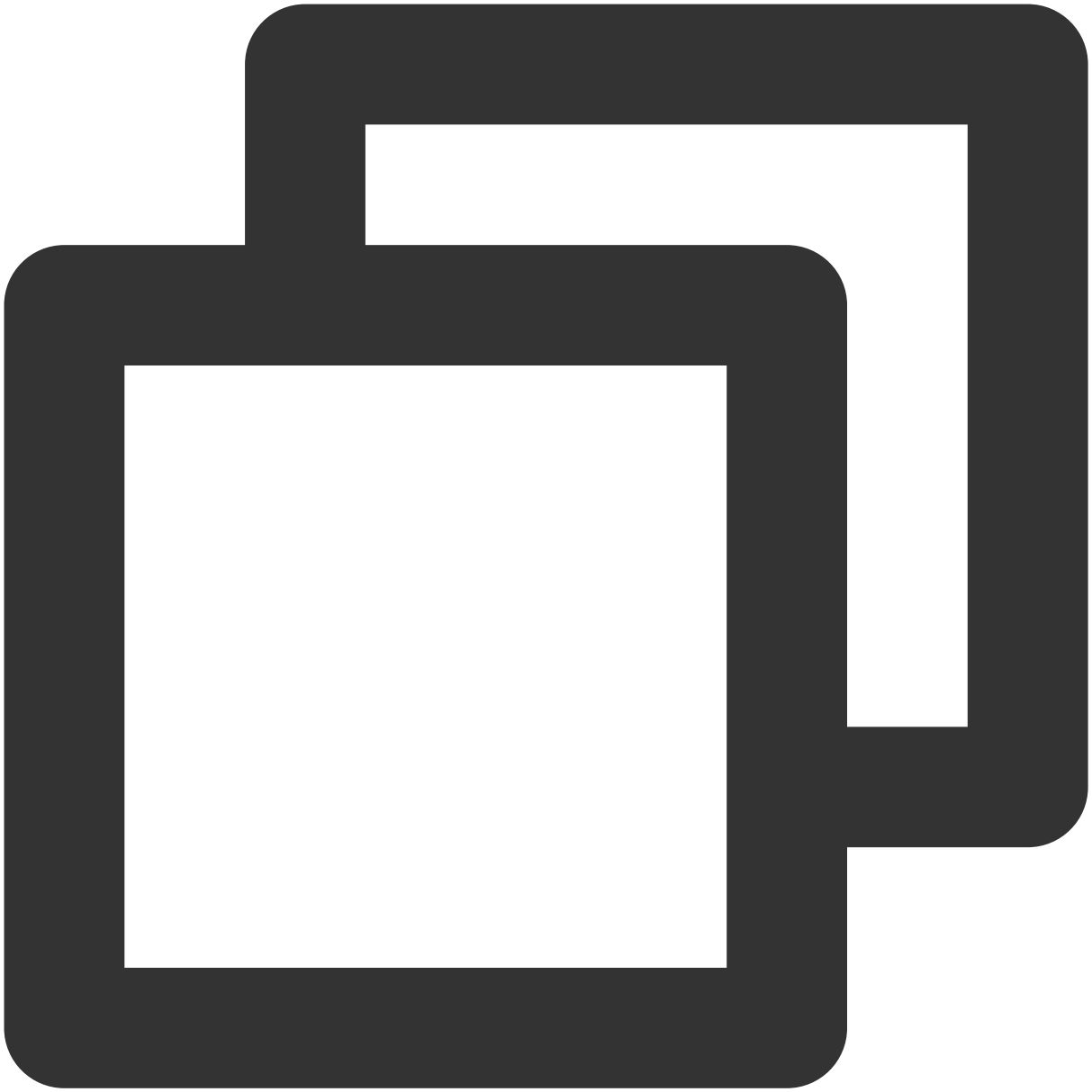

```
Builder setUrl(String url)
```

Parameter	Description
url	(Required) The request URL.

setIp

Set the request IP address.

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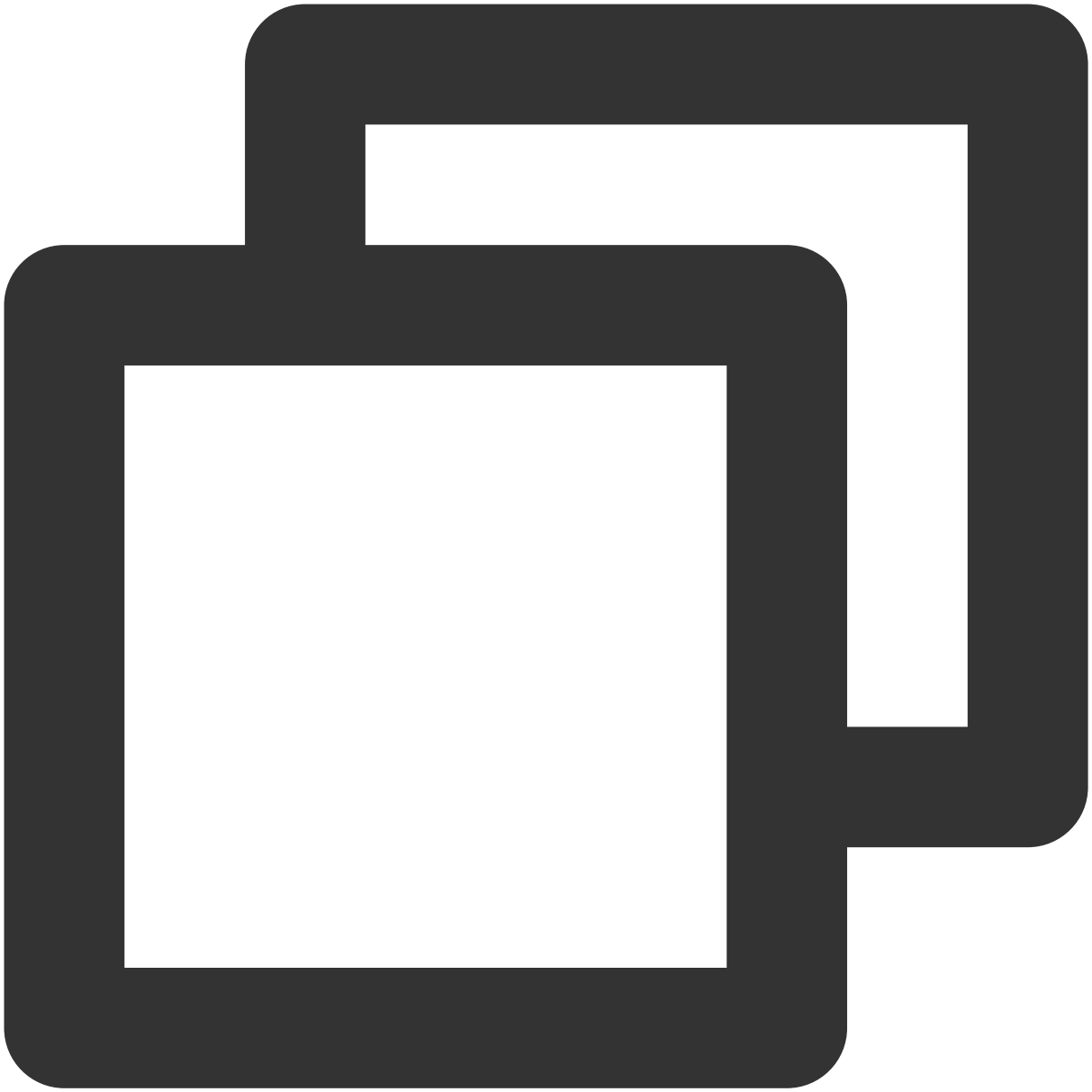

```
Builder setIp(String ip)
```

Parameter	Description
ip	(Optional) If you do not use DNS resolution, set the IP address that the hostname resolves to.

addHeader

Add the request header in a key-value format.

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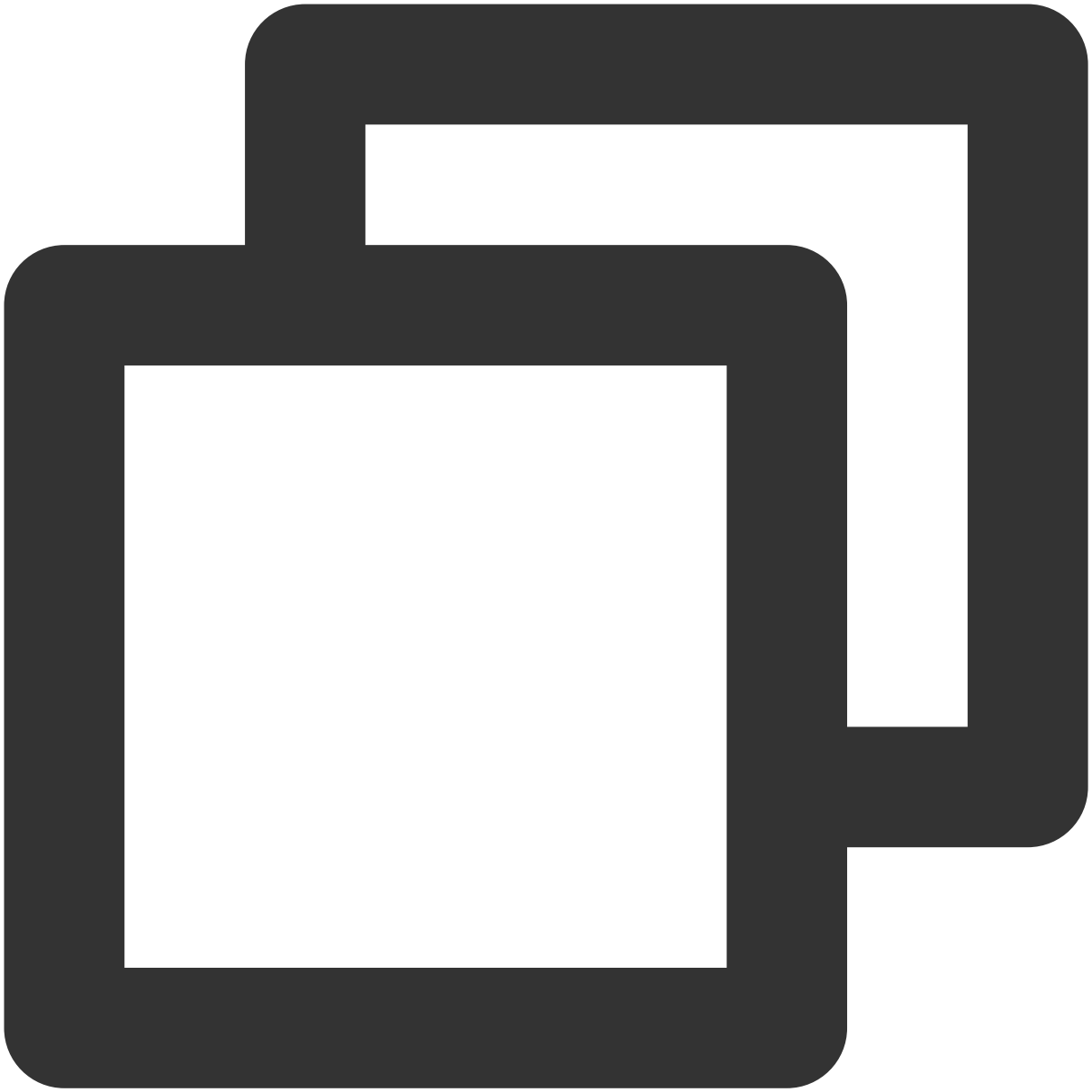

```
Builder addHeader(String key, String value)
```

Parameter	Description
key	Key of the header.
value	Value of the header.

get

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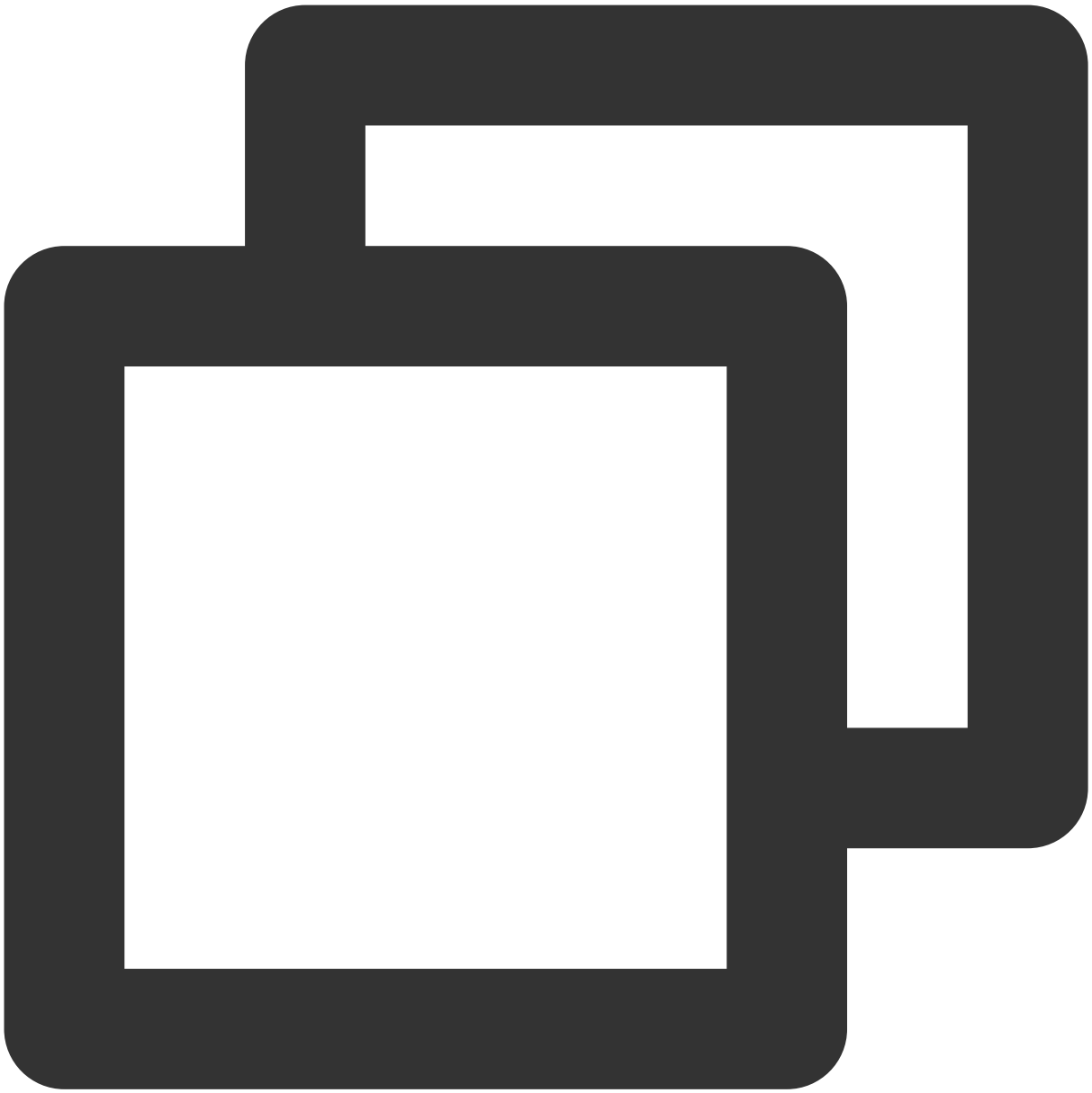
Set the request type to GET.



```
Builder get()
```

post

Set the request type to POST.

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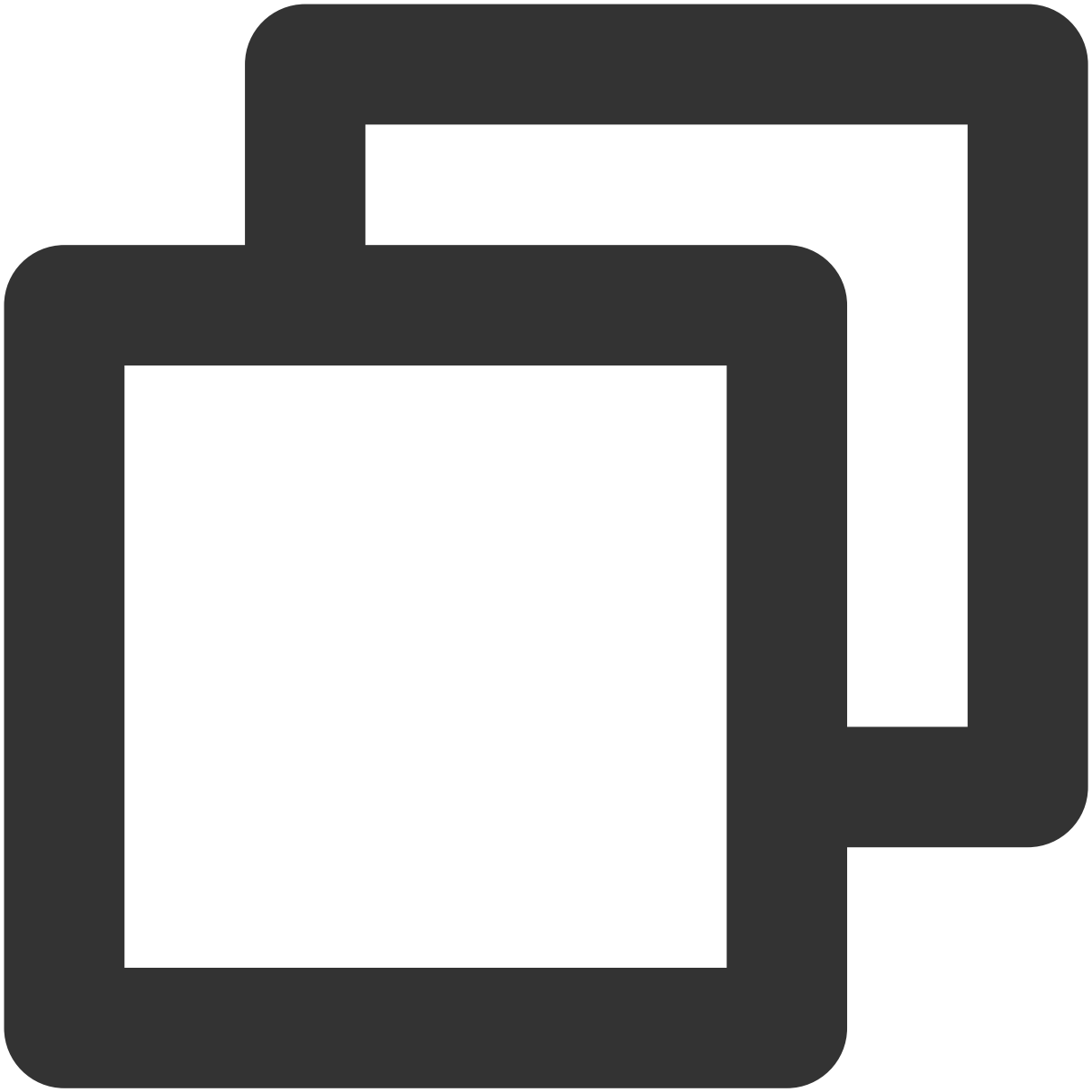

```
Builder post(RequestBody body)
```

Parameter	Description
body	Body data.

method

Construct DELETE, PUT and other requests.

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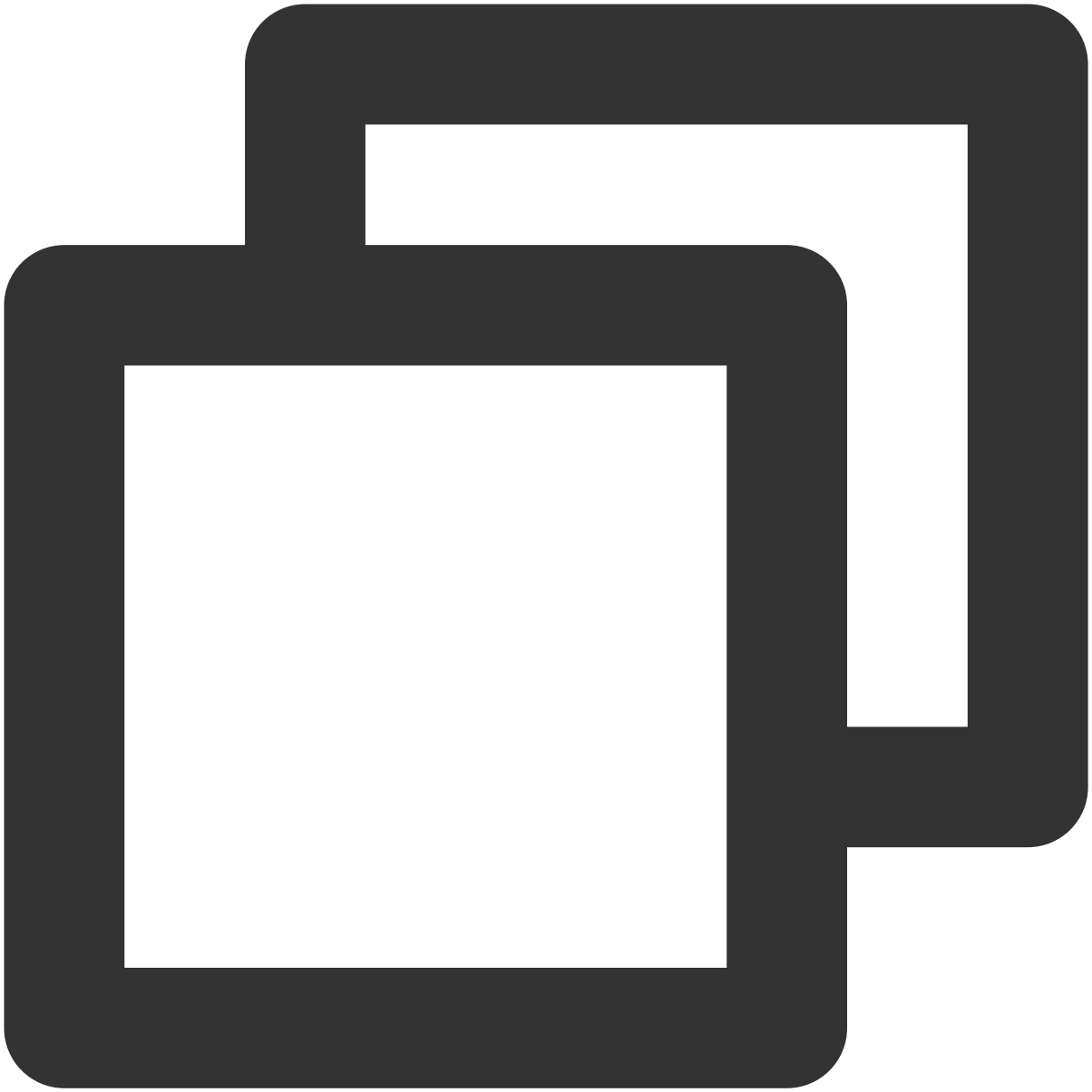

```
Builder method(String method, RequestBody body)
```

Parameter	Description
method	Supported request methods: PUT, DELETE, HEAD, PATCH.
body	Body data.

build

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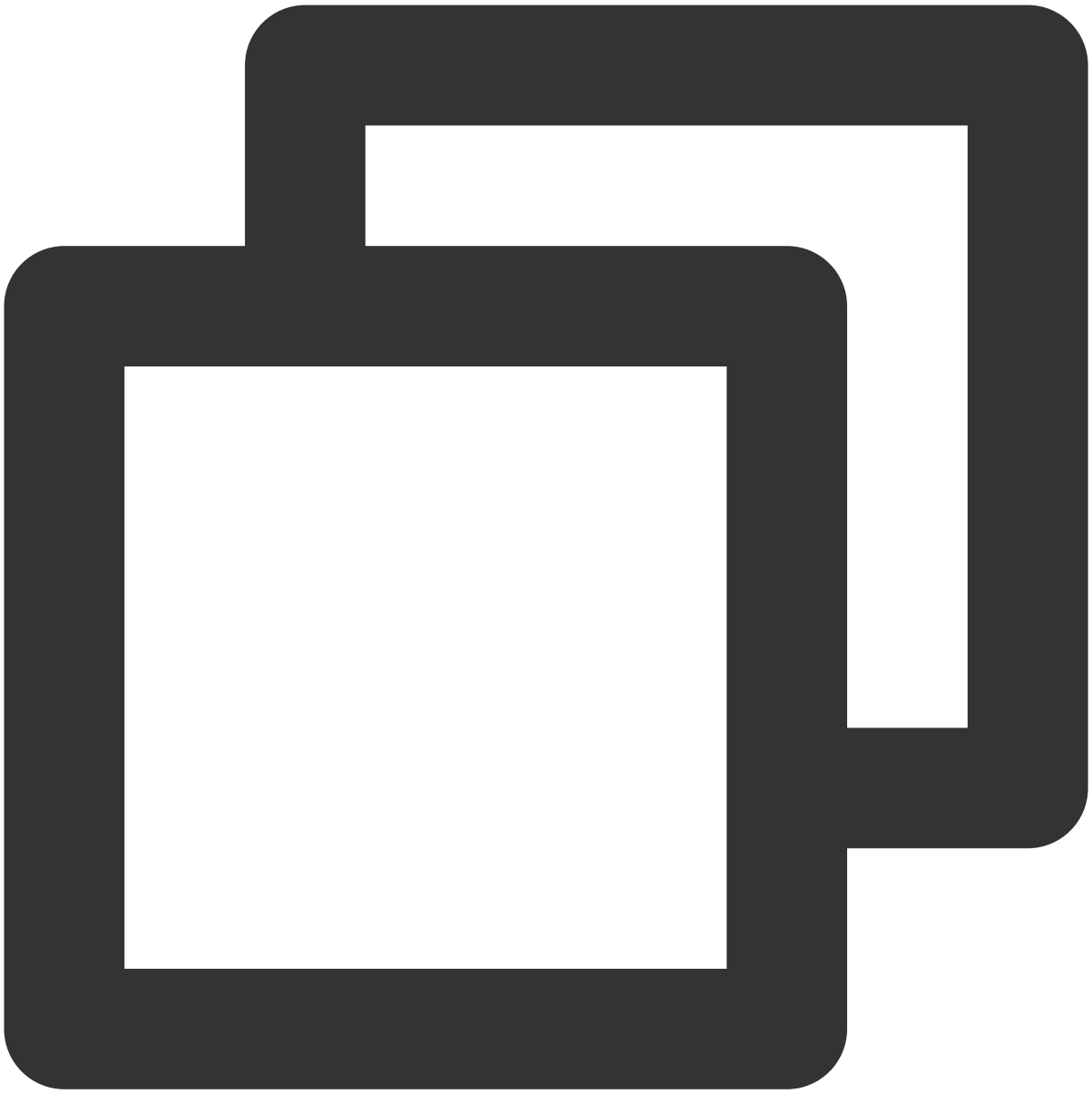
Create QuicRequest



```
QuicRequest build()
```

QuicResponse

Response information

API	Description

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getCode	Get the response status code.
getHeaders	Get the response headers.
getContentType	Get Content-Type.
getContentLength	Get Content-Length.
body	Get the response body.

getCode

Get the response status code.

