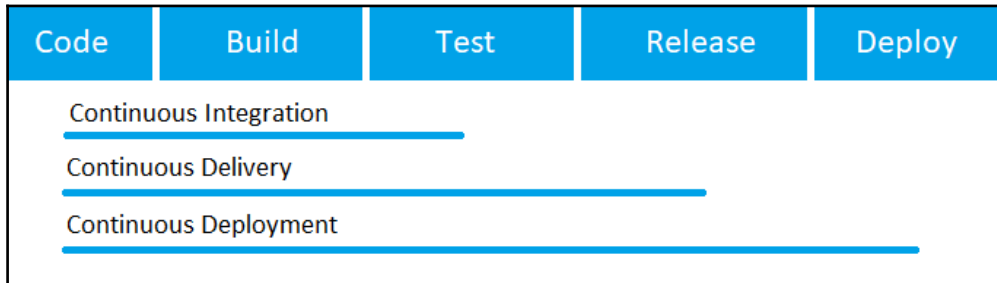
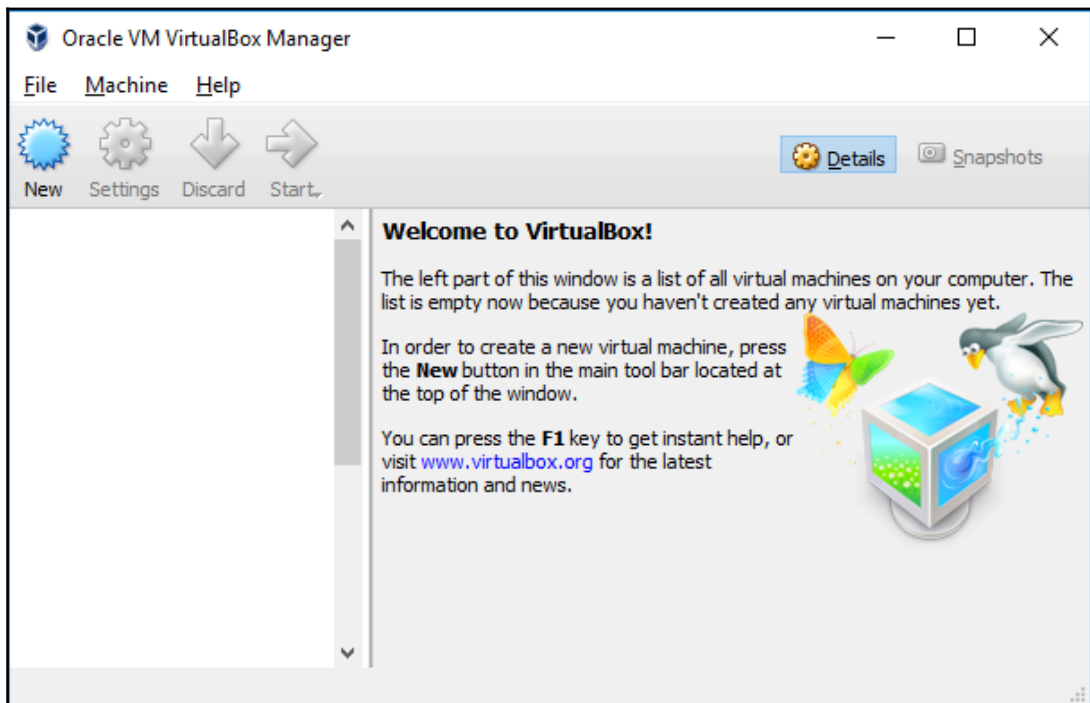
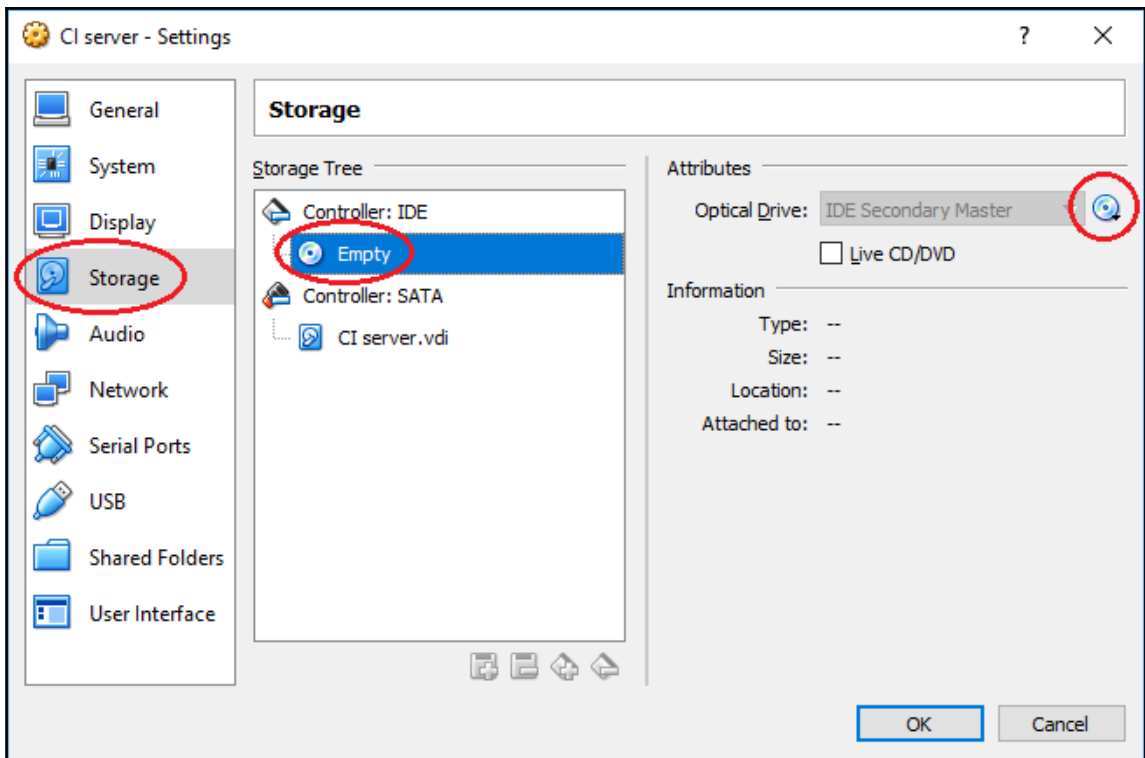


Continuous Integration, Delivery, and Deployment Foundations



Setting Up a CI Environment





Ubuntu 16.04.1 LTS ciserver tty1

ciserver login: sander

Password:

Welcome to Ubuntu 16.04.1 LTS (GNU/Linux 4.4.0-31-generic x86_64)

- * Documentation: <https://help.ubuntu.com>
- * Management: <https://landscape.canonical.com>
- * Support: <https://ubuntu.com/advantage>

109 packages can be updated.

