Skills Network

Testing React Components

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What you will learn

Explain what is testing

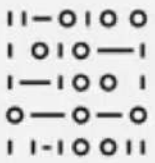
List the advantages and disadvantages of testing

Describe the different approaches of component testing

Describe the testing tools

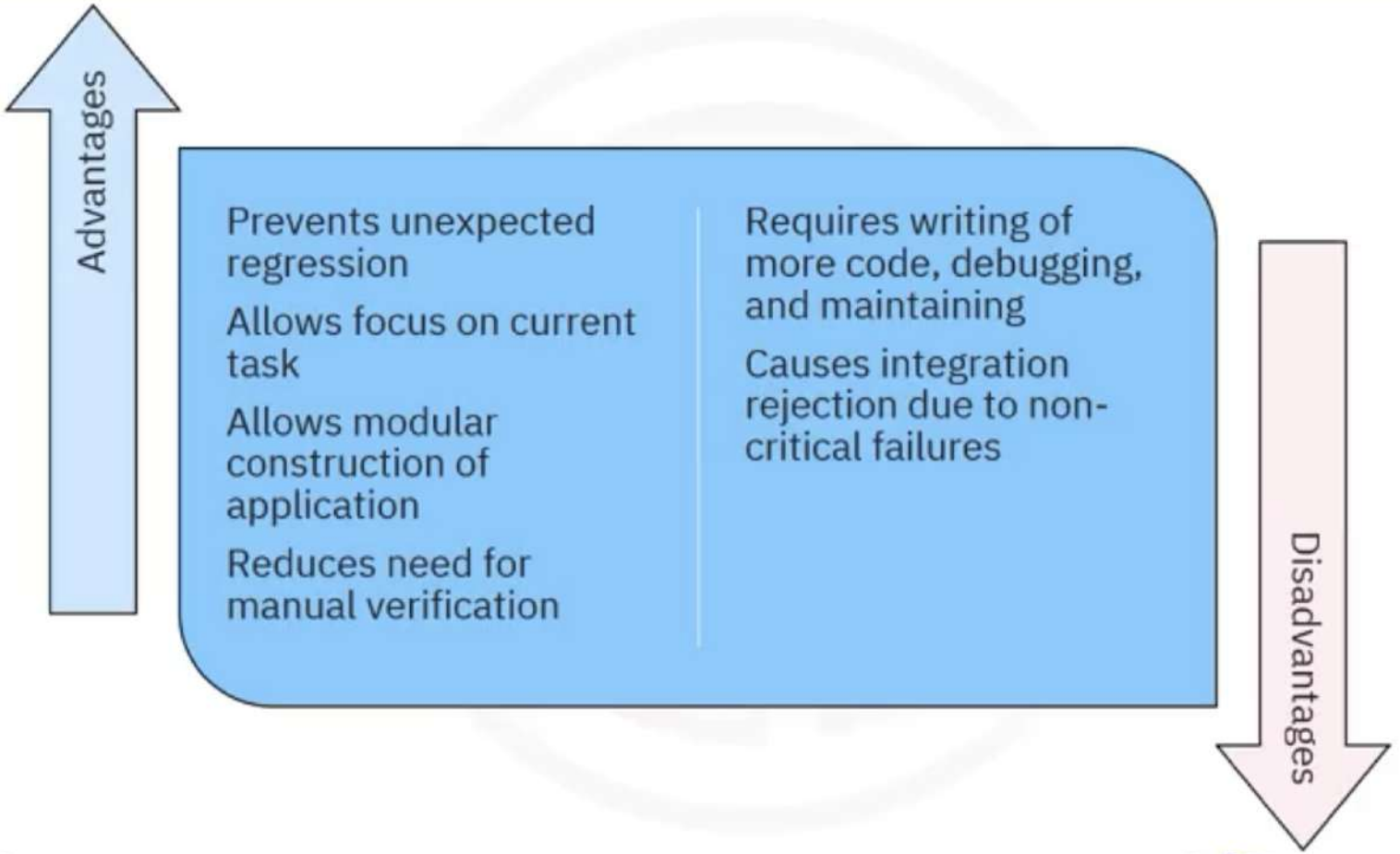
What is testing?

Is a line-by- line review of how your code will execute



Can be a suite of tests comprising bits of code to verify error-free execution of application

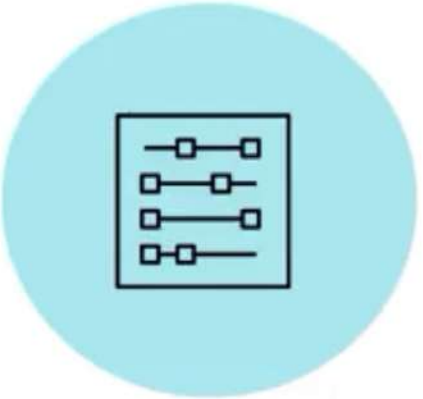
Advantages and disadvantages of testing



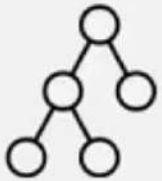
Why test React components?