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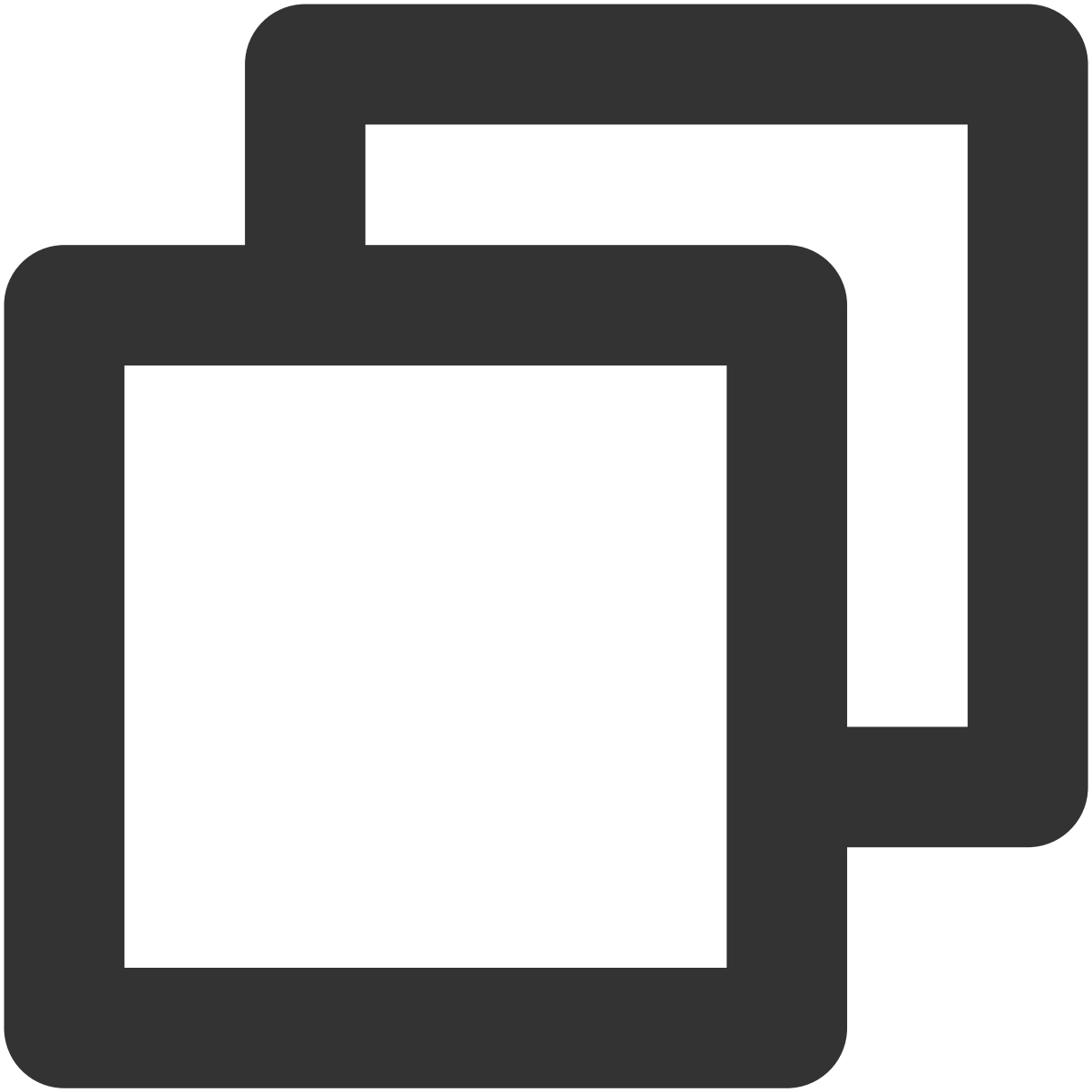

```
int getCode()
```

getHeaders

Get a list of response headers.

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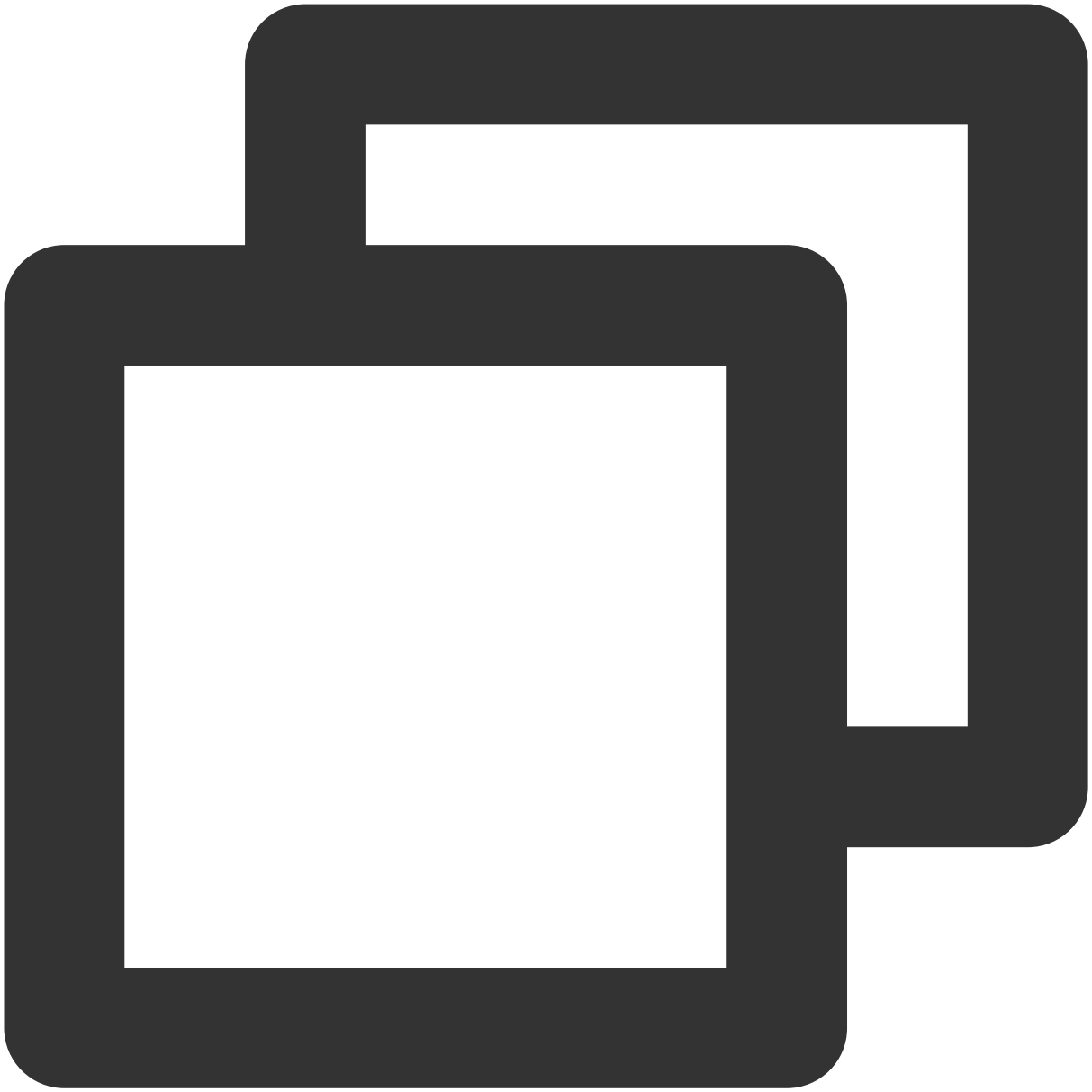

```
List<String> getHeaders()
```

getContentType

Get the content type from the response.

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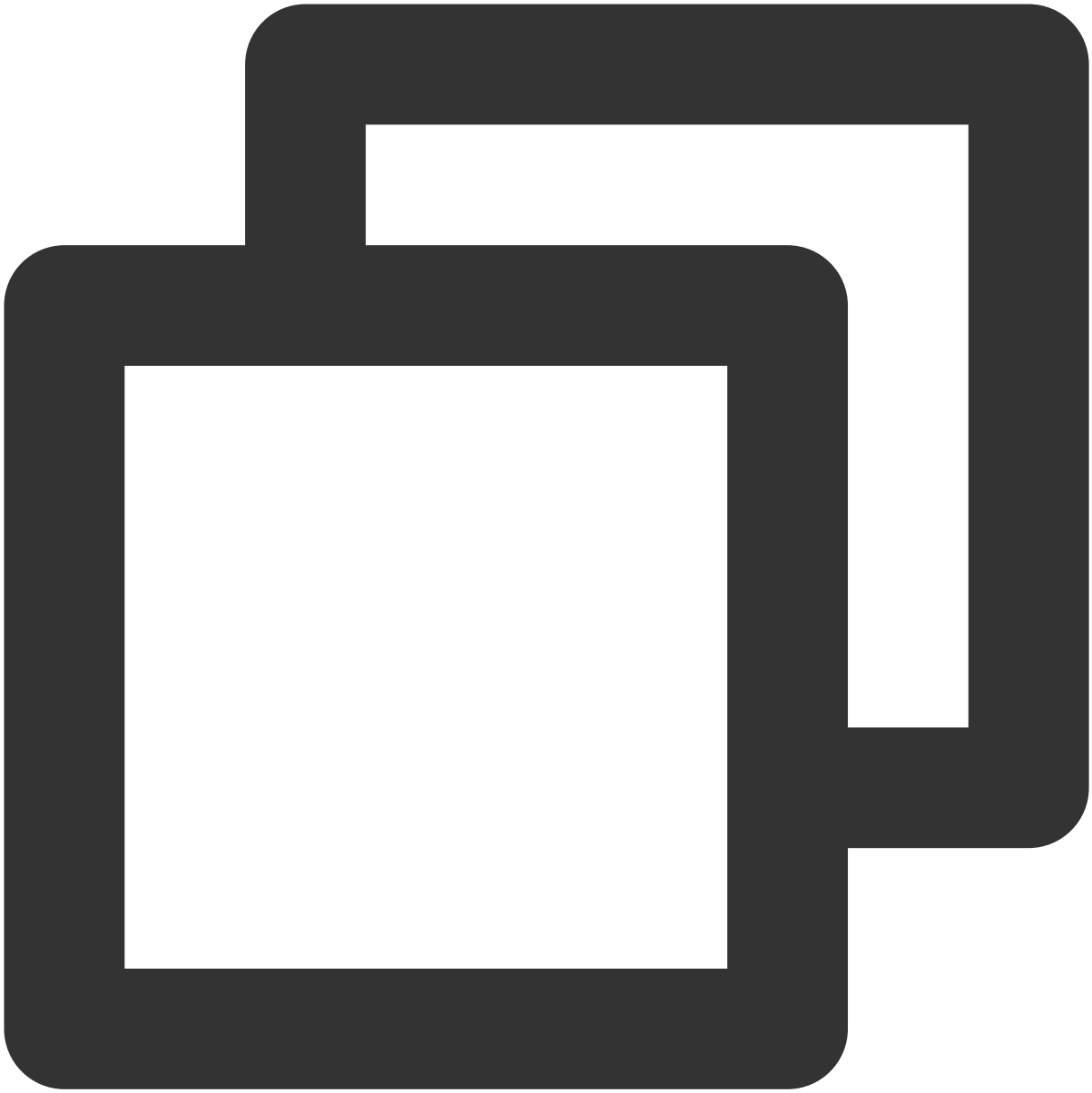

```
void setContentType(String contentType)
```

Parameter	Description
contentType	Get the content type.

getContentLength

Get the content length.

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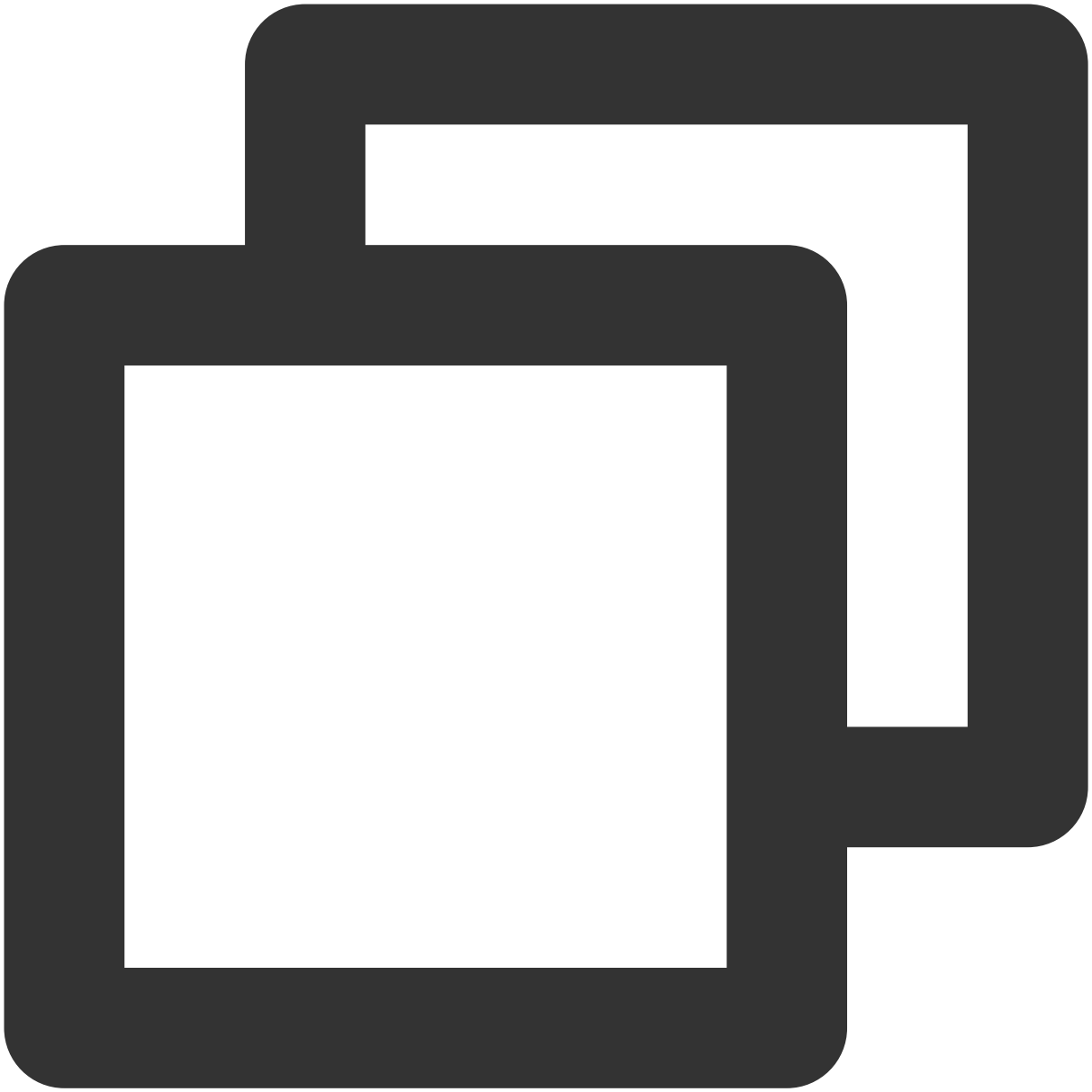

```
void setContentLength(long contentLength)
```

Parameter	Description
contentLength	Get the content length.

body

Get the body of the response.

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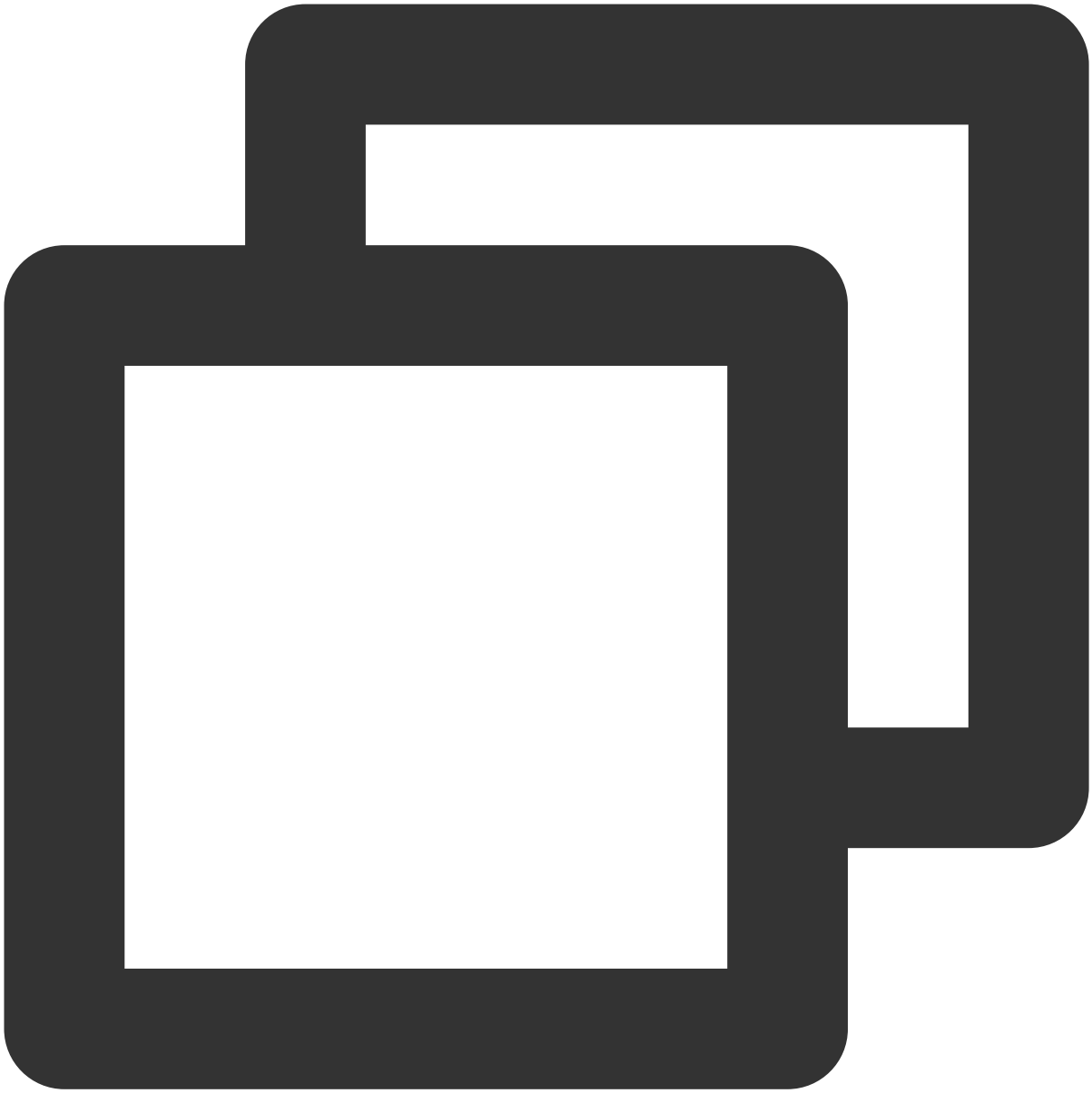

```
ResponseBody body()
```

QuicCallback

Execute callbacks.

API	Description
onResponse	The callback succeeded.

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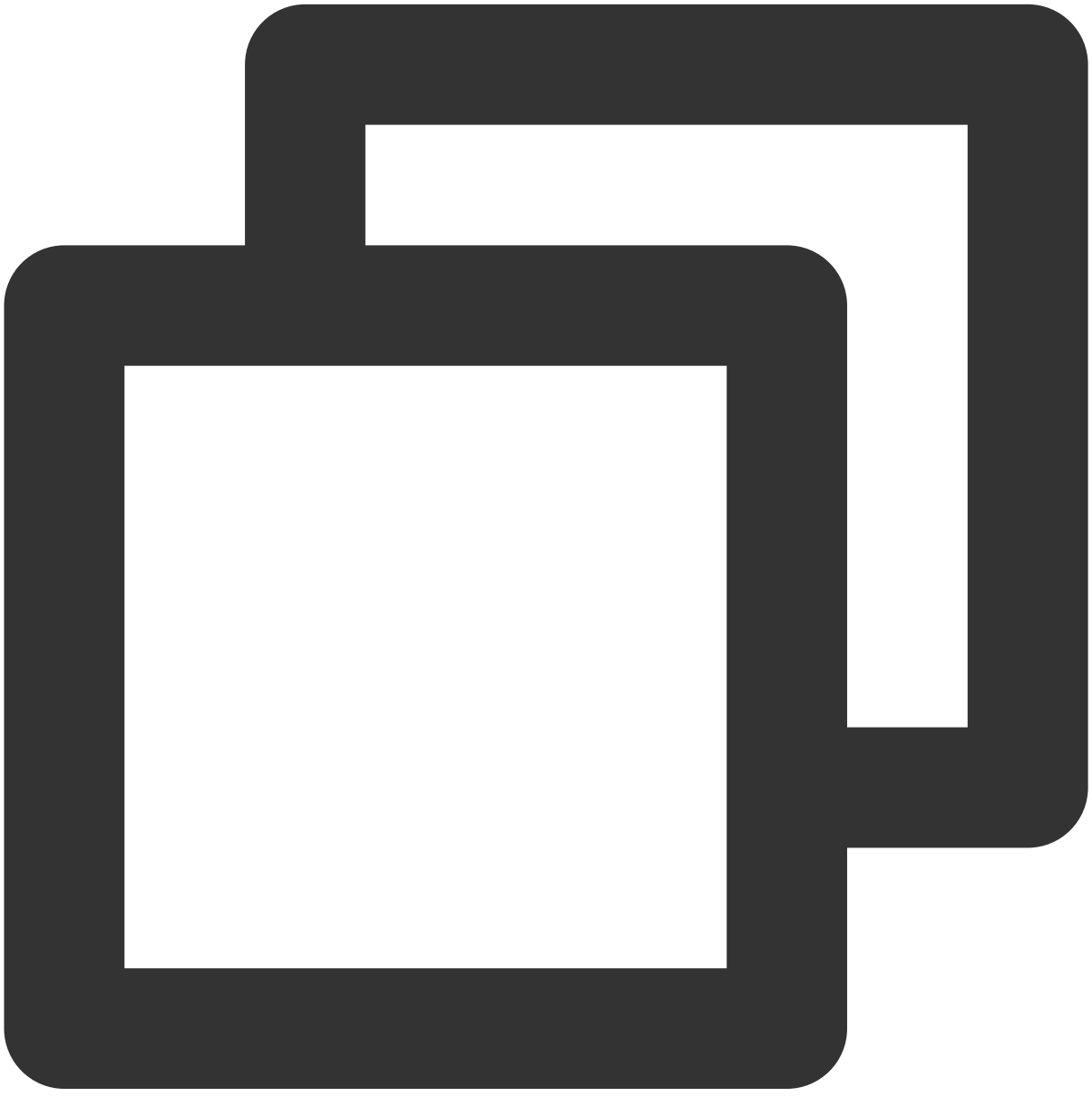
onFailed	The callback failed.

onResponse

The callback function to execute when the request has succeeded.



```
void onResponse(QuicCall call, QuicResponse response) throws IOException
```

Parameter	Description

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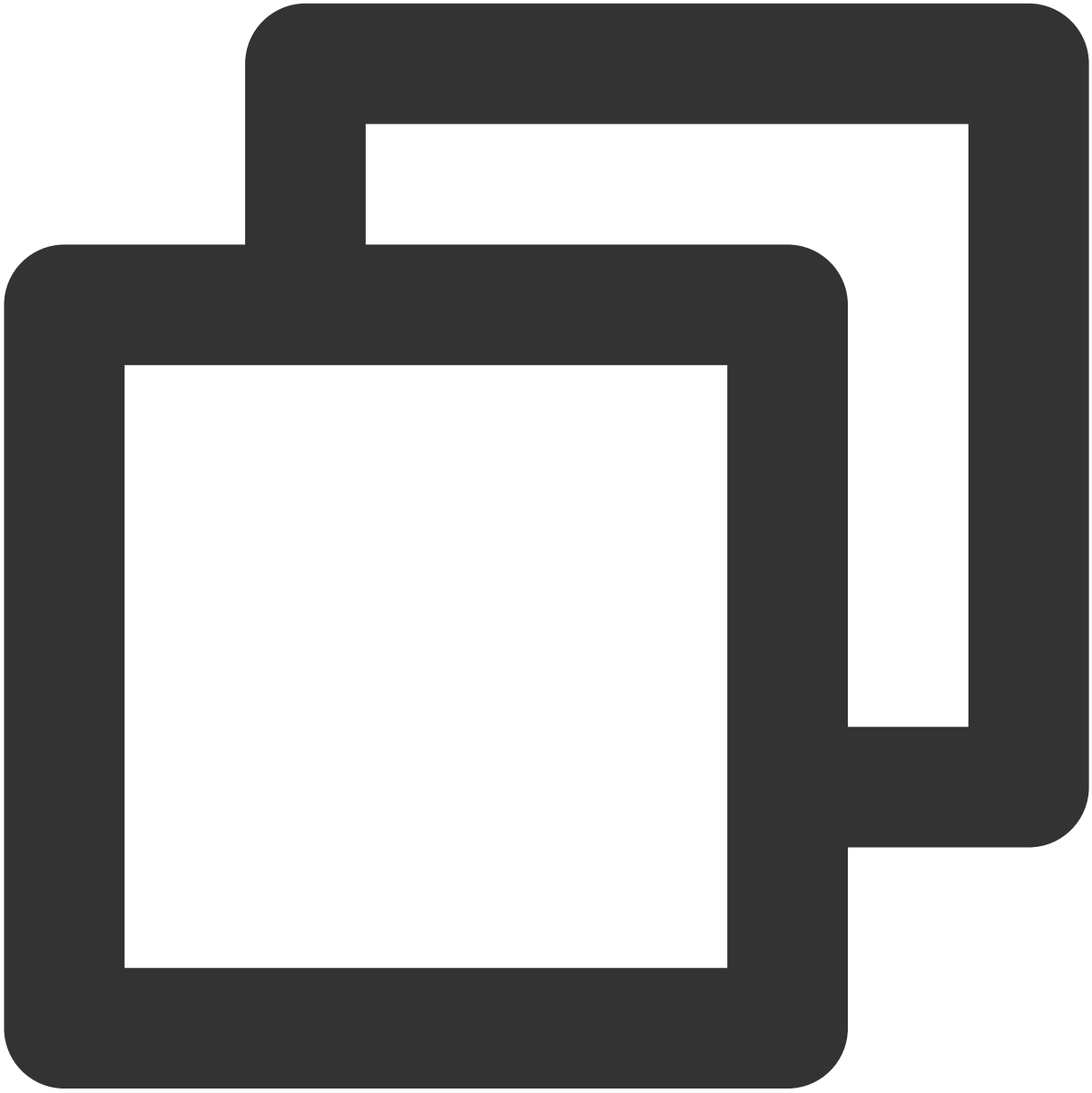
call	Manage the QUIC request. For more details, see QuicCall.
response	Return the QUIC response. For more details, see QuicResponse.

onFailed

The callback function to execute when the request has failed.



```
void onFailed(QuicCall call,  int errorCode, String errorMsg)
```

Parameter	Description

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call	Manage the QUIC request. For more details, see QuicCall.
errorCode	The error code.
errorMsg	The error message.

QuicNetStats

Get information about QUIC network status.

