Cypress Tutorial

Cypress Tutorial

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Cypress is an end to end testing framework. It helps to perform front end testing on web applications with ease.

In this Cypress Tutorial, we will get a hands on experience with using Cypress framework to perform an end to end testing on a web application.

Cypress – Setup

You should have node.js installed prior to using Cypress. Node.js is a prerequisite. To install node.js on your computer, refer Node.js Tutorial.

Sample Web Application for this Cypress Tutorial

To demonstrate the working of Cypress framework, we shall consider a web application. The web application is a to do application. All the HTML, CSS and JavaScript is in the following file.

We shall try using Cypress framework to perform end to end testing on this application.

Create a HTML file with the following content in a directory.

```
<!DOCTYPE html>
<html><head>
<meta name="viewport" content="width=device-width, initial-scale=1">
<style>
body {
  margin: 0;
  min-width: 250px;
}

* {
  box-sizing: border-box;
}
ul {
  margin: 50px;
  padding: 0;
  border: 1px solid #000;
  border: 1px solid #ccc;
}

ul li {
  cursor: pointer;
  position: relative;
  padding: 12px 8px 12px 40px;
  list-style-type: none;
  background: #eee;
  font-size: 18px;
  transition: 0.2s;

  -webkit-user-select: none;
  -moz-user-select: none;
  -ms-user-select: none;
  user-select: none;
}

ul li:nth-child(odd) {
  background: #f9f9f9;
}

ul li:hover {
  background: #ddd;
}

ul li.checked {
  background: #888;
  color: #fff;
  text-decoration: line-through;
}

ul li.checked::before {
  content: '';
  position: absolute;
  border-color: #fff;
  border-style: solid;
  border-width: 0 2px 2px 0;
  top: 10px;
  left: 16px;
  transform: rotate(45deg);
  height: 15px;
  width: 7px;
}

.close {
  position: absolute;
  right: 0;
  top: 0;
  padding: 12px 16px 12px 16px;
}

.close:hover {
  background-color: #f44336;
  color: white;
}

.header {
  background-color: #455ba2;
  padding: 30px 40px;
  color: white;
  text-align: center;
}
```

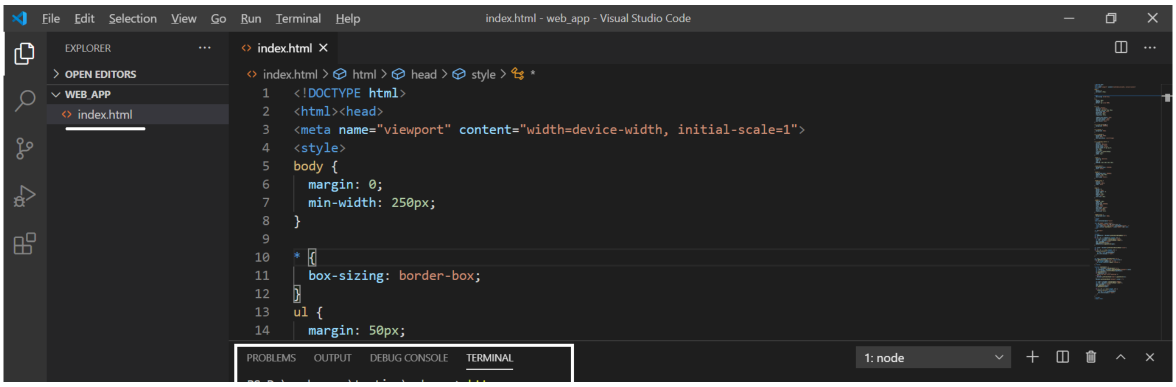
```
.header:after {
  content: "";
  display: table;
  clear: both;
}

input {
  margin: 0;
  border: none;
  border-radius: 0;
  width: 75%;
  padding: 10px;
  float: left;
  font-size: 16px;
}

.addBtn {
  padding: 10px;
  width: 25%;
  background: #d9d9d9;
  color: #555;
  float: left;
  text-align: center;
  font-size: 16px;
  cursor: pointer;
  transition: 0.3s;
}

.addBtn:hover {
  background-color: #bbb;
}
</style>
</head>
<body contenteditable="false">

<div id="myDIV" class="header">
  <h2 style="margin:5px">My To Do List</h2>
  <input type="text" id="myInput" placeholder="Title...">
  <span onclick="newElement()" class="addBtn">Add</span>
</div>

<ul id="myUL">
</ul>

<script>
var myNodelist = document.getElementsByTagName("LI");
var i;
for (i = 0; i < myNodelist.length; i++) {
  var span = document.createElement("SPAN");
  var txt = document.createTextNode("\u00D7");
  span.className = "close";
  span.appendChild(txt);
  myNodelist[i].appendChild(span);
}

var close = document.getElementsByClassName("close");
var i;
for (i = 0; i < close.length; i++) {
  close[i].onclick = function() {
    var div = this.parentElement;
    div.style.display = "none";
  }
}

var list = document.querySelector('ul');
list.addEventListener('click', function(ev) {
  if (ev.target.tagName === 'LI') {
    ev.target.classList.toggle('checked');
  }
}, false);

function newElement() {
  var li = document.createElement("li");
  var inputValue = document.getElementById("myInput").value;
  var t = document.createTextNode(inputValue);
  li.appendChild(t);
  if (inputValue === '') {
    alert("You must write something!");
  } else {
    document.getElementById("myUL").appendChild(li);
  }
  document.getElementById("myInput").value = "";

  var span = document.createElement("SPAN");
  var txt = document.createTextNode("\u00D7");
  span.className = "close";
  span.appendChild(txt);
  li.appendChild(span);

  for (i = 0; i < close.length; i++) {
    close[i].onclick = function() {
      var div = this.parentElement;
      div.style.display = "none";
    }
  }
}
</script>
</body></html>
```

Open this directory in a Visual Studio Code IDE and run the following command in a Terminal.

