

 무료 전자 책

배우기

protractor

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1:

AngularJS - - .

Protractor Selenium WebDriver () Selenium WebDriver . AngularJS
waitForAngular, By.binding, By.repeater, By.textarea, By.model, WebElement.all,
WebElement.evaluate .

0.0.1 2016-08-01

Examples

(Windows)

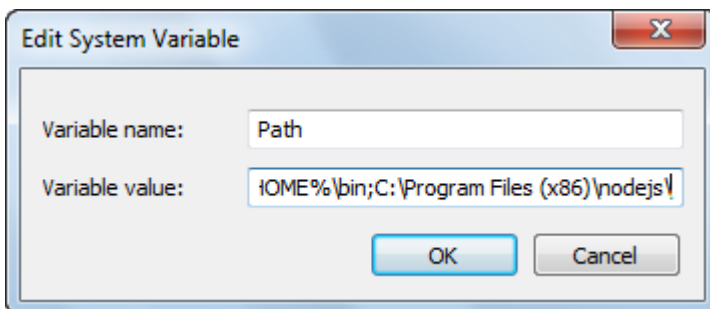
:

- Java JDK 1.7
- Node.js v4

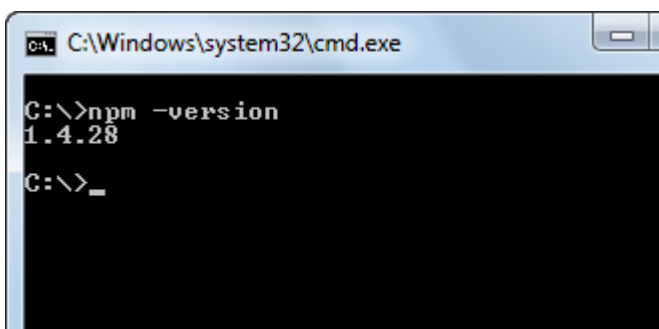
:

URL Node.js . <https://nodejs.org/en/>

Node.js . " .



npm -version . . .



:

.

```
npm install protractor
```

.

```
$ npm install -g protractor
```

```
protractor webdriver-manager .
```

```
protractor --version .
```

```
webdriver-manager .
```

.

```
$ webdriver-manager update
```

.

```
$ webdriver-manager start
```

Internet Explorer `webdriver-manager update --ie . IEDriverServer.exe .`

, `spec()` . , , URL,

Chrome.

conf.js -

```
exports.config = {
  seleniumAddress: 'http://localhost:4444/wd/hub',
  specs: ['spec.js']
};
```

spec.js - ()

```
describe('first test in protractor', function() {
  it('should verify title', function() {
    browser.get('https://angularjs.org');

    expect(browser.getTitle()).toEqual('AngularJS - Superheroic JavaScript MVW Framework');
  });
});
```

seleniumAddress - webdriver .

specs -

describe - [Jasmine](#) . **sta** describe

, **spec** .

AngularJS **todo** **ToDo** .

spec.js .

('angularjs todo', function () {it 'todo', function () {browser.get (' <https://angularjs.org> ');

```
element(by.model('todoList.todoText')).sendKeys('write first protractor test');
element(by.css('[value="add"]')).click();

var todoList = element.all(by.repeater('todo in todoList.todos'));
expect(todoList.count()).toEqual(3);
expect(todoList.get(2).getText()).toEqual('write first protractor test');

// You wrote your first test, cross it off the list
todoList.get(2).element(by.css('input')).click();
var completedAmount = element.all(by.css('.done=true'));
expect(completedAmount.count()).toEqual(2);});});});
```

describe () **fdescribe** () .

```
fdescribe('first group', ()=>{
  it('only this test will run', ()=>{
    //code that will run
  });
});
describe('second group', ()=>{
  it('this code will not run', ()=>{
    //code that won't run
  });
});
```

it () **fit** () .

```
describe('first group', ()=>{
  fit('only this test will run', ()=>{
    //code that will run
  });
  it('this code will not run', ()=>{
    //code that won't run
  });
});
```

fdescribe () **fit** () **it** () . **fit** () **describe** () **fdescribe** () **it** () .

```
fdescribe('first group', ()=>{
  fit('only this test will run', ()=>{
    //code that will run
  });
  it('this code will not run', ()=>{
```



```
        //code that won't run
    });
});
```

fit () fdescribe () describe () . fit () fdescribe () it () .

```
fdescribe('first group', ()=>{
  it('this test will run', ()=>{
    //code that will run
  });
  it('this test will also run', ()=>{
    //code that will also run
  });
});
describe('second group', ()=>{
  it('this code will not run', ()=>{
    //code that won't run
  });
  fit('this code will run', ()=>{
    //code that will run
  });
});
```

