

Relatório - FizzBuzz

TDD

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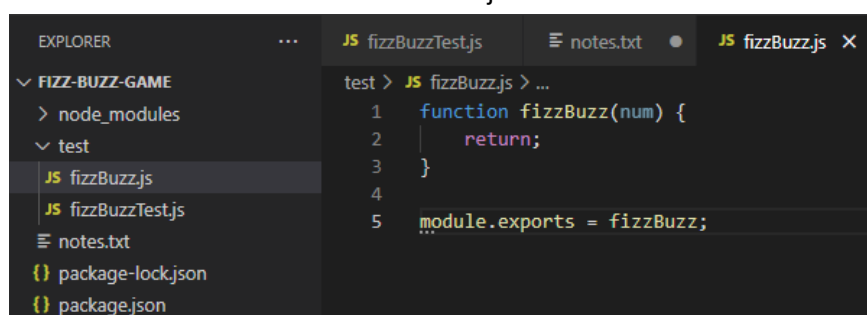
Comecei a atividade pesquisando em como fazer em JavaScript, achei o seguinte vídeo: [FizzBuzz in JavaScript - Using TDD \(Test Driven Development\)](#) e fui seguindo o passo a passo de como fazer com essa linguagem (que eu sei bem pouco).

Criei uma pasta (fizz-buzz-game e test), abri no Visual Studio e dei um "npm init" para criar o package.json e instalei o Mocha e o Chai.

```
package.json > ...
1  {
2    "name": "fizz-buzz-game",
3    "version": "1.0.0",
4    "description": "exercicio-tdd-2",
5    "main": "index.js",
6    "scripts": {
7      "test": "mocha --exit"
8    },
9    "keywords": [
10     "tdd"
11   ],
12   "author": "Nicoli Ferreira",
13   "license": "ISC",
14   "devDependencies": {
15     "chai": "^4.3.6",
16     "mocha": "^10.0.0"
17   }
18 }
19
```

Também criei 2 classes com estruturas iniciais:

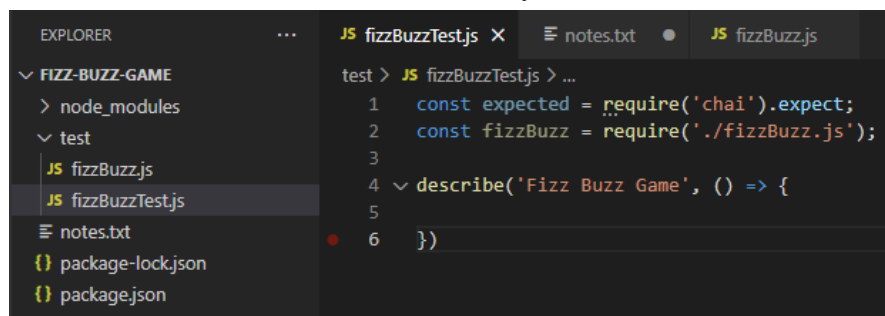
fizzBuzz.js



The screenshot shows the Visual Studio interface. On the left, the Explorer sidebar shows a project named 'FIZZ-BUZZ-GAME' with subfolders 'node_modules' and 'test'. Inside 'test', there are two files: 'fizzBuzz.js' and 'fizzBuzzTest.js'. The main editor area shows the 'fizzBuzz.js' file with the following code:

```
test > JS fizzBuzz.js > ...
1  function fizzBuzz(num) {
2    return;
3  }
4
5  module.exports = fizzBuzz;
```

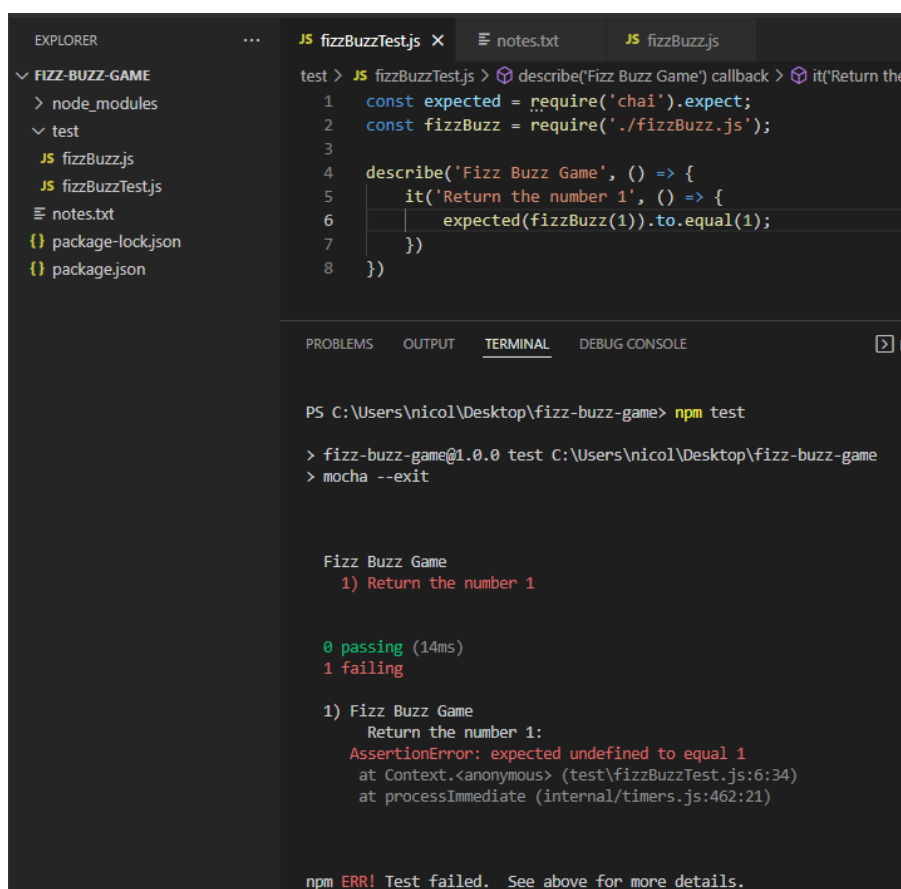
fizzBuzzTest.js



The screenshot shows the VS Code interface. The Explorer sidebar on the left displays the project structure: FIZZ-BUZZ-GAME, node_modules, test, JS fizzBuzz.js, JS fizzBuzzTest.js (selected), notes.txt, package-lock.json, and package.json. The main editor area shows the content of fizzBuzzTest.js, which includes imports for 'chai' and 'fizzBuzz', and the beginning of a 'describe' block for 'Fizz Buzz Game'.

```
test > JS fizzBuzzTest.js > ...
1  const expected = require('chai').expect;
2  const fizzBuzz = require('./fizzBuzz.js');
3
4  describe('Fizz Buzz Game', () => {
5
6  })
```

Assim, comecei a criar os testes. O primeiro foi para retornar o número 1 quando o mesmo fosse passado como parâmetro na função do game. Logo, o teste falhou.