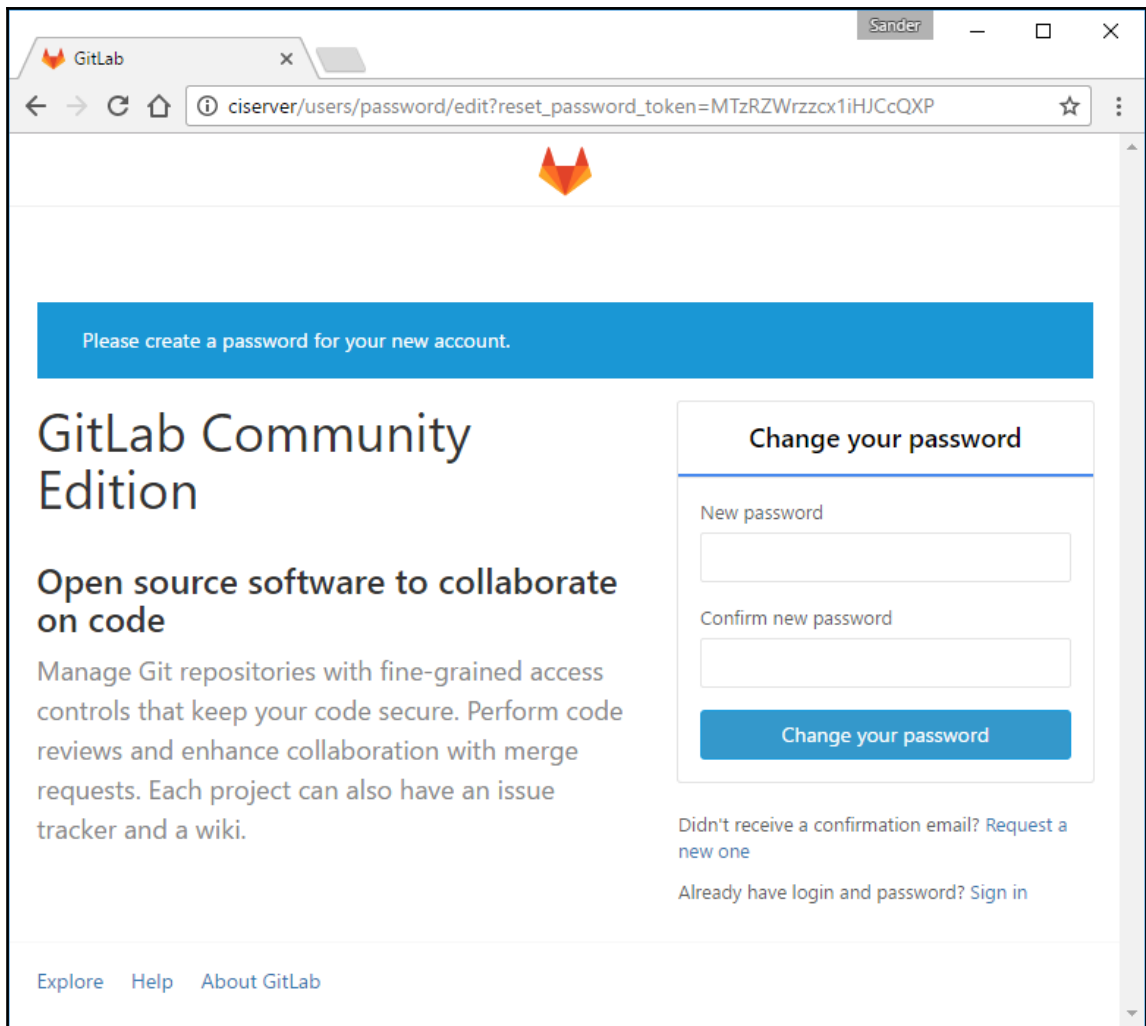
58 updates are security updates.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