. :

```
Pending:
1) Test Name
Temporarily disabled with xit
```

xdescribe () :

```
Pending:
1) Test Name
No reason given
```

- xdescribe () xit () xit () .
- fdescribe () xit () .
- xdescribe () fit () .

: **E2E**

1 : NodeJS . . , v7.8.0 . Java Development Kit (JDK) .

2 : .

```
npm install -g protractor
```

webdriver . protractor -version. Installation :protractor -version. (: 5.1.1). .3 :
webdriver .

```
webdriver-manager update
```

4 : Selenium Server .

webdriver-manager start http://localhost:4444/wd/hub/static/resource/hub.html.
http://localhost:4444/wd/hub/static/resource/hub.html.

:

.

:

```
//In conf.js
exports.config = {
  baseUrl: 'http://localhost:8800/adminapp',
  seleniumAddress: 'http://localhost:4444/wd/hub',
  specs: ['product/product_test.js'],
  directConnect : true,
  capabilities :{
    browserName: 'chrome'
  }
}
```

:

baseUrl - URL.

seleniumAddress - Selenium Server .

specs -

directConnect : true - .

- capabilities . multiCapabilities .

.

:

```
//In product_test.js

describe('Angular Enterprise Boilerplate', function() {
  it('should have a title', function() {
    browser.get('http://localhost:8800/adminapp');
    expect(browser.getTitle()).toEqual('Angular Enterprise Boilerplate');
  });
});
```

spec :

." " . . :

.

.

```
Protractor app/conf.js
```

```
URL . 1,1,0.
```

```
! .
```

```
: https://riptutorial.com/ko/protractor/topic/933/-
```

2: browser.wait ()

Examples

browser.sleep () vs browser.wait ()

""" browser.sleep(<timeout_in_milliseconds>) . browser.sleep(<timeout_in_milliseconds>) .

. / ., .

browser.wait() . / WebDriverJS true . true .

().

browser.wait () : <https://riptutorial.com/ko/protractor/topic/8297/browser-wait----->

3: CSS

- `by.css ('css-selector')`
- `by.id ('id')`
- `by.model ('model')`
- `by.binding ('')`

CSS	' .class-name'	CSS	.
DOM			

CSS ?

CSS dom ID. html dom :

```
<form class="form-signin">
  <input type="text" id="email" class="form-control" placeholder="Email">
  <input type="password" id="password" class="form-control" placeholder="Password">
  <button class="btn btn-block" id="signin-button" type="submit">Sign in</button>
</form>
```

CSS .

1. : CSS () . CSS .form-control .

```
by.css('.form-control')
```

form-control . id id .

2. ID : CSS ID # () . id CSS .

```
by.css('#email')
```

3. : dom CSS . dom :

```
<input class="username-class form-control">
// css selector using multiple classes
by.css('.username-class.form-control')
```

4. : CSS tagname[attribute-type='attribute-vallue'] . css locator :

```
by.css("button[type='submit']") //or
by.css("button[id='signin-button']")
```

Examples

\$ \$\$ CSS

API CSS jQuery `$()` .

CSS :

```
element(by.css('h1.documentation-text[ng-bind="title"]'));
element(by.css('[ng-click="submit"]));
```

`$()` **CSS** :

```
$('#h1.documentation-text[ng-bind="title"]');
$('#[ng-click="submit"]');
```

`$$ ()` .

