Callback, promises

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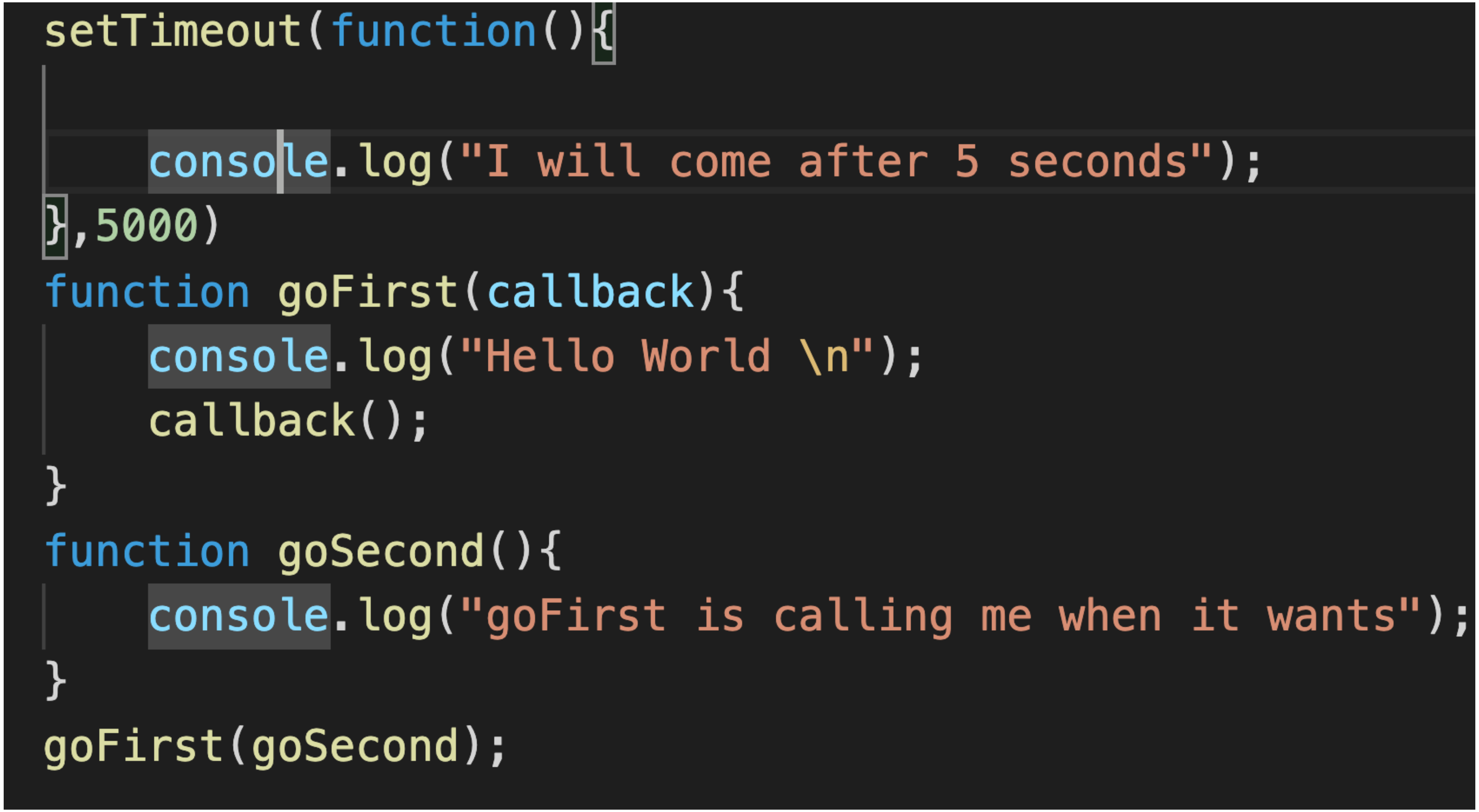
Basics