sander@ciserver:~\$



```
CA\ Command Prompt
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\sander.rossel>git config --global user.name "Sander Rossel"

C:\Users\sander.rossel>git config --global user.email "my.email@provider.com"

C:\Users\sander.rossel>git clone http://ciserver/sander/test.git desktop\myrepo
Cloning into 'desktop\myrepo'...
warning: You appear to have cloned an empty repository.

C:\Users\sander.rossel>cd desktop\myrepo

C:\Users\sander.rossel\Desktop\myrepo>git add .

C:\Users\sander.rossel\Desktop\myrepo>git status
On branch master

Initial commit

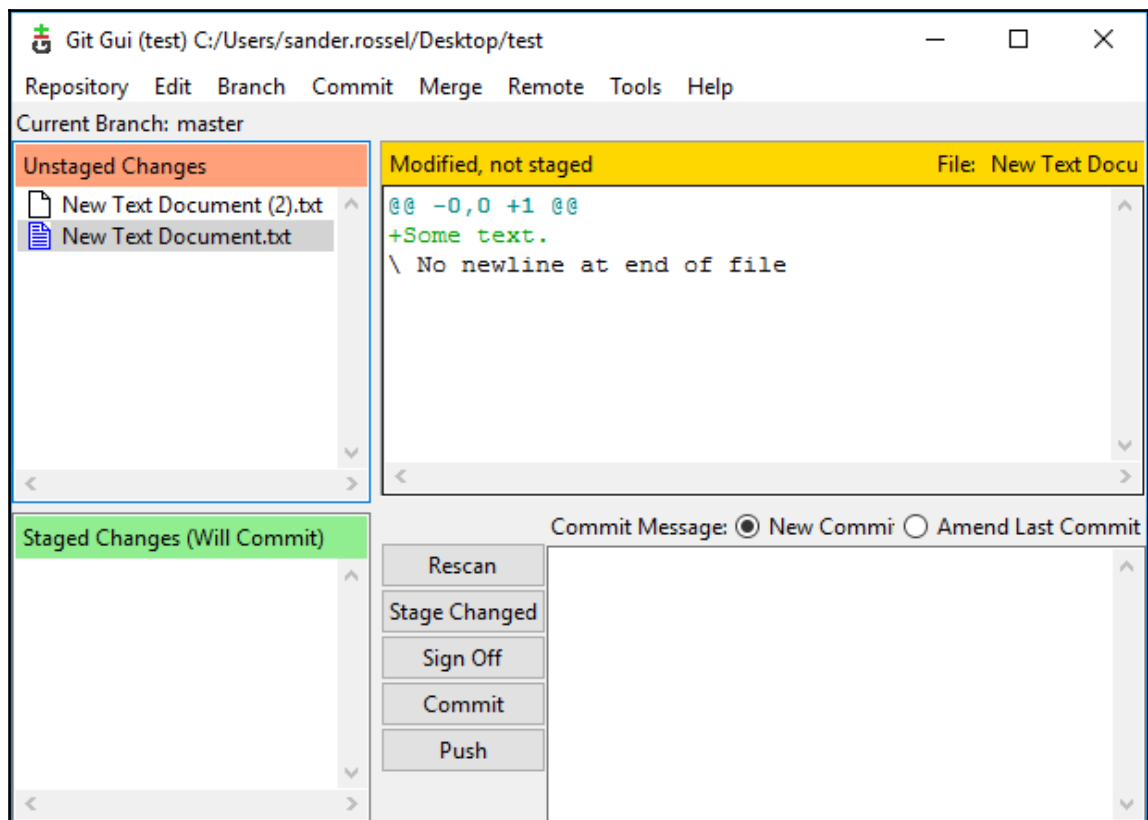
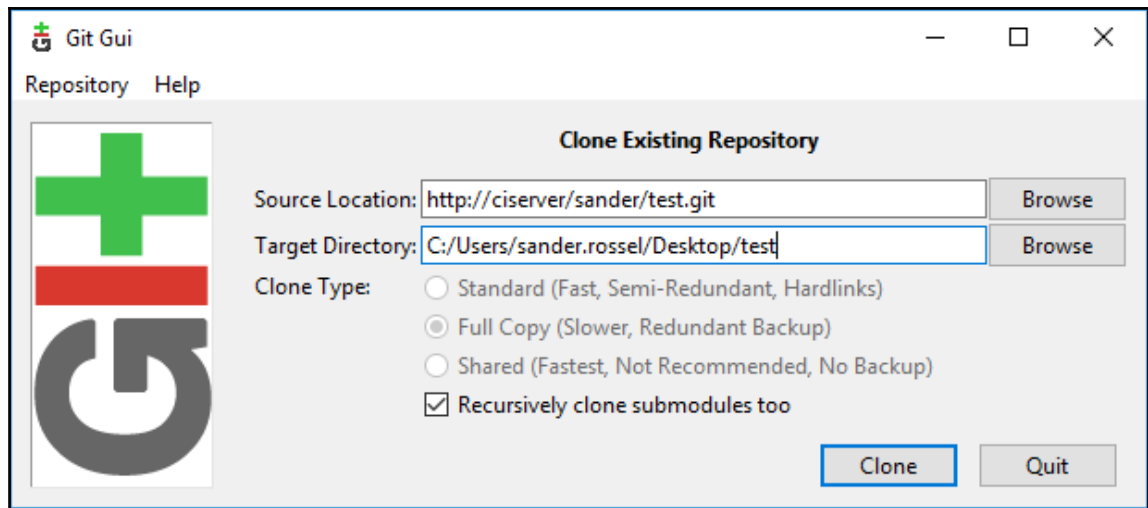
Changes to be committed:
  (use "git rm --cached <file>..." to unstage)

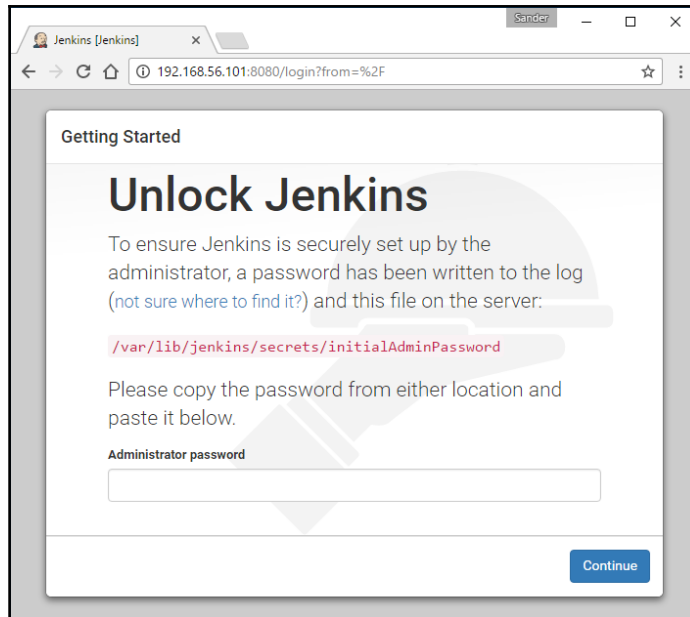
    new file:   New Text Document.txt

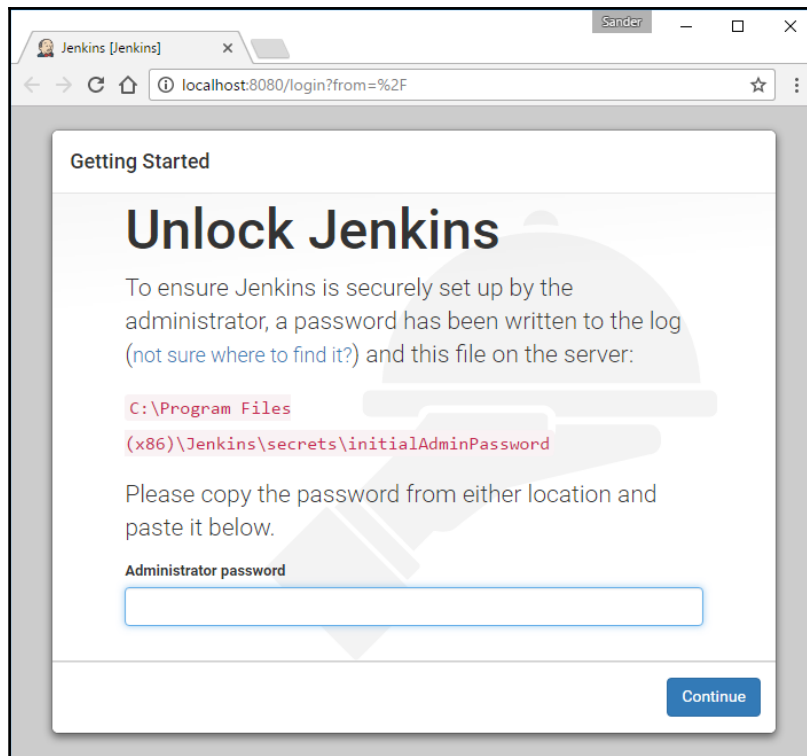
C:\Users\sander.rossel\Desktop\myrepo>git commit -m "Added a text file."
[master (root-commit) 0183b6c] Added a text file.
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 New Text Document.txt

C:\Users\sander.rossel\Desktop\myrepo>git push
Counting objects: 3, done.
Writing objects: 100% (3/3), 233 bytes | 0 bytes/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To http://ciserver/sander/test.git
 * [new branch]      master -> master

C:\Users\sander.rossel\Desktop\myrepo>
```







pgAdmin 4

pgAdmin 4

Browser

Servers

Create - Server

General

Connection

Host name/address

ciserver

Port

5432

Maintenance database

postgres

User name

sa

Password

..

Save password?