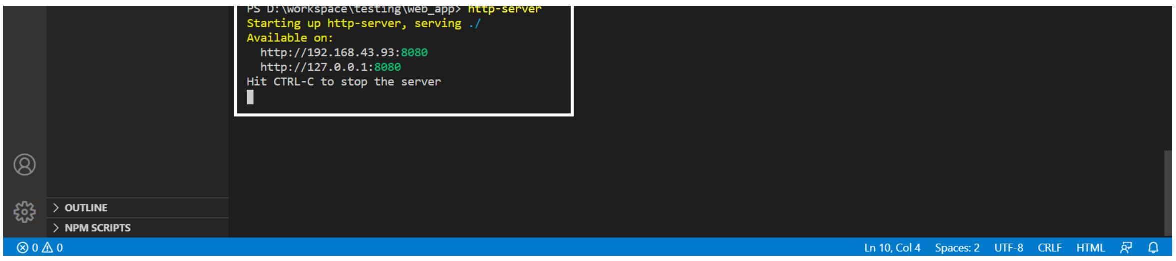
```
$ npm install http-server -g
```

Run the following command to make the HTML page available at a URL.

```
$ http-server
```


File Edit Selection View Go Run Terminal Help
index.html - web_app - Visual Studio Code
EXPLORER
OPEN EDITORS
WEB_APP
index.html
index.html > html > head > style > *
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
1: node

```
<!DOCTYPE html>
<html><head>
<meta name="viewport" content="width=device-width, initial-scale=1">
<style>
body {
  margin: 0;
  min-width: 250px;
}

* {
  box-sizing: border-box;
}
ul {
  margin: 50px;
```



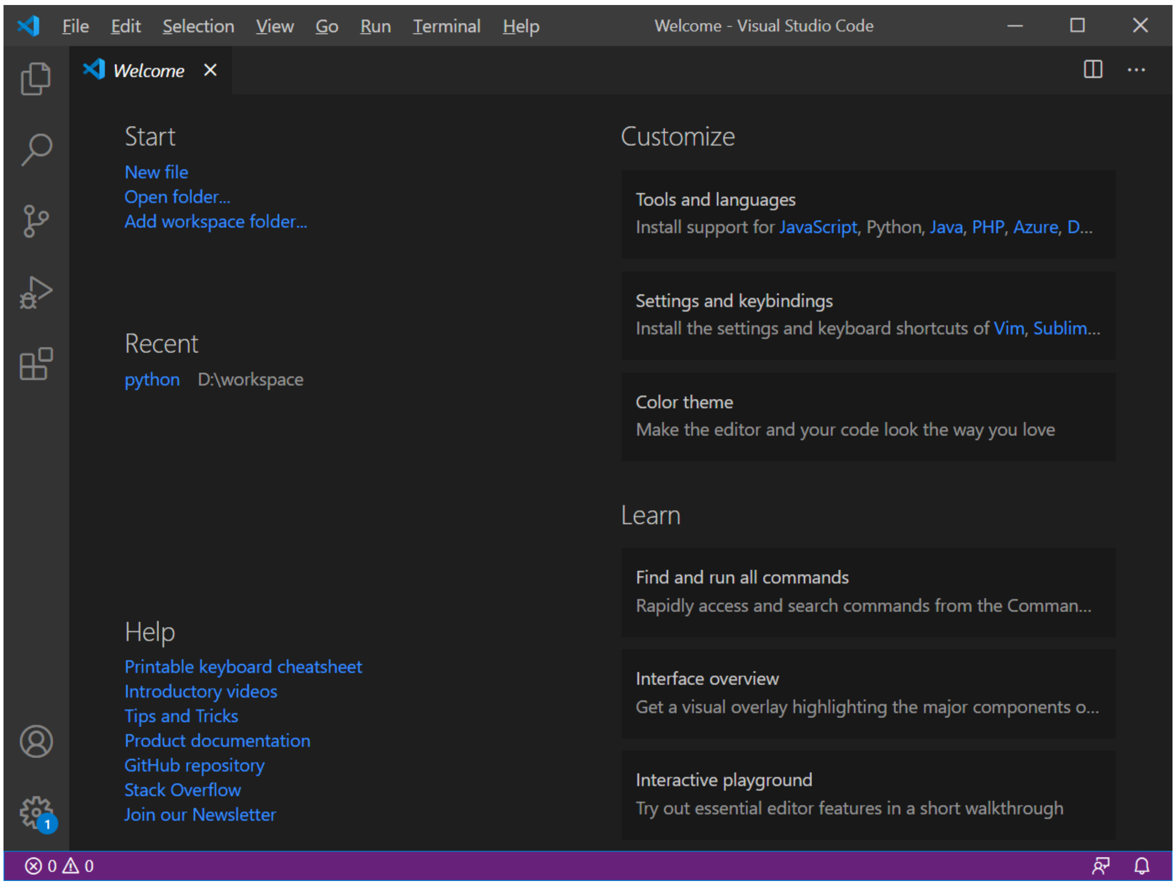
```
PS D:\workspace\testing\web_app> http-server
Starting up http-server, serving ./
Available on:
  http://192.168.43.93:8080
  http://127.0.0.1:8080
Hit CTRL-C to stop the server
```

Now the index.html will be available at http://127.0.0.1:8080/index.html.