- JavaScript has synchronous execution
- They execute line by line
- In the real world we need to wait sometimes before we do something else.
- This should not stop the rest of our program from executing.
- There we need asynchronous execution too. So, we have <u>callbacks</u> & <u>promises</u>

Callbacks

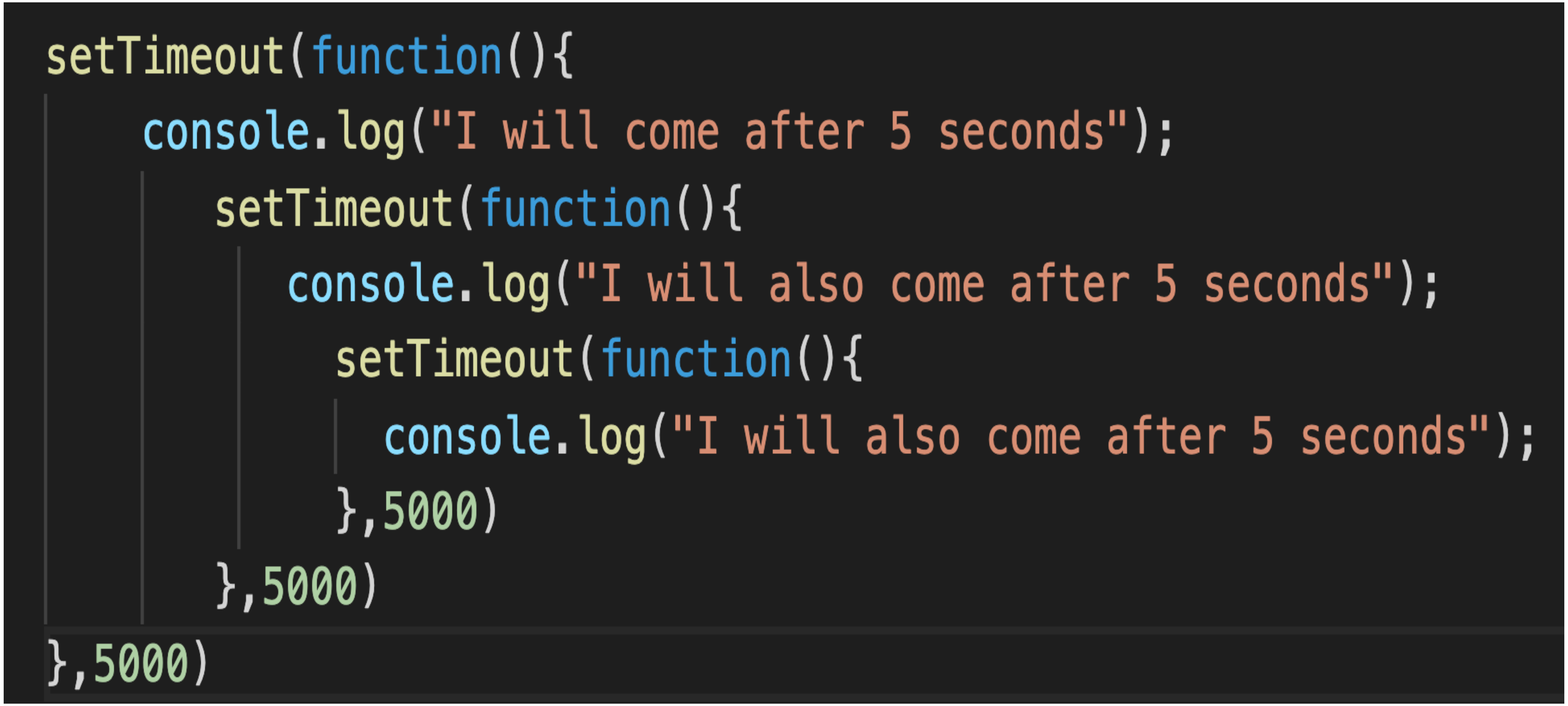
- Let's give the responsibility of calling a function to another function.
- This is useful when you want to call a function or do something post completion of another function/task.