☐

Role

SSL mode

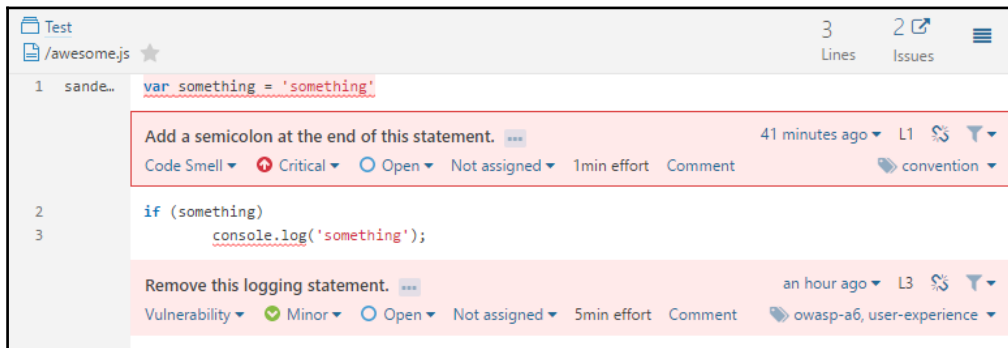
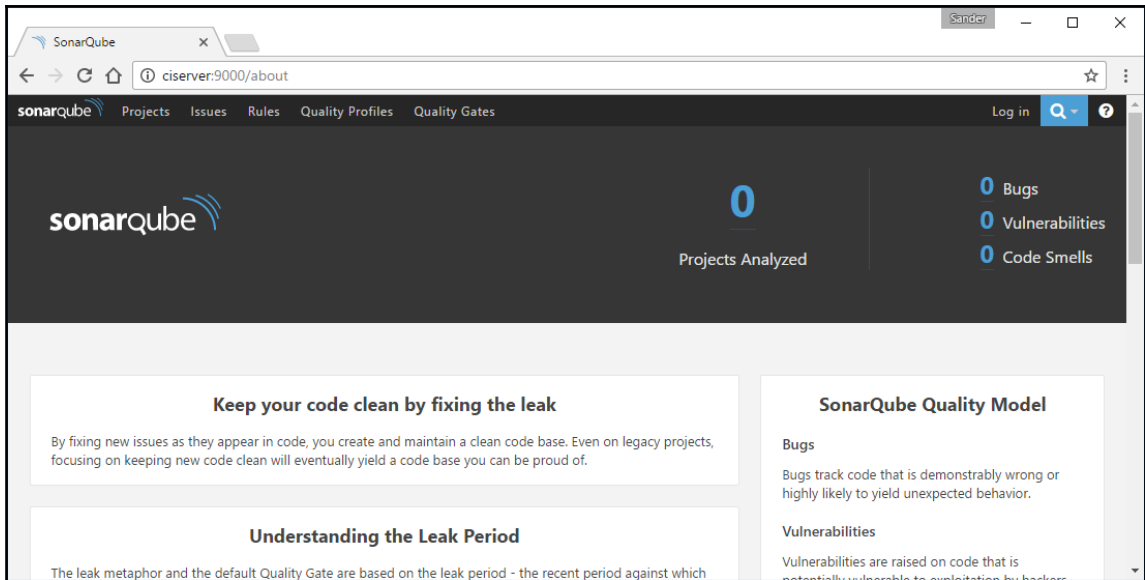
Prefer

?

Save

Cancel

Reset



Version Control with Git

```

C:\Users\sander.rossel\Desktop\test>git status
On branch master
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

        modified:   index.js

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

        modified:   repository.js

Untracked files:
  (use "git add <file>..." to include in what will be committed)

        utils.js

C:\Users\sander.rossel\Desktop\test>

```

```

C:\Users\sander.rossel\Desktop\test>git add --patch hunks.txt
diff --git a/hunks.txt b/hunks.txt
index b178657..bfaf5b6 100644
--- a/hunks.txt
+++ b/hunks.txt
@@ -1,4 +1,6 @@
 1
+1.1
 2
 3
+3.1
 4
\ No newline at end of file
Stage this hunk [y,n,q,a,d,/s,e,?]? ?
y - stage this hunk
n - do not stage this hunk
q - quit; do not stage this hunk or any of the remaining ones
a - stage this hunk and all later hunks in the file
d - do not stage this hunk or any of the later hunks in the file
g - select a hunk to go to
/ - search for a hunk matching the given regex
j - leave this hunk undecided, see next undecided hunk
J - leave this hunk undecided, see next hunk
k - leave this hunk undecided, see previous undecided hunk
K - leave this hunk undecided, see previous hunk
s - split the current hunk into smaller hunks
e - manually edit the current hunk
? - print help

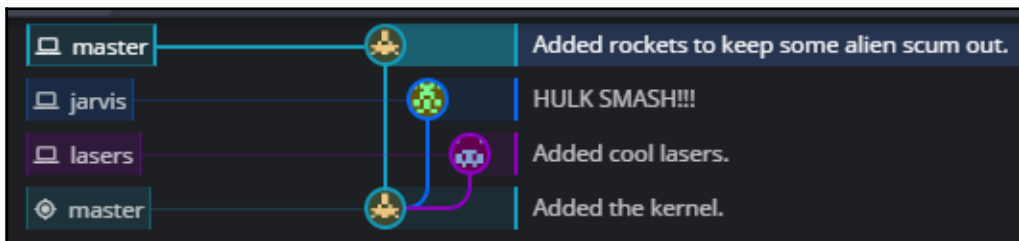
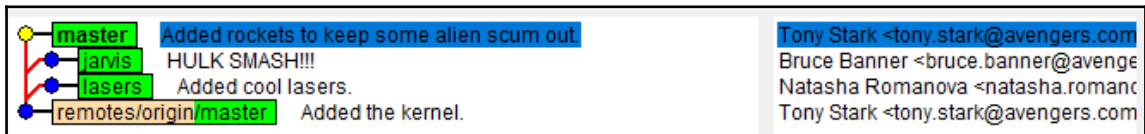
```

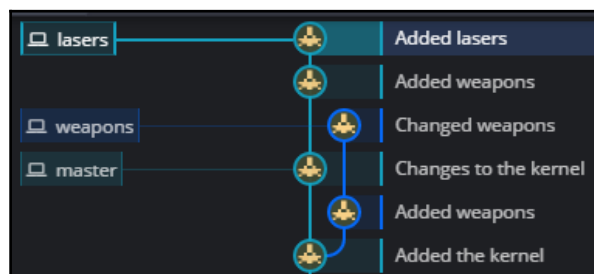
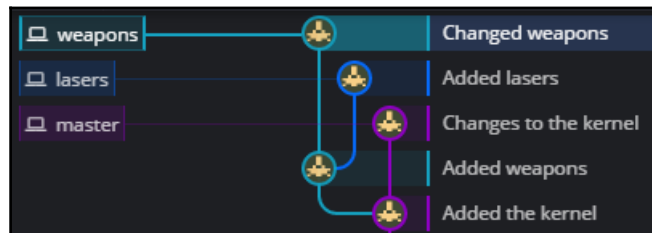
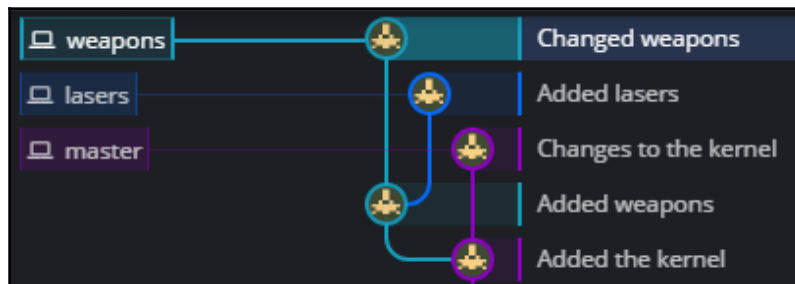
```

@@ -1,4 +1,6 @@
1
+1.1
2
3
+3.1
4
\ No newline at end of file
Stage this hunk [y,n,q,a,d,/s,e,?]? s
Split into 3 hunks.
@@ -1,3 +1,4 @@
1
+1.1
2
3
Stage this hunk [y,n,q,a,d/,j,j,g,e,?]? y
@@ -2,3 +3,4 @@
2
3
+3.1
4
Stage this hunk [y,n,q,a,d/,K,j,j,g,e,?]? n
@@ -4 +6,2 @@
4
\ No newline at end of file
Stage this hunk [y,n,q,a,d/,K,g,e,?]? n

C:\Users\sander.rossel\Desktop\test>_

