FetchAPI

.NET

The Fetch API provides an interface for fetching resources that has a more powerful and flexible feature set than XMLHttpRequest.

HTTPS://DEVELOPER.MOZILLA.ORG/EN-US/DOCS/WEB/API/FETCH_API

FetchAPI - Overview

https://developer.mozilla.org/en-US/docs/Web/API/Fetch_API
https://developer.mozilla.org/en-US/docs/Web/API/Fetch_API/using_fetch

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Fetch() is an async method of the ***WindowOrWorkerGlobalScope*** 'mixin' (not an Interface). It provides ***Request*** and ***Response*** objects involved with network requests. ***Fetch()*** has built-in functions and properties that can be used when needed.

Fetch() includes concepts such as ***CORS*** and the HTTP Origin header semantics.

Fetch() requires at least one argument (the URL). It returns a ***Promise*** that represents the response to the request.

Fetch() never fails, even if the HTTP Response Code is 404 or 500. It will reject if the request itself fails (a network failure).

Fetch() can send and receive cross-site cookies (***Sessions***)

```
fetch('http://revature.com/assoc')
  .then(res => res.json())
  .then(data => console.log(data));
```

Fetch API Example

https://developer.mozilla.org/en-US/docs/Web/API/Fetch_API/using_fetch

```
fetch('http://revature.com/associates')
  .then(response => response.json())
  .then(data => console.log(data));
```

In this example, a URL is ***Fetch***'ed and the response is printed to the console. fetch() takes one argument (there is an overload) and returns a ***Promise*** containing the ***Response*** object.

When fetch() returns, the ***Promise*** response becomes the parameter for the following .then() statement. The .json() method is used to extract the JSON ***Body*** content from the response.

The .then() statement is also used to handle whatever HTTP response codes are returned, even if 404 or 500.

Fetch() – Arguments

https://developer.mozilla.org/en-US/docs/Web/API/WindowOrWorkerGlobalScope/fetch

Fetch() has two possible arguments.

1. The URL path to the desired resource.
2. An (optional) object called an ***init*** object. This allows custom settings to be set with the ***Request***. (see next slide)

Below are the most frequently used ***init*** object properties.

Option	Usage
Method	The HTTP verb of the request. GET, POST, etc.
Headers	A Headers object containing the headers desired.
Body	An object containing what you want to POST, Delete, INSERT, etc.
Mode	The mode desired. ‘cors’, ‘no-cors’, ‘same-origin’

Fetch() – example

https://developer.mozilla.org/en-US/docs/Web/API/Fetch_API/using_fetch

Below are the options available for each property.

* == default

The path to the resource –

The init object –

*GET, POST, PUT, DELETE, etc –

‘no-cors’, *’cors’, ‘same-origin’ –

*default, no-cache, reload, force-cache, only-if-cached –

include, *same-origin, omit –

‘application/json’,‘application/x-www-form-urlencoded’ –

manual, *follow, error –

‘no-referrer’, *’no-referrer-when-downgrade’, ‘origin’, ‘origin-when-cross-origin’, ‘same-origin’, ‘strict-origin’, ‘strict-origin-when-cross-origin’, ‘unsafe-url’ –

Use JSON.stringify() to serialize the body. –

Body data type must match "Content-Type" header –

Use `response.json()` to parse JSON data. –

```
fetch(‘https://revature.com/associates’,
    {
    method: 'POST',
    mode: 'cors’,
    cache: 'no-cache',
    credentials: 'same-origin’,
    headers:
      {‘Content-Type': 'application/json’},
    redirect: 'follow’,
    referrerPolicy: 'no-referrer’,
    body: JSON.stringify(
      { name: ‘Mark’, id: 42 })
    })
    .then(response => response.json())
    .then(data => console.log(data));
```

Promises

https://javascript.info/promise-basics
https://javascript.info/promise-basics#consumers-then-catch-finally