Callbacks



```
setTimeout(function(){

      console.log("I will come after 5 seconds");
},5000)
function goFirst(callback){
      console.log("Hello World \n");
      callback();
}
function goSecond(){
      console.log("goFirst is calling me when it wants");
}
goFirst(goSecond);
```

Callback Hell or Pyramid of doom



```
setTimeout(function(){
    console.log("I will come after 5 seconds");
    setTimeout(function(){
        console.log("I will also come after 5 seconds");
            setTimeout(function(){
                console.log("I will also come after 5 seconds");
            },5000)
    },5000)
},5000)
```

Callback Hell or Pyramid of doom

- Say we have code from third parties
- We make multiple database requests
- Callbacks can lead to losing control of our code.
- Callbacks might not do what we want our code to do.
- Losing trust of our code.

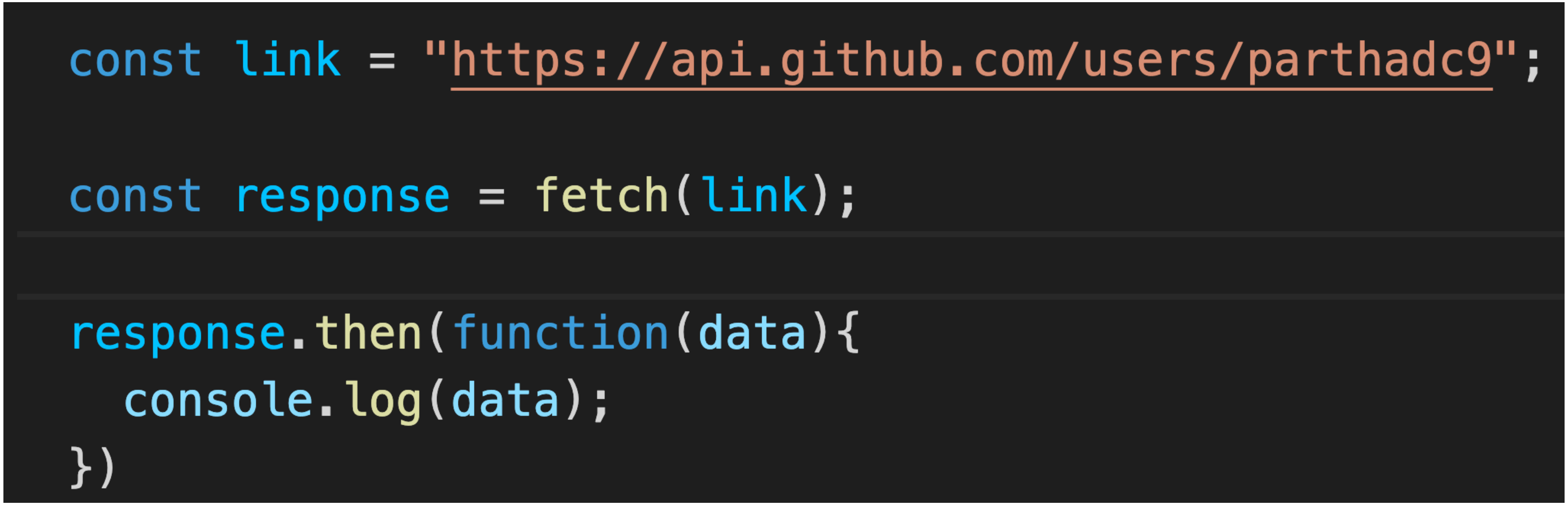
Promises

The Promise object represents the eventual completion (or failure) of an asynchronous operation and its resulting value. (MDN Documentation)