```







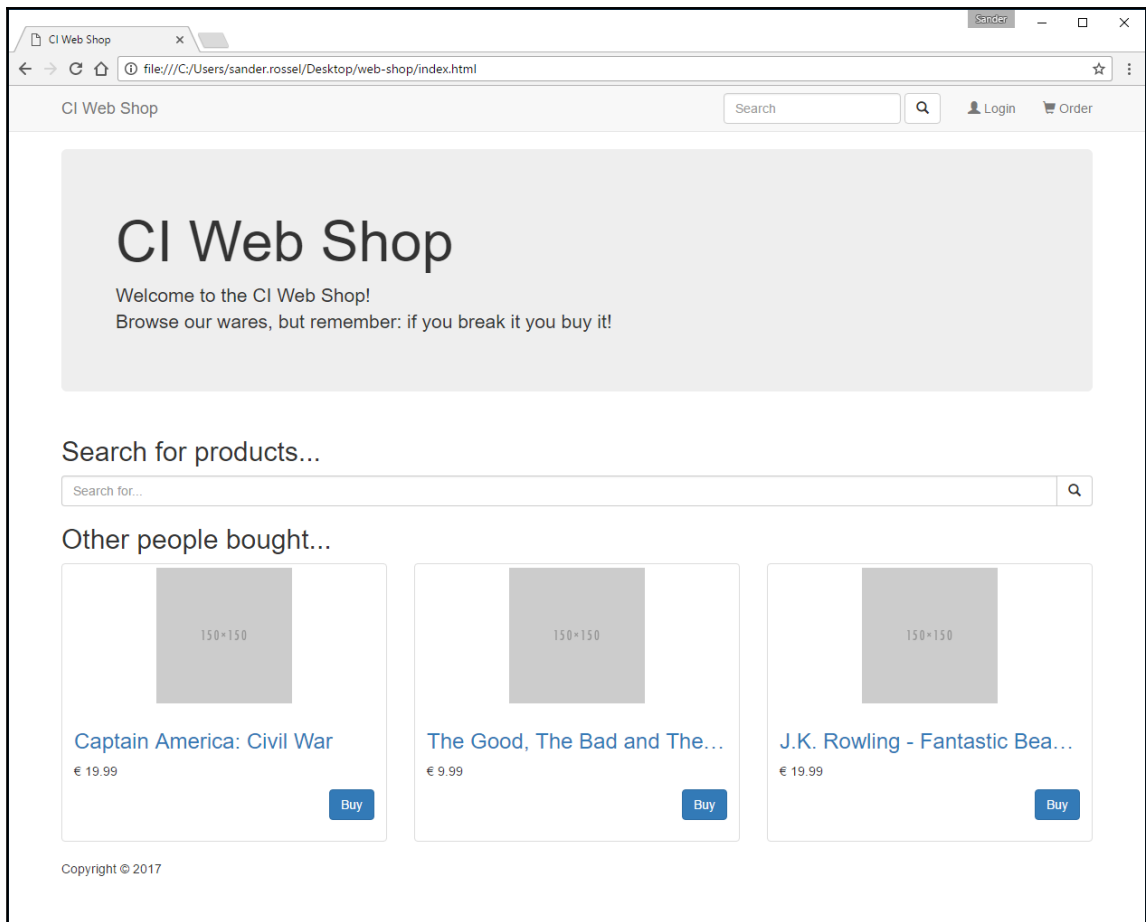
```
Git Command Prompt - git rebase -i master

pick 4844862 Commit 1
squash 31e4c9d Commit 2
drop f91ce19 Commit 3

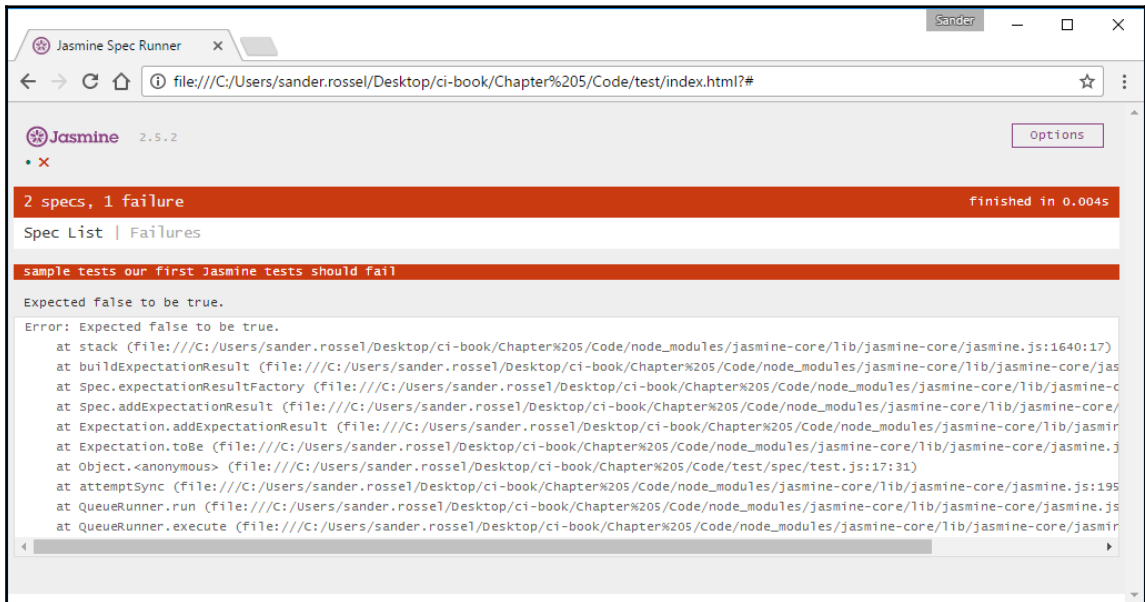
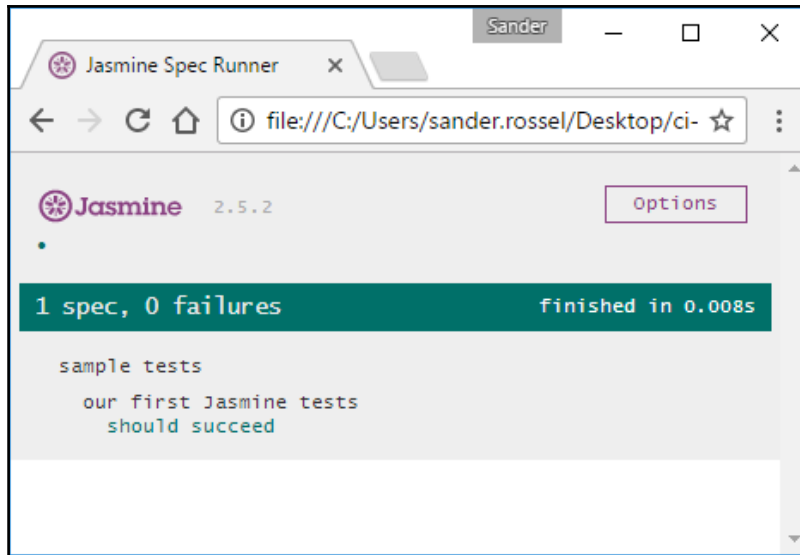
# Rebase 4844862..f91ce19 onto 897dd47 (3 commands)
#
# Commands:
# p, pick = use commit
# r, reword = use commit, but edit the commit message
# e, edit = use commit, but stop for amending
# s, squash = use commit, but meld into previous commit
# f, fixup = like "squash", but discard this commit's log message
# x, exec = run command (the rest of the line) using shell
# d, drop = remove commit
#
# These lines can be re-ordered; they are executed from top to bottom.
#
# If you remove a line here THAT COMMIT WILL BE LOST.
#
# However, if you remove everything, the rebase will be aborted.
#
# Note that empty commits are commented out
~
~
~
~
~

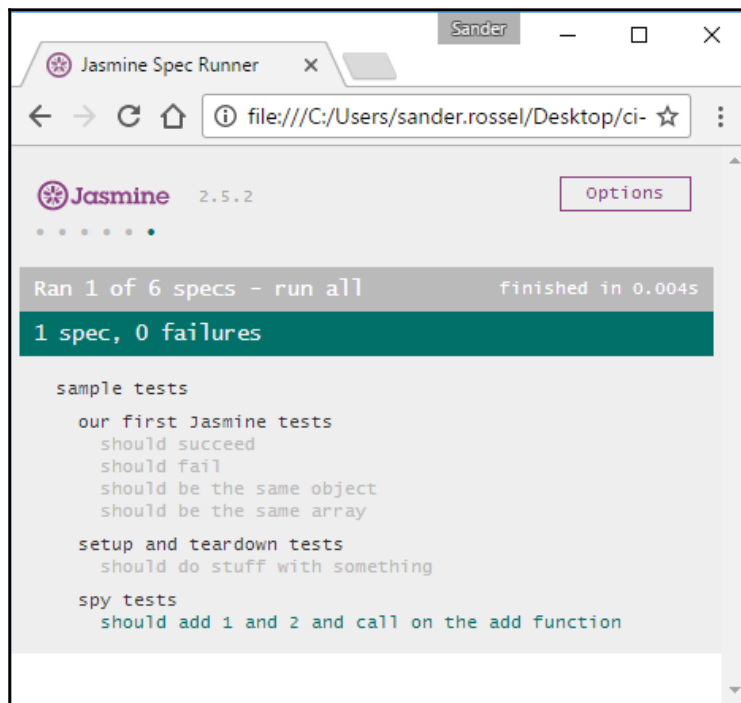
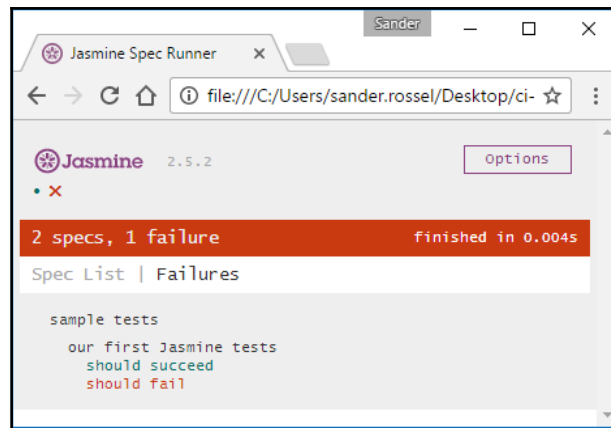
~/Desktop/the-suit/.git/rebase-merge/git-rebase-todo[+] [unix] (22:24 30/01/2017)
-- INSERT --
```