This screenshot shows the same VS Code interface but with the test file updated and the terminal open. The test file now includes an 'it' block within the 'describe' function. The terminal shows the command 'npm test' being executed, followed by the output of the Jest test runner, which indicates that the test failed.

```
test > JS fizzBuzzTest.js > describe('Fizz Buzz Game') callback > it('Return the
1  const expected = require('chai').expect;
2  const fizzBuzz = require('./fizzBuzz.js');
3
4  describe('Fizz Buzz Game', () => {
5      it('Return the number 1', () => {
6          expected(fizzBuzz(1)).toEqual(1);
7      })
8  })
```

PROBLEMS OUTPUT **TERMINAL** DEBUG CONSOLE

```
PS C:\Users\nicol\Desktop\fizz-buzz-game> npm test

> fizz-buzz-game@1.0.0 test C:\Users\nicol\Desktop\fizz-buzz-game
> mocha --exit

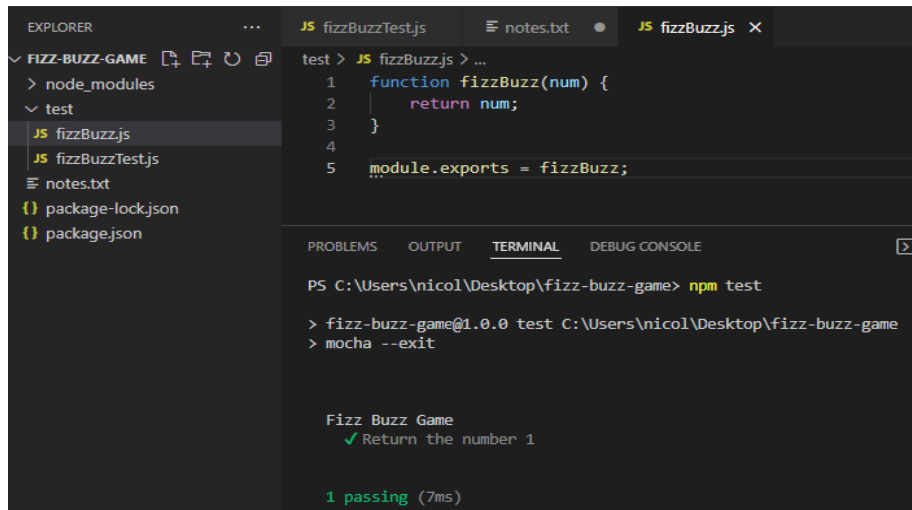
Fizz Buzz Game
  1) Return the number 1

0 passing (14ms)
1 failing

1) Fizz Buzz Game
  Return the number 1:
    AssertionError: expected undefined to equal 1
      at Context.<anonymous> (test/fizzBuzzTest.js:6:34)
      at processImmediate (internal/timers.js:462:21)

npm ERR! Test failed.  See above for more details.
```

Para corrigir aplicando o TDD, ajustei na classe a função “fizzbuzz” para que ela retornasse o número que é passado por parâmetro. Portanto, o teste passou.



The screenshot shows the VS Code interface with the Explorer on the left showing the file structure of 'FIZZ-BUZZ-GAME'. The main editor has two tabs: 'fizzBuzzTest.js' and 'fizzBuzz.js'. The 'fizzBuzz.js' tab is active, showing a simple function that returns the input number. The 'fizzBuzzTest.js' tab is also visible, showing a single test case. The terminal at the bottom shows the command 'npm test' being executed, which runs the test successfully, outputting '1 passing (7ms)'.

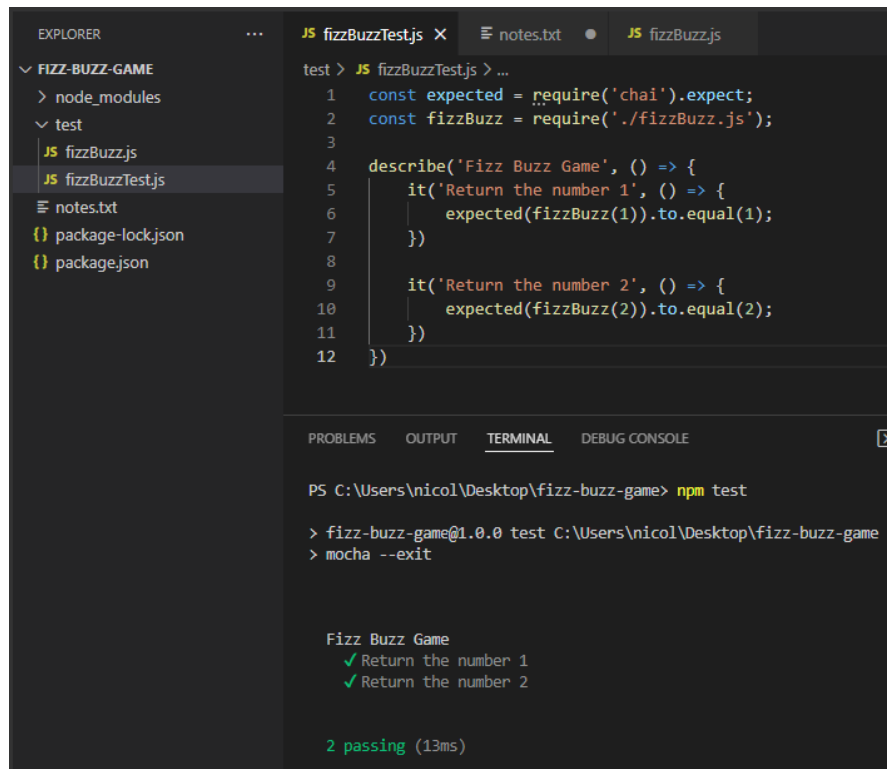
```
test > JS fizzBuzzTest.js > ...
1 function fizzBuzz(num) {
2   return num;
3 }
4
5 module.exports = fizzBuzz;
```

```
PS C:\Users\nicol\Desktop\fizz-buzz-game> npm test
> fizz-buzz-game@1.0.0 test C:\Users\nicol\Desktop\fizz-buzz-game
> mocha --exit

Fizz Buzz Game
  ✓ Return the number 1

1 passing (7ms)
```

Em seguida, adicionei mais um teste para retornar o número 2 e o teste também passou.



The screenshot shows the VS Code interface with the Explorer on the left showing the file structure of 'FIZZ-BUZZ-GAME'. The main editor has two tabs: 'fizzBuzzTest.js' and 'fizzBuzz.js'. The 'fizzBuzzTest.js' tab is active, showing two test cases. The 'fizzBuzz.js' tab is also visible, showing the function that returns the input number. The terminal at the bottom shows the command 'npm test' being executed, which runs the tests successfully, outputting '2 passing (13ms)'.