Promises

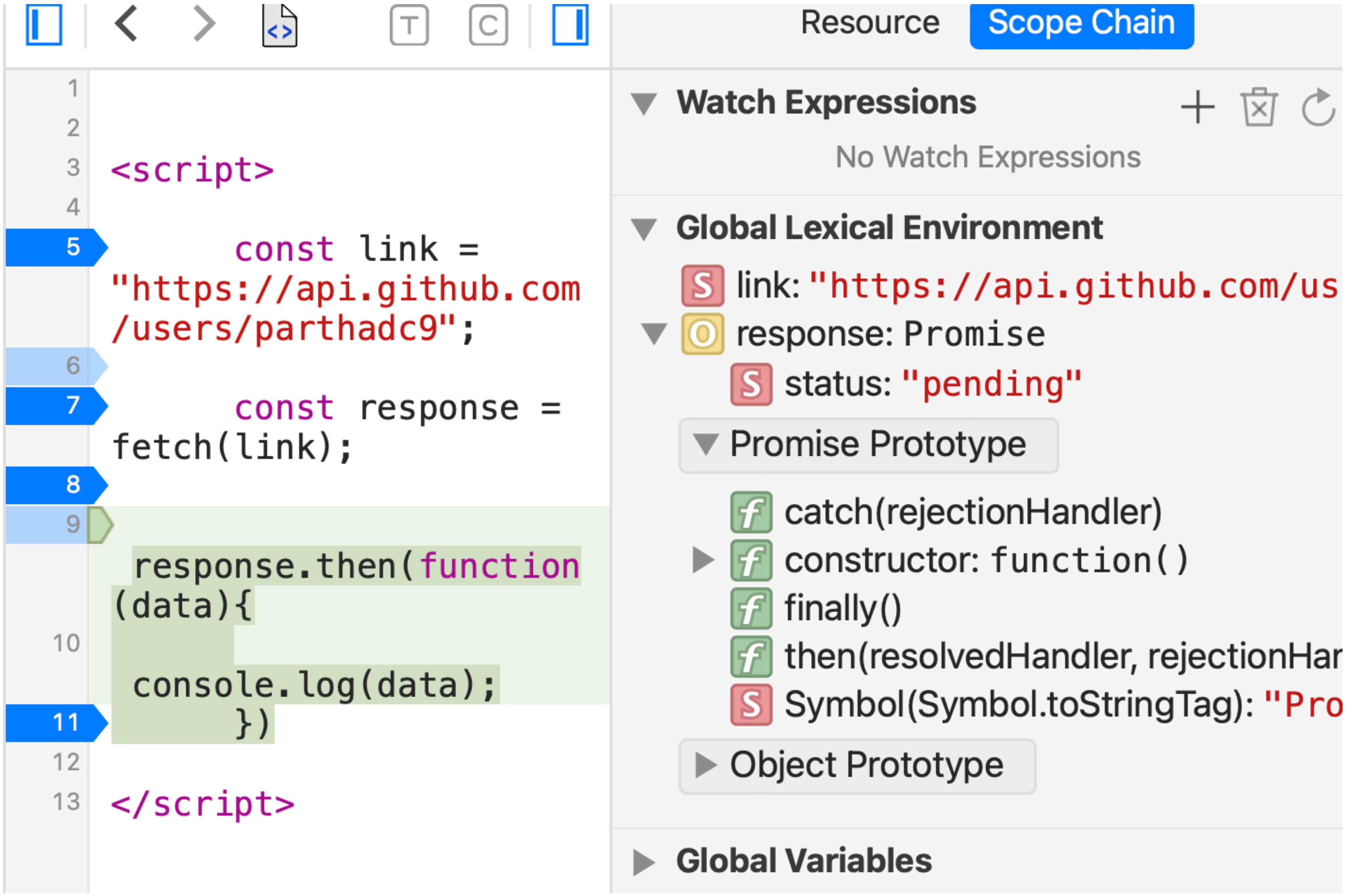
- Promises are used to handle asynchronous operation.
- Asynchronous means we are dependent on the user or some other task to finish
  - For example, if a user is browsing and choosing items to buy on your site.
- Promises can be pending, fulfilled and rejected
- Promise objects are immutable

Promises



```
const link = "https://api.github.com/users/parthadc9";

const response = fetch(link);


response.then(function(data){
  console.log(data);
})
```

