End-to-End Testing Angular Applications

THE DEPARTMENT OF
COMPUTER **S**CIENCE & **E**NGINEERING
計算機科學及工程學系

香港科技大學
THE HONG KONG UNIVERSITY OF
SCIENCE AND TECHNOLOGY

End-to-End Testing

- Unit Testing is great for testing the units in isolation
  - Frequent repeated tests
  - Fast
  - Does not test the interaction among the units
  - Small test coverage scope
- Need integration and end-to-end tests
  - Covers large group of module interactions
  - Slow, so not repeated frequently

Testing Strategies

E2E Tests

Few, slow, tests everything including user interaction

Integration Tests

Testing interactions among modules

Unit Tests

Testing individual units in isolation, numerous tests, repeated frequently

Unit and Integration Tests

- In the previous lecture and exercise we examined unit tests:

  - Some of the tests were integration tests: testing interaction between the controller, service and mock back end using $httpBackend

Protractor

- Node program that enables running of end-to-end tests
  - Runs tests against your application running in a browser and interacting with it like a real user
- Uses WebDriver to control browsers to carry out the tests
  - Selenium browser automation framework
  - Can use Direct Connect to test with Chrome and Firefox
- Uses Jasmine for expressing the test syntax

Protractor Configuration Example

```
exports.config = {
    allScriptsTimeout: 11000,
    specs: [ 'e2e/*.js' ],
    capabilities: { 'browserName': 'chrome' },
    baseUrl: 'http://localhost:3001/',
    framework: 'jasmine',
    directConnect: true,
    jasmineNodeOpts: { defaultTimeoutInterval: 30000 }
};
```

Protractor Test Example

```
'use strict';
describe('conFusion  App E2E Testing', function() {

    it('should  automatically redirect to / when location hash/fragment  is empty',
function()  {
            browser.get('index.html');
            expect(browser.getLocationAbsUrl()).toMatch("/");
    });

});
```

Protractor Test Example

```
describe('menu 0 item', function() {
    beforeEach(function() {
        browser.get('index.html#/menu/0');
    });

    it('should have a name', function() {
        var name = element(by.binding('dish.name'));
        expect(name.getText()). toEqual('Uthapizza Hot $4.99');
    });
});
```

Protrator Test Example

```
it('should show the first comment author as', function() {
        element(by.model('orderText')).sendKeys('author');

        expect(element.all(by.repeater('comment  in dish.comments'))
        .count()).toEqual(5);

        var author = element.all(by.repeater('comment  in dish.comments'))
                .first().element(by.binding('comment.author'));

        expect(author.getText()).toContain('25 Cent');
});
```

Exercise: End-to-End Testing Angular Applications

- Configure a protractor configuration file

- Set up e2e tests using Jasmine and carry out the e2e test automatically