CSS :

```
element.all(by.css('h1.documentation-text[ng-bind="title"]'));
element.all(by.css('[ng-click="submit"]));
```

`$$ ()` **CSS** :

```
$$('h1.documentation-text[ng-bind="title"]');
$$('[ng-click="submit"]');
```

HTML dom . CSS, ID, . . .

```
by.css('css-selector')
by.id('id')
```

HTML

HTML css locator [\[attribute = value\]](#)

```
//selects the first element with href value '/contact'
element(by.css('[href="/contact"]'));

//selects the first element with tag option and value 'foo'
element(by.css('option[value="foo"]'));

//selects all input elements nested under the form tag with name attribute 'email'
element.all(by.css('form input[name="email"]'));
```

HTML

HTML CSS [\[attribute * = value\]](#) .

```
//selects the first element with href value that contains 'cont'  
element(by.css('[href*="cont"]'));  
  
//selects the first element with tag h1 and class attribute that contains 'fo'  
element(by.css('h1[class*="fo"]'));  
  
//selects all li elements with a title attribute that contains 'users'  
element.all(by.css('li[title*="users"]'));
```

CSS : <https://riptutorial.com/ko/protractor/topic/1524/css->

4:

Examples

Simple Config - Chrome

```
var config = {};  
var timeout = 120000;  
  
config.framework = 'jasmine2';  
config.allScriptsTimeout = timeout;  
config.getPageTimeout = timeout;  
config.jasmineNodeOpts.isVerbose = true;  
config.jasmineNodeOpts.defaultTimeoutInterval = timeout;  
config.specs = ['qa/**/*.Spec.js'];  
config.browserName = 'chrome';  
  
exports.config = config;
```

- Chrome

```
var config = {};  
var timeout = 120000;  
  
config.framework = 'jasmine2';  
config.allScriptsTimeout = timeout;  
config.getPageTimeout = timeout;  
config.jasmineNodeOpts.isVerbose = true;  
config.jasmineNodeOpts.defaultTimeoutInterval = timeout;  
config.specs = ['qa/**/*.Spec.js'];  
config.capabilities = {  
  browserName: 'chrome',  
  'chromeOptions': {  
    'args': ['start-minimized', 'window-size=1920,1080']  
  }  
};  
  
exports.config = config;
```

shardTestFiles - Chrome

. . maxInstances .

: .

```
var config = {};  
var timeout = 120000;  
  
config.framework = 'jasmine2';  
config.allScriptsTimeout = timeout;
```



```

config.getPageTimeout = timeout;
config.jasmineNodeOpts.isVerbose = true;
config.jasmineNodeOpts.defaultTimeoutInterval = timeout;
config.specs = ['qa/**/*.Spec.js'];
config.capabilities = {
  browserName: 'chrome',
  shardTestFiles: true,
  maxInstances: 2,
  'chromeOptions': {
    'args': ['start-minimized', 'window-size=1920,1080']
  }
};

exports.config = config;

```

```

var config = {};
var timeout = 120000;

config.framework = 'jasmine2';
config.allScriptsTimeout = timeout;
config.getPageTimeout = timeout;
config.jasmineNodeOpts.isVerbose = true;
config.jasmineNodeOpts.defaultTimeoutInterval = timeout;
config.specs = ['qa/**/*.Spec.js'];
config.multiCapabilities = [{
  browserName: 'chrome',
  shardTestFiles: true,
  maxInstances: 2,
  'chromeOptions': {
    'args': ['start-minimized', 'window-size=1920,1080']
  }
},
{
  browserName: 'chrome',
  shardTestFiles: true,
  maxInstances: 1,
  'chromeOptions': {
    'args': ['show-fps-counter=true'],
    'mobileEmulation': {
      'deviceName': 'Apple iPhone 6'
    }
  }
}
];

exports.config = config;

```

: <https://riptutorial.com/ko/protractor/topic/9745/-->

5:

- `browser.pause ()`
- `browser.debugger ()`

Examples

`browser.pause ()`

`pause ()` . . . :

1. `c (c)` . `c` .
2. `repl` . . .

```
> element (by.css ('#username')).getText ()
> NoSuchElementException: No element found using locator: by.username("#username")
```

: *Chrome Dev Tools* *Dev Tools* *ChromeDriver* .

3. `CTRL+C` `CTRL + C` .

```
it ('should pause when we use pause method', function () {
  browser.get ('/index.html');

  var username = element (by.model ('username'));
  username.sendKeys ('username');
  browser.pause ();

  var password = element (by.model ('password'));
  password.sendKeys ('password');
  browser.pause ();
});
```

4. `d` .

`browser.debugger ()`

`browser.debugger ()` . . .