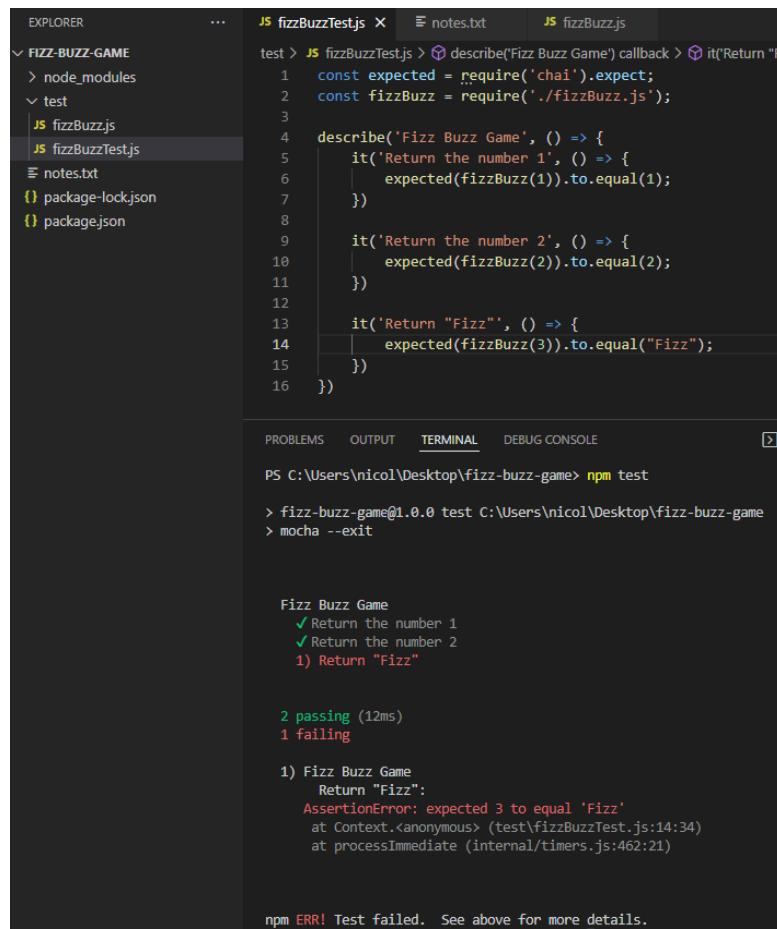
```
test > JS fizzBuzzTest.js > ...
1 const expected = require('chai').expect;
2 const fizzBuzz = require('./fizzBuzz.js');
3
4 describe('Fizz Buzz Game', () => {
5   it('Return the number 1', () => {
6     expected(fizzBuzz(1)).to.equal(1);
7   })
8
9   it('Return the number 2', () => {
10    expected(fizzBuzz(2)).to.equal(2);
11  })
12 })
```

```
PS C:\Users\nicol\Desktop\fizz-buzz-game> npm test
> fizz-buzz-game@1.0.0 test C:\Users\nicol\Desktop\fizz-buzz-game
> mocha --exit

Fizz Buzz Game
  ✓ Return the number 1
  ✓ Return the number 2

2 passing (13ms)
```

De acordo com a regra do game, adicionei um teste para que o número 3 fosse passado por parâmetro, esperando o retorno do “Fizz”. O teste falhou.



The screenshot shows the VS Code interface with the Explorer on the left, the Editor in the center, and the Terminal at the bottom. The Explorer shows a project named 'FIZZ-BUZZ-GAME' with files 'fizzBuzz.js', 'fizzBuzzTest.js', 'notes.txt', 'package-lock.json', and 'package.json'. The Editor shows the content of 'fizzBuzzTest.js' with the following code:

```
test > JS fizzBuzzTest.js > describe('Fizz Buzz Game') callback > it('Return "F
1  const expected = require('chai').expect;
2  const fizzBuzz = require('./fizzBuzz.js');
3
4  describe('Fizz Buzz Game', () => {
5    it('Return the number 1', () => {
6      expected(fizzBuzz(1)).to.equal(1);
7    })
8
9    it('Return the number 2', () => {
10     expected(fizzBuzz(2)).to.equal(2);
11   })
12
13   it('Return "Fizz"', () => {
14     expected(fizzBuzz(3)).to.equal("Fizz");
15   })
16 })
```

The Terminal shows the output of running 'npm test' in the project directory. The output indicates that the test for 'Return "Fizz"' failed. The error message is: 'AssertionError: expected 3 to equal 'Fizz''. The terminal output is as follows:

```
PS C:\Users\nicol\Desktop\fizz-buzz-game> npm test
> fizz-buzz-game@1.0.0 test C:\Users\nicol\Desktop\fizz-buzz-game
> mocha --exit

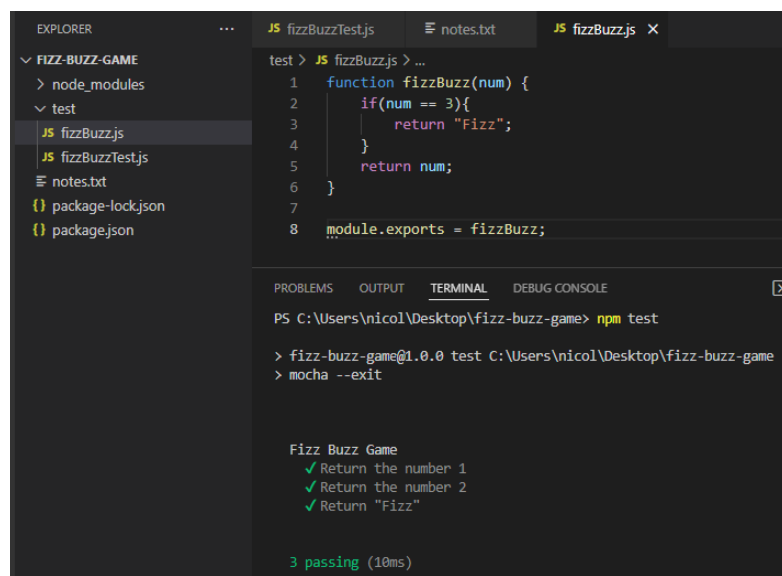
Fizz Buzz Game
  ✓ Return the number 1
  ✓ Return the number 2
  1) Return "Fizz"

2 passing (12ms)
1 failing

1) Fizz Buzz Game
   Return "Fizz":
     AssertionError: expected 3 to equal 'Fizz'
       at Context.<anonymous> (test\fizzBuzzTest.js:14:34)
       at processImmediate (internal/timers.js:462:21)

npm ERR! Test failed. See above for more details.
```

Como solução para isso, ajustei a função na classe adicionando um if para quando o parâmetro ser igual a 3. O teste passou.



