

Week- 3

Backend Engineering Launchpad

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UNIT TESTING AND DEBUGGING

Node JS

Agenda

- Why do we need unit testing ?
- Frameworks for unit testing in node js
- Writing effective unit testing - Understanding mock, stub, code coverage
- Continuous Integration - Integrating unit testing into continuous integration
- Unit testing exercise for course rating application
- Question and answers

What are unit tests and why test ?

- Unit tests help catch errors early in the development process
- Helps improving code quality
- Allow safe refactoring and modularization of code
- Encourages collaboration and allows parallel development
- Tests serve as good documentation
- **Tests help reduce fear of things breaking on prod :)**

Difference between unit and integration testing

Unit Tests

- ▶ Isolate each part of the program

- ▶ Show that the individual parts are working correctly

Integration tests

- ▶ Test the interoperability of multiple subsystems

- ▶ Tests that “the nuts fit the bolts”

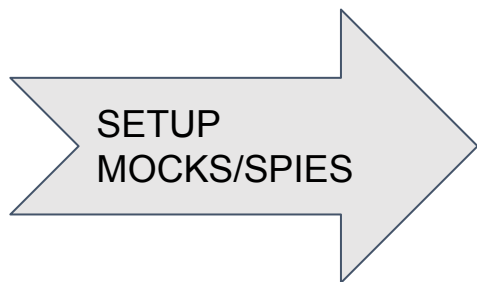
Frameworks for unit testing – Node JS

- Test Runner - Mocha.js
- Assertion Framework - Chai.js
- Stubbing/Mocking tool - Sinon.js
- All in one comprehensive framework - Jest
- Jest includes its own built in assertion library and mocking functionality
- Some other available frameworks - Jasmine, Tape, Ava

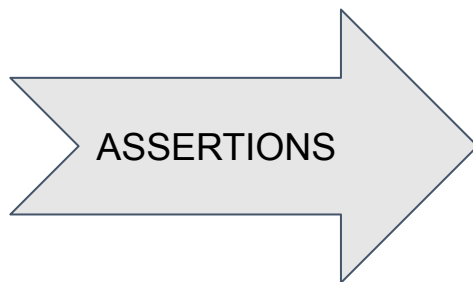
Anatomy of unit testing



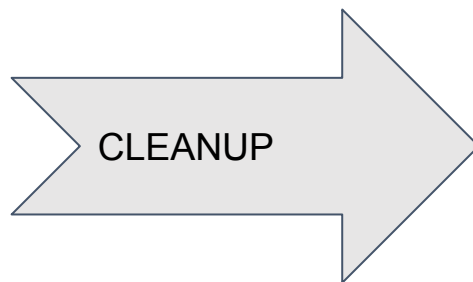
Anatomy of unit testing – Mochafied



`before()`
`beforeEach()`



`it()`



`after()`
`afterEach()`

Problem statement

Identify problems with unit testing this piece of code

```
const axios = require('axios');

function processAPIResponse() {
  axios.get('https://api.example.com/data')
    .then((response) => {
      // Process the API response
      const processedData = response.data.map((item) => {
        // Perform some transformations on the data
        return item.name.toUpperCase();
      });

      saveProcessedData(processedData);
    })
    .catch((error) => {
      console.error('Error fetching data:', error);
    });
}

function saveProcessedData(data) {
  // Save the processed data to a database or file system
  // ...
}

module.exports = {
  processAPIResponse,
};
```

Thank You!