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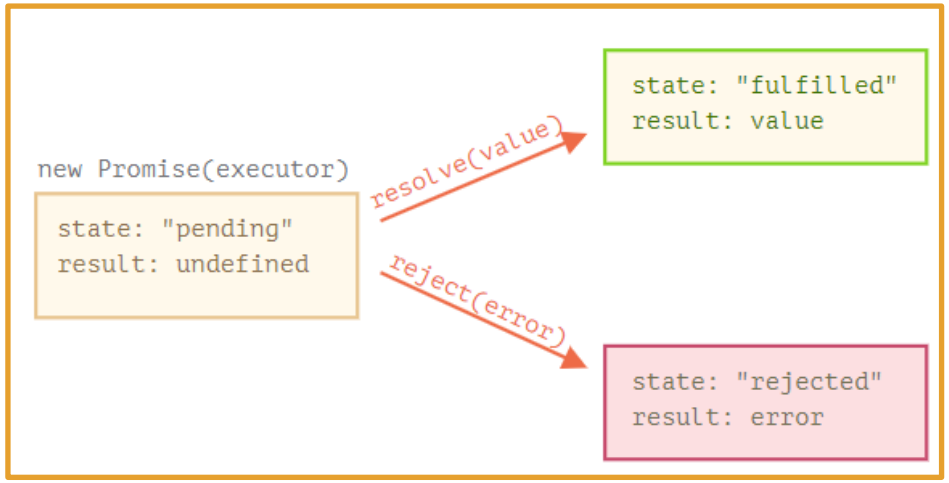
Fetch() returns a ***Promise***. A ***Promise*** is the async result of the Fetch HTTP Request. It contains the ***Fetch()*** Response.
The ***Fetch()*** Response has either been 'resolved' or 'rejected'.
Resolve and reject are internal JS functions so you don't have to implement them.
The 'resolved' or 'rejected' status of a response can be checked and acted upon with the .then(), .catch(). and/or .finally() blocks.




```
let promise = new Promise(function(resolve, reject) {
  setTimeout(() => resolve("done!"), 1000);
});

// resolve runs the first function in .then
promise.then(
  result => alert(result), // shows "done!" after 1 second
  error => alert(error) // doesn't run
);
```

Promises - .then(), .catch(), .finally() (1/3)

https://javascript.info/promise-basics
https://javascript.info/promise-basics#consumers-then-catch-finally

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.then() has two arguments (.then(a, b)).

1. a - A function for a Resolved Request that contains a value.
2. b - A function for a Rejected/failed Request that contains an error.

```
let promise = new Promise(function(resolve, reject) {
  setTimeout(() => resolve("done!"), 1000);
});

// resolve runs the first function in .then
promise.then(
  result => alert(result), // shows "done!" after 1 second
  error => alert(error) // doesn't run
);
```

Promises - .then(), .catch(), .finally() (1/3)

https://javascript.info/promise-basics
https://javascript.info/promise-basics#consumers-then-catch-finally

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.catch() is the equivalent of .then(null, b). It will catch any errors returned in the response. It only runs if there is an error.

```
1  let promise = new Promise((resolve, reject) => {
2    setTimeout(() => reject(new Error("Whoops!")), 1000);
3  });
4
5  // .catch(f) is the same as promise.then(null, f)
6  promise.catch(alert); // shows "Error: Whoops!" after 1 second
```

Promises - .then(), .catch(), .finally() (1/3)

https://javascript.info/promise-basics
https://javascript.info/promise-basics#consumers-then-catch-finally

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.finally() is equivalent to .then(c, c) because it always runs whether the result is successful or an error. It can be placed before or after .then().