The screenshot shows the VS Code interface with the Explorer on the left, the Editor in the center, and the Terminal at the bottom. The Explorer shows the same project as the previous screenshot. The Editor shows the content of 'fizzBuzz.js' with the following code:

```
test > JS fizzBuzz.js > ...
1  function fizzBuzz(num) {
2    if(num == 3){
3      return "Fizz";
4    }
5    return num;
6  }
7
8  module.exports = fizzBuzz;
```

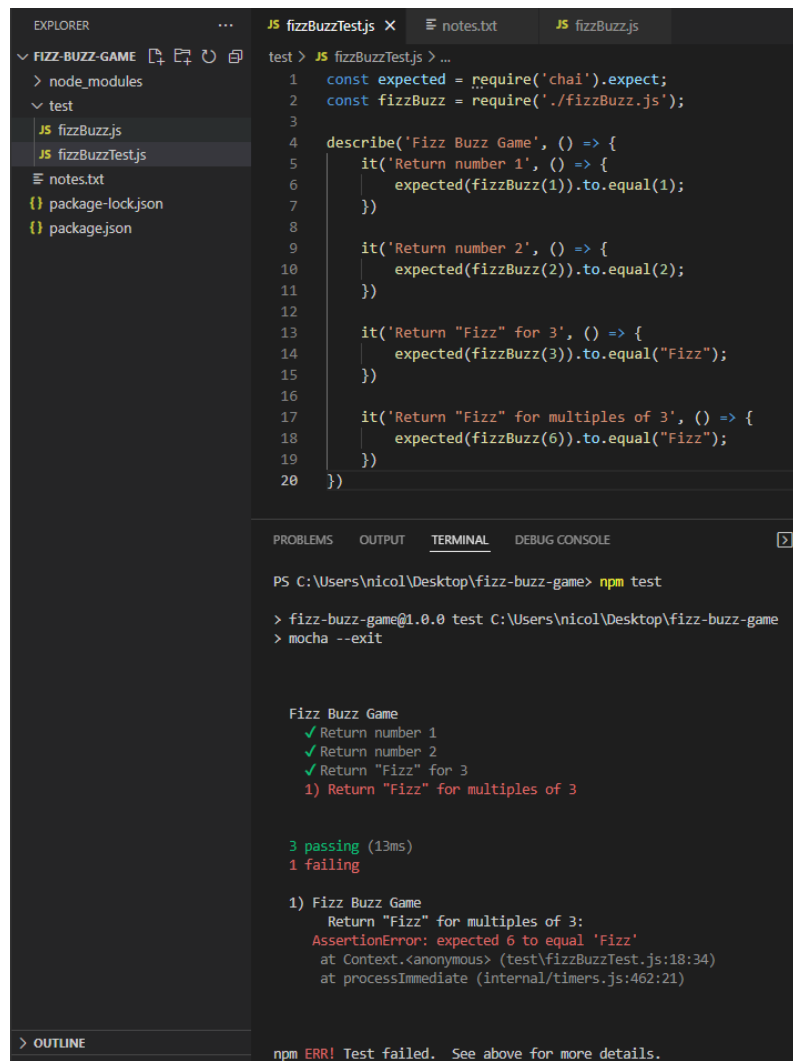
The Terminal shows the output of running 'npm test' in the project directory. The output indicates that all tests passed. The terminal output is as follows:

```
PS C:\Users\nicol\Desktop\fizz-buzz-game> npm test
> fizz-buzz-game@1.0.0 test C:\Users\nicol\Desktop\fizz-buzz-game
> mocha --exit

Fizz Buzz Game
  ✓ Return the number 1
  ✓ Return the number 2
  ✓ Return "Fizz"

3 passing (10ms)
```

Após isso, adicionei um teste para múltiplos de 3 passando o número 6 como parâmetro. Logo, o teste falhou.



The screenshot shows the VS Code interface with the Explorer on the left, the Editor in the center, and the Terminal at the bottom. The Explorer shows a project named 'FIZZ-BUZZ-GAME' with files like 'node_modules', 'test', 'fizzBuzz.js', 'fizzBuzzTest.js', 'notes.txt', 'package-lock.json', and 'package.json'. The Editor shows the 'fizzBuzzTest.js' file with the following code:

```
1 const expected = require('chai').expect;
2 const fizzBuzz = require('./fizzBuzz.js');
3
4 describe('Fizz Buzz Game', () => {
5   it('Return number 1', () => {
6     expected(fizzBuzz(1)).to.equal(1);
7   })
8
9   it('Return number 2', () => {
10    expected(fizzBuzz(2)).to.equal(2);
11  })
12
13  it('Return "Fizz" for 3', () => {
14    expected(fizzBuzz(3)).to.equal("Fizz");
15  })
16
17  it('Return "Fizz" for multiples of 3', () => {
18    expected(fizzBuzz(6)).to.equal("Fizz");
19  })
20 })
```

The Terminal shows the output of running 'npm test'. It displays the test results for the 'Fizz Buzz Game' suite, showing that the first three tests passed, but the fourth test failed:

```
PS C:\Users\nicol\Desktop\fizz-buzz-game> npm test
> fizz-buzz-game@1.0.0 test C:\Users\nicol\Desktop\fizz-buzz-game
> mocha --exit

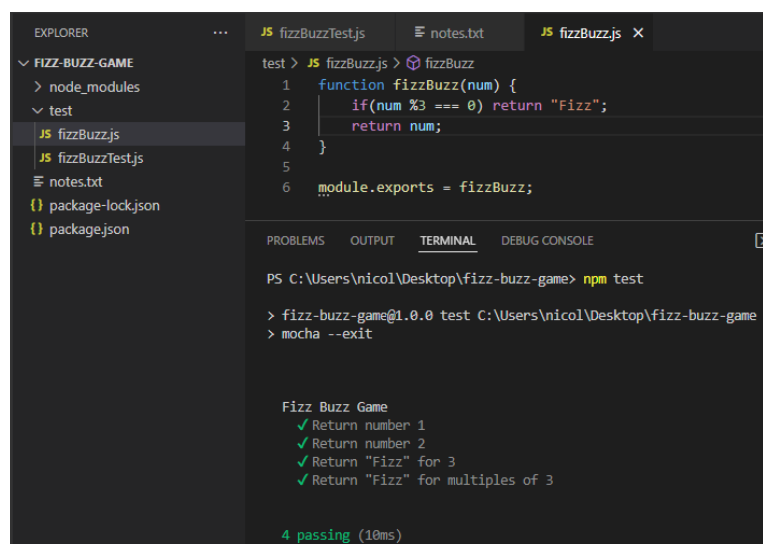
Fizz Buzz Game
  ✓ Return number 1
  ✓ Return number 2
  ✓ Return "Fizz" for 3
  1) Return "Fizz" for multiples of 3

3 passing (13ms)
1 failing

1) Fizz Buzz Game
   Return "Fizz" for multiples of 3:
    AssertionError: expected 6 to equal 'Fizz'
    at Context.<anonymous> (test\fizzBuzzTest.js:18:34)
    at processImmediate (internal/timers.js:462:21)

npm ERR! Test failed. See above for more details.
```

Refatorei a classe adicionando um if mais abrangente e o teste passou.