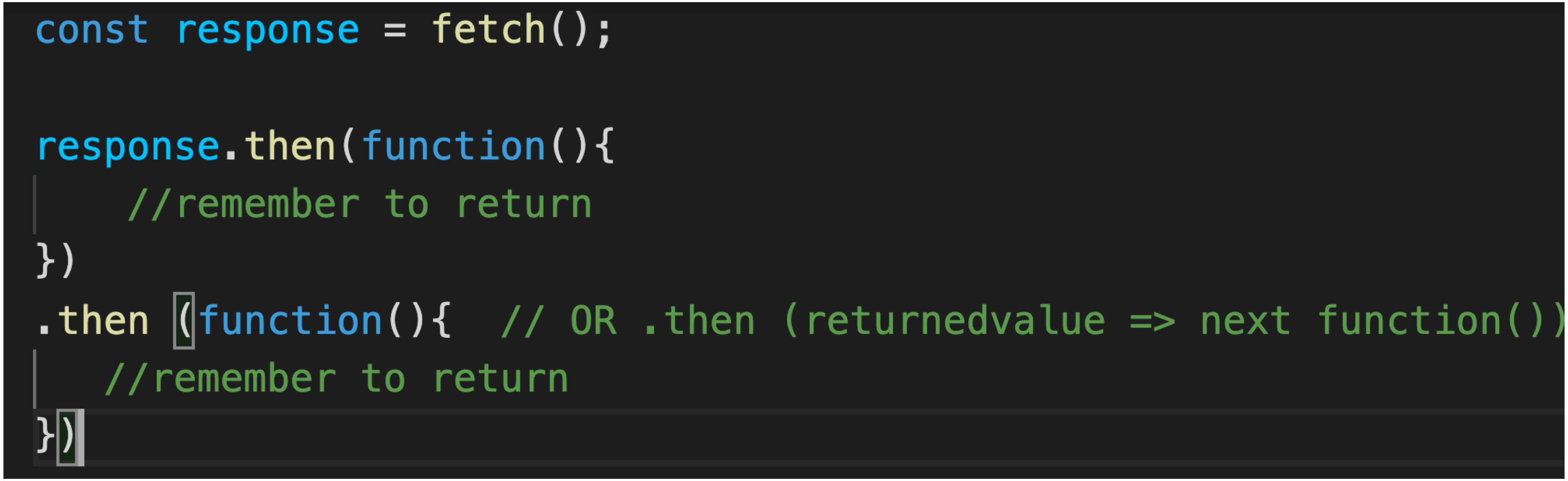
Promises



```
<script>

        const link = "https://api.github.com/users/parthadc9";

        const response = fetch(link);

        response.then(function(data){
                console.log(data);
        })

</script>
```

