Real-world Examples and Cancelable Async Flows (CAF)

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Overview

Generator functions

The ‘Yield’ keyword

What is yield delegation?

Early completion of a generator

Generator error handling

Generator Function

A function that can be paused and resumed at a later time, while having the ability to pass values to and from the function at each pause point.

Generator Function Syntax

```
function* gen() {...}

function *gen() {...}

function * gen() {...}

const obj = {

  *gen(params) {...}

}
```

Executing the generator function alone DOES NOT execute its containing code

Yield

Yield keyword signals the pause point of a generator function.

Possible Yield Actions

Send a value to the iterator

- yield ‘goes to iterator’;

Receive a value from the iterator

- const x = yield; //
- it.next(‘value for x’); //=> x is now ‘value for x’

Yield Expression Placement

```
var y = yield 3;
```

```
const arr = [yield 2,
yield 3, yield 4];
```

```
if (yield 4 === 8 )
{…}
```

Yield Delegation

Yield delegation essentially allows a host generator function to control the iteration of a different generator function.

Generator Functions Include Return and Throw

generatorExample.js

```javascript
function* randomNumbers() {
  while(true) {
    yield Math.floor(Math.random() * 1000);
  }
}
const it = randomNumbers();
it.return(); // Valid
it.throw(); // Valid
```

No need to manually implement the 'return' and 'throw' methods

Early Completion

iterator.return()

The return method ends a generator functions execution

iterator.throw()

The throw method will end a generator functions execution while also throwing an exception that can be handled by the generator

Summary

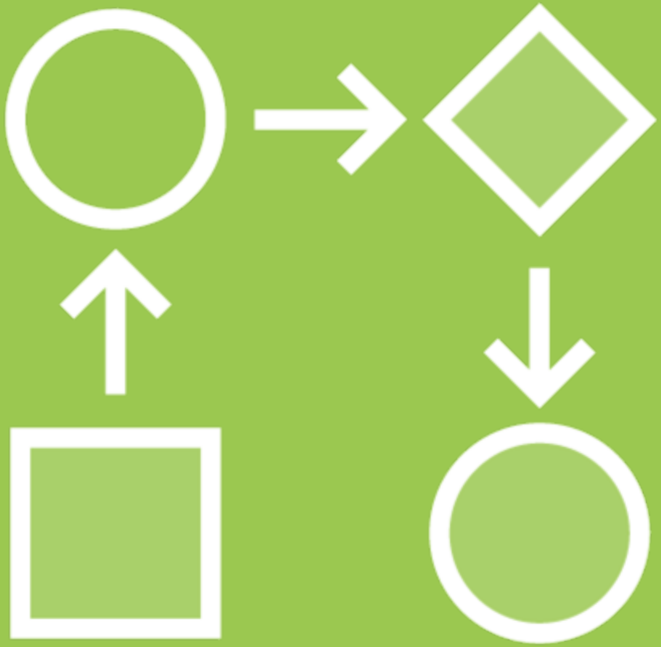
Generator functions return iterators

The ‘yield’ keyword

Yield delegation (yield*)

Early completion of generator

Error handling



Next up: Introducing CAF

Cancelable Async Flows (CAF)

Make generator functions look like async functions

Cancelable Async Flows

CAF

https://github.com/getify/CAF

Created by Kyle Simpson

Makes generator functions work like async functions

Gives the ability to externally cancel an async request

```
function* fetch() {
  const promise = yield axios.get("http://localhost:3000/users");
  return promise;
}

const token = new CAF.cancelToken()

const main = CAF(function* fetch(signal) {
  const promise = yield axios.get("http://localhost:3000/users");
  return promise;
});

main(token.signal).then(...)
```

Token Cancellation

CAF.delay()

A promisified setTimeout() that can be canceled

CAF.timeout()

Abort a token after a specified time

SetTimeout Gotchas

Example From https://github.com/getify/CAF docs

```
function delay(ms) {
  return new Promise( function c(res){
    setTimeout( res, ms );
  } );
}

var token = new CAF.cancelToken();

var main = CAF( function *main(signal,ms){
  yield delay( ms );
  console.log( "All done!" );
});

main( token.signal, 100 );

// only wait 5 seconds for the request!
delay( 5000 ).then( function onElapsed(){
  token.abort( "Request took too long!" );
});
```

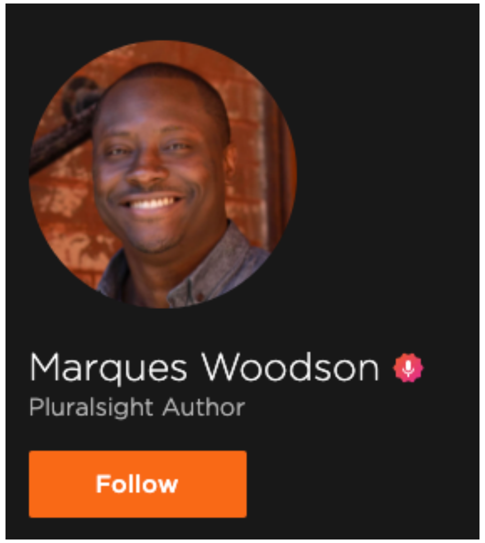
Summary

Using generator functions for async flows

CAF.cancelToken()

CAF.delay()

CAF.timeout()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