API	Description
isValid	Whether the value of status is valid.
isQuic	Whether it is a QUIC request.
is0rtt	Whether it is a 0-RTT connection.
isConnReuse	Whether the connection is reused.
getConnectMs	Get the connection duration in milliseconds.
getDnsMs	Get the DNS duration in milliseconds.
getDnsCode	Get the DNS error code.
getTtfbMs	Get the time taken for the first byte to be received in milliseconds.
getCompleteMs	Get the time taken for the request to be completed in milliseconds. The time taken by the connection is not included.
getSrttMs	Get the average round-trip time in milliseconds.
getPacketsSent	Get the number of packets sent in bytes.
getPacketsRetransmitted	Get the number of packets retransmitted in bytes.
getBytesSent	Get the number of bytes sent.
getBytesRetransmitted	Get the number of bytes retransmitted.
getPacketsLost	Get the number of packets lost in bytes.
getPacketsReceived	Get the number of packets received in bytes.
getBytesReceived	Get the number of bytes received.

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getStreamBytesReceived	Get the number of bytes received within the stream.

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iOS

Last updated：2023-07-26 15:32:06

API Overview

API	Description
TQUICHTTPSessionManager	Session management APIs
TQUICURLSessionConfiguration	QUIC request configuration
TQUICURLSessionDataTask	Task management APIs
TQUICURLRequestSerialization	Request serialization APIs
TQUICURLResponseSerialization	Response serialization APIs

TQUICHTTPSessionManager

API	Description
manager	A static method to construct a TQUICHTTPSessionManager instance.
initWithSessionConfiguration	Create a TQUICHTTPSessionManager instance with the specified configuration. For detailed configuration, see TQUICURLSessionConfiguration
initWithBaseURL	Create a TQUICHTTPSessionManager instance with the specified URL.
GET	Initiate a GET request.
POST	Initiate a POST request.

manger

Create a TQUICHTTPSessionManager instance and pass the default QUIC configuration.

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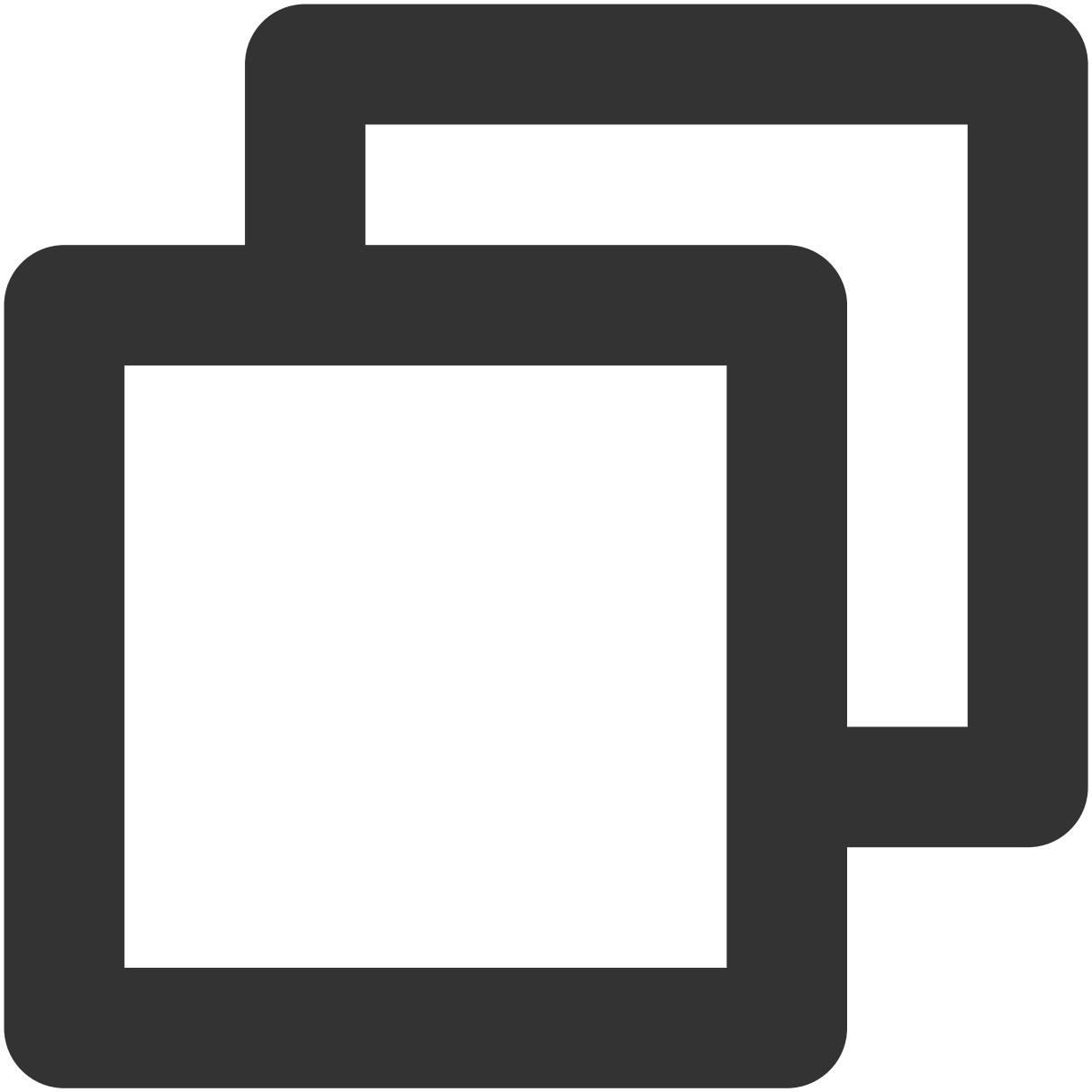

```
+ (instancetype)manager
```

initWithSessionConfiguration

Create a TQUICHTTPSessionManager instance and pass the QUIC configuration.

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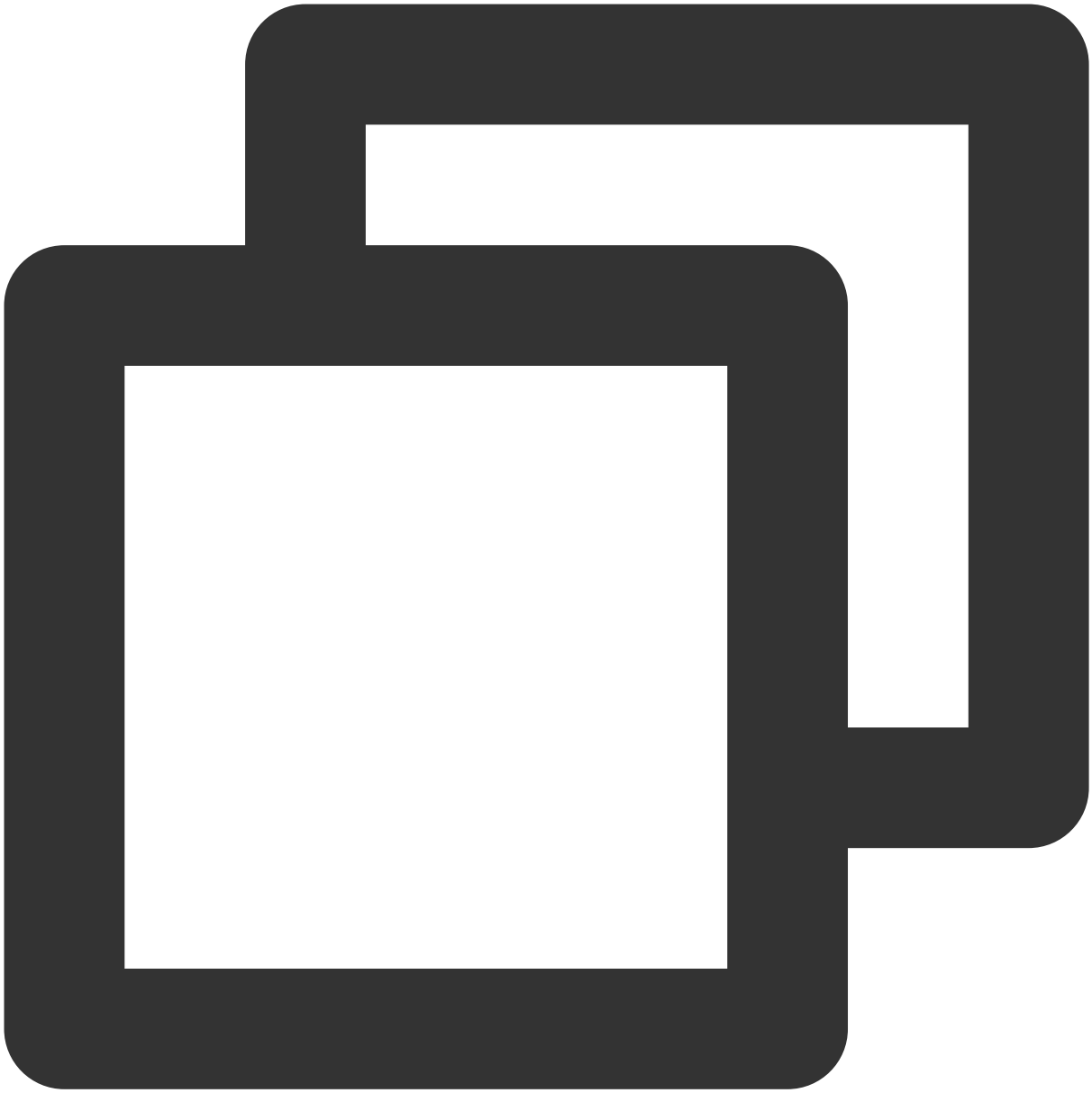

```
- (instancetype)initWithSessionConfiguration:(nullable %!s(<nil>) *)configuration
```

Parameter	Description
configuration	QUIC request configuration. For details, see TQUICURLSessionConfiguration.

initWithBaseURL

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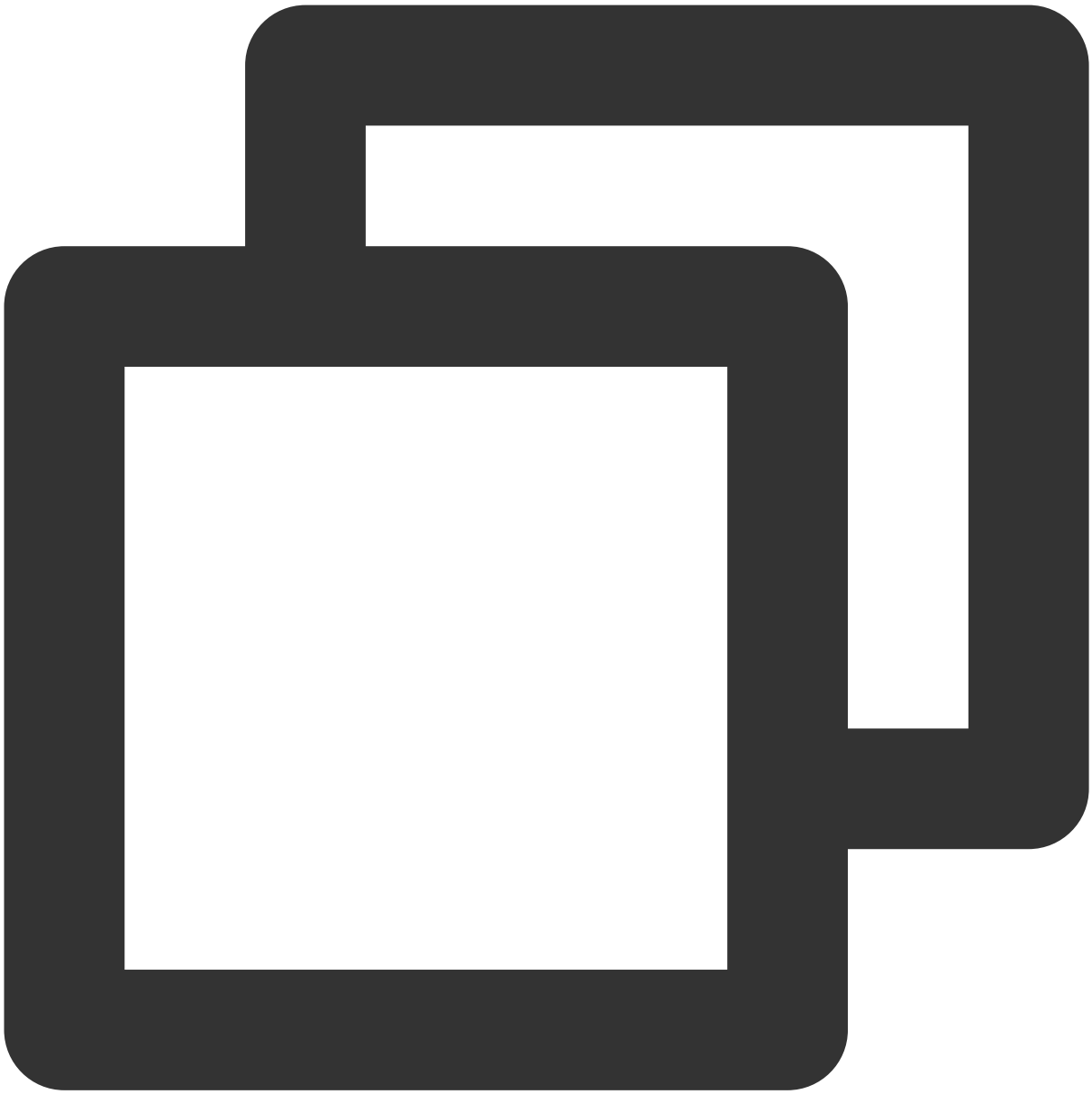
Create a TQUICHTTPSessionManager instance and pass the specified URL.



```
- (instancetype)initWithBaseURL:(nullable NSURL *)baseURL;

- (instancetype)initWithBaseURL:(nullable NSURL *)baseURL

          sessionConfiguration:(nullable %!s(<nil>) *)configuration;
```

Parameter	Description

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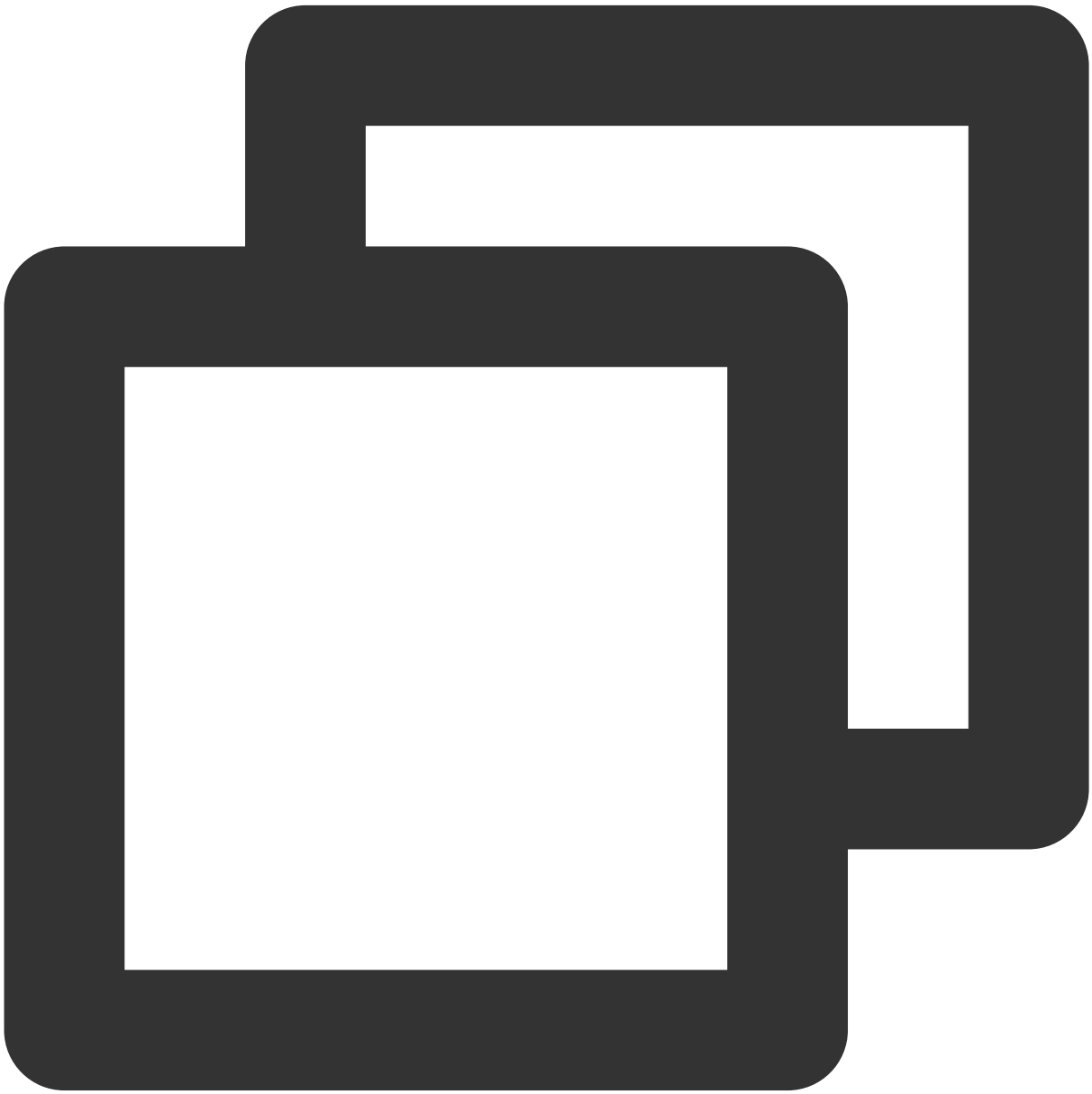
baseURL	The request domain name.
configuration	QUIC request configuration. For details, see TQUICURLSessionConfiguration.

GET

Create a GET request.



```
- (nullable TQUICURLSessionDataTask *)GET:(NSString *)URLString
```

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```
                          parameters:(nullable id)parameters

                             headers:(nullable NSDictionary <NSString *, NSStr

                       timeoutInterval:(NSTimeInterval)timeoutInterval

                      downloadProgress:(nullable %!s(<nil>))downloadProgress

                               success:(nullable %!s(<nil>))success

                               failure:(nullable %!s(<nil>))failure
```

Parameter	Description
URLString	The request URL.
parameters	The request parameters.
headers	The request headers.
timeoutInterval	The connection timeout.
downloadProgress	The callback for download progress.
success	The callback for request success.
failure	The callback for request failure.

POST

Create a POST Request.

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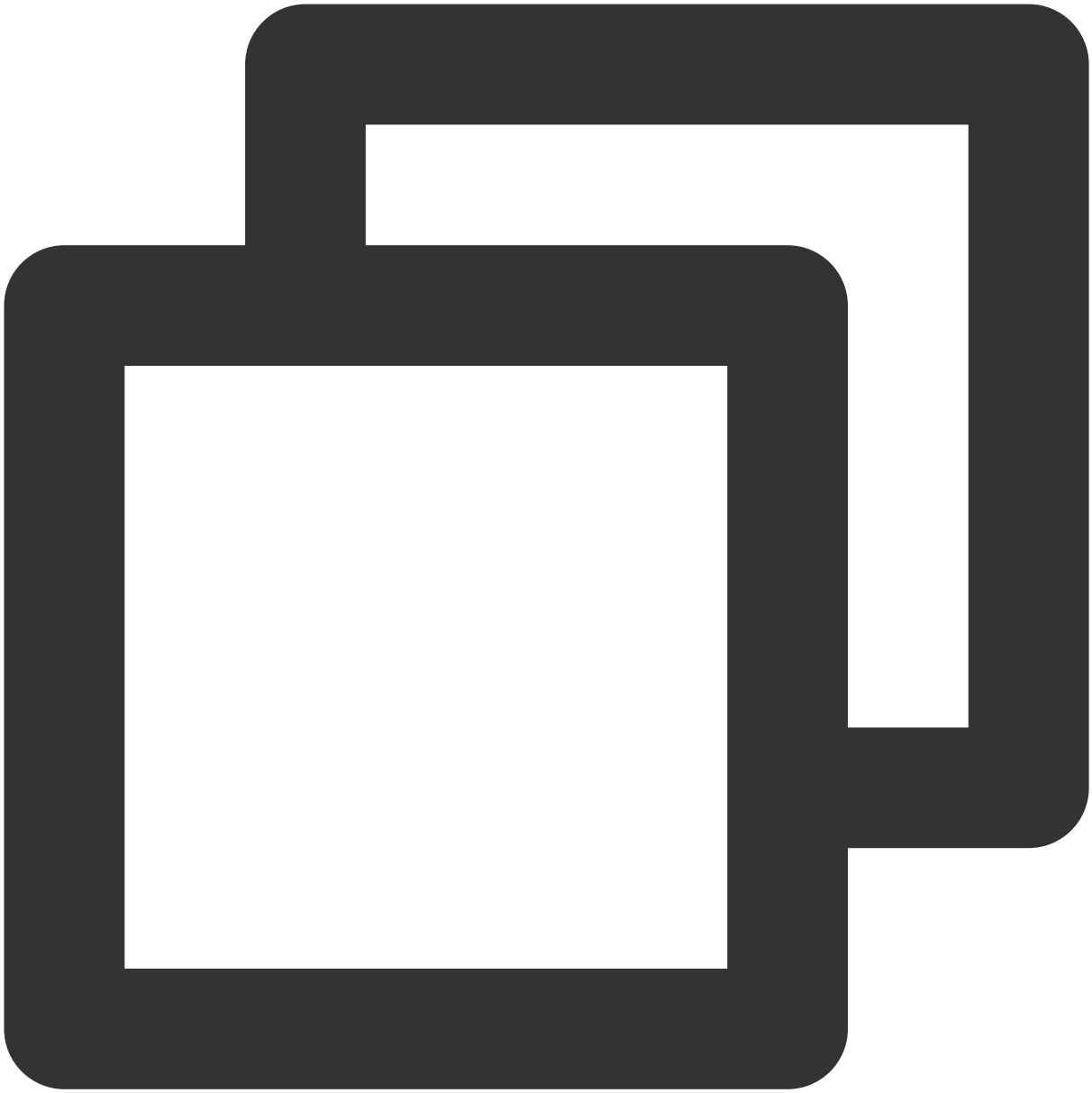

```
- (nullable TQUICURLSessionDataTask *)POST:(NSString *)URLString

                                parameters:(nullable id)parameters

                                   headers:(nullable NSDictionary <NSString *, NSSt

                           timeoutInterval:(NSTimeInterval)timeoutInterval

                            uploadProgress:(nullable %!s(<nil>))uploadProgress
```

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```
                                success:(nullable %!s(<nil>))success

                                failure:(nullable TQUICURLSessionTask)failure
```

Parameter	Description
URLString	The request URL.
parameters	The request parameters.
headers	The request headers.
timeoutInterval	The connection timeout.
uploadProgress	The callback to be executed to get upload progress.
success	The callback to be executed upon request success.
failure	The callback to be executed upon request failure.

TQUICURLSessionTaskSuccess

Execute the callback for task success.

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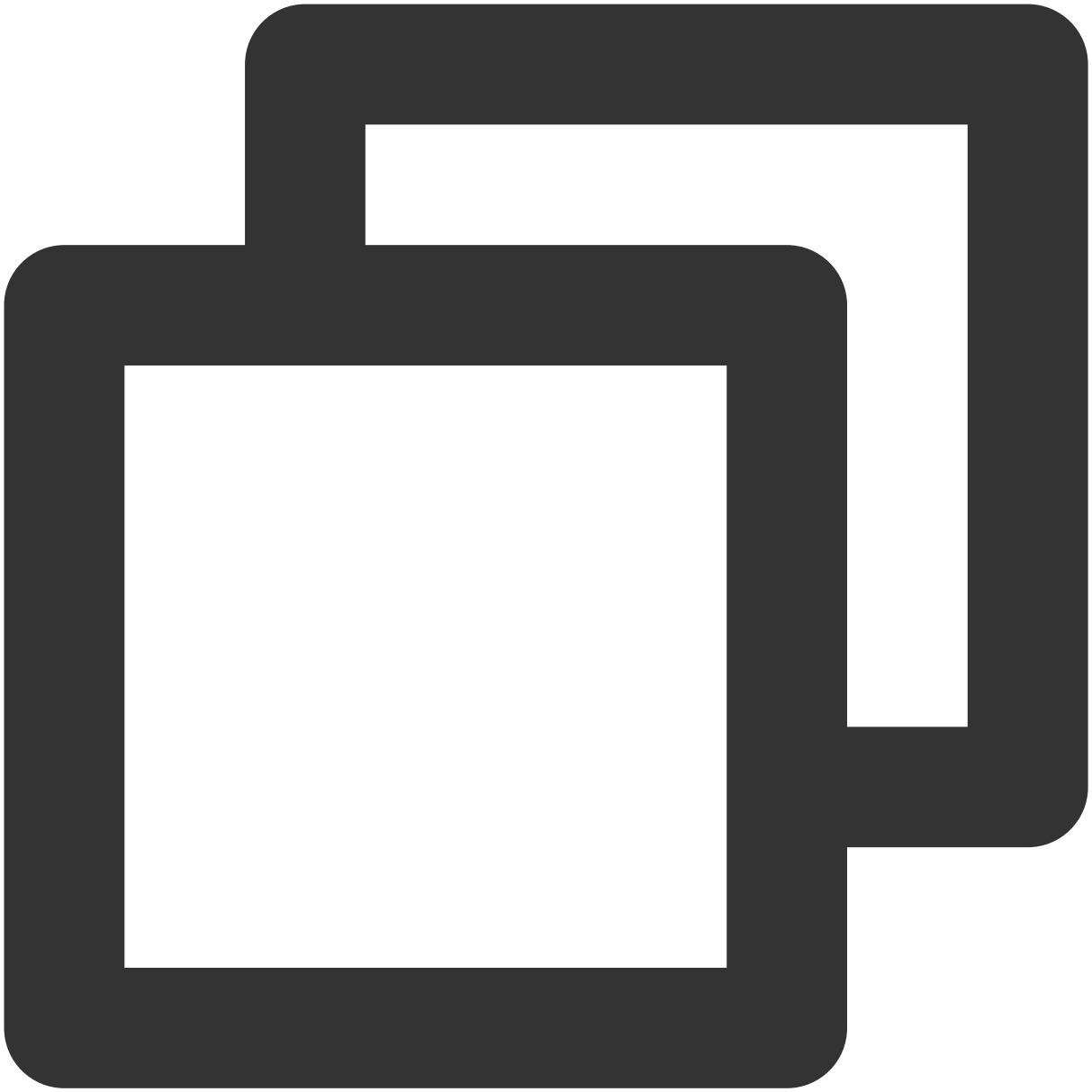

```
typedef void (^TQUICURLSessionTaskSuccess)(%!s(<nil>) *task, id _Nullable responseO
```

Parameter	Description
task	The request task.
responseObject	The response data.