Cypress – Create Project

Create a directory for placing your project. We shall use this directory as project folder in Visual Studio Code.

Open Visual Studio Code IDE.



Install support for JavaScript, Python, Java, PHP, Azure, D...

Install the settings and keyboard shortcuts of Vim, Sublim...

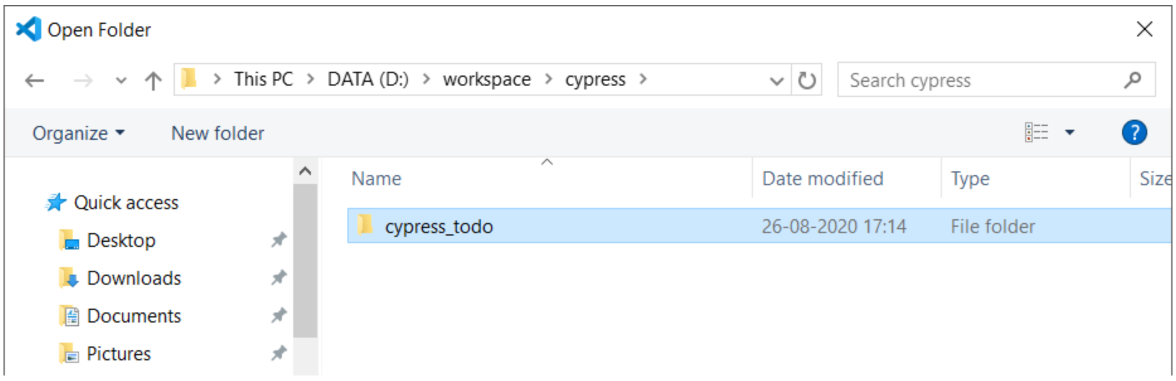
Make the editor and your code look the way you love

Rapidly access and search commands from the Comman...

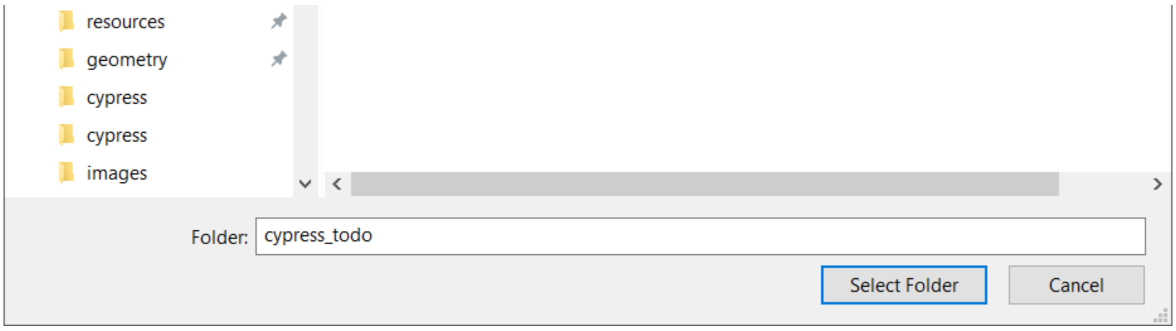
Get a visual overlay highlighting the major components o...

Try out essential editor features in a short walkthrough

Click on Open folder… and navigate to the directory we created for keeping project files.