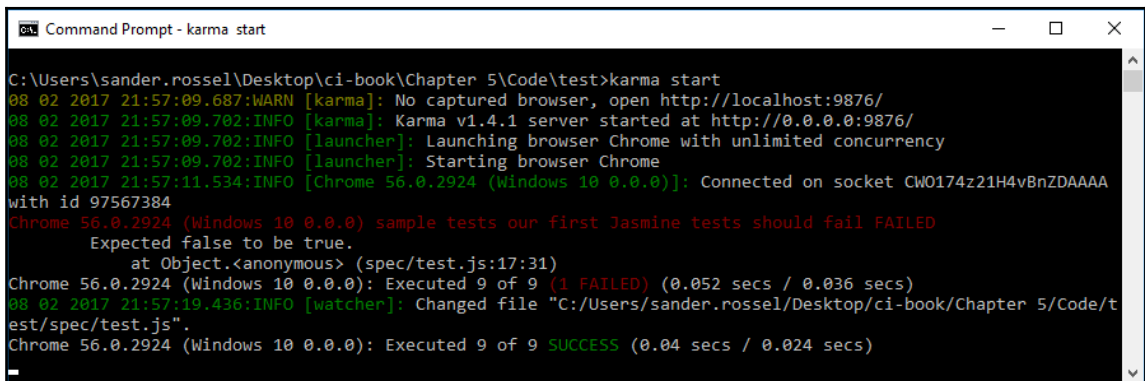
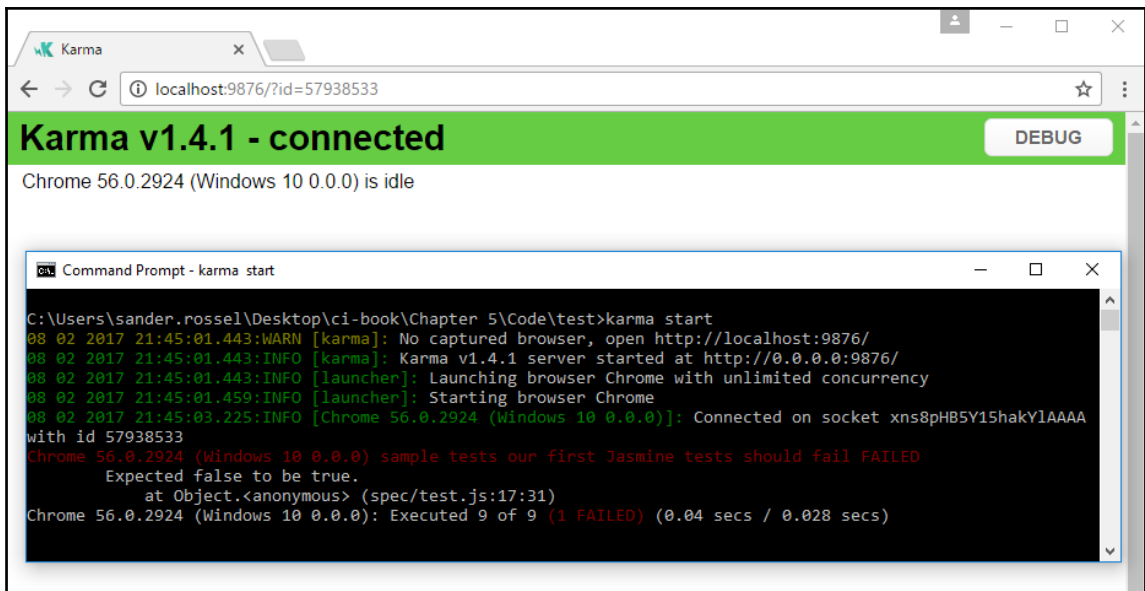
Creating a Simple JavaScript App



