Final Project Report

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https://github.com/maysa92/cloudMusicPackage

Table of Contents

Overview (_test.js)

➢ This project is to test a Netease API in Javascript.

➢ There are four test cases in my project for two main scenarios:

- Song Searching (line 7 to line 30)

- Lyrics Catching (line 34 to line 65)

➢ In the context of Branch Coverage there are only two branches: if an error occurs or not. Test cases are designed based on two core concepts: whether a successful connection is performed and whether correct information is caught.

➢ Variables are thrown into 'createRequest' to see whether it can handle it precisely.

Code and Branch Coverage

- To generate an automated report of code and branch coverage in Mocha, I need an additional library called istanbul. Figure 1 shows the report for my test cases.
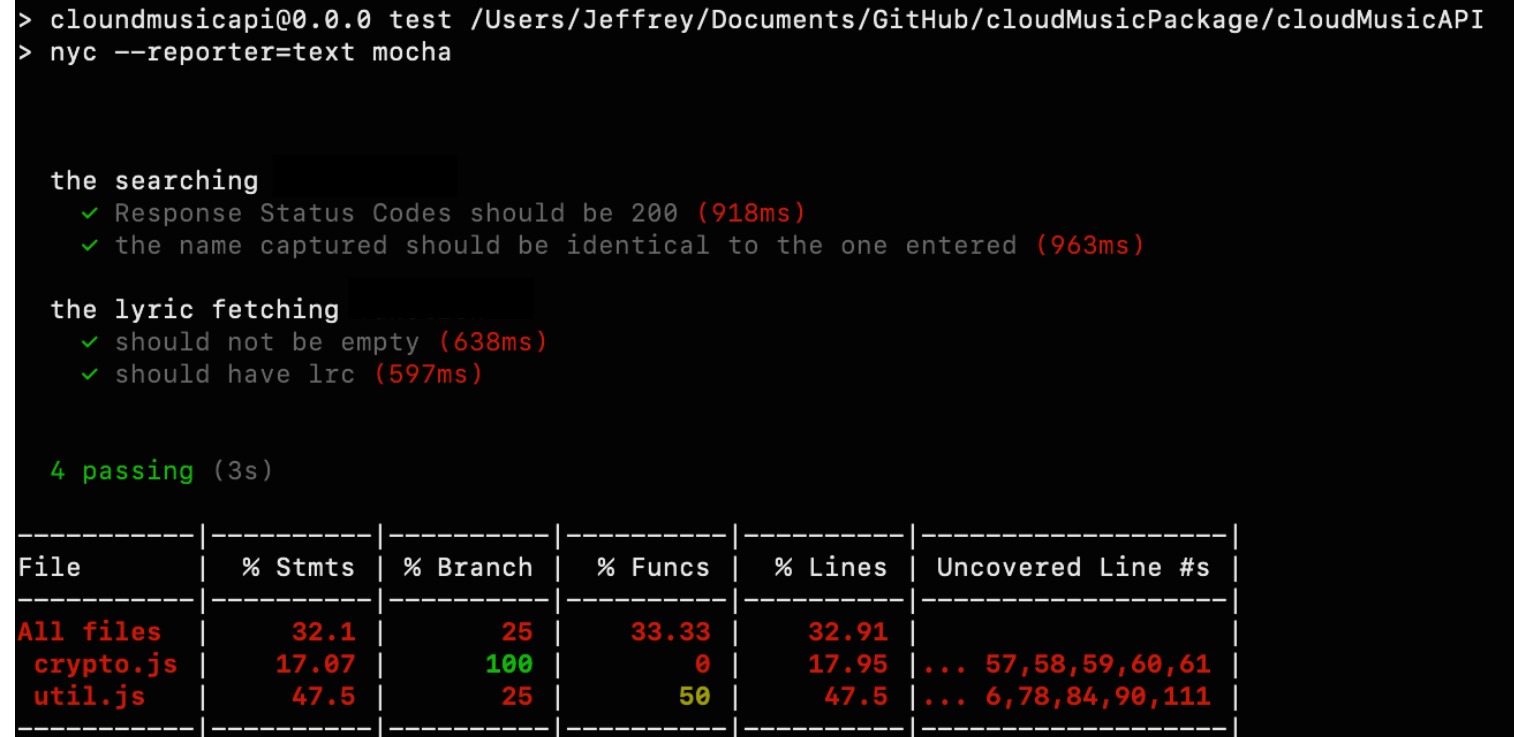

Figure 1. the coverage report created by Istanbul after the test execution.

Mutant Testing

- Step 1:

Create a new branch "mutant 2" for mutant testing.