TQUICURLSessionTaskFailure

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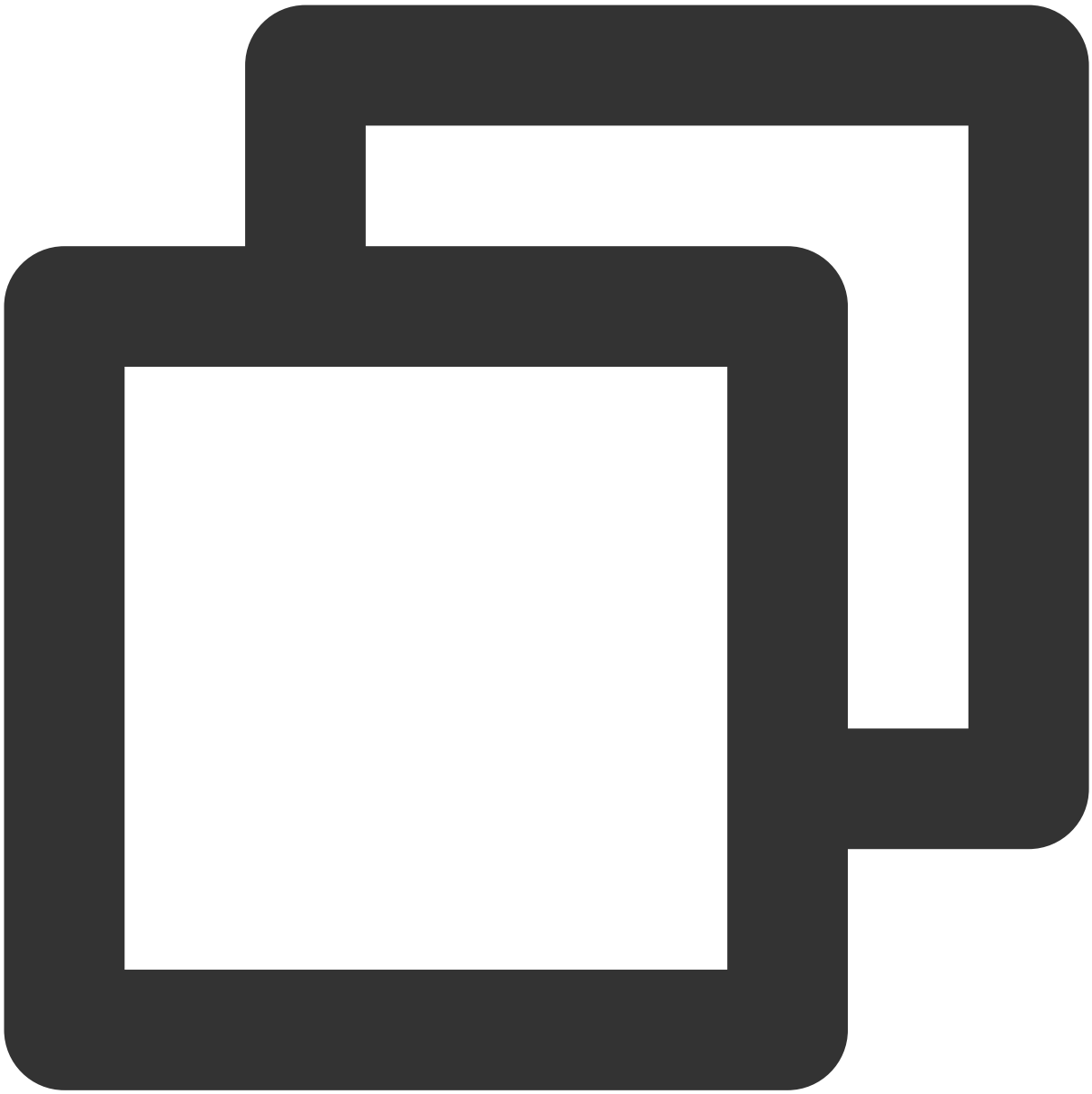
Execute the callback for task failure.



```
typedef void (^TQUICURLSessionTaskFailure)(%!s(<nil>) * _Nullable task, NSError *er
```

Parameter	Description
task	The request task.
error	The error message.

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TQUICURLSessionManager

Session management APIs

API	Description
initWithSessionConfiguration	Create an instance with the specified configuration.
dataTaskWithRequest	Initiate requests with the NSURLRequest parameter.
setTaskDidFinishCollectingMetricsBlock	Set the callback to collect statistics.
setTaskDidReceiveResponseBlock	Set the callback block to receive request response.

initWithSessionConfiguration

Create a TQUICURLSessionManager instance and pass the QUIC configuration.

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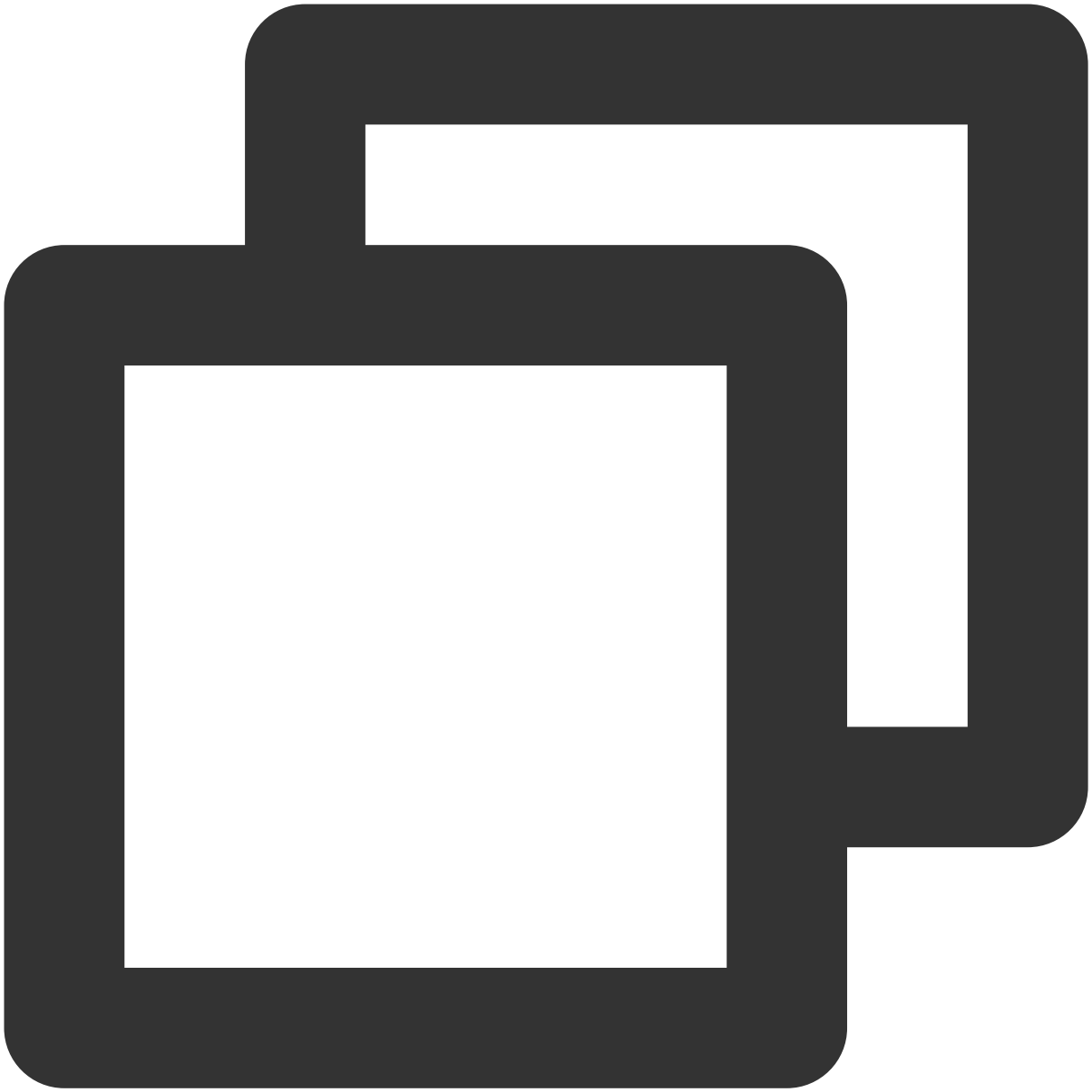

```
- (instancetype)initWithSessionConfiguration:(nullable %!s(<nil>) *)configuration
```

Parameter	Description
configuration	QUIC request configuration.

dataTaskWithRequest

Initiate requests with the NSURLRequest parameter.

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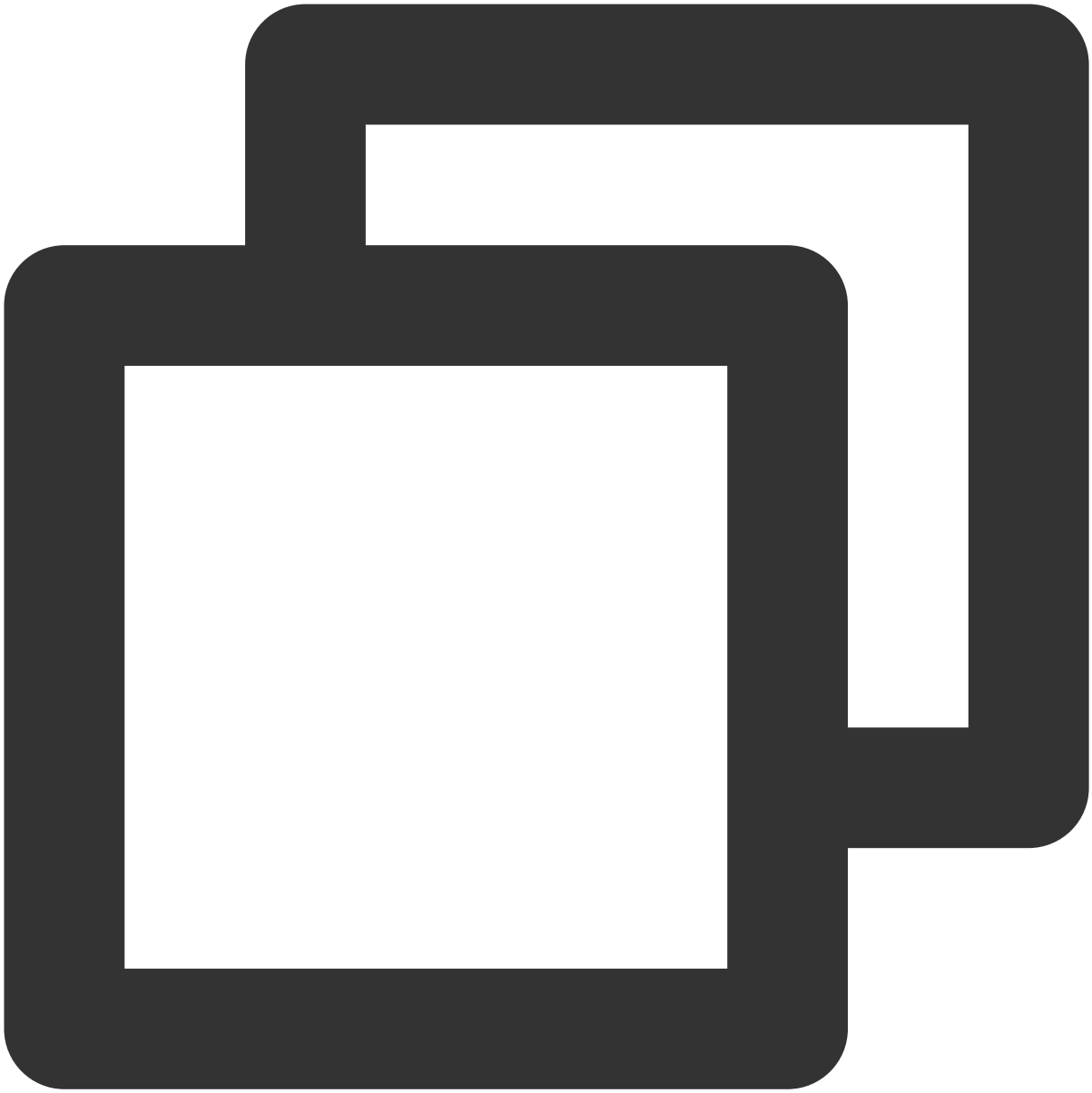

```
- (TQUICURLSessionDataTask *)dataTaskWithRequest:(NSURLRequest *)request
                                  uploadProgress:(nullable %!s(<nil>))uploadProgres
                                downloadProgress:(nullable %!s(<nil>))downloadProgr
                               completionHandler:(nullable %!s(<nil>))completionHan
```

Parameter	Description
request	For detailed configuration, see NSURLRequest.
uploadProgress	The callback to be executed to get upload progress.

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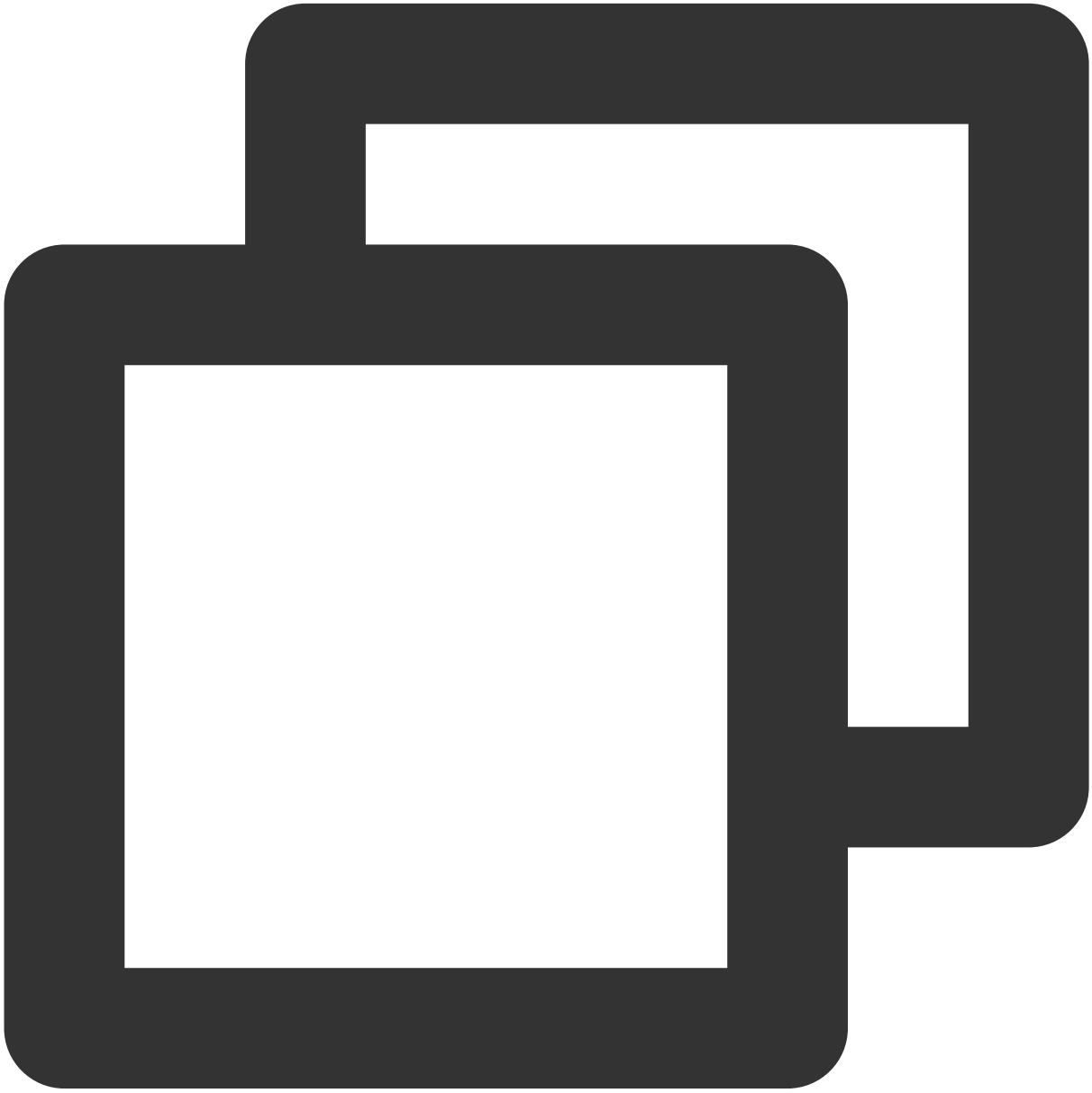
downloadProgress	The callback to be executed to get download progress.
completionHandler	The callback to be executed upon request completion.

setTaskDidFinishCollectingMetricsBlock

Set the callback to collect statistics.



```
- (void)setTaskDidFinishCollectingMetricsBlock:(nullable %!s(<nil>))block
```

Parameter	Description

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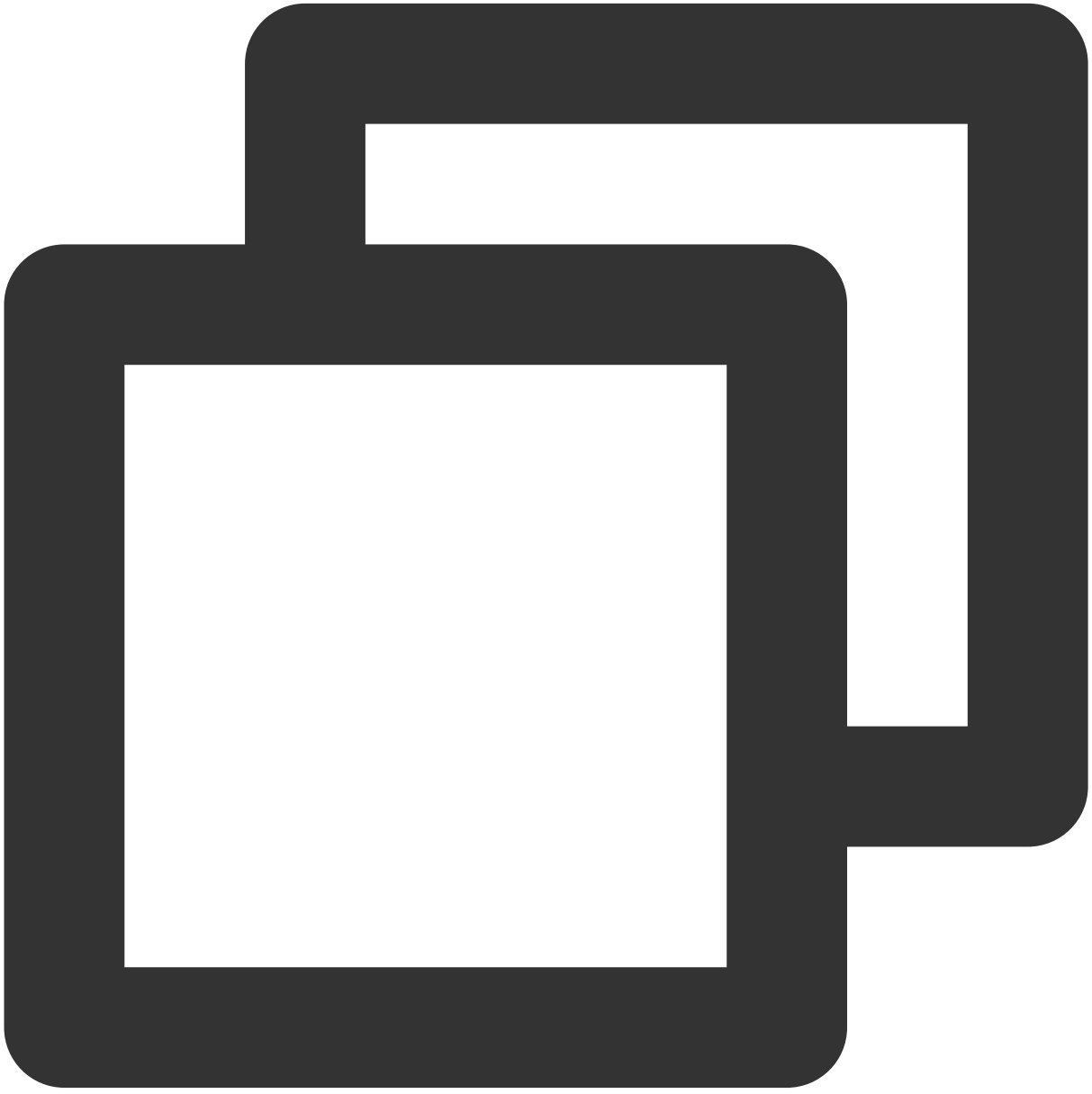
block	Execute the callback block to collect statistics when the request is complete.

setTaskDidReceiveResponseBlock

Set the callback block to receive request response.



```
- (void)setTaskDidReceiveResponseBlock:(nullable %!s(<nil>))block
```

Parameter	Description

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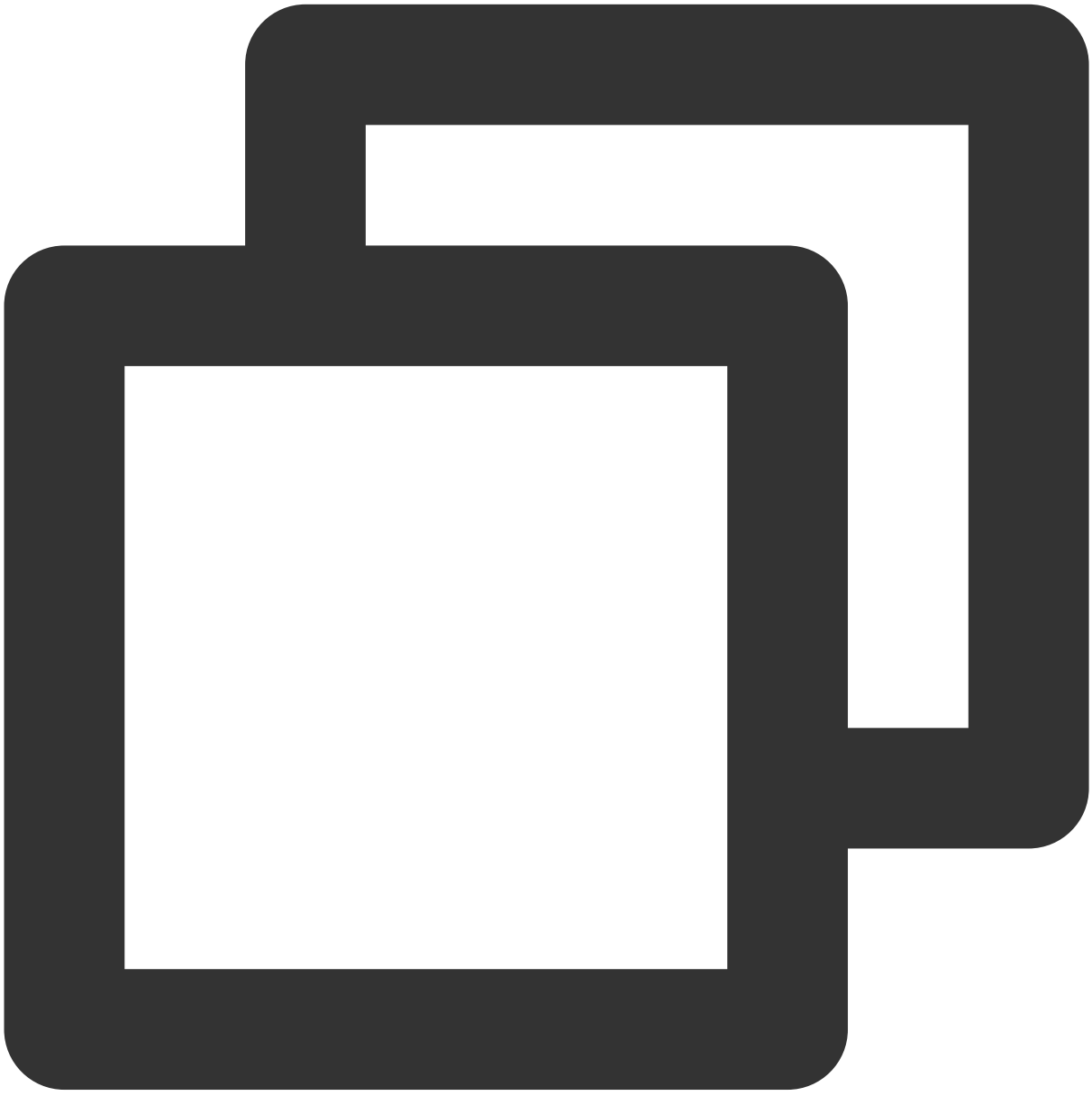
block	Execute the callback block to receive request response.

TQUICURLSessionTaskDidReceiveResponseBlock

Execute the callback block to receive session task response.



```
typedef void (^TQUICURLSessionTaskDidReceiveResponseBlock)(%!s(<nil>) *session, %!s
```

Parameter	Description

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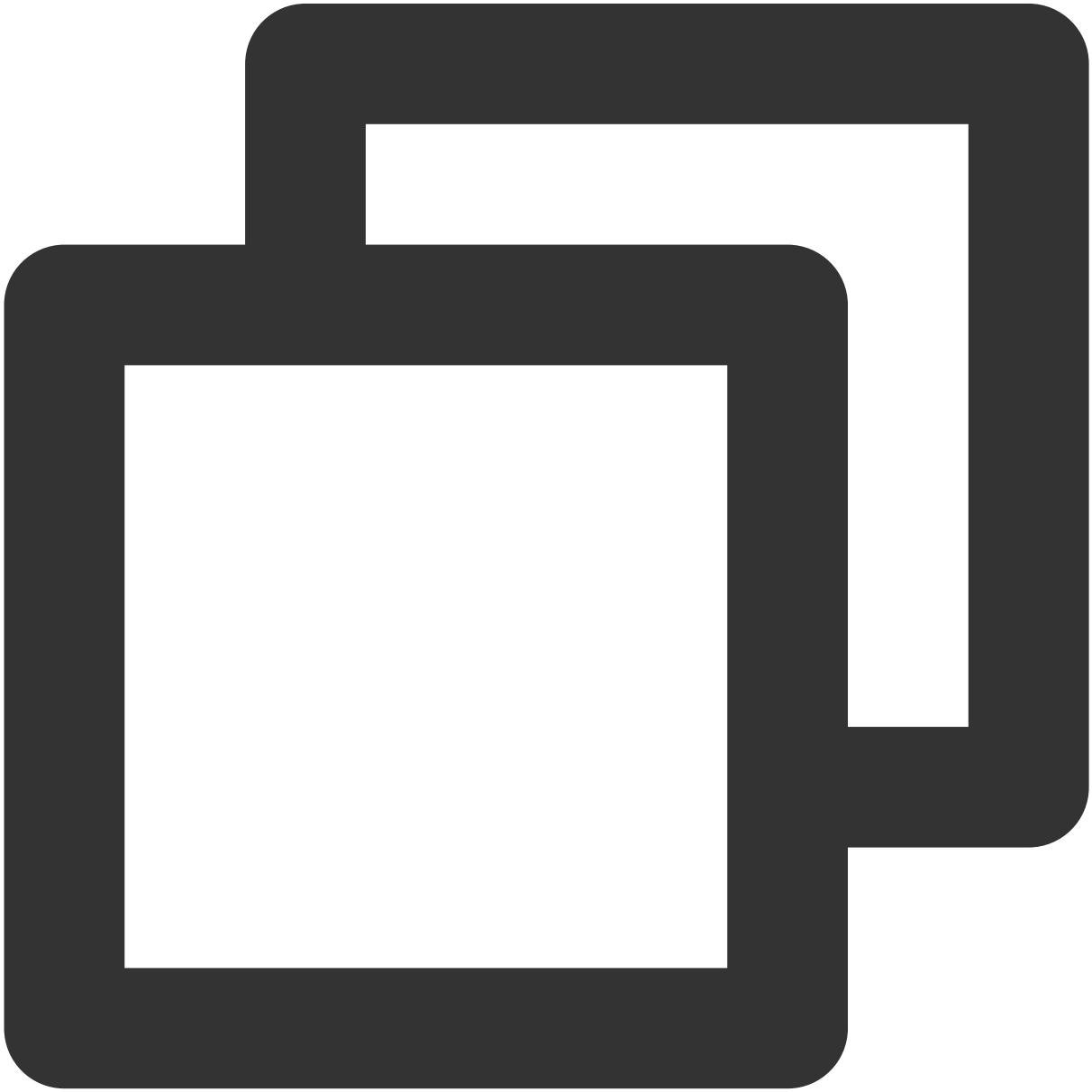
session	The class that manages sessions.
task	The class that manages tasks.
response	The response result.