Testing of React components:

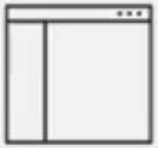
- Ensures application will work as intended
- Verifies the code runs error-free
- Tests functionality by replicating the actions of the end users
- Validates any updates done do not affect the working of the overall application
- Prevents regression that is reappearance of a previous fixed bug



Approaches of React component testing

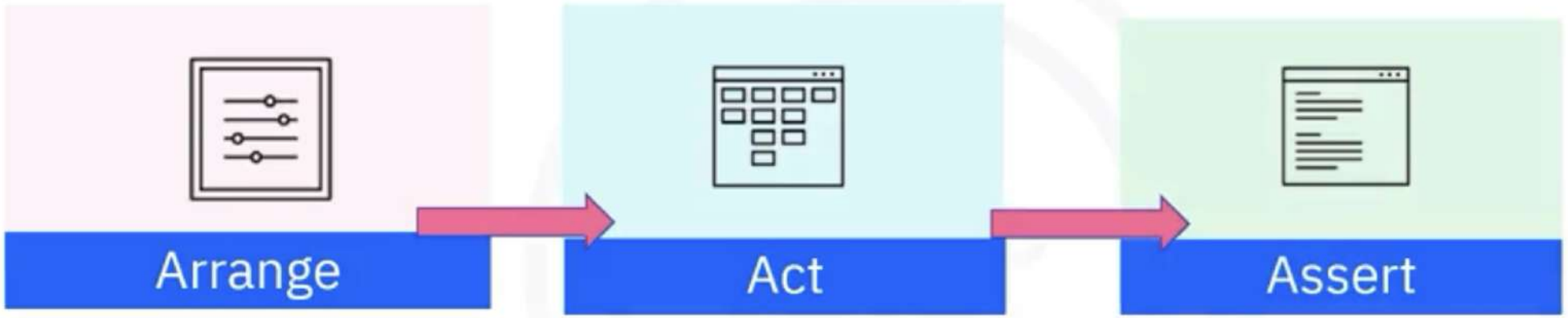


Render component trees in a simple test environment and assert their output



Run application in a realistic browser environment to do end-to-end testing

Phases of React component testing



Choosing the right tool

Speed vs environment

Tools can:

- Give quick feedback but inaccurate browser behavior
- Use real browser environment but give slow iteration

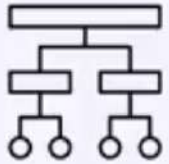
What to mock

- Unit (buttons)
- Integration (form)

React testing libraries/tools

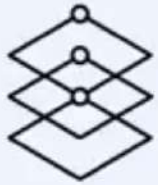
- Mocha: Test runner
- Chai: Assertion library
- Sinon: Spies, stubs, mocks
- Enzyme: Render components

Popular React testing libraries



Jest

Combined Power of Mocha, Chai, Sinon

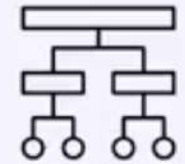


React Testing Library

Set of helpers

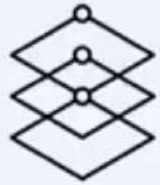
Testing with Jest

- JavaScript test runner
- Combined with Enzyme or React Testing Library
- Can access DOM via jsdom
- Great iteration speed with mocking modules and timers
- Command line tool
- Mock functions
- Offers snapshot
- A dependency to React when using npx-create-react-app



Testing with React Testing Library

- Light utility functions on top of react-dom and react-dom/test-utils
- Facilitate querying the DOM, finding form elements, and finding links and buttons
- Finds elements where the text is not understandable
- Encourages applications to be more accessible
- Is a replacement for Enzyme

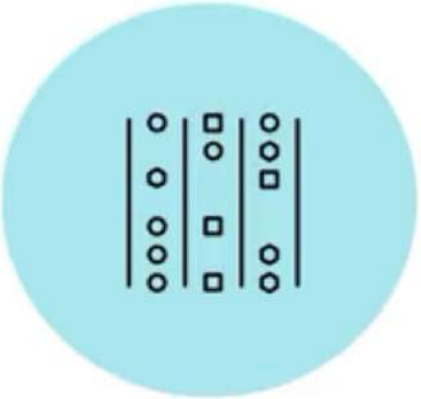


Example of usage of React Testing Library

```
import {render, screen} from '@testing-library/react'
import userEvent from '@testing-library/user-event'
import '@testing-library/jest-dom'
import Fetch from './fetch'

test('loads and displays greeting', async () => {
  // ARRANGE
  render(<Fetch url="/greeting" />)

  // ACT
  await userEvent.click(screen.getByText('Load Greeting'))
  await screen.findByRole('heading')

  // ASSERT
  expect(screen.getByRole('heading')).toHaveTextContent('hello there')
  expect(screen.getByRole('button')).toBeDisabled()
})
```

Benefits of React Test Library

- Provides reliable testing of the components in the same way as an end user would use them
- Enables you to write your tests based on the component output visible to the end users
- Rewriting your tests increases your productivity



Recap

In this video, you learned that:

- Testing is a line-by-line review of how your code will execute.
- You can render component trees in a simple test environment or a realistic browser environment.
- Component tests flow through three phases: Arrange, Act, and Assert.
- React components can be tested using Mocha, Chai, Sinon, Jest and React Testing Library.
- React Testing Library increases confidence in your tests by testing your components in the same way as an end user would use the components.