The screenshot shows the VS Code interface with the Explorer on the left, the Editor in the center, and the Terminal at the bottom. The Explorer shows the same project as before. The Editor shows the 'fizzBuzz.js' file with the following code:

```
1 function fizzBuzz(num) {
2   if(num %3 === 0) return "Fizz";
3   return num;
4 }
5
6 module.exports = fizzBuzz;
```

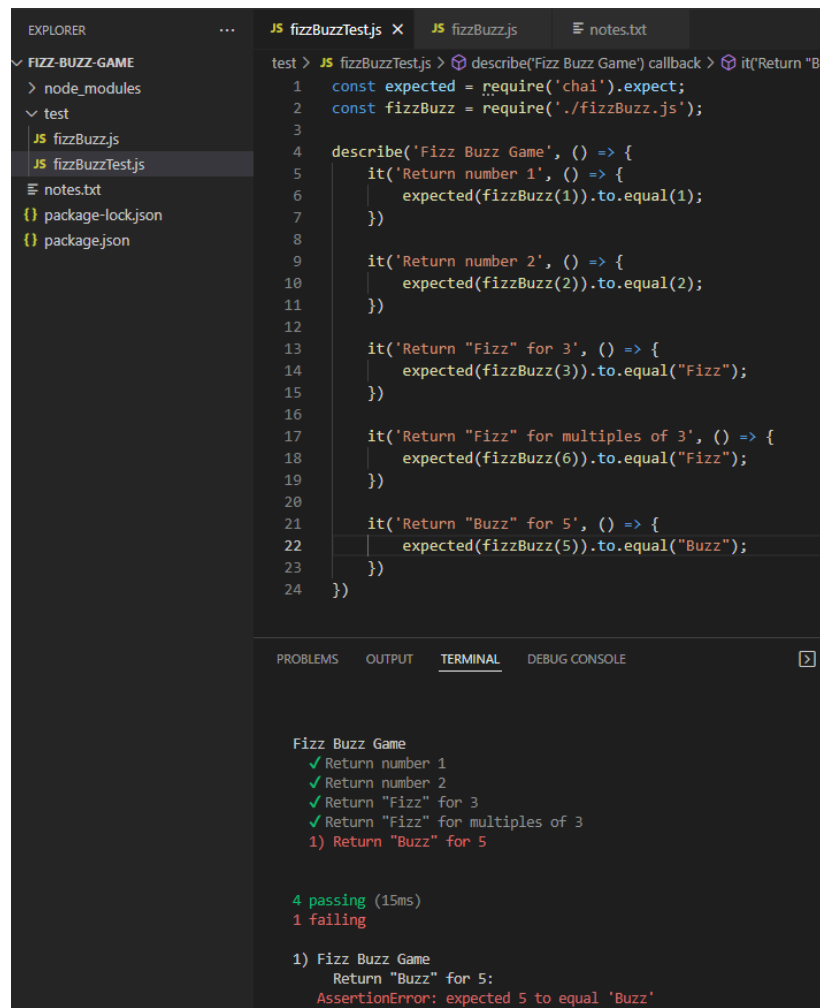
The Terminal shows the output of running 'npm test'. It displays the test results for the 'Fizz Buzz Game' suite, showing that all four tests passed:

```
PS C:\Users\nicol\Desktop\fizz-buzz-game> npm test
> fizz-buzz-game@1.0.0 test C:\Users\nicol\Desktop\fizz-buzz-game
> mocha --exit

Fizz Buzz Game
  ✓ Return number 1
  ✓ Return number 2
  ✓ Return "Fizz" for 3
  ✓ Return "Fizz" for multiples of 3

4 passing (10ms)
```

Adicionei um teste para o número 5 retornar Buzz mas o teste falhou. Pois, retornou o número 5.



The screenshot shows the VS Code editor with the file explorer on the left, the editor window in the center, and the terminal at the bottom. The file explorer shows the project structure: FIZZ-BUZZ-GAME, node_modules, test, JS, fizzBuzz.js, JS fizzBuzzTest.js, notes.txt, package-lock.json, and package.json. The editor window shows the code for fizzBuzzTest.js, which uses Jest's describe and it functions to test the fizzBuzz function. The tests are: 1) Return number 1, 2) Return number 2, 3) Return "Fizz" for 3, 4) Return "Fizz" for multiples of 3, and 5) Return "Buzz" for 5. The terminal shows the output of the tests, with the first four passing and the fifth failing. The error message is: AssertionError: expected 5 to equal 'Buzz'.

```
test > JS fizzBuzzTest.js > describe('Fizz Buzz Game') callback > it('Return "Bu
1  const expected = require('chai').expect;
2  const fizzBuzz = require('./fizzBuzz.js');
3
4  describe('Fizz Buzz Game', () => {
5    it('Return number 1', () => {
6      expected(fizzBuzz(1)).to.equal(1);
7    })
8
9    it('Return number 2', () => {
10     expected(fizzBuzz(2)).to.equal(2);
11   })
12
13   it('Return "Fizz" for 3', () => {
14     expected(fizzBuzz(3)).to.equal("Fizz");
15   })
16
17   it('Return "Fizz" for multiples of 3', () => {
18     expected(fizzBuzz(6)).to.equal("Fizz");
19   })
20
21   it('Return "Buzz" for 5', () => {
22     expected(fizzBuzz(5)).to.equal("Buzz");
23   })
24 })
```

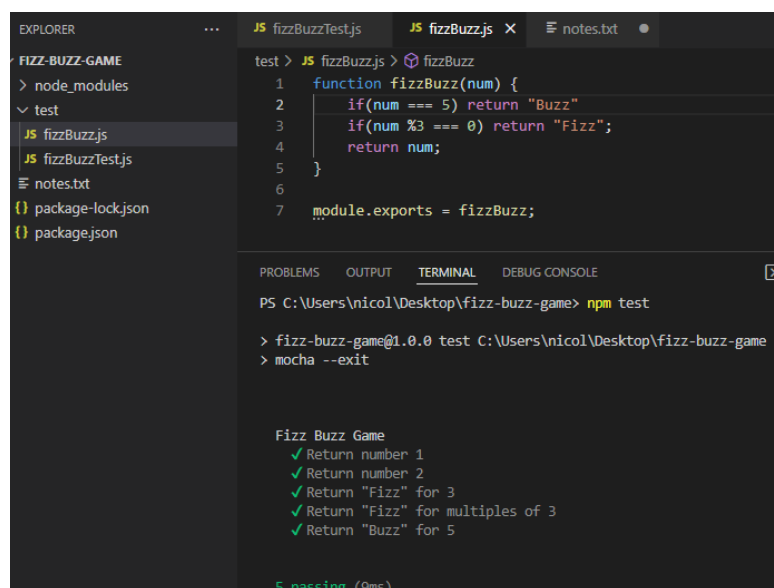
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