Testing Your JavaScript







```
karma start
C:\Users\sander.rossel\Desktop\ci-book\Chapter 5\Code\test>karma start
09 02 2017 21:51:47.012:WARN [karma]: No captured browser, open http://localhost:9876/
09 02 2017 21:51:47.028:INFO [karma]: Karma v1.4.1 server started at http://0.0.0.0:9876/
09 02 2017 21:51:47.028:INFO [launcher]: Launching browsers Chrome, Firefox, Edge with unlimited concurrency
09 02 2017 21:51:47.043:INFO [launcher]: Starting browser Chrome
09 02 2017 21:51:47.043:INFO [launcher]: Starting browser Firefox
09 02 2017 21:51:47.059:INFO [launcher]: Starting browser Edge
09 02 2017 21:51:48.867:INFO [Chrome 56.0.2924 (Windows 10 0.0.0)]: Connected on socket 7hF-GXmJuhjpV40PAAAA with id 12481006
09 02 2017 21:51:50.139:INFO [Edge 14.14393.0 (Windows 10 0.0.0)]: Connected on socket zCVxsfdpiDop45p5AAAB with id 75920513
09 02 2017 21:51:50.321:INFO [Firefox 51.0.0 (Windows 10 0.0.0)]: Connected on socket FuLT00gC2v6V7T0kAAAC with id 10999755
Edge 14.14393.0 (Windows 10 0.0.0): Executed 9 of 9 SUCCESS (0.098 secs / 0.054 secs)
Firefox 51.0.0 (Windows 10 0.0.0): Executed 9 of 9 SUCCESS (0.107 secs / 0.052 secs)
Chrome 56.0.2924 (Windows 10 0.0.0): Executed 9 of 9 SUCCESS (0.091 secs / 0.043 secs)
TOTAL: 27 SUCCESS
```

Code coverage report for x

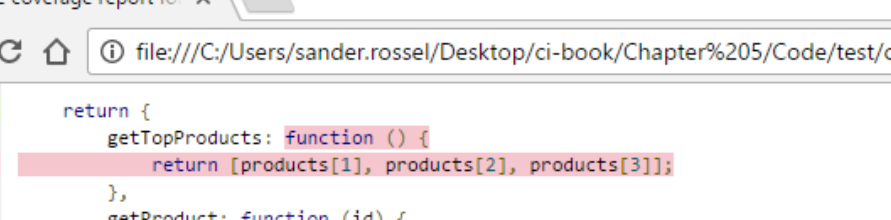
file:///C:/Users/sander.rossel/Desktop/ci-book/Chapter%205/Code/test/coverage/html/scripts/index.html

all files scripts/

56.1% Statements 23/41 0% Branches 0/2 58.82% Functions 10/17 56.1% Lines 23/41

File		Statements	Branches	Functions	Lines				
index.js	<div></div>	33.33%	1/3	100%	0/0	0%	0/1	33.33%	1/3
product.js	<div></div>	16.67%	1/6	100%	0/0	0%	0/1	16.67%	1/6
repository.js	<div></div>	50%	5/10	0%	0/2	50%	3/6	50%	5/10
search.js	<div></div>	33.33%	1/3	100%	0/0	0%	0/1	33.33%	1/3
shopping-cart.js	<div></div>	100%	13/13	100%	0/0	100%	6/6	100%	13/13
utils.js	<div></div>	33.33%	2/6	100%	0/0	50%	1/2	33.33%	2/6

Code coverage generated by Istanbul at Sat Feb 11 2017 16:48:17 GMT+0100 (W. Europe Standard Time)



```
33  
36 1x    return {  
37        getTopProducts: function () {  
38            return [products[1], products[2], products[3]];  
39        },  
40        getProduct: function (id) {  
41 6x            return products.filter(function (p) {  
42 30x                return p.id === id;  
43            })[0];  
44        },  
45        search: function (q) {  
46            if (q == null) {  
47                return [];  
48            } else {  
49                return products.filter(function (p) {  
50                    return p.name.toLowerCase().indexOf(q.toLowerCase()) >= 0;  
51                });  
52            }  
53        }  
    }  
}
```

```
Command Prompt

[firefox #11]
[firefox #11] [16:31:21] I/direct - Using FirefoxDriver directly...
[firefox #11] Started
[firefox #11] Selenium tests
[firefox #11]   homepage
[firefox #11]     should cut off long titles ...
[firefox #11] . Passed
[firefox #11]     should navigate to the clicked product ...
[firefox #11] . Passed
[firefox #11]     should search for all products containing "fanta" ...
[firefox #11] . Passed
[firefox #11]     should remove an item from the shopping cart ...
[firefox #11] . Passed
[firefox #11] 4 of 4 passed (0 skipped, 0 disabled).
[firefox #11] 4 of 4 passed (0 skipped, 0 disabled).
[firefox #11]
[firefox #11]
[firefox #11] 4 specs, 0 failures
[firefox #11] Finished in 2.273 seconds
[firefox #11]
[firefox #11] SUCCESS: 4 specs, 0 failures, 0 skipped, 0 disabled in 2.277s.

[16:31:27] I/testLogger -

[16:31:27] I/launcher - 0 instance(s) of WebDriver still running
[16:31:27] I/launcher - chrome #01 passed
[16:31:27] I/launcher - firefox #11 passed

C:\Users\sander.rossel\Desktop\ci-book\Chapter 5\Code\test>
```

```
Command Prompt

[16:46:23] I/launcher - Running 1 instances of WebDriver
[16:46:23] I/direct - Using ChromeDriver directly...
4
0
0
  4 passing (2s)

[16:46:27] I/launcher - 0 instance(s) of WebDriver still running
[16:46:27] I/launcher - chrome #01 passed

C:\Users\sander.rossel\Desktop\ci-book\Chapter 5\Code\test>
```