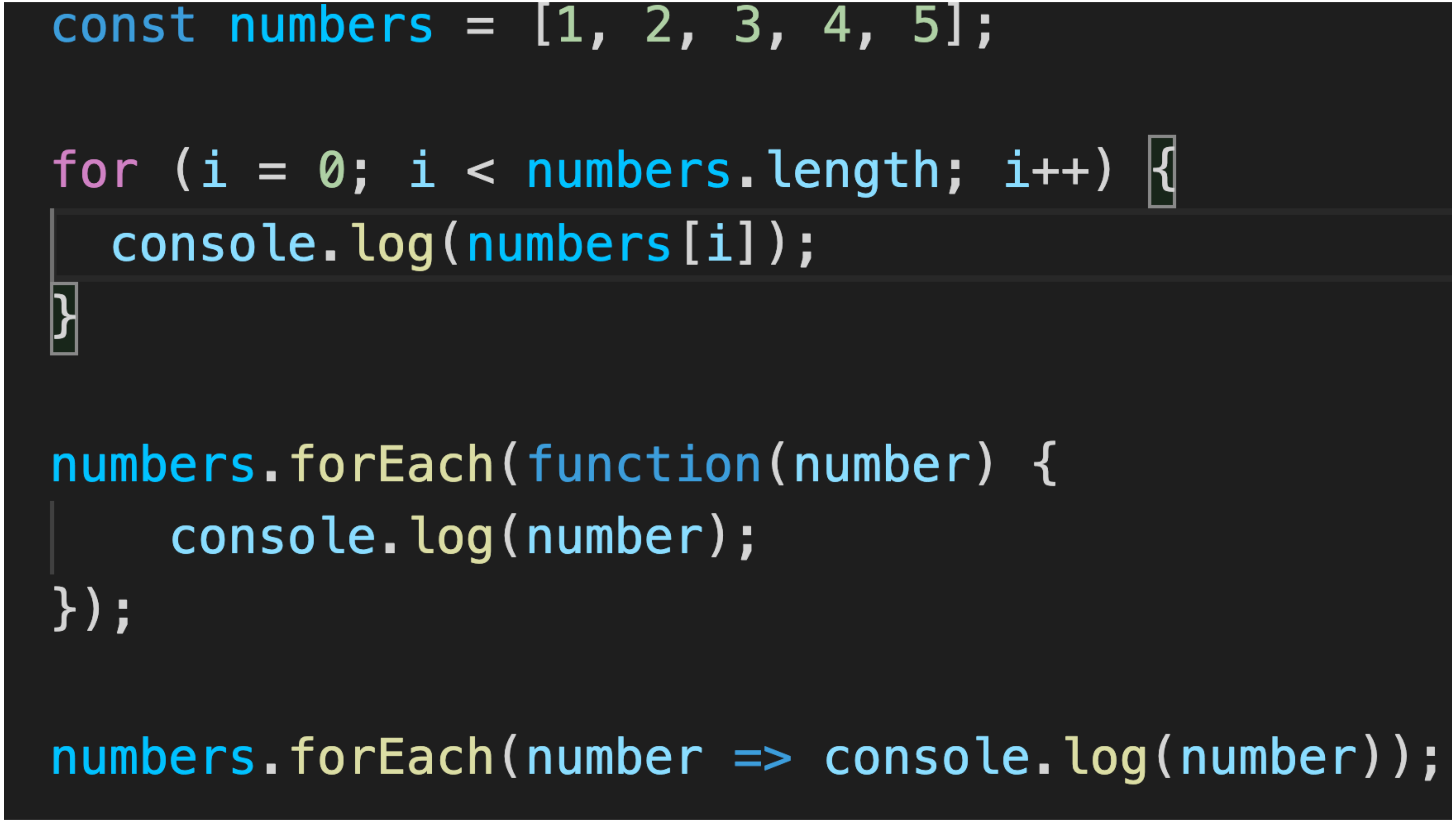
```
Watch Expressions
    No Watch Expressions
Global Lexical Environment
    link: "https://api.github.com/us
    response: Promise
        status: "pending"
        Promise Prototype
            catch(rejectionHandler)
            constructor: function()
            finally()
            then(resolvedHandler, rejectionHar
            Symbol(Symbol.toStringTag): "Pro
        Object Prototype
Global Variables
```