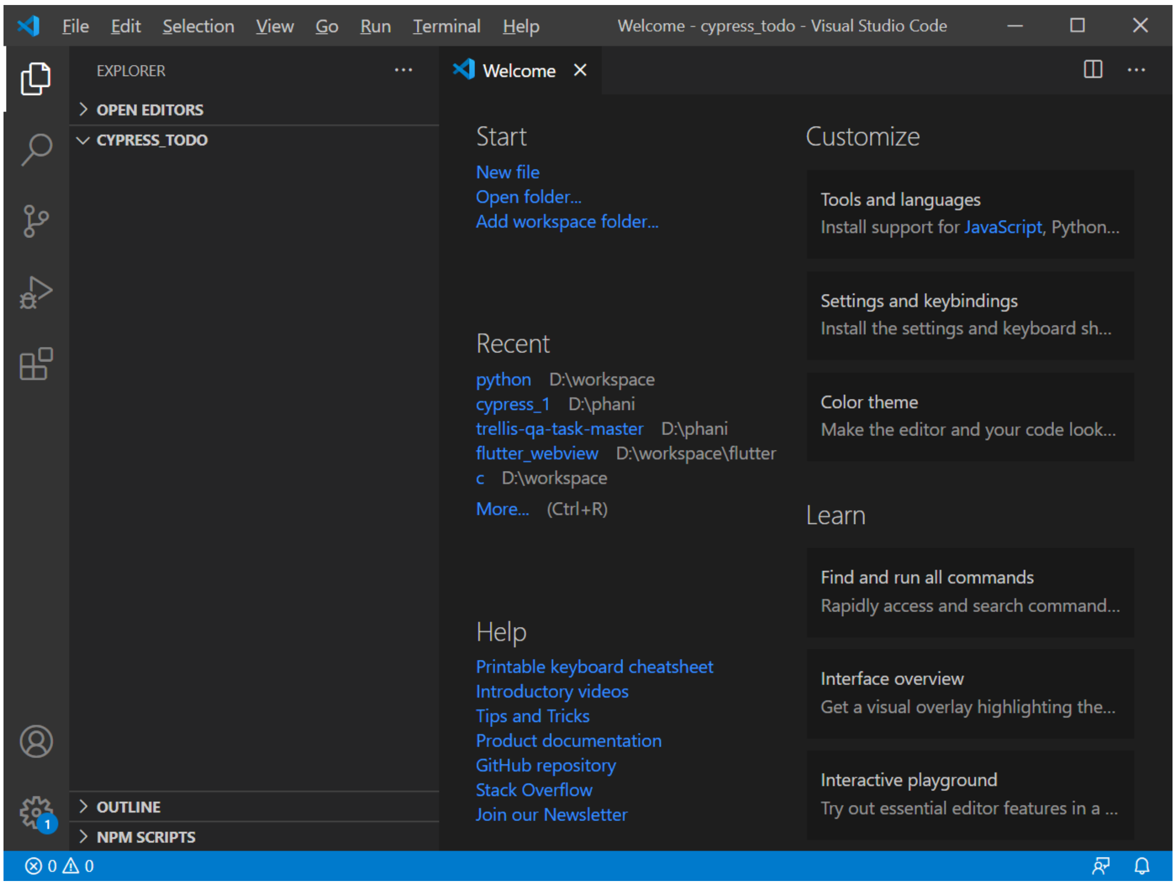


Name	Date modified	Type	Size
cypress_todo	26-08-2020 17:14	File folder	



Folder: cypress_todo

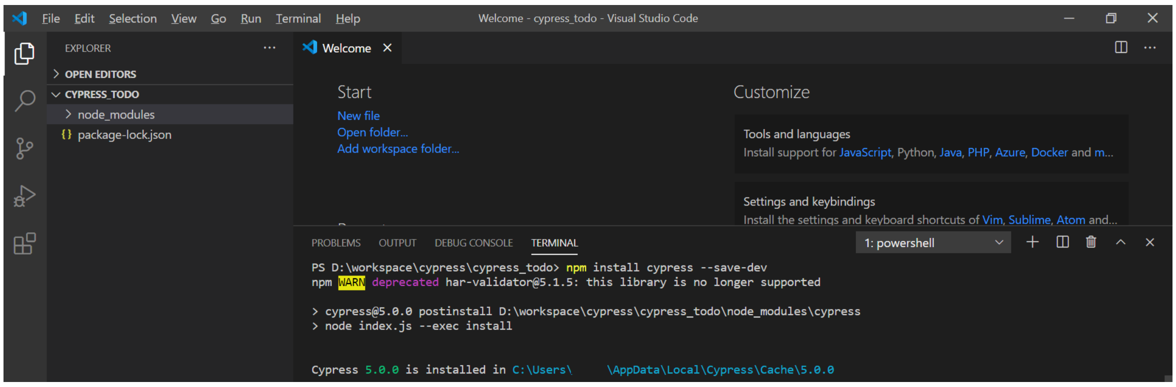
The project folder would be empty, as we have not created any files in it.


File Edit Selection View Go Run Terminal Help
Welcome - cypress_todo - Visual Studio Code
EXPLORER
OPEN EDITORS
CYPRESS_TODO
OUTLINE
NPM SCRIPTS
Welcome
Start
New file
Open folder...
Add workspace folder...
Recent
python D:\workspace
cypress_1 D:\phani
trellis-qa-task-master D:\phani
flutter_webview D:\workspace\flutter
c D:\workspace
More... (Ctrl+R)
Help
Printable keyboard cheatsheet
Introductory videos
Tips and Tricks
Product documentation
GitHub repository
Stack Overflow
Join our Newsletter
Customize
Tools and languages
Install support for JavaScript, Python...
Settings and keybindings
Install the settings and keyboard sh...
Color theme
Make the editor and your code look...
Learn
Find and run all commands
Rapidly access and search command...
Interface overview
Get a visual overlay highlighting the...
Interactive playground
Try out essential editor features in a ...

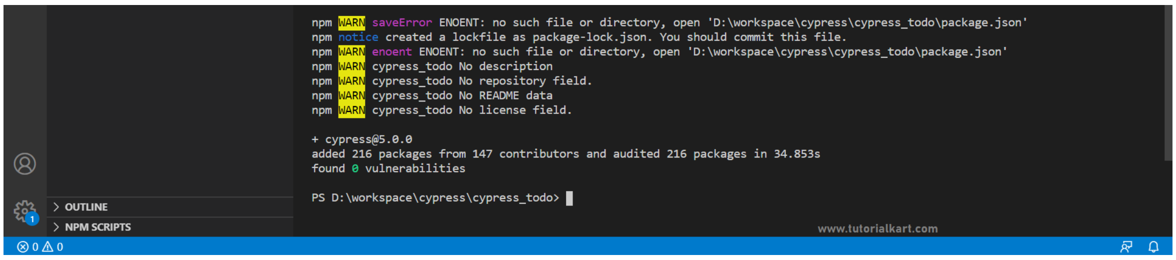
Open Terminal window. From top menu click on Terminal -> New Terminal.