TQUICURLSessionTaskDownloadProgressBlock

Execute the callback block to get download progress.



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```
typedef void (^TQUICURLSessionTaskDownloadProgressBlock)(NSProgress *downloadProgre
```

Parameter	Description
downloadProgress	The download progress.

TQUICURLSessionTaskUploadProgressBlock

Execute the callback block to get upload progress.

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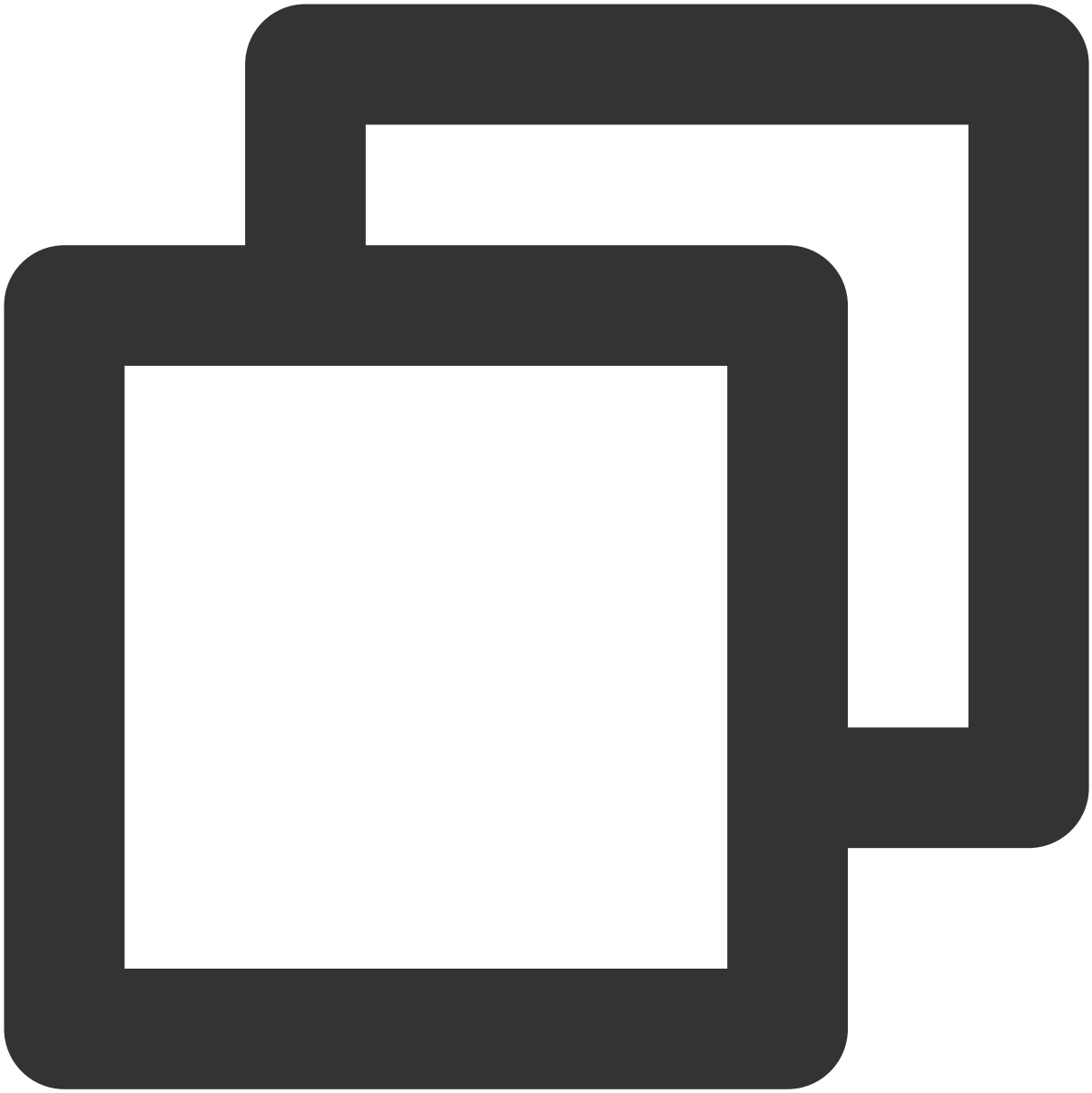

```
typedef void (^TQUICURLSessionTaskUploadProgressBlock)(NSProgress *uploadProgress)
```

Parameter	Description
uploadProgress	The upload progress.

QUICURLSessionTaskCompletionHandler

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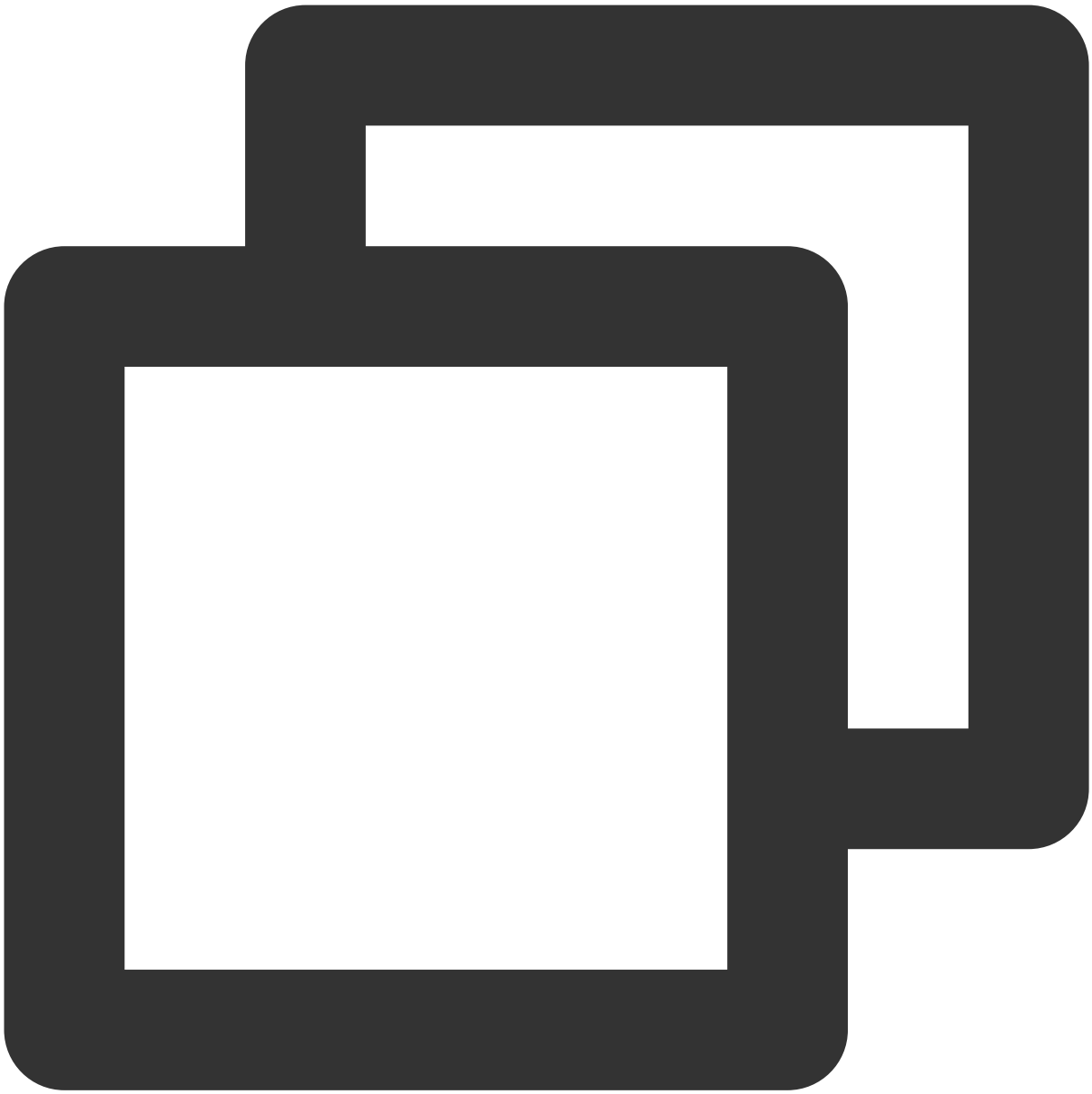
Execute the callback block upon session completion.



```
typedef void (^TQUICURLSessionTaskCompletionHandler)(NSURLResponse *response, id re
```

Parameter	Description
response	For details about the response result, see NSURLResponse.
responseObject	The response data.
error	The error message.

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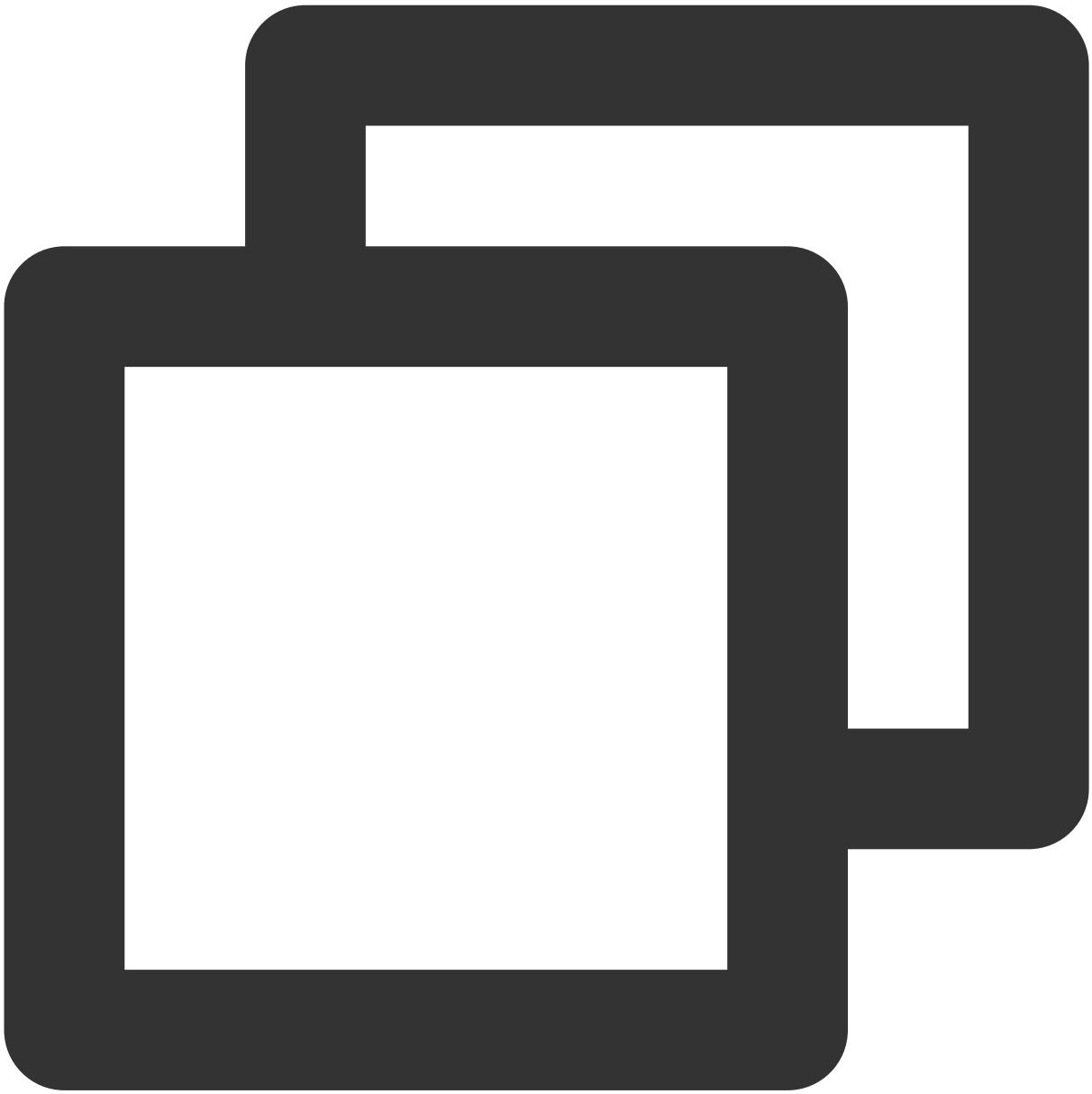
TQUICURLSessionTaskDidFinishCollectingMetricsBlock

Execute the callback block to collect statistics upon session completion.



```
typedef void (^TQUICURLSessionTaskDidFinishCollectingMetricsBlock)(TQUICURLSession
```

Parameter	Description
session	Session management.
task	Task management.

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metrics	The network statistics.

TQUICURLSessionConfiguration

QUIC request configuration.

Member variable	Description
quicVersion	Set the QUIC version. Supported versions: 043, Q046, Q050, Q051, draft-29, RFC-V1 (RFC 9000). Values: TQUICVersionQ043 (default) TQUICVersion046 audio/video proxy TQUICVersion050 audio/video proxy TQUICVersion051 audio/video proxy TQUICVersionDraft29 audio/video proxy TQUICVersionRFCV1 audio/video proxy
congestionType	Supported congestion algorithms: CubicBytes, RenoBytes, BBR, PCC, GCC. Values: TQUICCongestionTypeBBR (default) TQUICCongestionTypeCubicBytes TQUICCongestionTypeRenoBytes TQUICCongestionTypePCC TQUICCongestionTypeGCC
connectTimeoutMillis	The connection timeout in milliseconds. Default value: 60000.
idleTimeoutMillis	The idle connection timeout in milliseconds. This setting will affect connection reuse. Default value: 90000.
ipv6Enabled audio/video proxy	Whether to support IPv6. Values: YES, NO (default).
dnsParser	The custom DNS parser. For details, see TQUICDNSParserDelegate.

TQUICDNSParserDelegate

Implement a custom DNS parsing.

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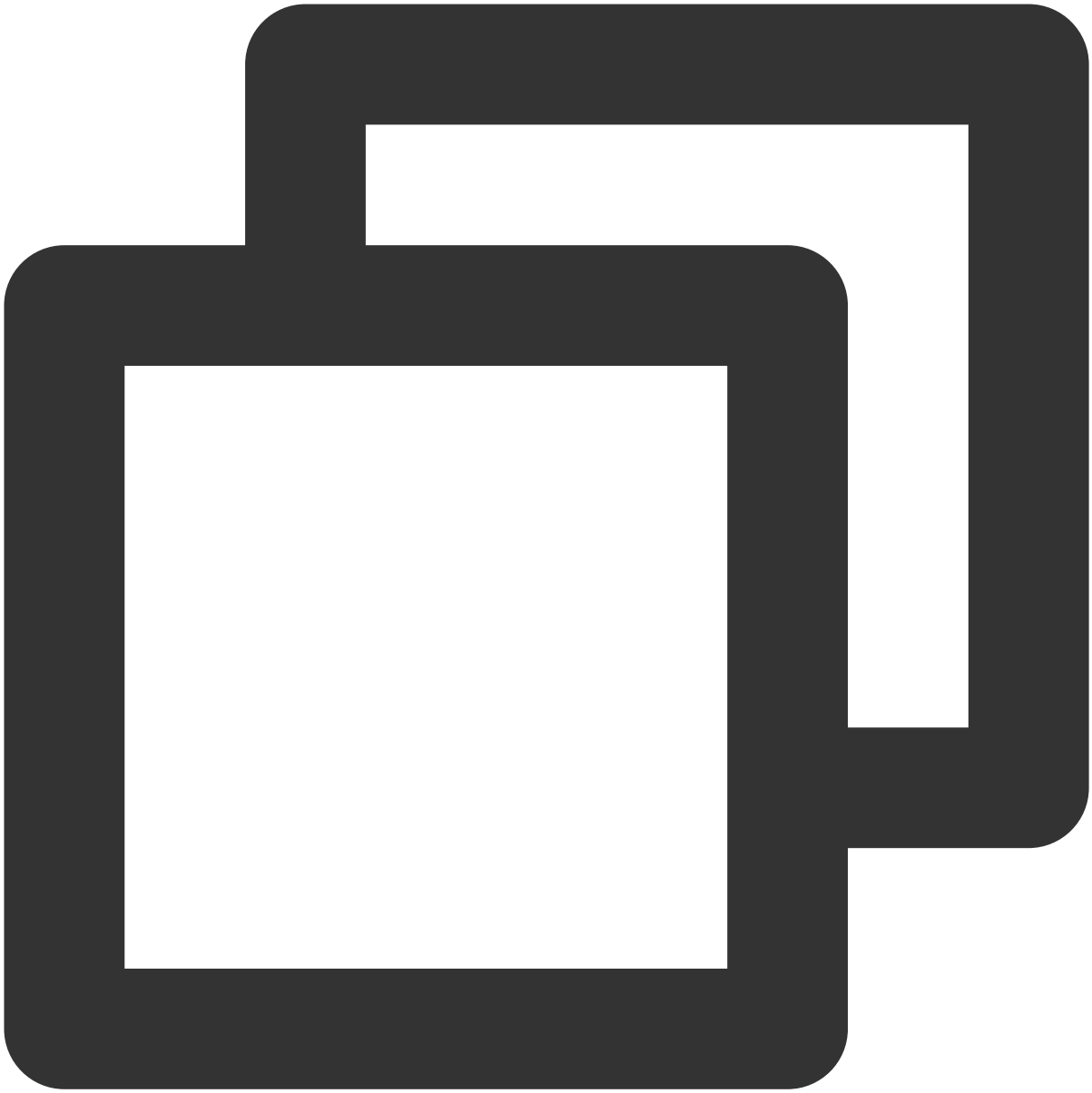

```
- (NSString *)lookup:(NSString *)hostName
```

Parameter	Description
hostName	The domain name, which is called back to resolve an IP address.

TQUICURLSession

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Task management APIs

API	Description
sessionWithConfiguration	Create an instance with the specified configuration.
sharedSession	Create an instance with the default configuration.
dataTaskWithRequest	Create a task with the request parameters.

sessionWithConfiguration

Create an instance with the specified configuration.

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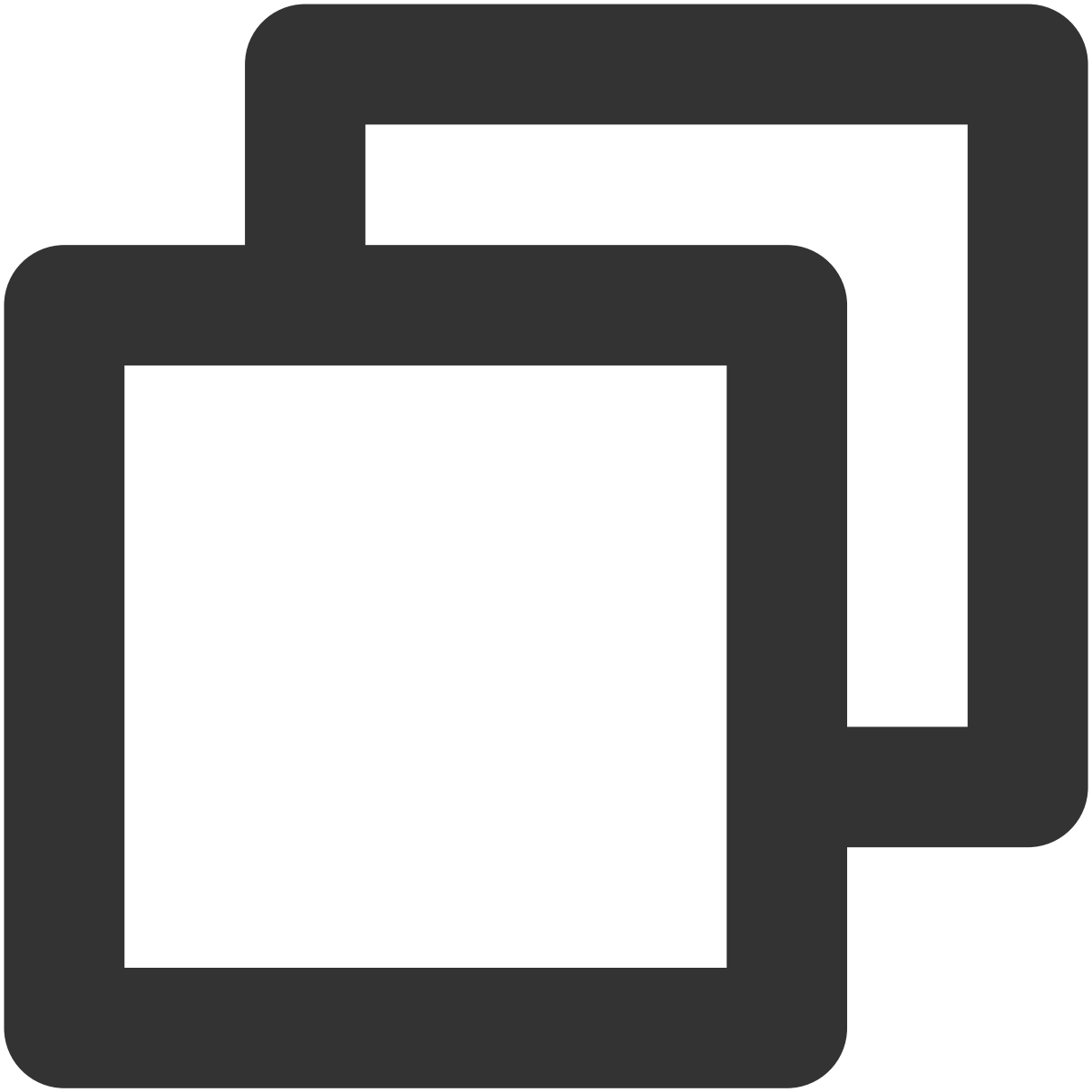

```
+ (instancetype)sessionWithConfiguration:(%!s(<nil>) *)configuration
```

Parameter	Description
configuration	The QUIC request configuration.

sharedSession

Create an instance with the default configuration.

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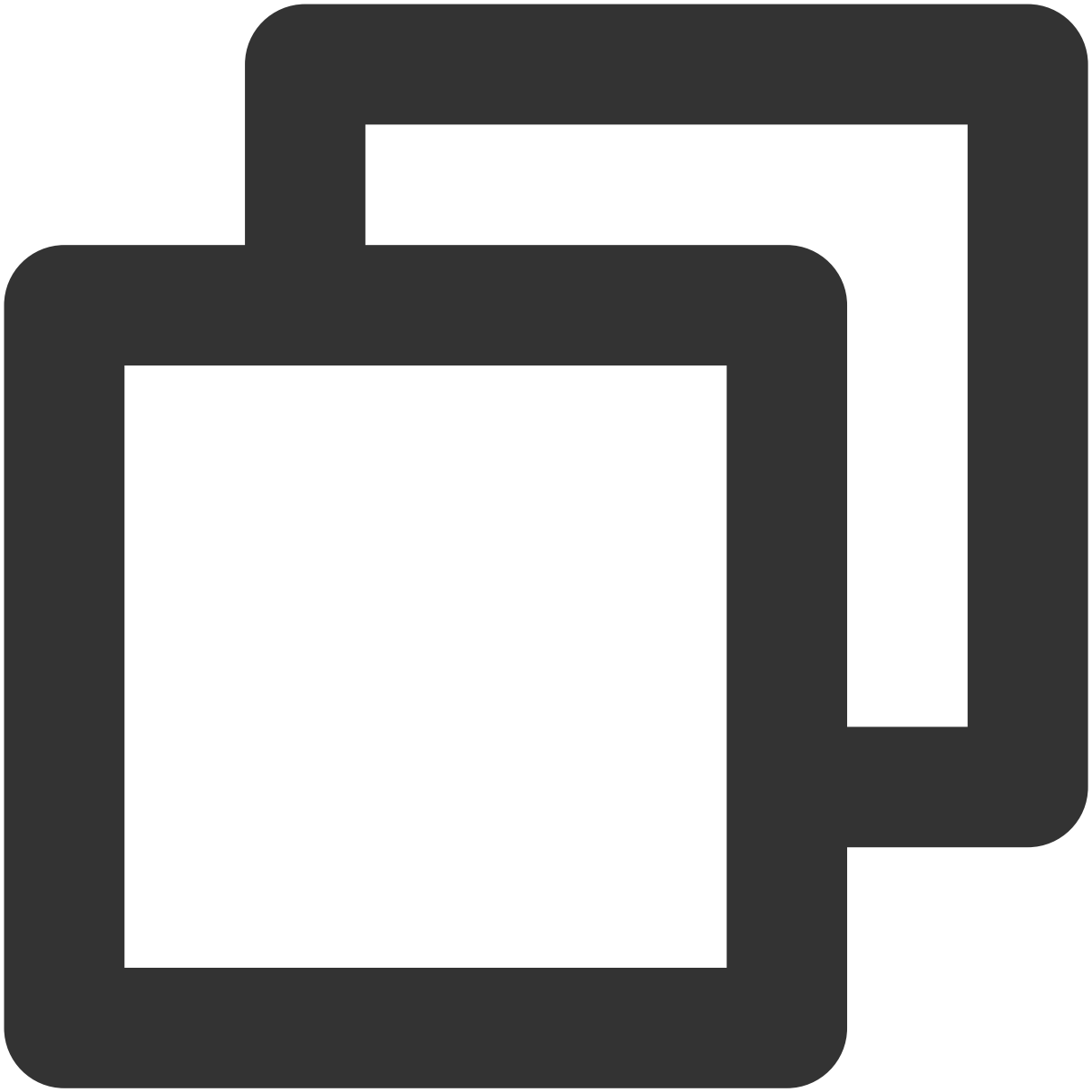