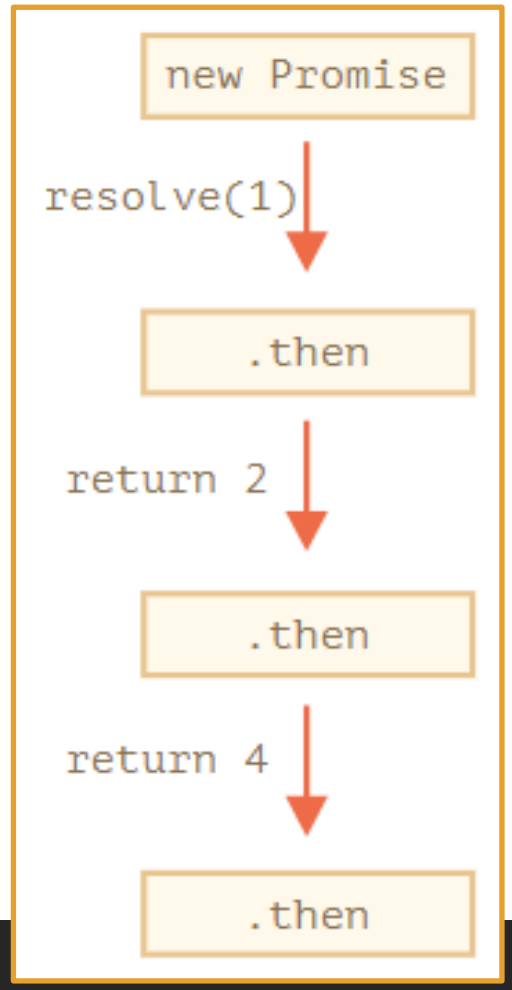
```
1  new Promise((resolve, reject) => {
2    /* do something that takes time, and then call resolve/reject */
3  })
4    // runs when the promise is settled, doesn't matter successfully or not
5    .finally(() => stop loading indicator)
6    .then(result => show result, err => show error)
```

Promise Chaining

https://javascript.info/promise-chaining

Promise Chaining is a way to run multiple actions on the returns of sequential asynchronous functions.

The result of each function is passed through the chain of .then() handlers.




```
fetch('https://revature.com/associates')
    .then(response1 => response.json())
    .finally(response2 => console.log('This is
        the finally block. It always runs.')
    .then(response3 => console.log('This is
        the second .then() block'))
    .then(response4 => {
        console.log('This is the third .then()
        block');
        resolve();
        })
    .catch(response5 => console.log('This is
        the catch block, but it won't run
        unless there's an error'));
```

Fetch() – Response Object

https://developer.mozilla.org/en-US/docs/Web/API/Fetch_API/using_fetch

A ***Response*** object is returned when a ***fetch() Promise*** is resolved. The three most commonly used response properties are:

- Response.status — An integer (default value 200) containing the response status code.
- Response.statusText — A string (default value "OK"), which corresponds to the HTTP status code message.
- Response.ok — This is a shorthand for checking that status is in the range 200-299 inclusive. This returns a Boolean.

```
fetch('flowers.jpg')
  .then(response => {
    if (!response.ok) {
      throw new Error('Network response was not ok');
    }
    return response.blob();
  })
  .then(myBlob => {
    myImage.src = URL.createObjectURL(myBlob);
  })
  .catch(error => {
    console.error('There has been a problem with your fetch operation:', error);
  });
```

Fetch() – checking Response success

https://developer.mozilla.org/en-US/docs/Web/API/Fetch_API/using_fetch

A *fetch()* promise will reject with a ***TypeError*** when a network error is encountered or ***CORS*** is misconfigured on the server-side.

A check for a successful fetch() includes checking that the ***Promise*** 'resolved'. Checking that the Response.ok property has a value of true.

1. With response.ok, check that the ***Response*** was completed and take action based on the data received.
2. Use .catch() to handle any errors that could have been thrown.

```
fetch('flowers.jpg')
  .then(response => {
    if (!response.ok) {
      throw new Error('Network response was not ok');
    }
    return response.blob();
  })
  .then(myBlob => {
    myImage.src = URL.createObjectURL(myBlob);
  })
  .catch(error => {
    console.error('There has been a problem with your fetch operation:', error);
  });
```

Fetch() – Body

https://developer.mozilla.org/en-US/docs/Web/API/Fetch_API/Using_Fetch

Both requests and responses may contain ***body*** data. A ***body*** is an instance of any of the following types.

Data Type	Function used to access data
ArrayBuffer	.arrayBuffer() - This object is used to represent a generic, fixed-length binary data buffer.
ArrayBufferView	
Blob/File	.blob() - returns a promise that resolves with a Blob.
String	.text() - returns a promise that resolves with a USVString object (text). The response is always decoded using UTF-8.
FormData	.formData() - returns a promise that resolves with a FormData object.