You can install Cypress using npm. Run the following command in the Terminal Window, that we just opened in Visual Studio Code.

```
$ npm install cypress --save-dev
```


File Edit Selection View Go Run Terminal Help
Welcome - cypress_todo - Visual Studio Code
EXPLORER
OPEN EDITORS
CYPRESS_TODO
node_modules
package-lock.json
Welcome
Start
New file
Open folder...
Add workspace folder...
Customize
Tools and languages
Install support for JavaScript, Python, Java, PHP, Azure, Docker and m...
Settings and keybindings
Install the settings and keyboard shortcuts of Vim, Sublime, Atom and...
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
1: powershell

```
PS D:\workspace\cypress\cypress_todo> npm install cypress --save-dev
npm WARN deprecated har-validator@5.1.5: this library is no longer supported

> cypress@5.0.0 postinstall D:\workspace\cypress\cypress_todo\node_modules\cypress
> node index.js --exec install


Cypress 5.0.0 is installed in C:\Users\      \AppData\Local\Cypress\Cache\5.0.0
```



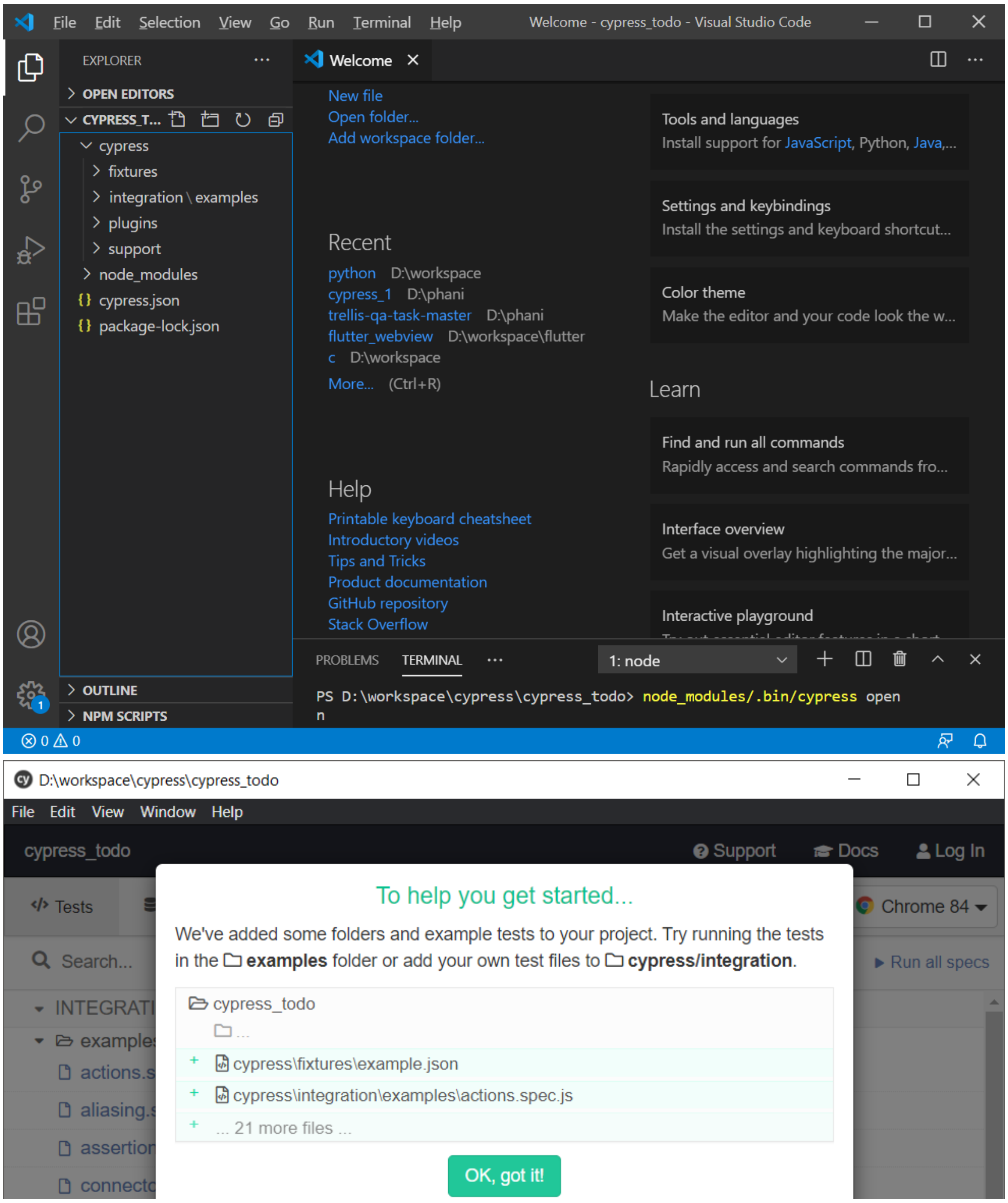
```
npm WARN saveError ENOENT: no such file or directory, open 'D:\workspace\cypress\cypress_todo\package.json'
npm notice created a lockfile as package-lock.json. You should commit this file.
npm WARN enoent ENOENT: no such file or directory, open 'D:\workspace\cypress\cypress_todo\package.json'
npm WARN cypress_todo No description
npm WARN cypress_todo No repository field.
npm WARN cypress_todo No README data
npm WARN cypress_todo No license field.

+ cypress@5.0.0
added 216 packages from 147 contributors and audited 216 packages in 34.853s
found 0 vulnerabilities

PS D:\workspace\cypress\cypress_todo>
```

During Cypress installation, **package.json** file and **node_modules** directory are created in our project.