Fizz Buzz Game
✓ Return number 1
✓ Return number 2
✓ Return "Fizz" for 3
✓ Return "Fizz" for multiples of 3
1) Return "Buzz" for 5

4 passing (15ms)
1 failing

1) Fizz Buzz Game
Return "Buzz" for 5:
AssertionError: expected 5 to equal 'Buzz'

Adicionei um if na classe para satisfazer essa condição e o teste passou.



The screenshot shows the VS Code editor with the file explorer on the left, the editor window in the center, and the terminal at the bottom. The file explorer shows the project structure: FIZZ-BUZZ-GAME, node_modules, test, JS, fizzBuzz.js, JS fizzBuzzTest.js, notes.txt, package-lock.json, and package.json. The editor window shows the code for fizzBuzz.js, which uses a function fizzBuzz(num) to return the correct value based on the conditions: if(num === 5) return "Buzz", if(num % 3 === 0) return "Fizz", and return num. The terminal shows the output of the tests, with all five passing.

```
test > JS fizzBuzzTest.js > fizzBuzz
1  function fizzBuzz(num) {
2    if(num === 5) return "Buzz"
3    if(num % 3 === 0) return "Fizz";
4    return num;
5  }
6
7  module.exports = fizzBuzz;
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

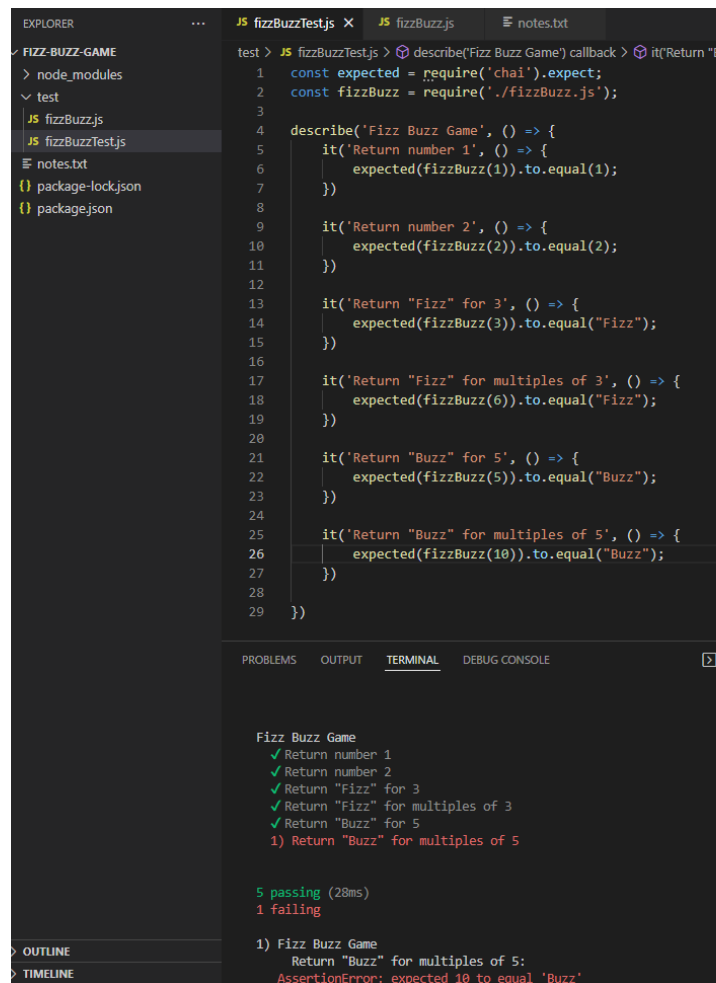
PS C:\Users\nicol\Desktop\fizz-buzz-game> npm test

> fizz-buzz-game@1.0.0 test C:\Users\nicol\Desktop\fizz-buzz-game
> mocha --exit

Fizz Buzz Game
✓ Return number 1
✓ Return number 2
✓ Return "Fizz" for 3
✓ Return "Fizz" for multiples of 3
✓ Return "Buzz" for 5

5 passing (9ms)

Adicionei mais um teste, agora para múltiplos de 5 no geral, passando o 10 por parâmetro e o teste falhou. Pois, retornou o próprio número 10.



The screenshot shows a VS Code editor with a file explorer on the left and a code editor on the right. The file explorer shows a project named 'FIZZ-BUZZ-GAME' with a 'test' directory containing 'fizzBuzzTest.js'. The code editor shows the 'fizzBuzzTest.js' file with the following code:

```
test > JS fizzBuzzTest.js > describe('Fizz Buzz Game') callback > it('Return "B'
1  const expected = require('chai').expect;
2  const fizzBuzz = require('./fizzBuzz.js');
3
4  describe('Fizz Buzz Game', () => {
5    it('Return number 1', () => {
6      expected(fizzBuzz(1)).to.equal(1);
7    })
8
9    it('Return number 2', () => {
10     expected(fizzBuzz(2)).to.equal(2);
11   })
12
13   it('Return "Fizz" for 3', () => {
14     expected(fizzBuzz(3)).to.equal("Fizz");
15   })
16
17   it('Return "Fizz" for multiples of 3', () => {
18     expected(fizzBuzz(6)).to.equal("Fizz");
19   })
20
21   it('Return "Buzz" for 5', () => {
22     expected(fizzBuzz(5)).to.equal("Buzz");
23   })
24
25   it('Return "Buzz" for multiples of 5', () => {
26     expected(fizzBuzz(10)).to.equal("Buzz");
27   })
28
29 })
```

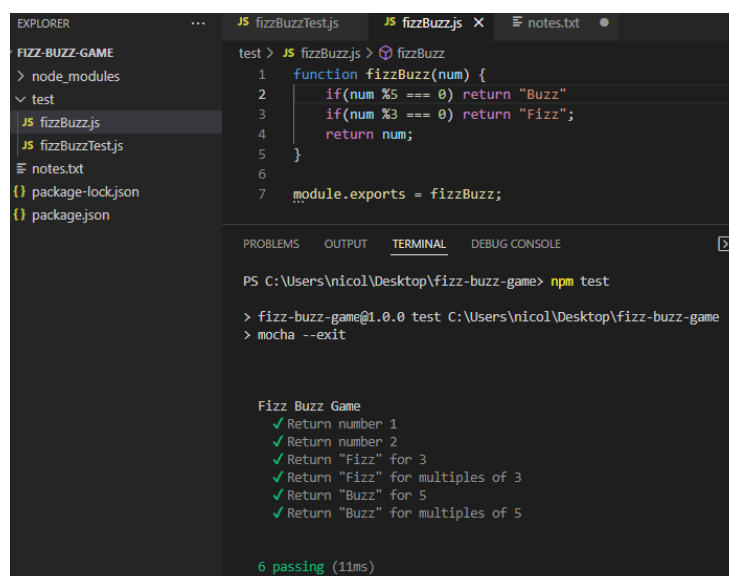
The terminal output shows the following results:

```
Fizz Buzz Game
✓ Return number 1
✓ Return number 2
✓ Return "Fizz" for 3
✓ Return "Fizz" for multiples of 3
✓ Return "Buzz" for 5
1) Return "Buzz" for multiples of 5

5 passing (28ms)
1 failing

1) Fizz Buzz Game
   Return "Buzz" for multiples of 5:
     AssertionError: expected 10 to equal 'Buzz'
```

Refatorei a classe implementando um if mais abrangente para os múltiplos de 5 e o teste passou.



The screenshot shows a VS Code editor with a file explorer on the left and a code editor on the right. The file explorer shows a project named 'FIZZ-BUZZ-GAME' with a 'test' directory containing 'fizzBuzzTest.js'. The code editor shows the 'fizzBuzz.js' file with the following code:

```
test > JS fizzBuzzTest.js > fizzBuzz
1  function fizzBuzz(num) {
2    if(num %5 === 0) return "Buzz"
3    if(num %3 === 0) return "Fizz";
4    return num;
5  }
6
7  module.exports = fizzBuzz;
```

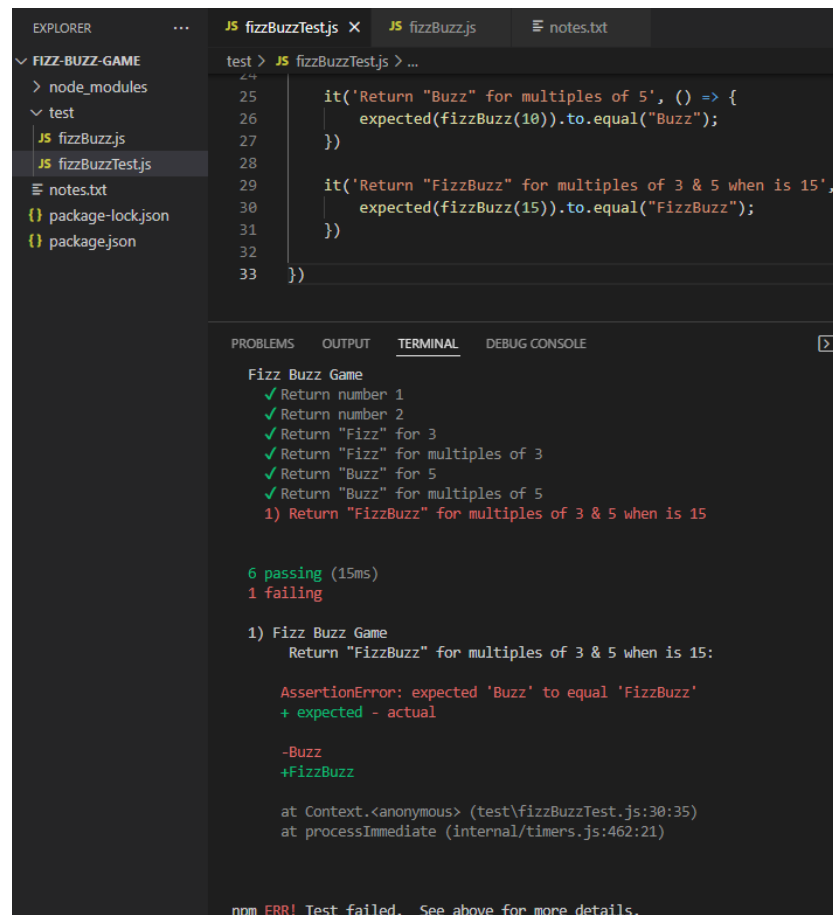
The terminal output shows the following results:

```
PS C:\Users\nicol\Desktop\fizz-buzz-game> npm test
> fizz-buzz-game@1.0.0 test C:\Users\nicol\Desktop\fizz-buzz-game
> mocha --exit

Fizz Buzz Game
✓ Return number 1
✓ Return number 2
✓ Return "Fizz" for 3
✓ Return "Fizz" for multiples of 3
✓ Return "Buzz" for 5
✓ Return "Buzz" for multiples of 5

6 passing (11ms)
```

O próximo passo foi eu adicionar um teste para retornar “FizzBuzz” quando o parâmetro for 15 (múltiplo de 3 e 5). O teste falhou pois entrou no primeiro if e retornou apenas “Buzz”.



The screenshot shows the VS Code interface with the Explorer on the left and the Editor on the right. The Explorer shows a project named 'FIZZ-BUZZ-GAME' with files like 'node_modules', 'test', 'fizzBuzz.js', 'fizzBuzzTest.js', 'notes.txt', 'package-lock.json', and 'package.json'. The Editor shows the 'fizzBuzzTest.js' file with the following code:

```
test > JS fizzBuzzTest.js > ...
25 it('Return "Buzz" for multiples of 5', () => {
26     expected(fizzBuzz(10)).to.equal("Buzz");
27 })
28
29 it('Return "FizzBuzz" for multiples of 3 & 5 when is 15',
30     expected(fizzBuzz(15)).to.equal("FizzBuzz"));
31 })
32
33 })
```

The Terminal at the bottom shows the output of the test run:

```
Fizz Buzz Game
✓ Return number 1
✓ Return number 2
✓ Return "Fizz" for 3
✓ Return "Fizz" for multiples of 3
✓ Return "Buzz" for 5
✓ Return "Buzz" for multiples of 5
1) Return "FizzBuzz" for multiples of 3 & 5 when is 15

6 passing (15ms)
1 failing

1) Fizz Buzz Game
   Return "FizzBuzz" for multiples of 3 & 5 when is 15:

