JavaScript Promises

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"I Promise a Result!"

"Producing code" is code that can take some time

"Consuming code" is code that must wait for the result

A Promise is an Object that links Producing code and Consuming code

JavaScript Promise Object

A Promise contains both the producing code and calls to the consuming code:

Promise Syntax

```
let myPromise = new Promise(function(myResolve, myReject) {
// "Producing Code" (May take some time)

  myResolve(); // when successful
  myReject();  // when error
});

// "Consuming Code" (Must wait for a fulfilled Promise)
myPromise.then(
  function(value) { /* code if successful */ },
  function(error) { /* code if some error */ }
  function(error) { /* code if some error */ }
);
```

When the producing code obtains the result, it should call one of the two callbacks:

When	Call
Success	myResolve(result value)
Error	myReject(error object)

Promise Object Properties

A JavaScript Promise object can be:

- Pending
- Fulfilled
- Rejected

The Promise object supports two properties: **state** and **result**.

While a Promise object is "pending" (working), the result is undefined.

When a Promise object is "fulfilled", the result is a value.

When a Promise object is "rejected", the result is an error object.

myPromise.state	myPromise.result
"pending"	undefined
"fulfilled"	a result value
"rejected"	an error object

You cannot access the Promise properties **state** and **result**.

You must use a Promise method to handle promises.

Promise How To

Here is how to use a Promise:

```
myPromise.then(
  function(value) { /* code if successful */ },
  function(error) { /* code if some error */ }
);
```

Promise.then() takes two arguments, a callback for success and another for failure.

Both are optional, so you can add a callback for success or failure only.

Example

```
function myDisplayer(some) {
  document.getElementById("demo").innerHTML = some;
}

let myPromise = new Promise(function(myResolve, myReject) {
  let x = 0;

// The producing code (this may take some time)

  if (x == 0) {
    myResolve("OK");
  } else {
    myReject("Error");
  }
});

myPromise.then(
  function(value) {myDisplayer(value);},
  function(error) {myDisplayer(error);}
);
```

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JavaScript Promise Examples

To demonstrate the use of promises, we will use the callback examples from the previous chapter:

- Waiting for a Timeout
- Waiting for a File

Waiting for a Timeout

Example Using Callback

```
setTimeout(function() { myFunction("I love You !!!"); }, 3000);

function myFunction(value) {
  document.getElementById("demo").innerHTML = value;
}
```

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Example Using Promise

```
let myPromise = new Promise(function(myResolve, myReject) {
  setTimeout(function() { myResolve("I love You !!"); }, 3000);
});

myPromise.then(function(value) {
  document.getElementById("demo").innerHTML = value;
});
```

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Waiting for a file

Example using Callback

```
function getFile(myCallback) {
  let req = new XMLHttpRequest();
  req.open('GET', "mycar.html");
  req.onload = function() {
    if (req.status == 200) {
      myCallback(req.responseText);
    } else {
      myCallback("Error: " + req.status);
    }
  }
  req.send();
}

getFile(myDisplayer);
```

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Example using Promise

```
let myPromise = new Promise(function(myResolve, myReject) {
  let req = new XMLHttpRequest();
  req.open('GET', "mycar.html");
  req.onload = function() {
    if (req.status == 200) {
      myResolve(req.response);
    } else {
      myReject("File not Found");
    }
  };
  req.send();
});

myPromise.then(
  function(value) {myDisplayer(value);},
  function(error) {myDisplayer(error);}
);
```

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Browser Support

ECMAScript 2015, also known as ES6, introduced the JavaScript Promise object.

The following table defines the first browser version with full support for Promise objects:

Chrome 33	Edge 12	Firefox 29	Safari 7.1	Opera 20
Feb, 2014	Jul, 2015	Apr, 2014	Sep, 2014	Mar, 2014

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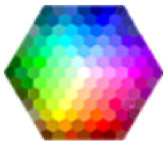

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