```
+ (instancetype)sharedSession
```

dataTaskWithRequest

Create a task based on the request parameters.

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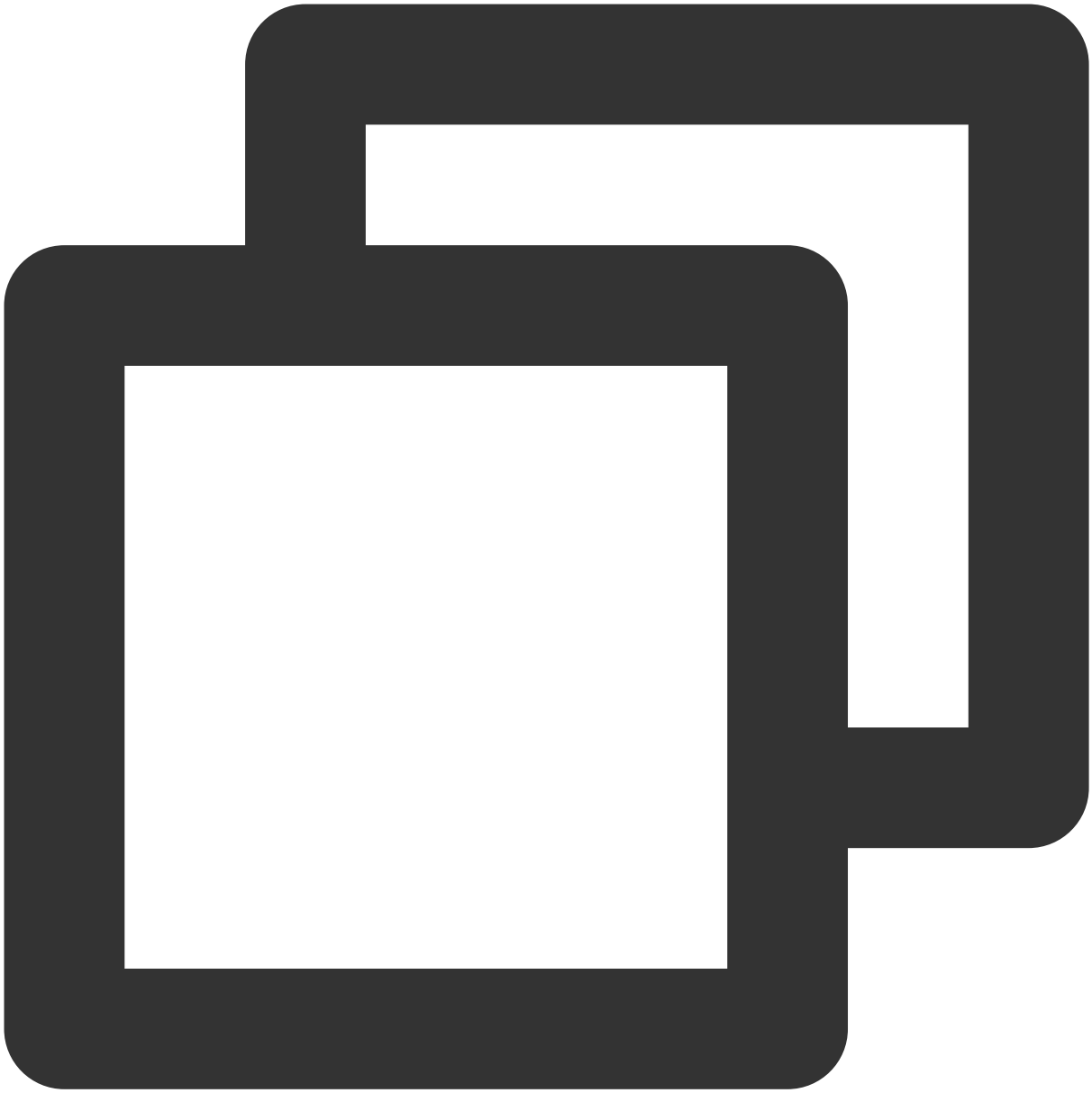

```
- (nullable %!s(<nil>) *)dataTaskWithRequest:(NSURLRequest *)request
```

Parameter	Description
request	The request parameters. For more details, see NSURLRequest.

TQUICURLSessionTask

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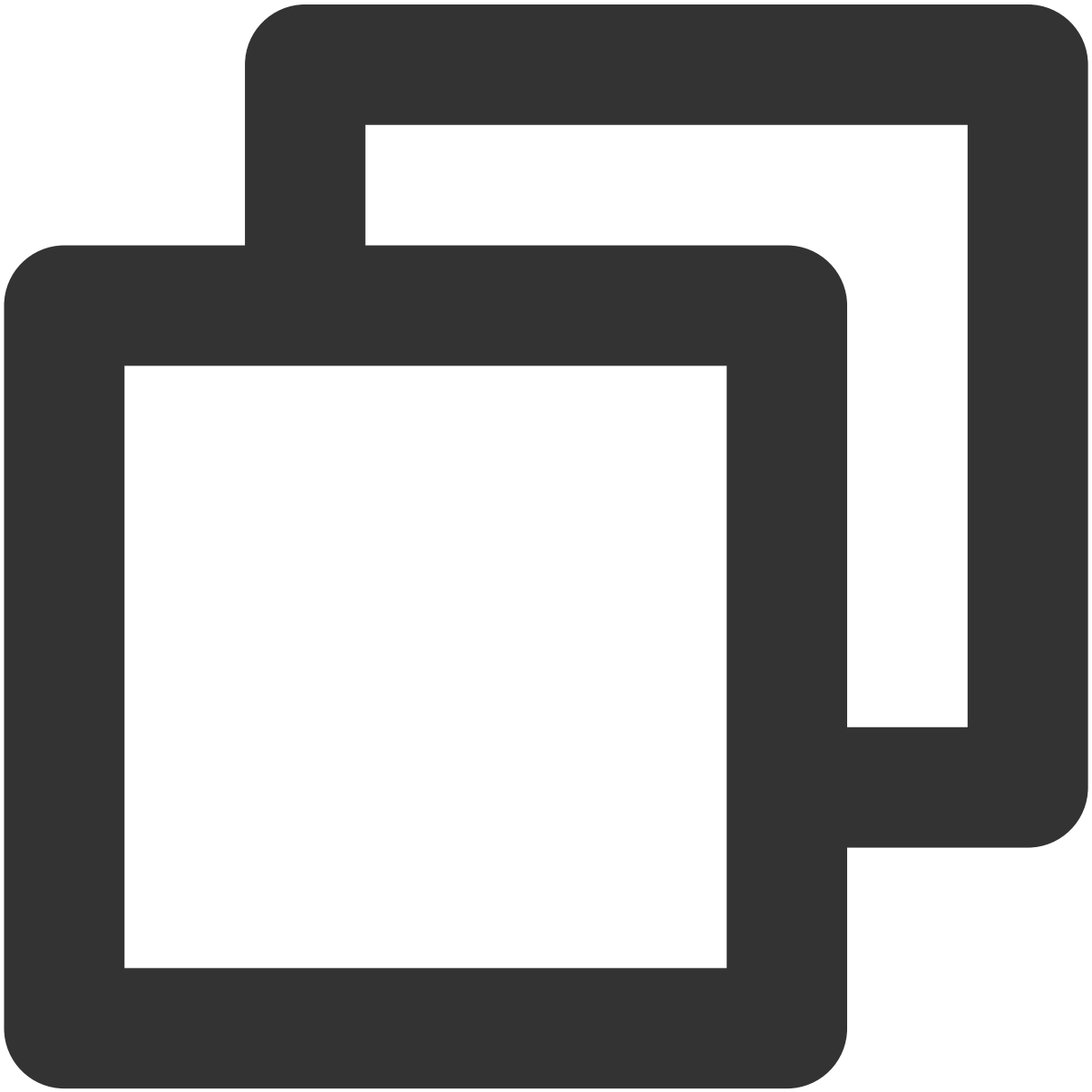
Task management APIs.

API	Description
resume	Start a request task.
cancel	Cancel a request task.

resume

Start a request task.



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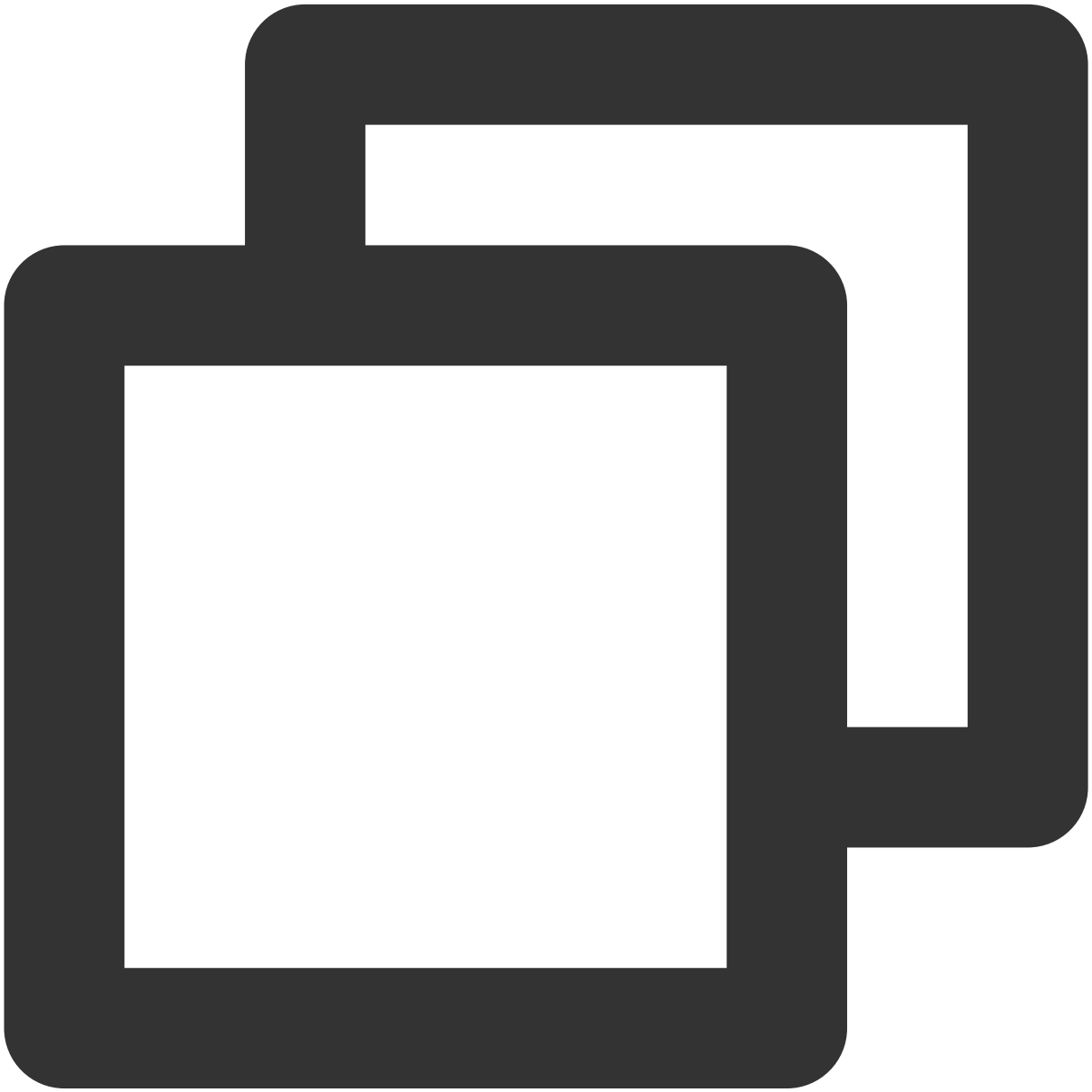
```
- (void)resume
```

cancel

Cancel a request task.



```
- (void)cancel
```

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TQUICURLSessionDataTask

Manage request tasks. This API inherits the TQUICURLSessionTask class.

API	Description
resume	Start a request task.
cancel	Cancel a request task.

resume

Start a request task.

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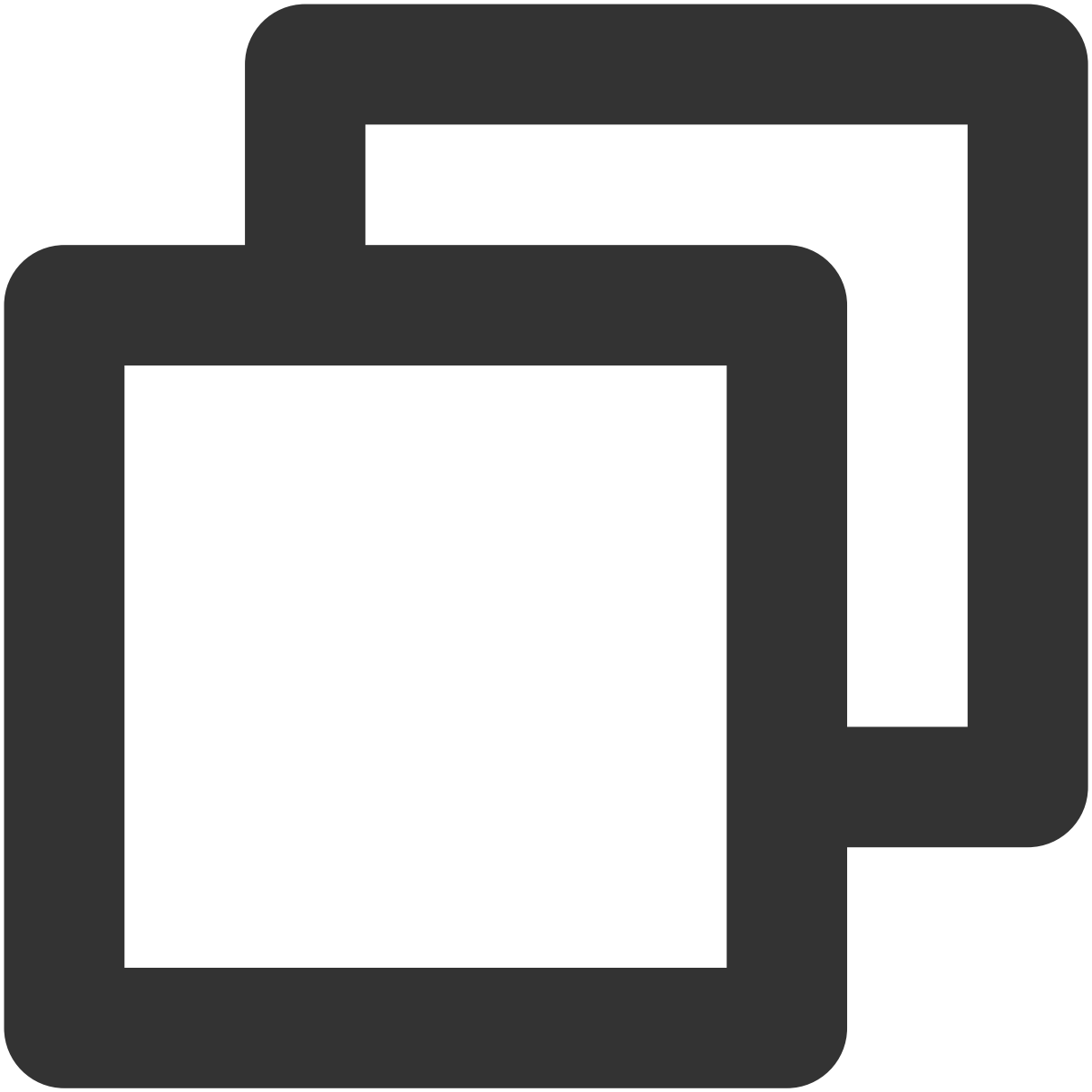

```
- (void)resume
```

cancel

Cancel a request task.

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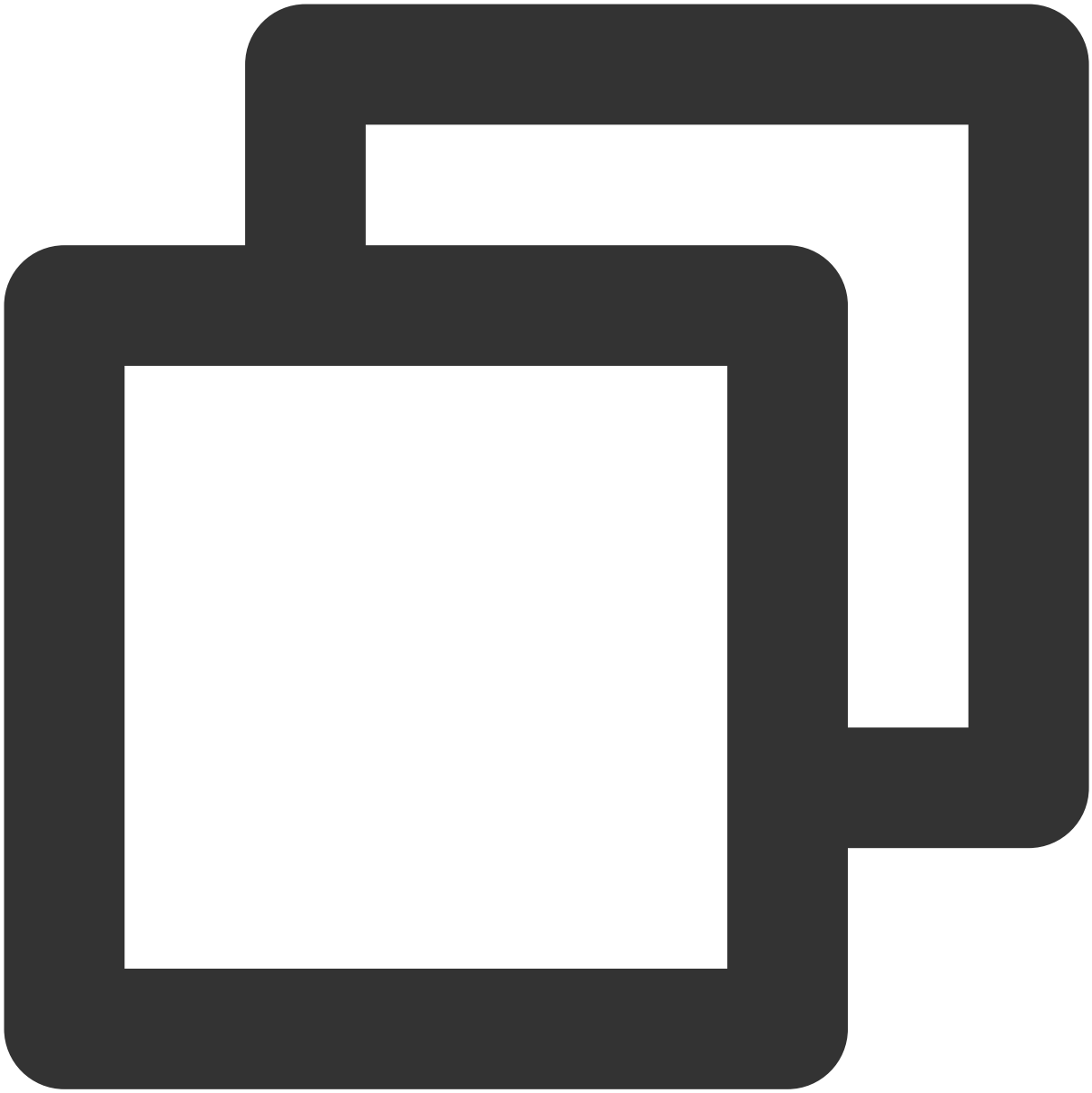

```
- (void)cancel
```

TQUICURLRequestSerialization

API	Description
TQUICHTTPRequestSerializer	Serialize HTTP request parameters.

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TQUICJSONRequestSerializer	Serialize JSON request parameters.

TQUICHTTPRequestSerializer

Request serialization APIs

API	Description
serializer	Implement instantiation.
setValue	Set a value for the header field.
valueForHTTPHeaderField	Return the value that corresponds to the header field.
requestWithMethod	Create NSMutableURLRequest.
multipartFormRequestWithMethod	Create NSMutableURLRequest to transfer streaming data.

serializer

Create a TQUICHTTPRequestSerializer instance.

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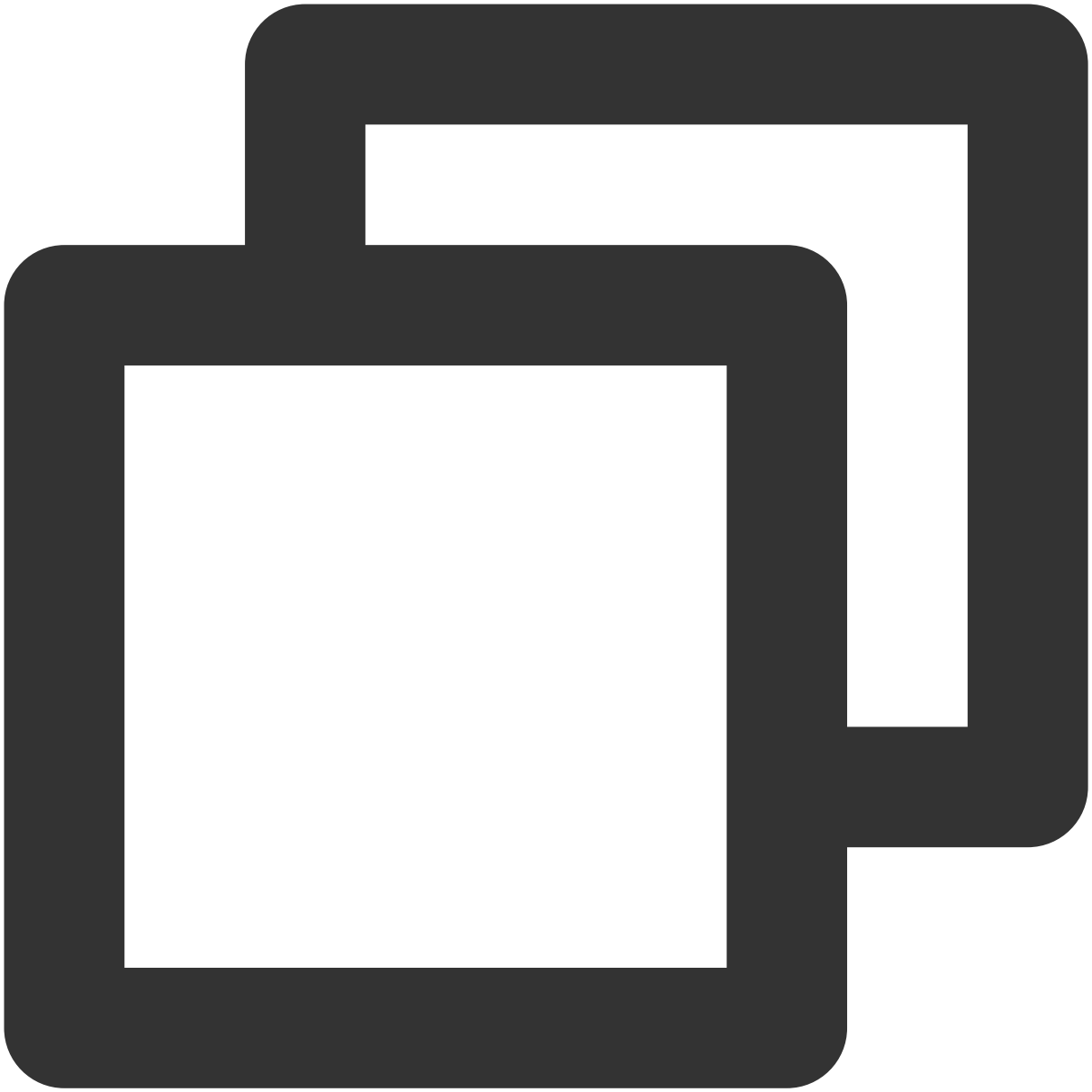

```
+ (instancetype)serializer
```

setValue

Set a value for the header field.

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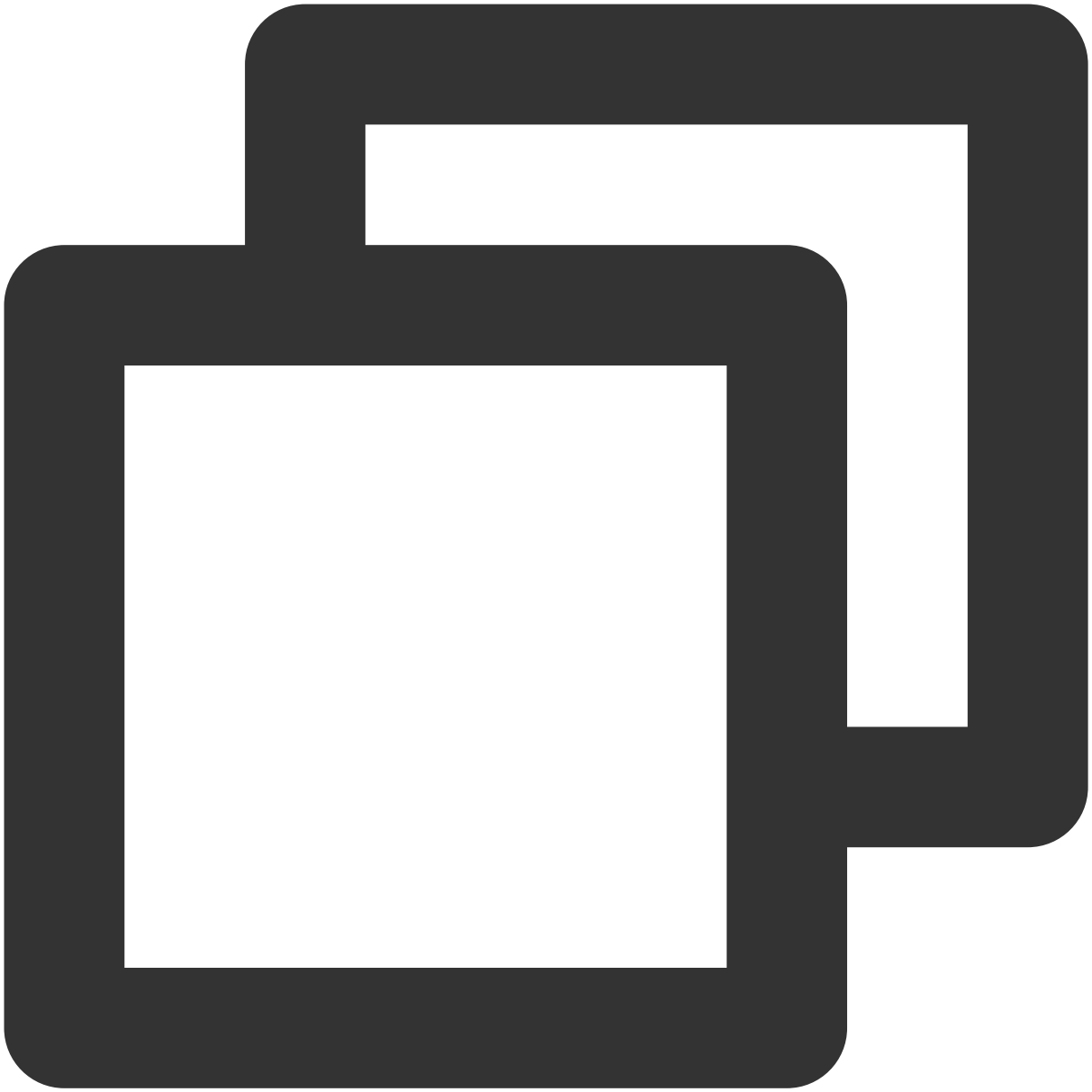

```
- (void)setValue:(nullable NSString *)value forHTTPHeaderField:(NSString *)field
```

Parameter	Description
value	The value of the header field.
field	The name of the header field.

valueForHTTPHeaderField

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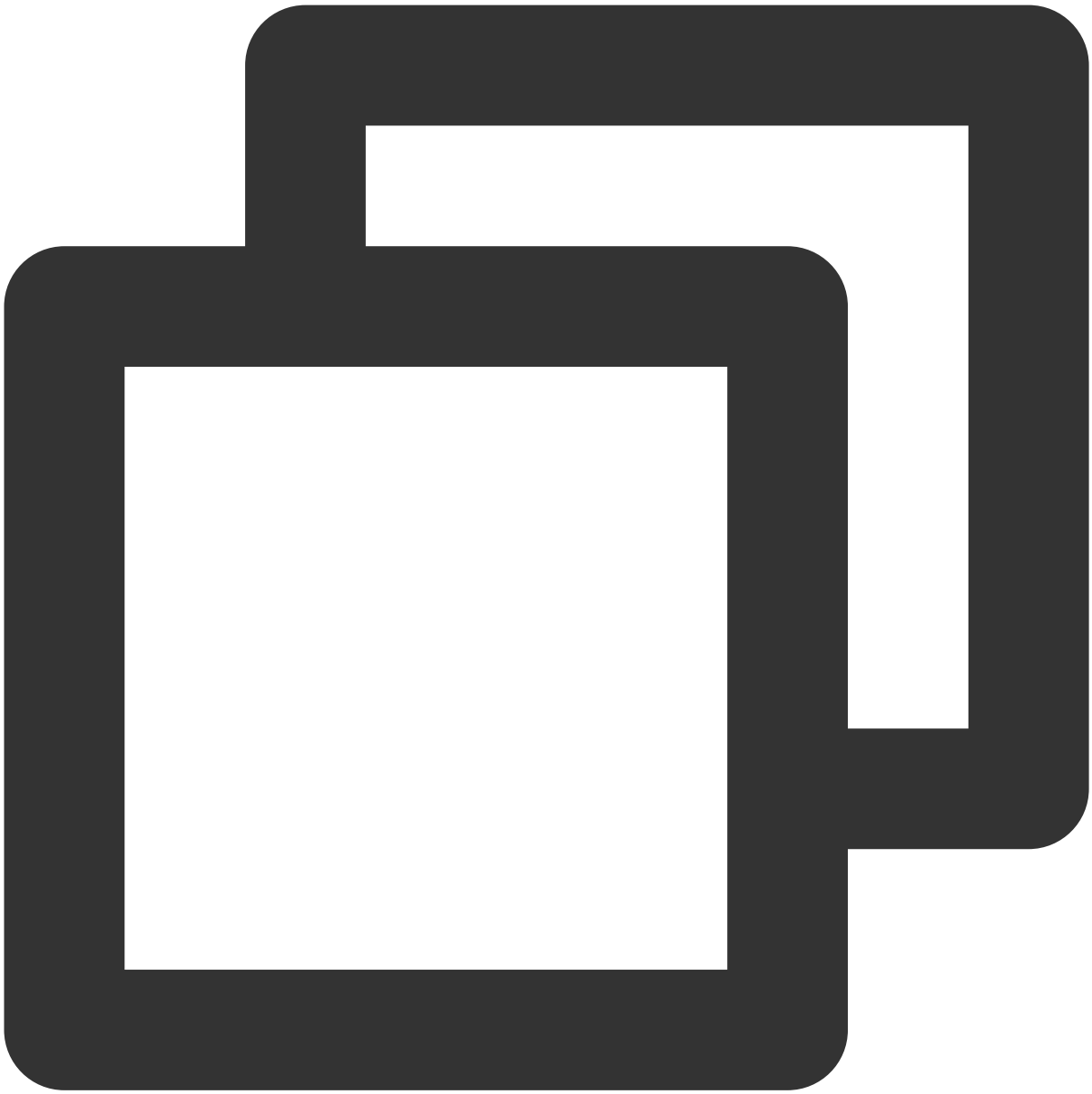
Return the value that corresponds to the header field.