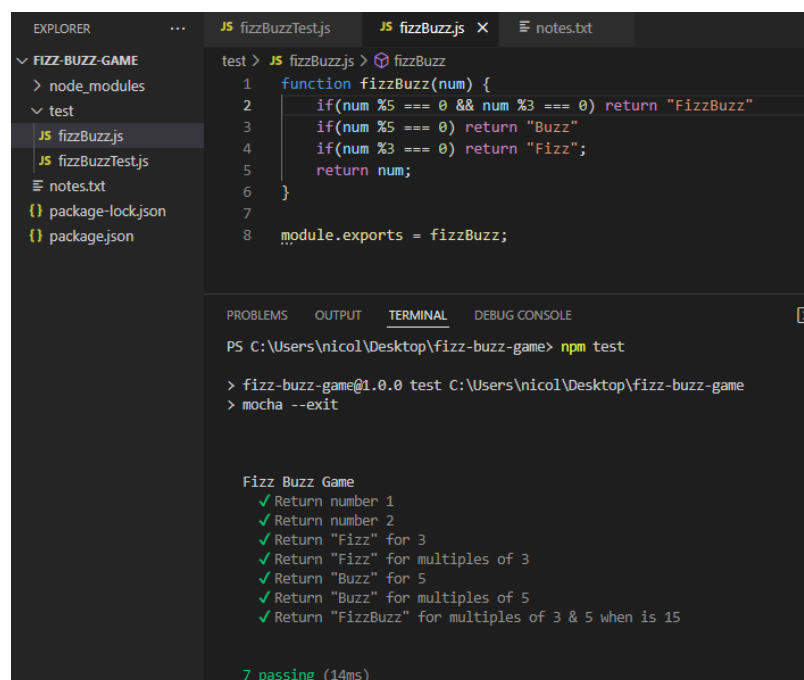
   AssertionError: expected 'Buzz' to equal 'FizzBuzz'
   + expected - actual

   -Buzz
   +FizzBuzz

   at Context.<anonymous> (test\fizzBuzzTest.js:30:35)
   at processImmediate (internal/timers.js:462:21)

npm ERR! Test failed. See above for more details.
```

Refatorei a classe com um novo if checando as duas condições e o teste passou.



The screenshot shows the VS Code interface with the Explorer on the left and the Editor on the right. The Explorer shows the same project as the previous screenshot. The Editor shows the 'fizzBuzz.js' file with the following code:

```
test > JS fizzBuzz.js > fizzBuzz
1 function fizzBuzz(num) {
2     if(num %5 === 0 && num %3 === 0) return "FizzBuzz"
3     if(num %5 === 0) return "Buzz"
4     if(num %3 === 0) return "Fizz";
5     return num;
6 }
7
8 module.exports = fizzBuzz;
```

The Terminal at the bottom shows the output of the test run:

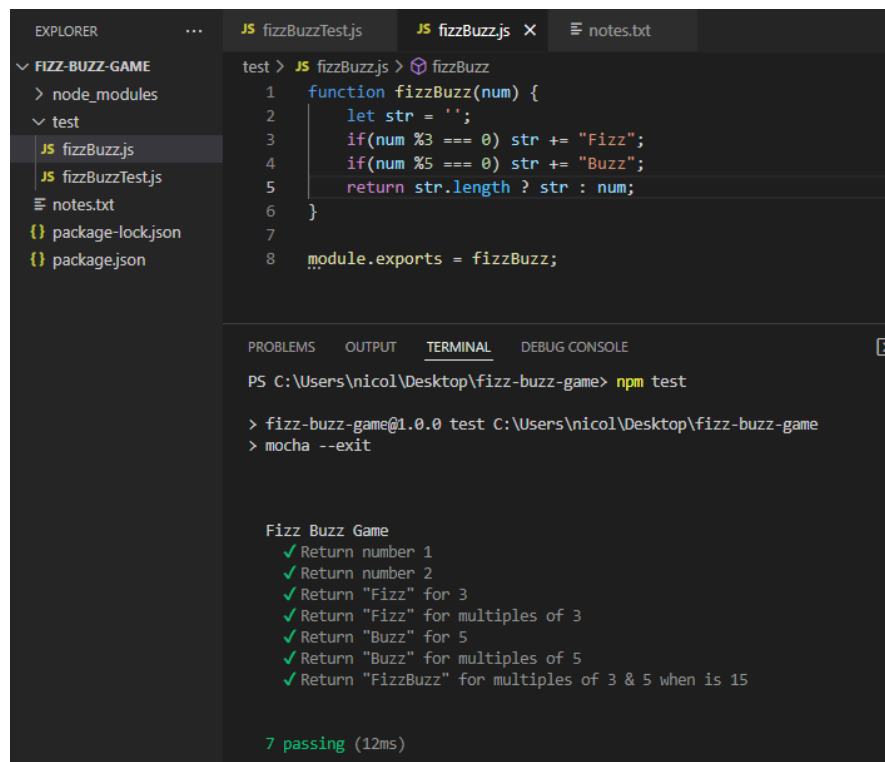
```
PS C:\Users\nicol\Desktop\fizz-buzz-game> npm test

> fizz-buzz-game@1.0.0 test C:\Users\nicol\Desktop\fizz-buzz-game
> mocha --exit

Fizz Buzz Game
✓ Return number 1
✓ Return number 2
✓ Return "Fizz" for 3
✓ Return "Fizz" for multiples of 3
✓ Return "Buzz" for 5
✓ Return "Buzz" for multiples of 5
✓ Return "FizzBuzz" for multiples of 3 & 5 when is 15

7 passing (14ms)
```


Por fim refatorei a classe para melhorar o desempenho e as boas práticas.



The screenshot shows the Visual Studio Code interface with the Explorer, Editor, and Terminal panels. The Explorer panel on the left shows the project structure for 'FIZZ-BUZZ-GAME', including 'node_modules', 'test', 'fizzBuzz.js', 'fizzBuzzTest.js', 'notes.txt', 'package-lock.json', and 'package.json'. The Editor panel in the center displays the 'fizzBuzz.js' file with the following code:

```
1 function fizzBuzz(num) {  
2   let str = '';  
3   if(num %3 === 0) str += "Fizz";  
4   if(num %5 === 0) str += "Buzz";  
5   return str.length ? str : num;  
6 }  
7  
8 module.exports = fizzBuzz;
```

The Terminal panel at the bottom shows the command 'npm test' being executed. The output indicates that the tests passed successfully:

```
PS C:\Users\nicol\Desktop\fizz-buzz-game> npm test  
  
> fizz-buzz-game@1.0.0 test C:\Users\nicol\Desktop\fizz-buzz-game  
> mocha --exit  
  
Fizz Buzz Game  
✓ Return number 1  
✓ Return number 2  
✓ Return "Fizz" for 3  
✓ Return "Fizz" for multiples of 3  
✓ Return "Buzz" for 5  
✓ Return "Buzz" for multiples of 5  
✓ Return "FizzBuzz" for multiples of 3 & 5 when is 15  
  
7 passing (12ms)
```