: .

```
`protractor debug <configuration.file.js>`
```

next next c .next .

```
. username.sendKeys('username') browser.debugger() .
```

```
: () , . !
```

```
it('should pause when we use pause method', function () {  
  browser.get('/index.html');  
  
  var username = element(by.model('username'));  
  username.sendKeys('username');  
  browser.debugger();  
  
  var password = element(by.model('password'));  
  password.sendKeys('password');  
});
```

repl **command-**

```
debug > repl  
> element(by.model('abc')).sendKeys('xyz');
```

sendKeys .

Port no. Port no. .

```
browser.debugger(4545); //will start the debugger in port 4545
```

```
debugger() . .
```

```
window.clientSideScripts.findInputs('username');
```

: [https://riptutorial.com/ko/protractor/topic/3910/-](https://riptutorial.com/ko/protractor/topic/3910/)

6:

Examples

```
driver browser.driver .
```

```
browser.driver.ignoreSynchronization = true .
```

```
: . " . "
```

```
: https://riptutorial.com/ko/protractor/topic/8830/----
```

7: XPath

Examples

DOM

CSS, xpath .

```
<ul>
<li><a href='http://www.google.com'>Go to google</a></li>
</ul>
```

```
var googleLink= element(by.xpath('//ul/li/a'));
expect(element.getText()).to.eventually.equal('Go to google','The text you mention was not found');
```

XPath , ID, .

:

```
<div class="HakunaMatata"> Hakuna Matata </div>
```

:

```
var theLionKing= element(by.xpath('//div[@class="HakunaMatata"]'));
expect(theLionKing.getText()).to.eventually.equal('Hakuna Matata', "Text not found");
```

. " .

:

```
<div class="Hakuna Matata"> Hakuna Matata </div>
```

:

```
var theLionKing= element(by.xpath('//div[contains(@class,"Hakuna")]'));
expect(theLionKing.getText()).to.eventually.equal('Hakuna Matata', "Text not found");
```

'class = "HakunaMatata"'class = "Hakuna Matata" . .

```
var theLionKing= element(by.xpath('//div[contains(concat(' ',normalize-space(@class),' '),
"Hakuna")]'));
expect(theLionKing.getText()).to.eventually.equal('Hakuna Matata', "Text not found");
```

ID .

:

```
<div id="HakunaMatata">Hakuna Matata</div>
```

:

```
var theLionKing= element (by.xpath('//div[@id="HakunaMatata"]'));  
expect (theLionKing.getText()).to.eventually.equal ('Hakuna Matata', "Text not found");
```

contains .

```
<div title="Hakuna Matata">Hakuna Matata</div>
```

```
var theLionKing= element (by.xpath('//div[@title="Hakuna Matata"]'));  
expect (theLionKing.getText()).to.eventually.equal ('Hakuna Matata', "Text not found");
```

```
<div class="Run Simba Run">Run Simba</div>
```

```
var runSimba= element (by.xpath('//div[text()="Run Simba"]'));
```

contains text () .

```
<div class="Run Simba Run">Run Simba,run</div>
```

```
var runSimba= element (by.xpath('//div[contains(text(),"Run Simba")]'));  
expect (runSimba.getText()).to.eventually.equal ('Run Simba, run', "Text not found"); //true
```

```
<input type="text" name="FullName"></input>
```

```
var fullNameInput= element (by.xpath('//input[@name="FullName"]'));  
fullNameInput.sendKeys ("John Doe");
```

XPath : <https://riptutorial.com/ko/protractor/topic/7205/-xpath->

8:

Selenium

```
selector (locator )
```

Examples

()

css xpath

```
by.binding('bind value')
```

```
<span>{{user.password}}</span>  
<span ng-bind="user.email"></span>
```

```
by.binding('user.password')  
by.binding('user.email')
```

```
by.binding('email')
```