- Step 2:

One syntactic element was changed, and the test suite was executed.

- Step 3:

Another syntactic element was then changed before the test suite was re-executed.

- Two separate reports are generated (see next 2 slides).

Figure 2. the Step-2 report

```
the searching
  1) Response Status Codes should be 200
  2) the name captured should be identical to the one entered

the lyric fetching
  ✓ should not be empty (538ms)
  ✓ should have lrc (538ms)


2 passing (2s)
2 failing

1) the searching
     Response Status Codes should be 200:

     AssertionError [ERR_ASSERTION]: The expression evaluated to a falsy value:

assert(rscode == 200)

     + expected - actual

     -false
     +true

     at /Users/Jeffrey/Documents/GitHub/cloudMusicPackage/cloudMusicAPI/mutant2/test/routers.test.js:14:9
     at processTicksAndRejections (internal/process/task_queues.js:93:5)


2) the searching
     the name captured should be identical to the one entered:
     TypeError: Cannot read property 'songs' of undefined
     at /Users/Jeffrey/Documents/GitHub/cloudMusicPackage/cloudMusicAPI/mutant2/test/routers.test.js:23:42
     at processTicksAndRejections (internal/process/task_queues.js:93:5)
```

```
-----------|----------|----------|----------|----------|-------------------|
File       | % Stmts  | % Branch | % Funcs  | % Lines  | Uncovered Line #s |
-----------|----------|----------|----------|----------|-------------------|
All files  |    30.86 |     12.5 |    33.33 |    31.65 |                   |
 crypto.js |    17.07 |      100 |        0 |    17.95 |... 57,58,59,60,61 |
 util.js   |       45 |     12.5 |       50 |       45 |... ,84,90,111,122 |
-----------|----------|----------|----------|----------|-------------------|
npm ERR! Test failed.  See above for more details.
```

```
120     )
121     if (method == 'PUT') {    //change from POST to PUT
122       http_client.write(data)
123     }
124     http_client.end()
125   })
126 }
127 module.exports = {
128   createWebAPIRequest,
129   createRequest
130 }
131
```

Figure 3. the Step-2 mutant

5

Figure 4. the Step-3 report


```
1) the searching
    Response Status Codes should be 200:

    AssertionError [ERR_ASSERTION]: The expression evaluated to a falsy value:

assert(rscode == 200)

    + expected - actual

    -false
    +true

    at /Users/Jeffrey/Documents/GitHub/cloudMusicPackage/cloudMusicAPI/mutant2/test/routers.test.js:15:9
    at processTicksAndRejections (internal/process/task_queues.js:93:5)

2) the searching
    the name captured should be identical to the one entered:
    TypeError: Cannot read property 'songs' of undefined
    at /Users/Jeffrey/Documents/GitHub/cloudMusicPackage/cloudMusicAPI/mutant2/test/routers.test.js:24:42
    at processTicksAndRejections (internal/process/task_queues.js:93:5)

3) the lyric fetching
    should not be empty:
    Error: Timeout of 2000ms exceeded. For async tests and hooks, ensure "done()" is called; if returning a
mise, ensure it resolves. (/Users/Jeffrey/Documents/GitHub/cloudMusicPackage/cloudMusicAPI/mutant2/test/route
test.js)
    at listOnTimeout (internal/timers.js:531:17)
    at processTimers (internal/timers.js:475:7)

4) the lyric fetching
    should have lrc:
    Error: Timeout of 2000ms exceeded. For async tests and hooks, ensure "done()" is called; if returning a
mise, ensure it resolves. (/Users/Jeffrey/Documents/GitHub/cloudMusicPackage/cloudMusicAPI/mutant2/test/route
test.js)
    at listOnTimeout (internal/timers.js:531:17)
    at processTimers (internal/timers.js:475:7)
```

File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	32.53	30	33.33	33.33	
crypto.js	17.07	100	0	17.95	... 57,58,59,60,61
util.js	47.62	30	50	47.62	... ,84,90,111,122


```
120         )
121         if (method == 'PUT') {   //change from POST to PUT
122             http_client.write(data)
123         }
124         //add extra wrong statements
125         if(method == 'GET') {          You, a few seconds ago
126             http_client.abort()
127         }
128         http_client.end()
129     })
130 }
131 module.exports = {
132     createWebAPIRequest,
133     createRequest
134 }
135
```

Figure 5. the Step-3 mutants

6

Mutant Testing - Description

- The mutant created in Step 2 is to change the way the method utilized in the Song Searching function.
The extra statements added in Step 3 is to change the way the method "GET" is utilized by aborting the request.