Promises



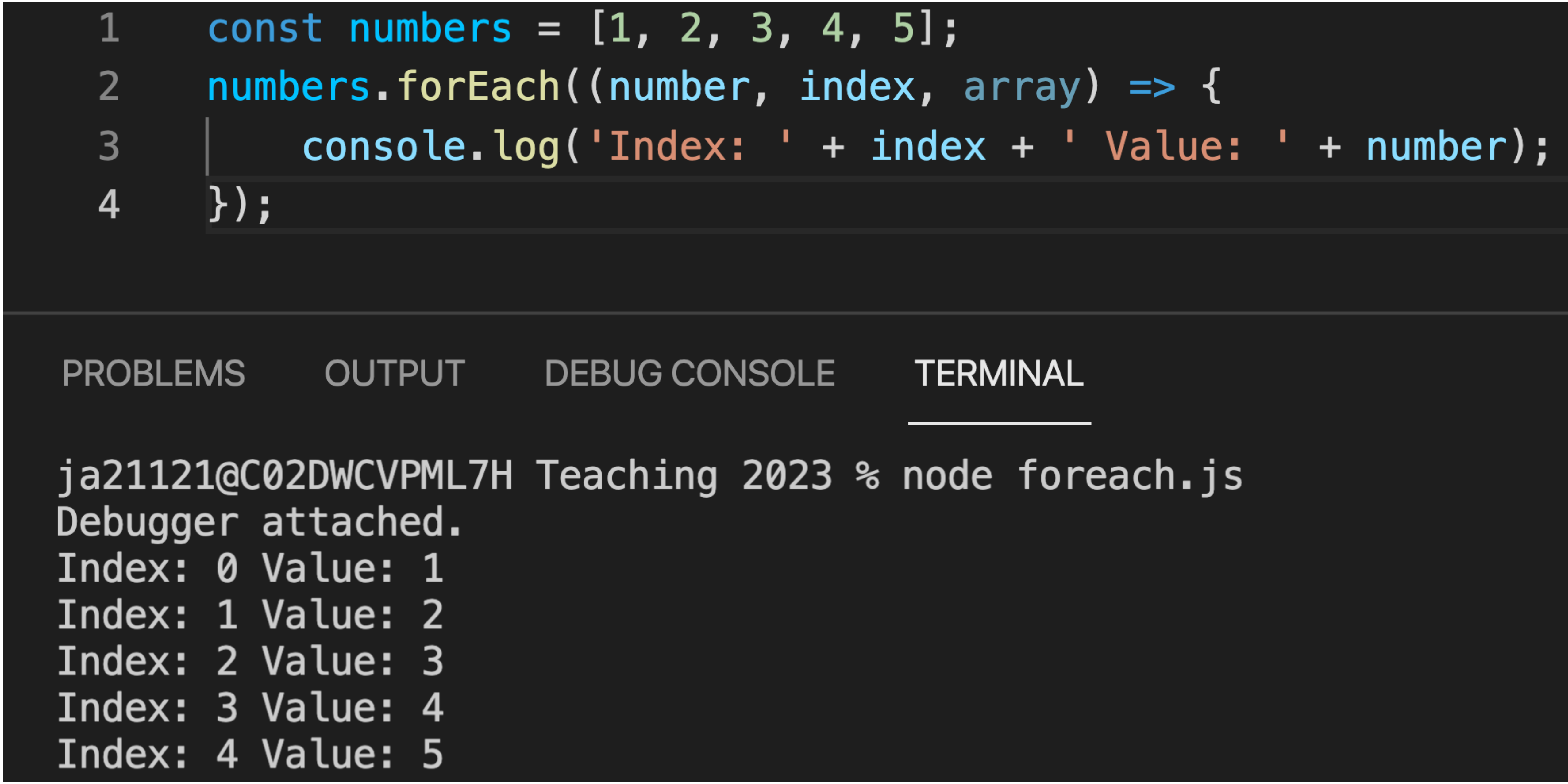
```
const response = fetch();

response.then(function(){
    //remember to return
})
.then (function(){  // OR .then (returnedvalue => next function())
   //remember to return
})
```

For Each



```
const numbers = [1, 2, 3, 4, 5];

for (i = 0; i < numbers.length; i++) {
  console.log(numbers[i]);
}

numbers.forEach(function(number) {
    console.log(number);
});

numbers.forEach(number => console.log(number));
```

For Each



```javascript
const numbers = [1, 2, 3, 4, 5];
numbers.forEach((number, index, array) => {
    console.log('Index: ' + index + ' Value: ' + number);
});
```

```
ja21121@C02DWCVPML7H Teaching 2023 % node foreach.js
Debugger attached.
Index: 0 Value: 1
Index: 1 Value: 2
Index: 2 Value: 3
Index: 3 Value: 4
Index: 4 Value: 5
```

Thank You