



Full Stack Software Development

Course: Server-Side
Development Using Node.js,
Express.js and MongoDB

Lecture on: Unit Testing and
Mocking

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Testing in Software Development

Levels of Testing

1**Unit Testing**

By Developer

2**Integration Testing**

By Developer & Tester

3**System Testing**

By Tester

4**User Acceptance Testing**

By End User / Customer

Poll 1 (15 seconds)

Can a developer perform system testing?

1. YES
2. NO

Poll 1 (Answer)

Can a developer perform system testing?

1. **YES**

2. NO

Today's Agenda

- Learn the importance of testing
- Tools for testing and its need
- Introduction to Mocha and Chai
- Create a small project for implementing different test cases
- Write test cases of Node APIs



What is Software Testing?



- ❖ Software testing is a method to check whether the software is able to meet the predefined requirements
- ❖ It is a mechanism to ensure the final product is defect free
- ❖ It ensures the end user will have a flawless experience using the software
- ❖ Testing ensures a quality product is delivered to customers
- ❖ It is a step before the launch of the product to the market. It includes examination, analysis, observation, and evaluation of different aspects of a product
- ❖ Testing can be done manually by a tester or it can be automated by some piece of code

Some of the well know tools for testing in Node.js include:

- Mocha
- Jest
- Lab and Code
- AVA
- Chai
- Test Double

Why do we need Testing Tools?

- ❖ To ensure a certain type of guideline while writing a test code
- ❖ To have a common ground where anyone can pick up from where another developer has left
- ❖ To get consistent performance
- ❖ To manage the test codebase and test history

Poll 2 (15 seconds)

What type of testing does a developer perform with the help of testing tools?

1. Manual Testing
2. Automated Testing
3. Both

Poll 2 (Answer)

What type of testing does a developer perform with the help of testing tools?

1. **Manual Testing**
2. Automated Testing
3. Both

Mocha in Node.js



By definition, Mocha is a feature-rich JavaScript test framework running on Node.js and in the browser, making asynchronous testing *simple* and *fun*. Mocha tests run serially, allowing for flexible and accurate reporting while mapping uncaught exceptions to the correct test cases

- ❖ Using Mocha, you can write unit test cases for our API functions
- ❖ You can map a particular function to a test case with the help of Mocha framework
- ❖ You can write unit test cases using Mocha features

Chai in Node.js



By definition, Chai is an assertion library, similar to Node's built-in assert. It makes testing much easier by giving you lots of assertions you can run against your code

- ❖ Chai is an alternative to Node.js `assert()` function, but with lot of add-on features
- ❖ Chai is always used along with Mocha to form a proper unit test case
- ❖ Assert means to test whether a given expression is true or false

```
var assert = require('assert');  
assert(50 > 70); // False
```

This assert method is the default assertion method for Node.js which will check the expression and return boolean value 'false'

Doubt Clearance (5 mins)

Key Takeaways

1. Learned the importance of testing in Node.js
2. Learned the importance of Mocha and Chai framework
3. Implementation and integration of unit test cases

The following tasks are to be completed after today's session:

Homework
MCQs
Coding Questions



Thank You!