Testing Business Code and Handling Errors & Race Conditions

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Module Overview

Test scheduler

Mocking services

Finding race condition

Solving race condition

Handling errors

Summary

Test Scheduler

Scheduler

Scheduler is a primitive inside RxJS

RxJS Operators takes scheduler as the second optional parameter

- Interval(40, async)

RxJS 6 has 6 built in schedulers

TestScheduler works with virtual time

```
Import {interval} from ‘rxjs’;

Import { getTestScheduler } from ‘jasmine-marbles’;

interval(40,getTestScheduler())

.subscribe(i=>console.log(i));
```

getTestScheduler

Here getTestScheduler is providing test scheduler to interval operator that virtualizing the time and making our test synchronous

In Marble Testing, to call the subscribe callback immediately or synchronously, we flush the TestScheduler

```
Import {cold, getTestScheduler} from ‘jasmine-
marbles’

const messages$ = cold(‘--a---b--|’,{

a: ‘marble-testing’

b: ‘is fun’

});

messages$.subscribe(m=>console.log(m));


getTestScheduler().flush();
```

- Import getTestScheduler
- Creating observable
- Subscribe to observable
- Flush the testScheduler

Mocking Api Services

Demo

Mocking API service

Finding Race Conditions

Race Condition Debugging

Finding race condition is difficult

Testing race condition is more difficult

Race Condition

A **race condition** is an undesirable situation that occurs when a device or system attempts to perform two or more operations at the same time, but because of the nature of the device or system, the operations must be done in the proper sequence to be done correctly.

Demo

Finding race condition

Solving Race Conditions

Demo

Solving race condition

Handling Errors

Why Handle Errors?

Program may crash

End-user may loose their data

Difficult to trace issue

```
#

`---a----b----#`
```

Marble Syntax for Error

Hash symbol (#) is used to represent error in the sequence

```
cold( <marble syntax>, mocked-data-map, error );

hot( <marble syntax>, mocked-data-map, error );
```

Cold and Hot Method

In both cold and hot method the 3rd argument is the error object that you want to pass for your unit test.

```
cold('--a---b---#', {a:'apple', b:'orange'},
 new Error('no fruits found'));
```

Emit apple after 20ms wait for 30ms emit orange wait another 30ms emit error object with message ‘no fruits found’