```
- (nullable NSString *)valueForHTTPHeaderField:(NSString *)field
```

Parameter	Description
field	The name of the header field.

requestWithMethod

Create NSMutableURLRequest.

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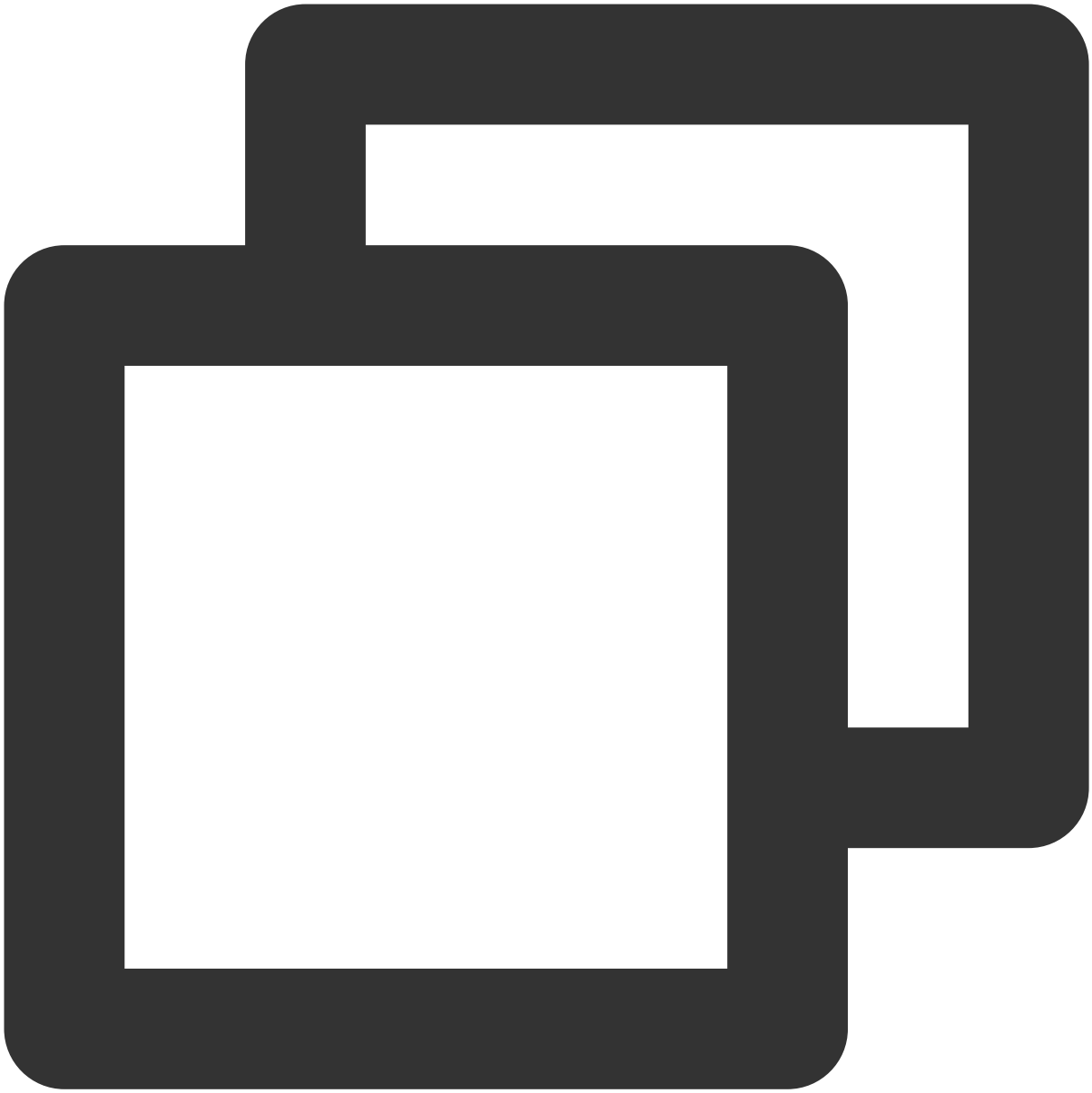

```
- (nullable NSMutableURLRequest *)requestWithMethod:(NSString *)method
                                          URLString:(NSString *)URLString
                                         parameters:(nullable id)parameters
                                              error:(NSError * _Nullable __autorele
```

Parameter	Description

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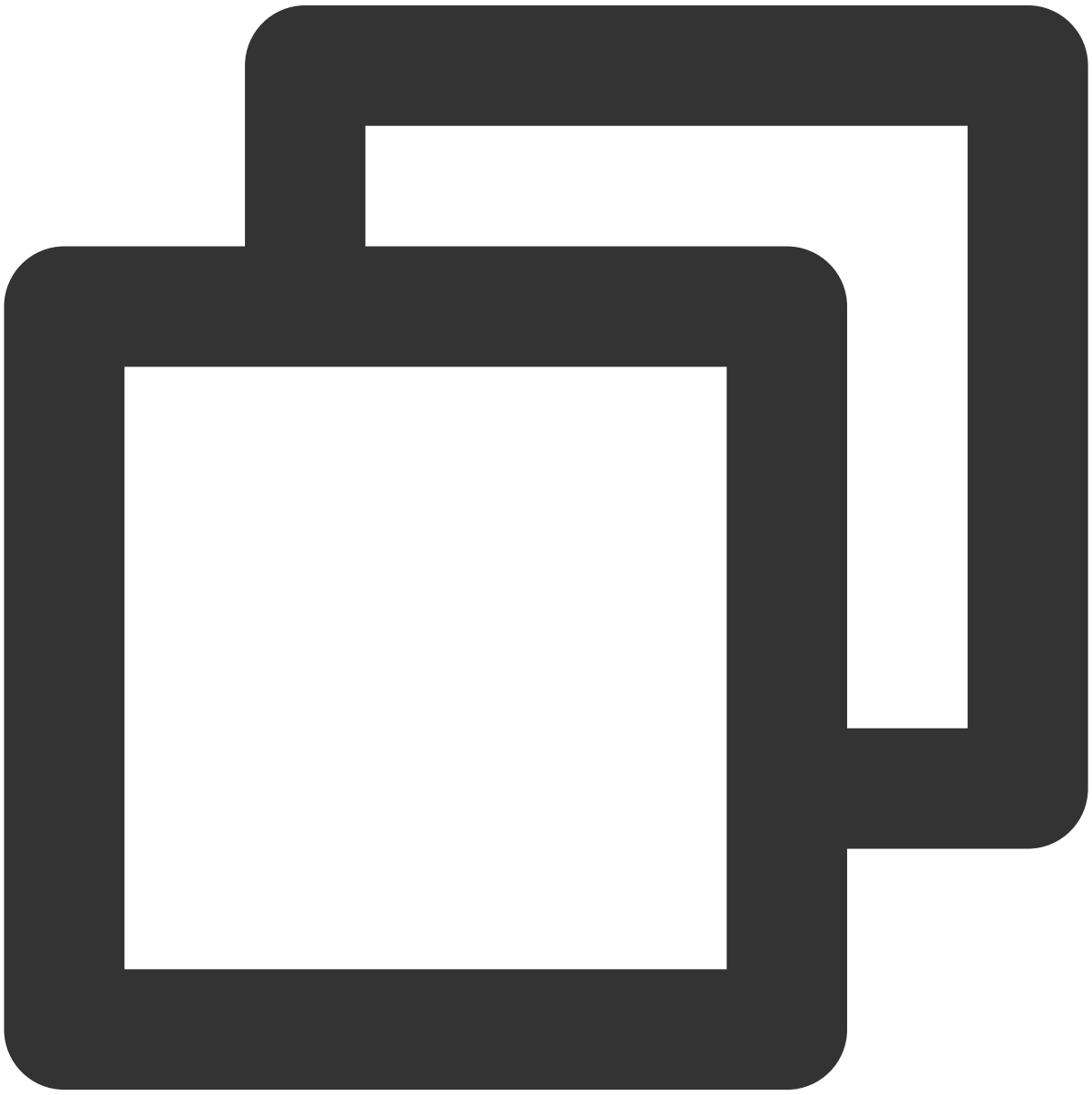
method	Set the HTTP request method, such as GET, POST, PUT, DELETE, HEAD and PATCH.
URLString	The request URL.
parameters	The request parameters.
error	The error message.

multipartFormRequestWithMethod



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```
- (NSMutableURLRequest *)multipartFormRequestWithMethod:(NSString *)method
                                              URLString:(NSString *)URLString
                                             parameters:(nullable NSDictionary <NSS
                                constructingBodyWithBlock:(nullable void (^)(id <%!s(
                                                  error:(NSError * _Nullable __auto
```

Parameter	Description
method	Set the HTTP request method, such as GET, POST, PUT, DELETE, HEAD and PATCH.
URLString	The request URL.
parameters	The request parameters.
constructingBodyWithBlock	Construct the body using the block.
error	The error message.

TQUICJSONRequestSerializer

API	Description
serializerWithWritingOptions	Create an instance.

serializerWithWritingOptions

Create a TQUICJSONRequestSerializer instance with the JSON serialization options.

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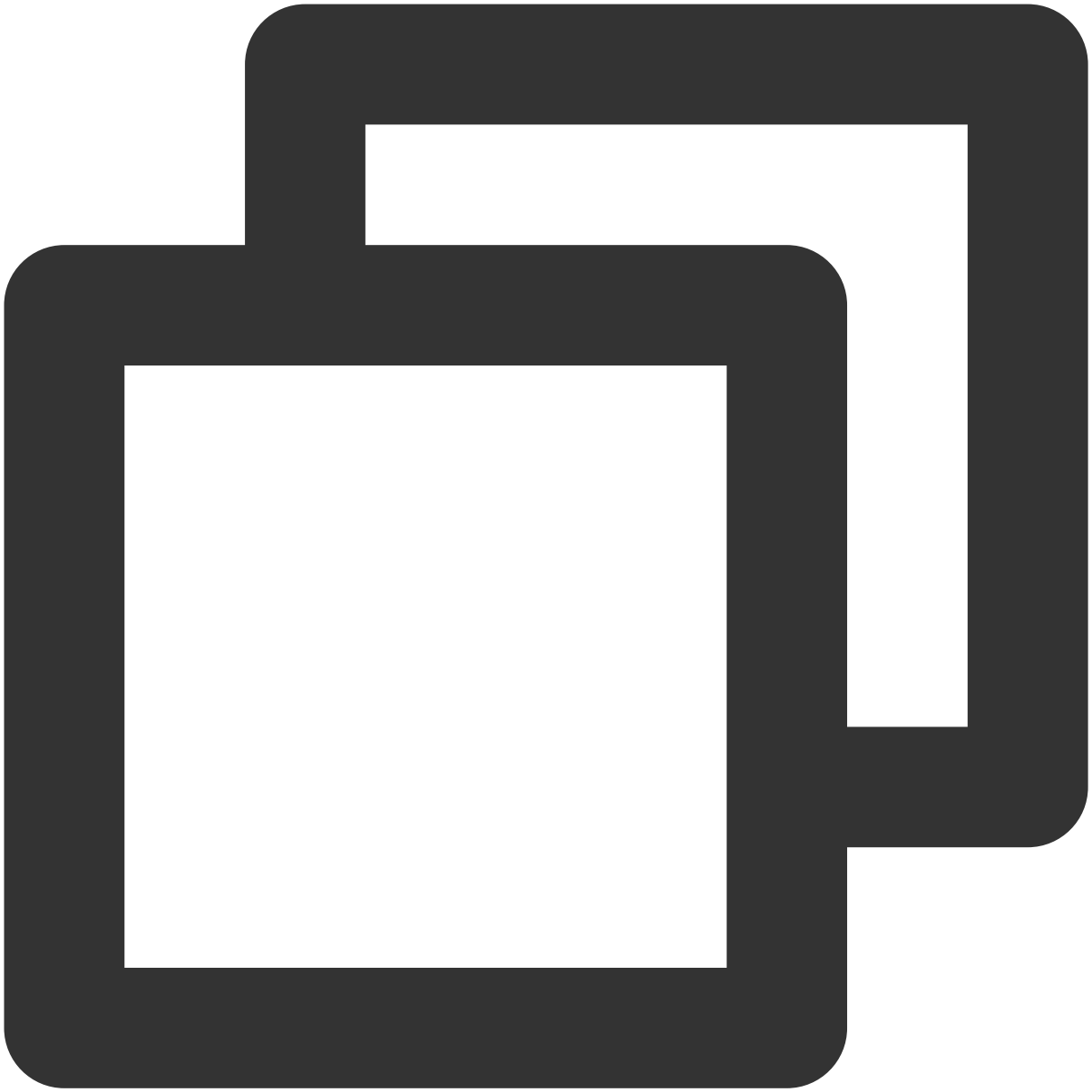

```
+ (instancetype)serializerWithWritingOptions:(NSJSONWritingOptions)writingOptions
```

Parameter	Description
writingOptions	Create an instance with the JSON serialization options.

TQUICMultipartFormData

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Multipart form data.

API	Description
appendPartWithFileURL	Upload the form data with the specified file URL.
appendPartWithInputStream	Upload the form data with the input stream.
appendPartWithFileData	Upload form data using multipart.
appendPartWithFormData	Add data parts.
appendPartWithHeaders	Add the header fields and body data to the form.
throttleBandwidthWithPacketSize	The bandwidth limit for uploads.

appendPartWithFileURL

Upload the form data with the specified file URL.

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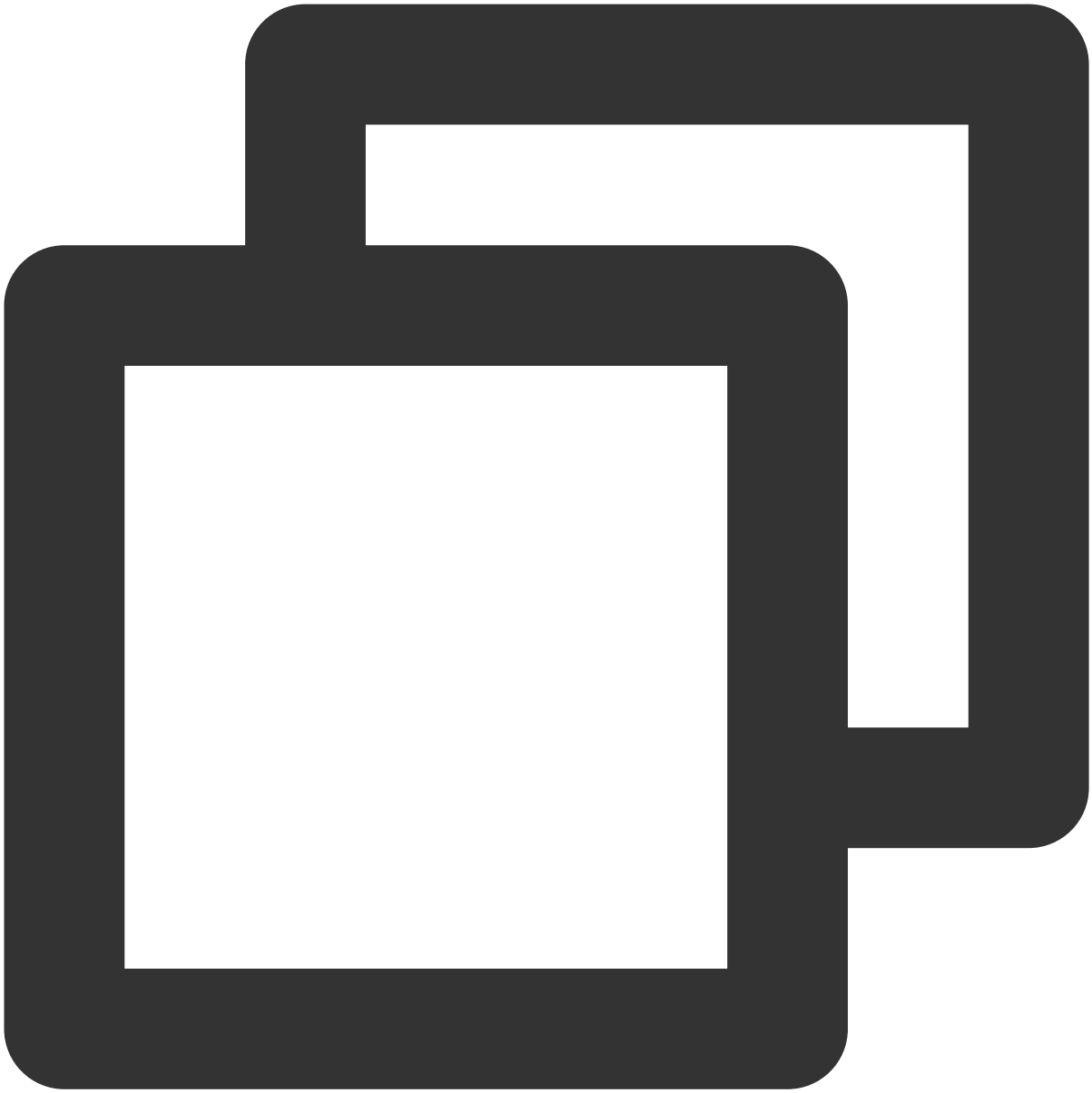

```
- (BOOL)appendPartWithFileURL:(NSURL *)fileURL
                         name:(NSString *)name
                        error:(NSError * _Nullable __autoreleasing *)error
```

Parameter	Description
fileURL	Add the file URL to the form.
name	The name of the associated file.
error	The error message.

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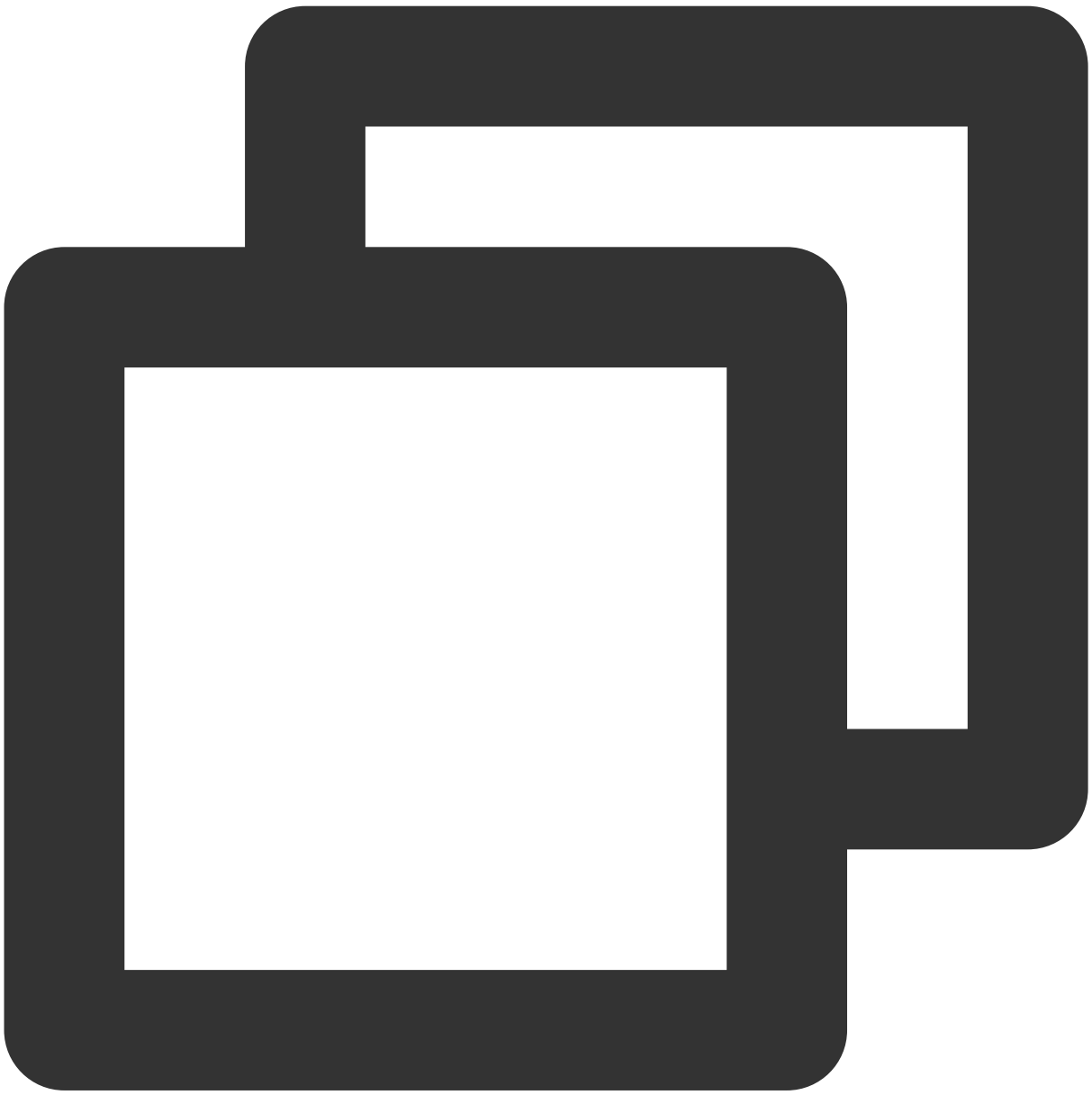
appendPartWithInputStream

Upload data with the specified input stream.



```
- (void)appendPartWithInputStream:(nullable NSInputStream *)inputStream
                             name:(NSString *)name
                         fileName:(NSString *)fileName
                           length:(int64_t)length
                         mimeType:(NSString *)mimeType
```

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Parameter	Description
inputStream	The input stream.
name	The name of the input stream.
fileName	The name of the file associated with the input stream.
length	The length of the stream in bytes.
mimeType	The MIME type, such as image/jpeg. For more details, see HTTP specifications.

appendPartWithFileData

Upload the form data using multipart.

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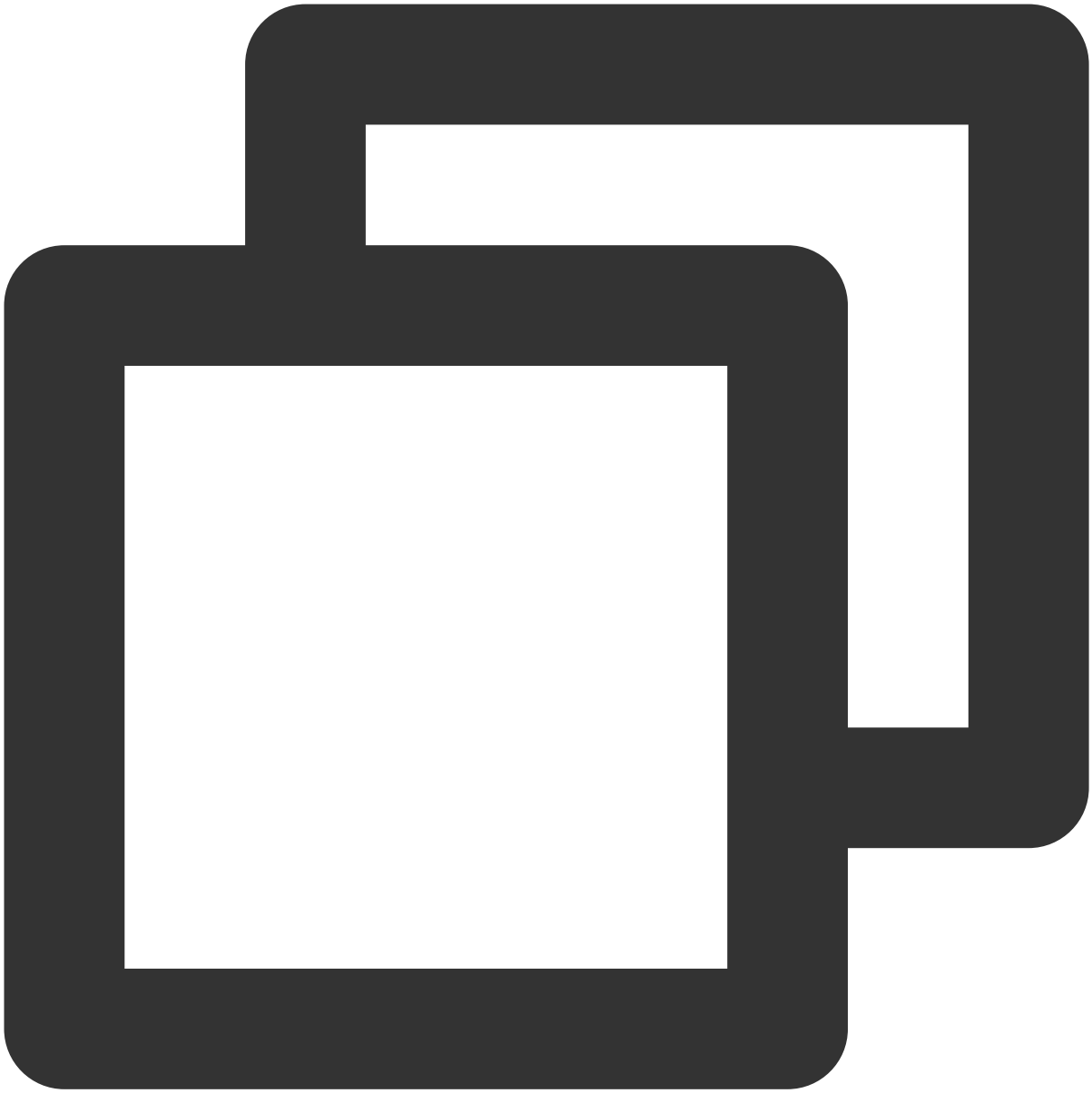

```
- (void)appendPartWithFileData:(NSData *)data
                          name:(NSString *)name
                      fileName:(NSString *)fileName
                      mimeType:(NSString *)mimeType
```

Parameter	Description
data	The data to be added to the form.
name	The name of the associated data.