Run the following command, to create Cypress related file structure in the project.

```
$ node_modules/.bin/cypress open
```

Cypress project files would be created and a Cypress window would open as shown below.



```
PS D:\workspace\cypress\cypress_todo> node_modules/.bin/cypress open
n
```

To help you get started...

We've added some folders and example tests to your project. Try running the tests in the examples folder or add your own test files to cypress/integration.

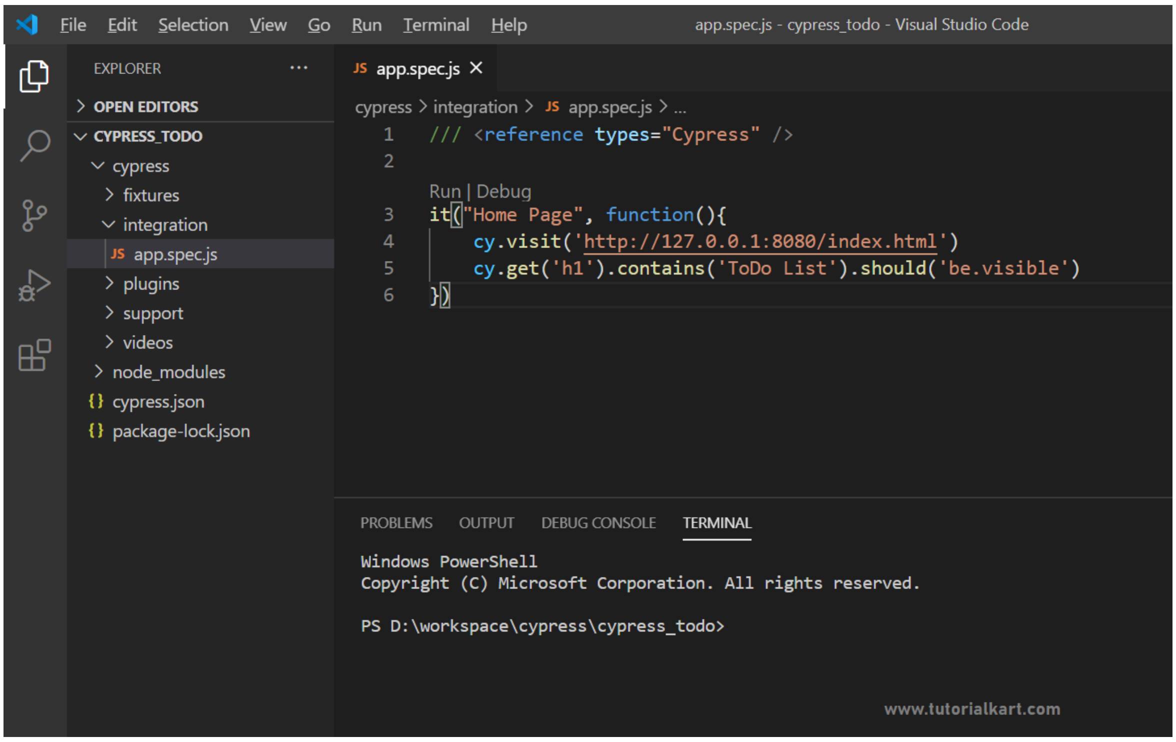
```
cypress_todo
  ...
+ cypress\fixtures\example.json
+ cypress\integration\examples\actions.spec.js
+ ... 21 more files ...
```

cypress/integration directory holds the test files. By default, examples folder is created with some sample test files. Delete the examples folder.

Now we are ready to start writing our first test file in Cypress.

Cypress – Writing Tests

Create a file named **app.spec.ts** in cypress/integration directory. Now, we shall write a simple test case in this file as shown below.



```
/// <reference types="Cypress" />

it("Home Page", function(){
    cy.visit('http://127.0.0.1:8080/index.html')
    cy.get('h1').contains('ToDo List').should('be.visible')
})
```

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS D:\workspace\cypress\cypress_todo>
```