Demo

Error Handling

Summary

Test scheduler & GetTestScheduler from jasmine marbles

Mocking services

Finding & solving race condition

Handling errors

Course Summary

Marble Syntaxes & Jasmine Marbles Hot and Cold methods

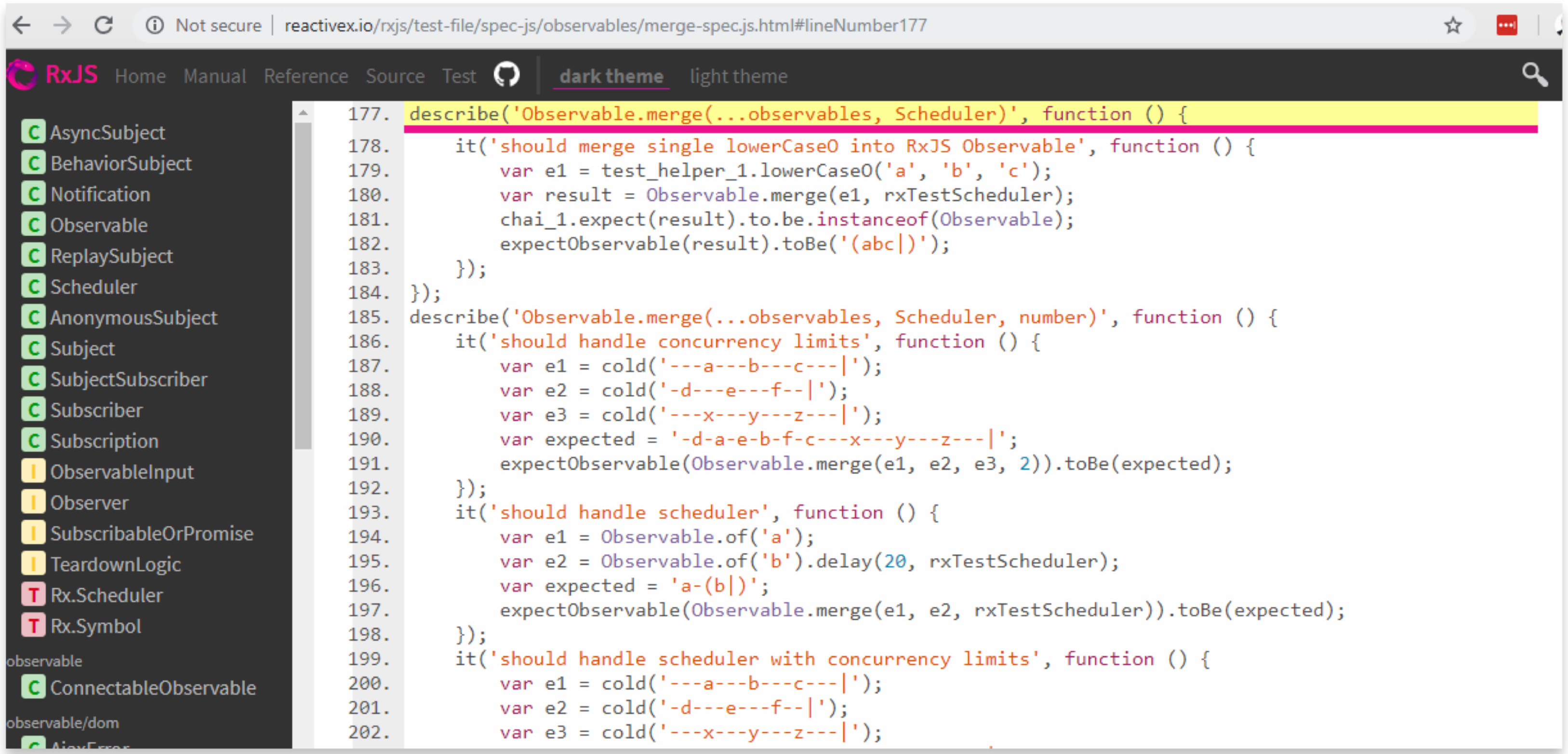
Unit Testing with Hot and cold observables

Unit Testing with Mocking Observable & Operator values

Unit Testing Business Code, Handling Race conditions & Errors

Additional Learning on Marble Testing

http://reactivex.io/rxjs/test-file/spec-js/observables/merge-spec.js.html#lineNumber177



```
describe('Observable.merge(...observables, Scheduler)', function () {
    it('should merge single lowerCaseO into RxJS Observable', function () {
        var e1 = test_helper_1.lowerCaseO('a', 'b', 'c');
        var result = Observable.merge(e1, rxTestScheduler);
        chai_1.expect(result).to.be.instanceof(Observable);
        expectObservable(result).toBe('(abc|)');
    });
});
describe('Observable.merge(...observables, Scheduler, number)', function () {
    it('should handle concurrency limits', function () {
        var e1 = cold('---a---b---c---|');
        var e2 = cold('-d---e---f--|');
        var e3 = cold('---x---y---z---|');
        var expected = '-d-a-e-b-f-c---x---y---z---|';
        expectObservable(Observable.merge(e1, e2, e3, 2)).toBe(expected);
    });
    it('should handle scheduler', function () {
        var e1 = Observable.of('a');
        var e2 = Observable.of('b').delay(20, rxTestScheduler);
        var expected = 'a-(b|)';
        expectObservable(Observable.merge(e1, e2, rxTestScheduler)).toBe(expected);
    });
    it('should handle scheduler with concurrency limits', function () {
        var e1 = cold('---a---b---c---|');
        var e2 = cold('-d---e---f--|');
        var e3 = cold('---x---y---z---|');
```

What to Do Next?

Practice writing unit tests using marble diagrams

Marble testing session every day

reactivex.io, rxviz.com and rxmarbles.com

Marble testing on NgRx Effects

Join discussion on Pluralsight

Contact Me!

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Thank You