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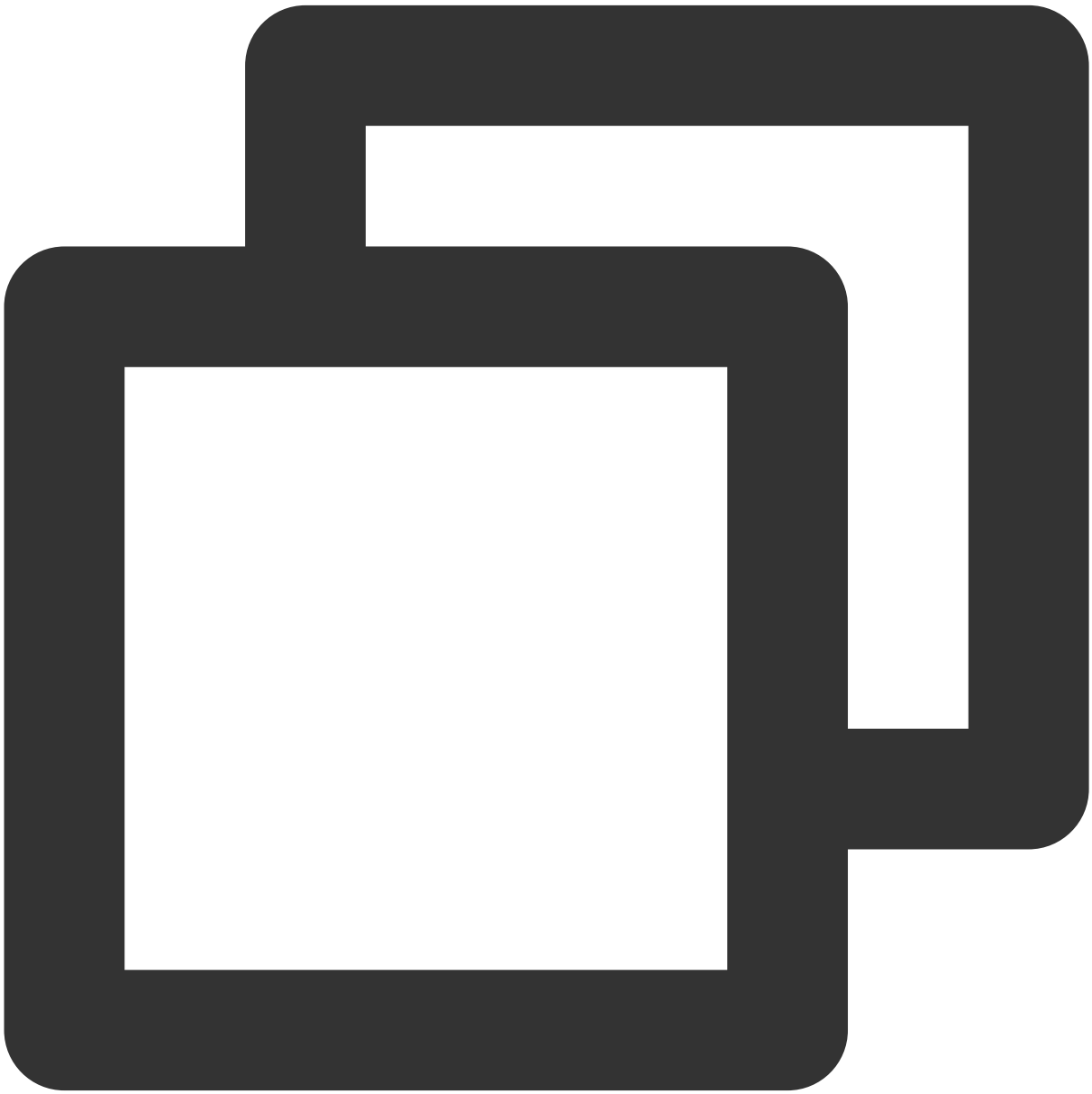
fileName	The name of the associated file.
mimeType	The MIME type, such as image/jpeg. For more details, see HTTP specifications.

appendPartWithFormData

Add data parts.



```
- (void)appendPartWithFormData:(NSData *)data
                          name:(NSString *)name
```

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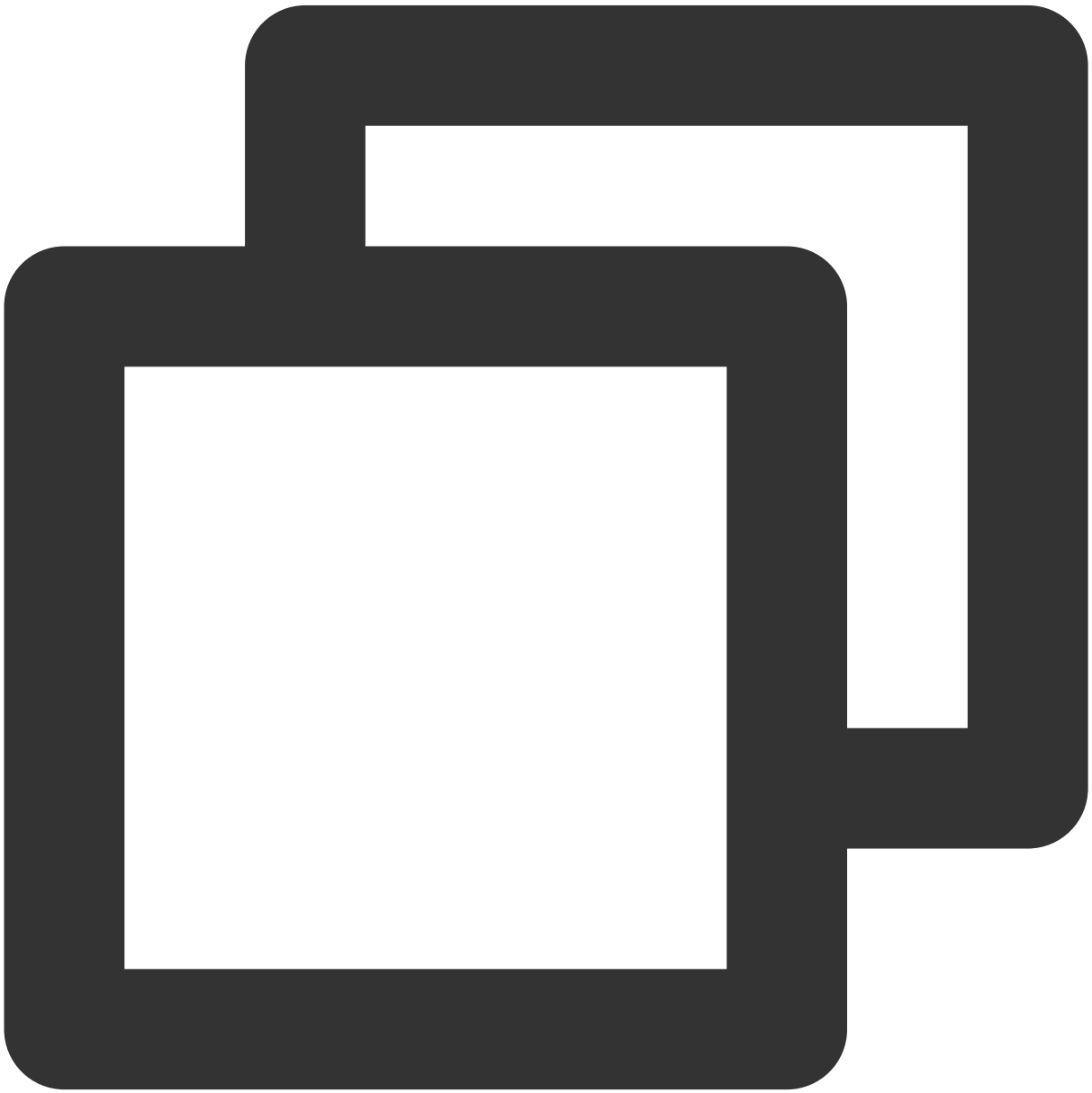
Parameter	Description
data	The data to be added to the form.
name	The name of the associated data.

appendPartWithHeaders

Add the header fields and body data to the form.



```
- (void)appendPartWithHeaders:(nullable NSDictionary <NSString *, NSString *> *)hea
```

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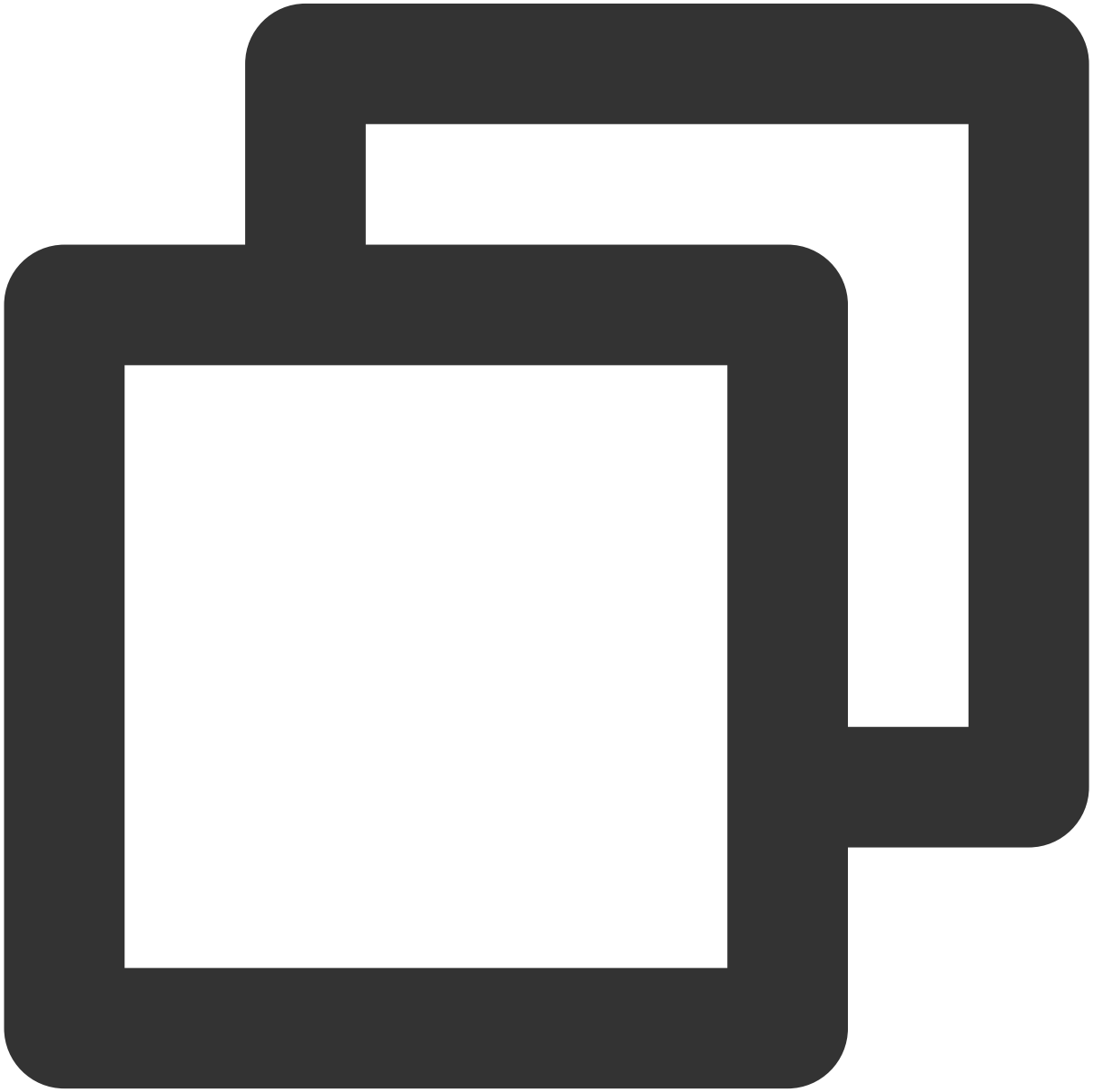
```
                    body:(NSData *)body;
```

Parameter	Description
headers	The headers to be added.
body	The body data to be added.

throttleBandwidthWithPacketSize

The bandwidth limit for uploads.



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```
- (void)throttleBandwidthWithPacketSize:(NSUInteger)numberOfBytes
                                  delay:(NSTimeInterval)delay
```

Parameter	Description
numberOfBytes	The maximum size of a packet in bytes. Default value: 16 KB.
delay	The read delay for a packet. Default value: 0 seconds.

TQUICURLResponseSerialization

Response serialization APIs

API	Description
TQUICHTTPResponseSerializer	Serialize HTTP response data.
TQUICJSONResponseSerializer	Serialize JSON response data.

TQUICHTTPResponseSerializer

Response serialization APIs

API	Description
serializer	Implement instantiation.
validateResponse	Validate the response data.

serializer

Create a TQUICHTTPResponseSerializer instance.

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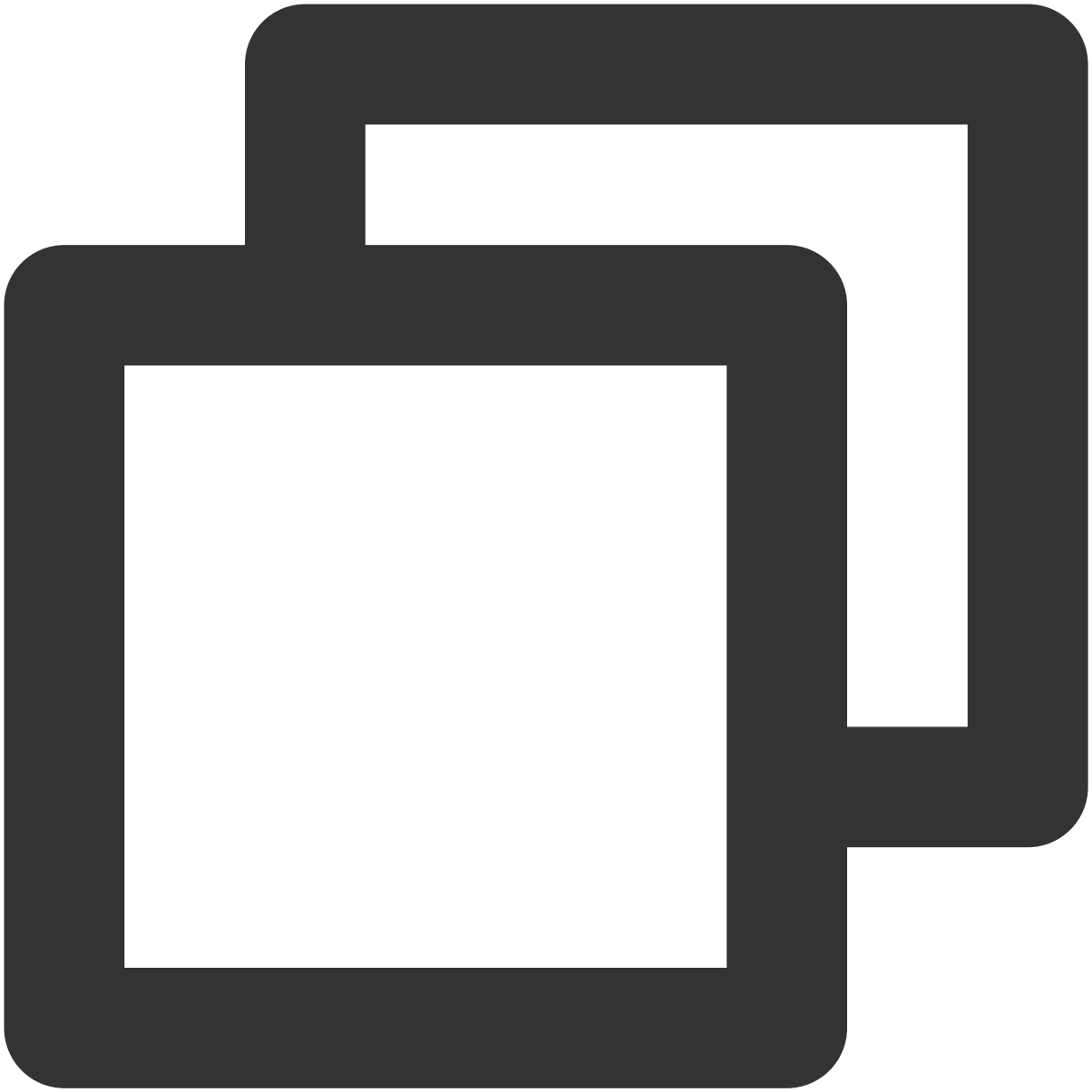

```
+ (instancetype)serializer
```

validateResponse

Validate the response data.

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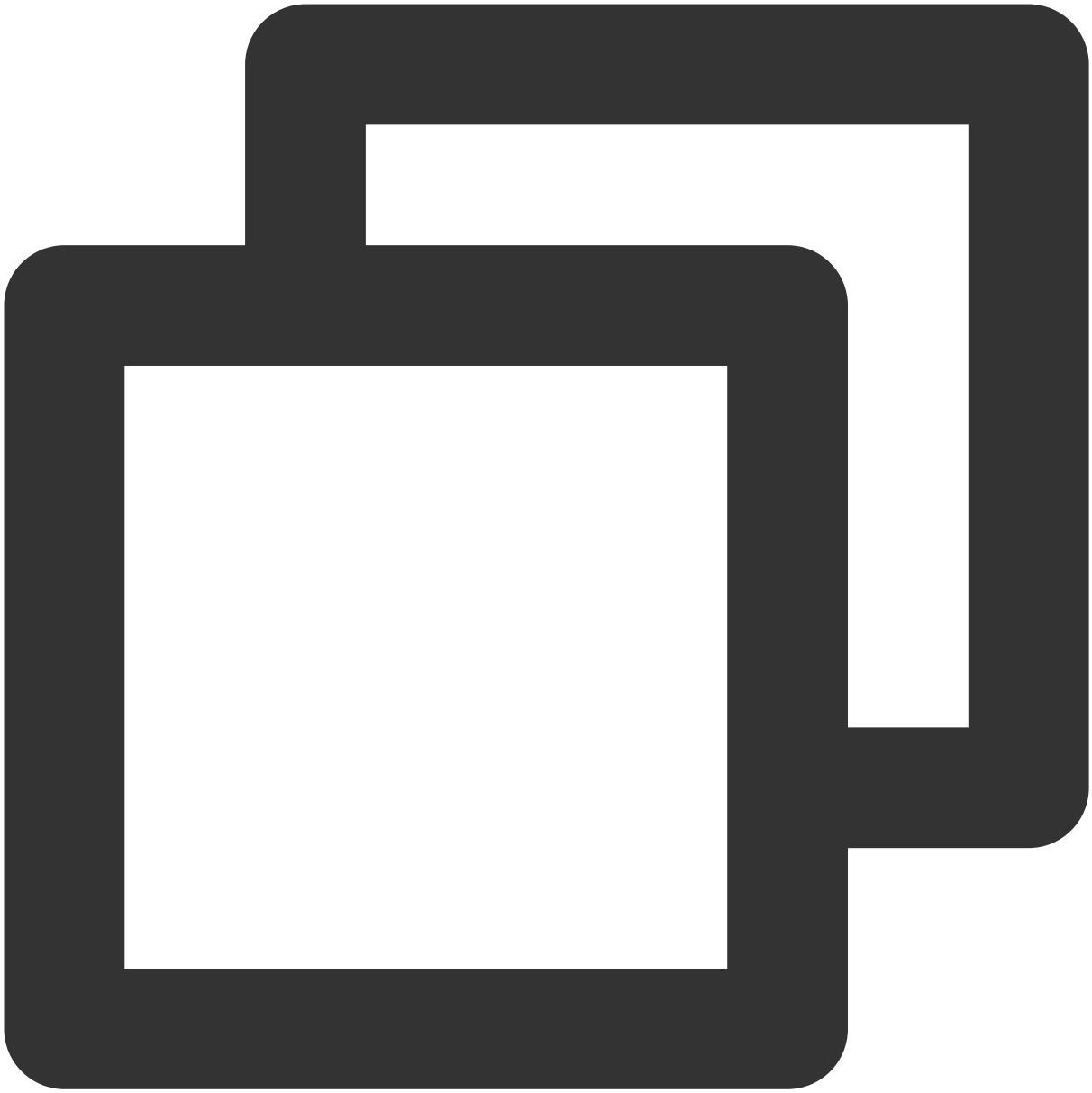

```
- (BOOL)validateResponse:(nullable NSHTTPURLResponse *)response
                    data:(nullable NSData *)data
                   error:(NSError * _Nullable __autoreleasing *)error
```

Parameter	Description
response	The response result to be validated. For more details, see NSHTTPURLResponse.

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data	The returned data.
error	The validation error.

TQUICJSONResponseSerializer

API	Description
serializerWithWritingOptions	Create an instance.

serializerWithWritingOptions

Create an instance with the JSON serialization options.

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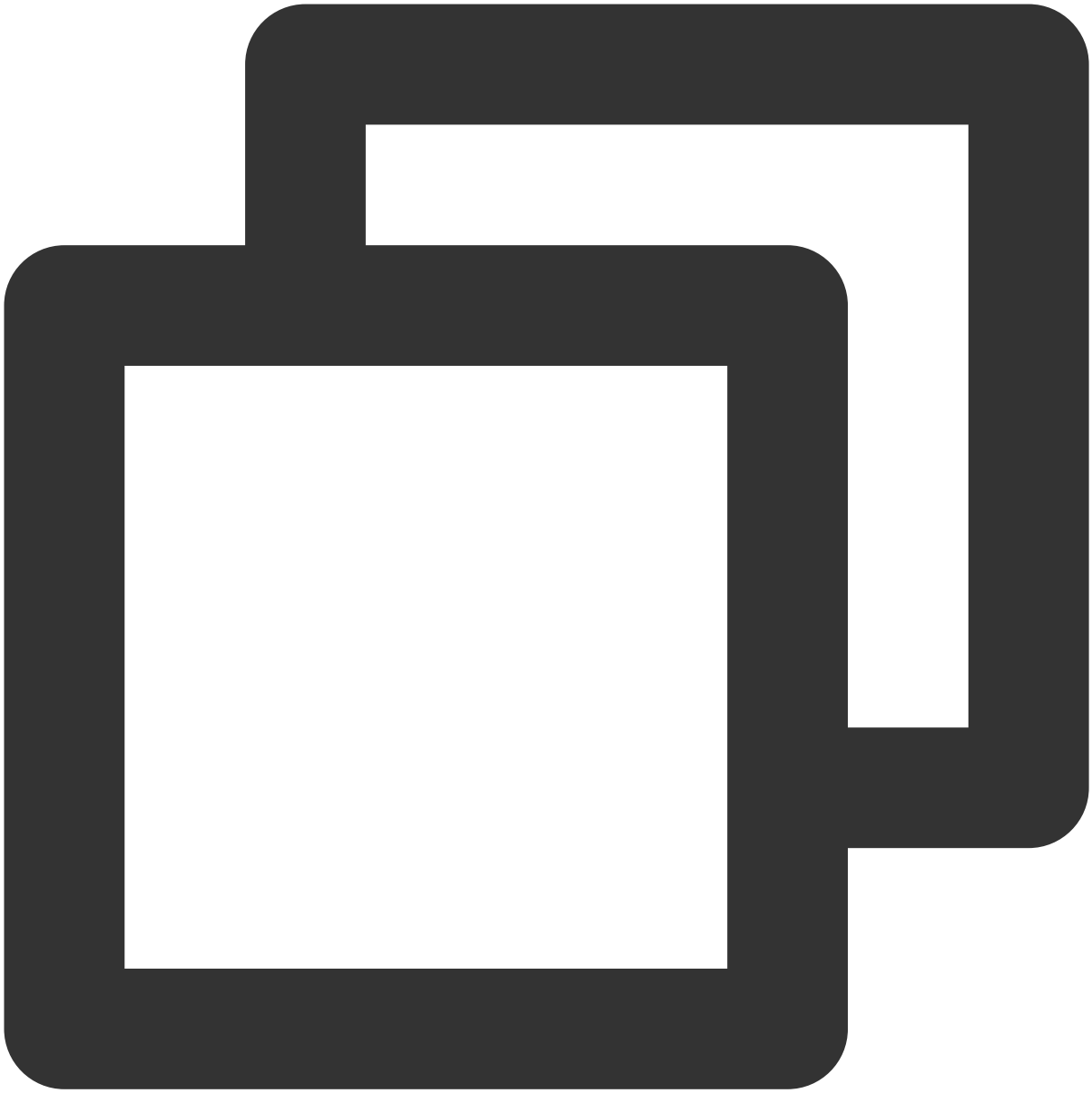

```
+ (instancetype)serializerWithReadingOptions:(NSJSONReadingOptions)readingOptions
```

Parameter	Description
serializerWithReadingOptions	Create an instance with the JSON serialization options.

TQUICURLSessionTaskMetrics

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The QUIC network metrics collected for a session.

Property	Description
transactionMetrics	An array of metrics for each request during the session. For more details, see TQUICURLSessionTaskTransactionMetrics.
taskInterval	The time taken between when the task is created and when the task is completed.
redirectCount	Number of redirects.

TQUICURLSessionTaskTransactionMetrics

The QUIC network metrics collected for a request.

Property	Description
isValid	Whether the value of status is valid.
isQuic	Whether it is a QUIC request.
is0rtt	Whether it is a 0-RTT connection.
isConnReuse	Whether the connection is reused.
connectMillis	Get the connection duration in milliseconds.
dnsMillis	Get the DNS duration in milliseconds.
dnsCode	Get the DNS error code.
ttfbMillis	Get the time taken for the first byte to be received in milliseconds.
completeMillis	Get the time taken for the request to be completed in milliseconds. The time taken by the connection is not included.
srttMicros	Get the average round-trip time in milliseconds.
packetsSent	Get the number of packets sent in bytes.
packetsRetransmitted	Get the number of packets retransmitted in bytes.
bytesSent	Get the number of bytes sent.
bytesRetransmitted	Get the number of bytes retransmitted.
packetsLost	Get the number of packets lost in bytes.
packetsReceived	Get the number of packets received in bytes.

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bytesReceived	Get the number of bytes received.
streamBytesReceived	Get the number of bytes received within the stream.

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