```
/// <reference types="Cypress" />

it("Home Page", function(){
     cy.visit('http://127.0.0.1:8080/index.html')
     cy.get('h1').contains('ToDo List').should('be.visible')
})
```

it() is used to define a test case. The first argument to is title for the test case, and the second argument is a function, that contains the logic to validate this test case.

cy.visit(url) loads the url.

cy.get(selector) traverses the html document loaded by the url and returns the nodes based on the argument to it. In this example, we have given the selector as **“h1”**, which means cy.get() gets all the h1 headings in the html document.

cy.contain(text) method gets the elements containing the text. The text is given as argument to it. Here, cy.get(‘h1’).contains(‘ToDo List’) filters all the elements returned by cy.get(‘h1’) based on the condition that the element should contain the text “ToDo List”.

should(‘be.visible’) asserts that atleast one of the elements should be visible.

All the cy methods we used in this example are chainable. Hence, we have written them as a single statement.

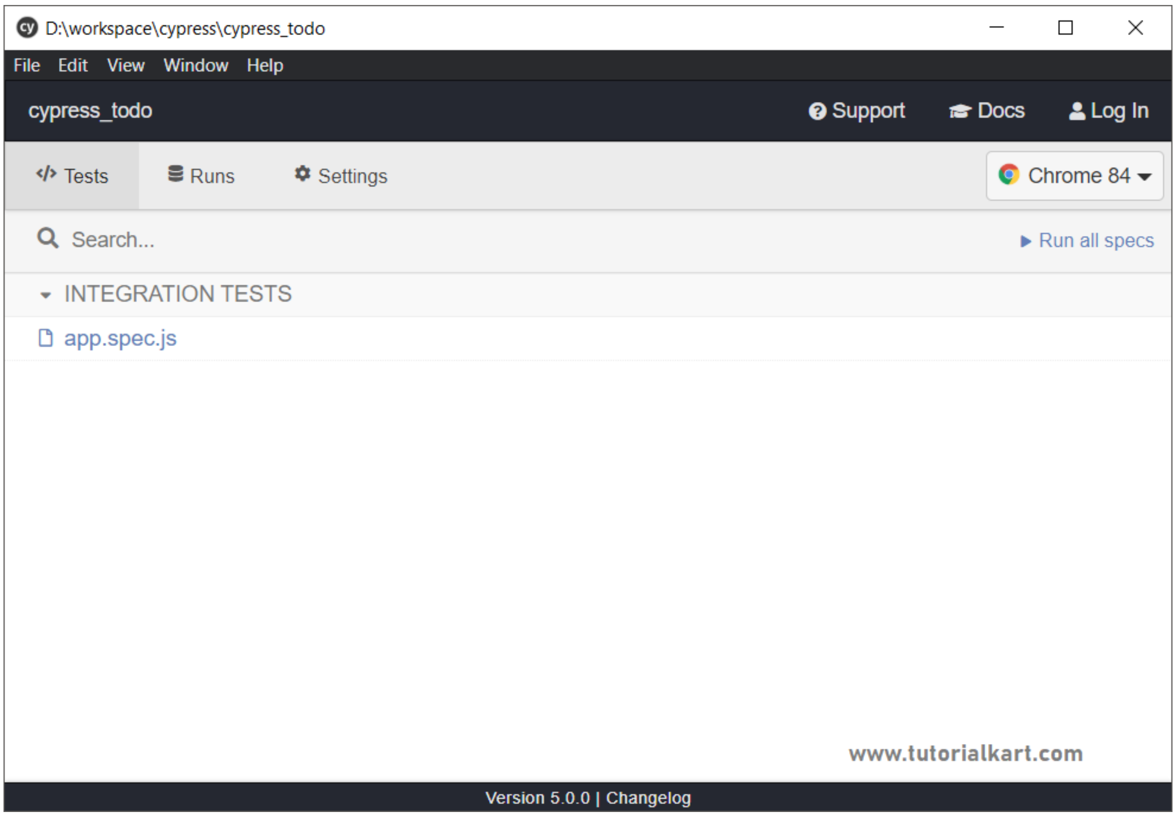
Cypress – Run Tests

To run Cypress tests, run the following command in terminal, from the root of your project folder.

```
$ node_modules/.bin/cypress open
```

We have already used this command to create the default folder structure and files for Cypress project.

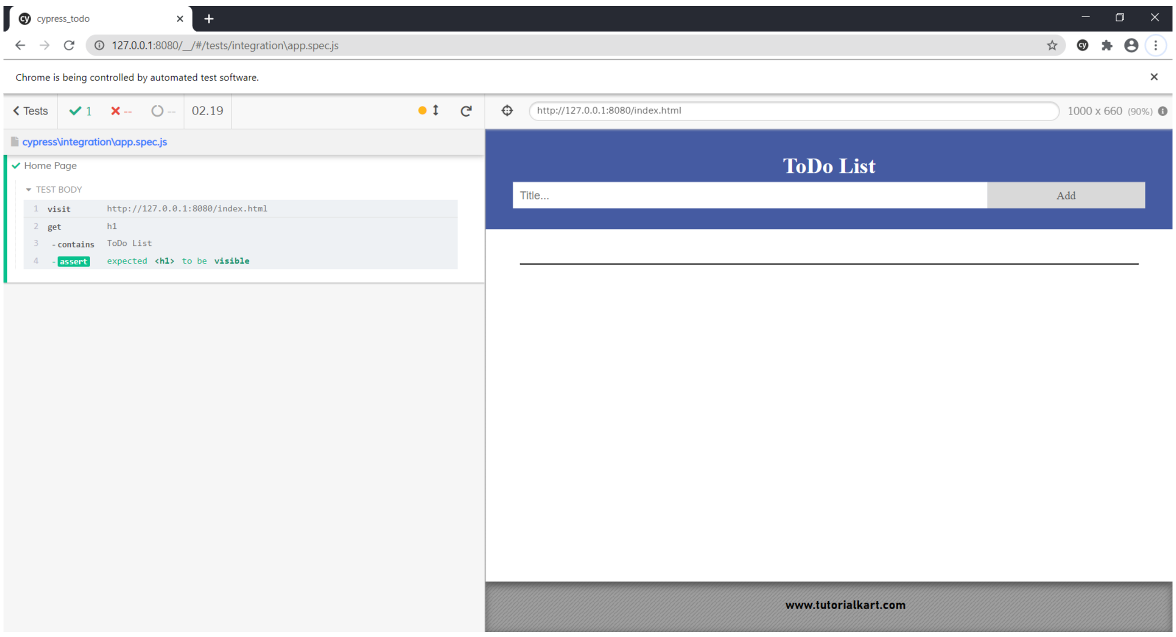
After you run this command, Cypress window appears as shown below.



In the above screenshot, under INTEGRATION TESTS, we have only one entry ‘app.spec.js’. That is because, we have only one spec file in the integration folder. If we have multiple test files in this folder, all these files we have only one spec file in the integration folder. If we have multiple test files in this folder, all those files would appear as entries under INTEGRATION TESTS.

Now, you may click on **Run all specs** (present on the top right corner) to run all the test files or click on an entry to run that specific test file.

A new browser window appears and runs the specs with the default browser.