binding

```
by.exactBinding('exact bind value')
```

```
<span>{{user.password}}</span>
```

```
by.exactBinding('user.password')  
by.exactBinding('password') // Will not work
```

```
by.model('model value')
```

```
<input ng-model="user.username">
```

```
by.model('user.username')
```

```
by.buttonText('button text')
```

```
<button>Sign In</button>
```

```
by.buttonText('Sign In')
```

```
buttonText .
```

```
by.partialButtonText('partial button text')
```

```
<button>Register an account</button>
```

```
by.partialButtonText('Register')
```

```
by.repeater('repeater value')
```

```
<tbody ng-repeat="review in reviews">
  <tr>Movie was good</tr>
  <tr>Movie was ok</tr>
  <tr>Movie was bad</tr>
</tbody>
```

```
by.repeater('review in reviews')
```

```
by.repeater('reviews')
```

```
repeater .
```

```
by.exactRepeater('exact repeater value')
```

```
<tbody ng-repeat="review in reviews">
  <tr>Movie was good</tr>
  <tr>Movie was ok</tr>
```



```
<tr>Movie was bad</tr>
</tbody>
```

```
by.exactRepeater('review in reviews')
by.exactRepeater('reviews') // Won't work
```

CSS

CSS .

```
by.cssContainingText('css selector', 'text of css element')
```

```
<ul>
  <li class="users">Mike</li>
  <li class="users">Rebecca</li>
</ul>
```

```
by.cssContainingText('.users', 'Rebecca') // Will return the second li only
```

```
by.options('options value')
```

```
<select ng-options="country.name for c in countries">
  <option>Canada</option>
  <option>United States</option>
  <option>Mexico</option>
</select>
```

```
by.options('country.name for c in countries')
```

CSS

DOM CSS

```
by.deepCss('css selector')
```

```
<div>
  <span id="outerspan">
    <"shadow tree">
      <span id="span1"></span>
      <"shadow tree">
        <span id="span2"></span>
      </>
    </>
  </>
```

```
</div>
```

```
by.deepCss('span') // Will select every span element
```

```
, .
```

```
.
```

```
element(locator);  
element.all(locator);
```

```
: ., getText() .
```

```
, element . element element .element ElementFinder .
```

```
element.all .element.all ElementArrayFinder (:map) .
```

```
element.all(locator).map(function(singleElement) {  
    return singleElement.getText();  
})  
});
```

```
. locator ElementFinders .
```

```
element(by.repeater('movie in movies').element(by.linkText('Watch Frozen on Netflix'))
```

```
. ElementFinder ElementArrayFinder .
```

```
: https://riptutorial.com/ko/protractor/topic/10825/-
```

9:

Protractor / WebDriverJS [Control Flow](#) . . .

Examples

```
it('should test something', function() {  
  browser.get('/dashboard/');  
  
  $("#myid").click();  
  expect(element(by.model('username')).getText()).toEqual('Test');  
  
  console.log("HERE");  
});
```

console.log() HERE . . .

[Promises Control Flow](#) .

: <https://riptutorial.com/ko/protractor/topic/8580/--->

10:

Examples

```
/* save the file in 'pages/loginPage'
var LoginPage = function(){

};

/*Application object properties*/
LoginPage.prototype = Object.create({}, {
  userName: {
    get: function() {
      return browser.driver.findElement(By.id('userid'));
    }
  },
  userPass: {
    get: function() {
      return browser.driver.findElement(By.id('password'));
    }
  },
  submitBtn: {
    get: function() {
      return browser.driver.findElement(By.id('btnSubmit'));
    }
  }
});

/* Adding functions */
LoginPage.prototype.login = function(strUser, strPass) {
  browser.driver.get(browser.baseUrl);
  this.userName.sendKeys(strUser);
  this.userPass.sendKeys(strPass);
  this.submitBtn.click();
};

module.exports = LoginPage;
```

```
var LoginPage = require('../pages/loginPage');
describe('User Login to Application', function() {
  var loginPage = new LoginPage();

  beforeAll(function() {
    loginPage.login(browser.params.userName, browser.params.userPass);
  });

  it('and see a success message in title', function() {
    expect(browser.getTitle()).toEqual('Success');
  });

});
```

: [https://riptutorial.com/ko/protractor/topic/9747/-](https://riptutorial.com/ko/protractor/topic/9747/)

S. No		Contributors
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2	<code>browser.wait ()</code>	alecxe
3	CSS	alecxe , Droogans , leon , Priyanshu Shekhar , sonhu
4		Barney
5		Devmati Wadikar , Priyanshu Shekhar , Ram Pasala , Sakshi Singla , Stephen Leppik
6		Sakshi Singla
7	XPath	Shubhang
8		Sébastien Dufour-Beauséjour
9		alecxe
10		Barney , Suresh Salloju