```
cypress\integration\app.spec.js
Home Page
TEST BODY
1  visit       http://127.0.0.1:8080/index.html
2  get         h1
3  -contains   ToDo List
4  -assert     expected <h1> to be visible
```

cypress_todo
127.0.0.1:8080/__/#/tests/integration\app.spec.js
Chrome is being controlled by automated test software.
Tests
02.19
http://127.0.0.1:8080/index.html
1000 x 660 (90%)
ToDo List
Title...
Add
www.tutorialkart.com

On the left hand side, you will see the individual test cases, along with test results, and on the right hand side you will see the actual steps being executed in real time in a browser.

You can write a test suite (multiple tests), using describe().

In the following app.spec.js, we have written following testcases.

1. Check if the ToDo List page is loading.
2. Check if we can Delete Item from ToDo List.
3. Check if we are able to Add Item to ToDo List.

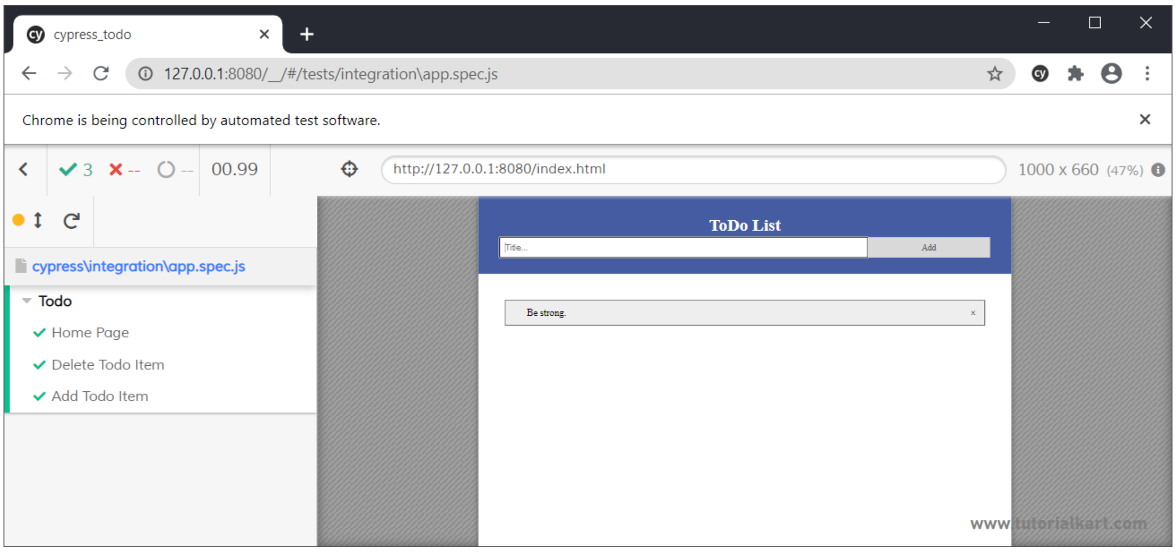
```
/// <reference types="Cypress" />

describe("Todo", function(){
    it("Home Page", function(){
        cy.visit('http://127.0.0.1:8080/index.html')
        cy.get('h1').contains('ToDo List').should('be.visible')
    })
    it("Delete Todo Item", function(){
        var todoItem = 'Get yourself a treat.'
        cy.get('#myInput').type(todoItem)
        cy.get('#myDIV .addBtn').first().click()
        cy.get('#myUL li').contains(todoItem).should('be.visible')
        cy.get('#myUL li span').click()
        cy.get('#myUL li').contains(todoItem).should('not.be.visible')
    })
    it("Add Todo Item", function(){
```

```
    it("Add Todo Item", function(){
        var todoItem = 'Be strong.'
        cy.get('#myInput').type(todoItem)
        cy.get('#myDIV .addBtn').first().click()
        cy.get('#myUL li').contains(todoItem).should('be.visible')
    })
})
```

If you have closed the Cypress window, run the following command again. It will open Cypress window.

```
$ node_modules/.bin/cypress open
```

Run the app.spec.js file by clicking on it. The output would be as shown in the following screenshot.


cypress_todo
127.0.0.1:8080/__/#/tests/integration\app.spec.js
Chrome is being controlled by automated test software.
3
00.99
http://127.0.0.1:8080/index.html
1000 x 660 (47%)
cypress\integration\app.spec.js
Todo
Home Page
Delete Todo Item
Add Todo Item
ToDo List
Title...
Add
Be strong.
www.tutorialkart.com

Conclusion

In this Cypress Tutorial, we learned how to use Cypress to perform end to end testing on your web application.

Cypress Tutorial

➪ **Cypress Tutorial**