Automation with Gulp

```
C:\Windows\System32\cmd.exe

C:\Users\sander.rossel\Desktop\ci-book\Chapter 6\Code>gulp
[21:40:24] Using gulpfile ~\Desktop\ci-book\Chapter 6\Code\gulpfile.js
[21:40:24] Starting 'default'...
[21:40:24] Starting 'copycss'...
[21:40:24] Finished 'copycss' after 7.82 ms
[21:40:24] Finished 'default' after 12 ms

C:\Users\sander.rossel\Desktop\ci-book\Chapter 6\Code>gulp copycss
[21:40:29] Using gulpfile ~\Desktop\ci-book\Chapter 6\Code\gulpfile.js
[21:40:29] Starting 'copycss'...
[21:40:29] Finished 'copycss' after 7.06 ms

C:\Users\sander.rossel\Desktop\ci-book\Chapter 6\Code>
```

```
C:\Windows\System32\cmd.exe

C:\Users\sander.rossel\Desktop\ci-book\Chapter 6\Code>gulp
[21:55:17] Using gulpfile ~\Desktop\ci-book\Chapter 6\Code\gulpfile.js
[21:55:17] Starting 'clean'...
[21:55:17] Finished 'clean' after 3.58 ms
[21:55:17] Starting 'lint'...
scripts\product.js: line 3, col 41, ['id'] is better written in dot notation.

1 error
scripts\Repository.js: line 46, col 19, Use '===' to compare with 'null'.

1 error
scripts\search.js: line 3, col 39, ['q'] is better written in dot notation.

1 error
scripts\shopping-cart.js: line 5, col 35, Expected an assignment or function call and instead saw an expression.
scripts\shopping-cart.js: line 5, col 41, Missing semicolon.
scripts\shopping-cart.js: line 9, col 10, Missing semicolon.
scripts\shopping-cart.js: line 29, col 10, Missing semicolon.

4 errors
scripts\utils.js: line 9, col 43, Expected a conditional expression and instead saw an assignment.

1 error
[21:55:17] Finished 'lint' after 77 ms
[21:55:17] Starting 'minify'...
[21:55:17] Before minification index.js 185 B
[21:55:17] Before minification product.js 337 B
[21:55:17] Before minification repository.js 1568 B
[21:55:17] Before minification search.js 189 B
[21:55:17] Before minification shopping-cart.js 955 B
```

```
C:\Windows\System32\cmd.exe
[21:16:42] Finished 'lint' after 73 ms
[21:16:42] Starting 'test'...
02 03 2017 21:16:42.773:INFO [karma]: Karma v1.4.1 server started at http://0.0.0.0:9876/
02 03 2017 21:16:42.777:INFO [launcher]: Launching browser PhantomJS with unlimited concurrency
02 03 2017 21:16:42.777:INFO [launcher]: Starting browser PhantomJS
02 03 2017 21:16:42.996:ERROR [phantomjs.launcher]: SetProcessDpiAwareness failed: "COM error 0x80070005 (Unknown error 0x0ffffffff80070005)"
02 03 2017 21:16:45.666:INFO [PhantomJS 2.1.1 (Windows 8 0.0.0)]: Connected on socket HfzpALOP-sUeZD4dAAAA with id 32345291
PhantomJS 2.1.1 (Windows 8 0.0.0) web app tests shopping cart controller should update the order total when a product is added FAILED
    Expected 131.96 to be 31.96.
    spec/test.js:86:44
    loaded@http://localhost:9876/context.js:151:17
PhantomJS 2.1.1 (Windows 8 0.0.0): Executed 10 of 10 (1 FAILED) (0 secs / 0.027 secs)
[21:16:45] 'test' errored after 3.75 s
[21:16:45] Error in plugin 'karma'
Message:
    Karma tests failed.

C:\Users\sander.rossel\Desktop\ci-book\Chapter 6\Code>
```

Automation with Jenkins

Chapter 7 [Jenkins]

Sander

← → ↻ ↺

ciserver:8080/job/Chapter%207/

☆

Jenkins

1

search

admin | log out

Jenkins > Chapter 7 > [ENABLE AUTO REFRESH](#)

Back to Dashboard

Status

Changes

Workspace

Build Now

Delete Project

Configure

Project Chapter 7

[Workspace](#)

[Recent Changes](#)

Build History

[trend](#)

find

X

#2

Mar 27, 2017 9:21 PM

#1

Mar 27, 2017 9:19 PM

RSS for all

RSS for failures

[add description](#)

Disable Project

Permalinks

- [Last build \(#2\), 14 min ago](#)
- [Last stable build \(#2\), 14 min ago](#)
- [Last successful build \(#2\), 14 min ago](#)
- [Last failed build \(#1\), 16 min ago](#)
- [Last unsuccessful build \(#1\), 16 min ago](#)
- [Last completed build \(#2\), 14 min ago](#)

Build

Execute shell

X

?

Command

npm install

[See the list of available environment variables](#)

Advanced...

Add build step

Post-build Actions

Publish JUnit test result report

Test report XMLs

test/junit/*.xml

Fileset 'includes' setting that specifies the generated raw XML report files, such as 'myproject/target/test-reports/*.xml'. Basedir of the fileset is [the workspace root](#).

☐ Retain long standard output/error

Health report amplification factor

1.0

1% failing tests scores as 99% health. 5% failing tests scores as 95% health

Allow empty results

☐ Do not fail the build on empty test results

Add post-build action

Test Result

1 failures (+1)

10 tests (±0)

Took 14 ms.

 [add description](#)

All Failed Tests

Test Name

[PhantomJS_2_1_1 \(Linux_0_0_0\) Web Shop.web app tests web app tests shopping cart controller should update the order total when a product is added](#)

[Stack Trace](#)

Expected 131.96 to be 31.96.

spec/test.js:86:44

loaded@http://localhost:9876/context.js:151:17

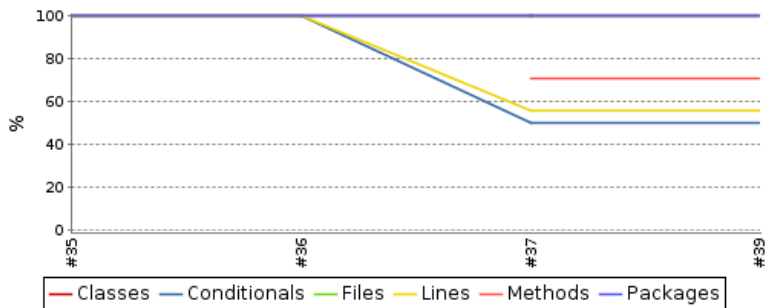
[Standard Output](#)

All Tests

Package	Duration	Fail	(diff) Skip	(diff) Pass	(diff) Total	(diff)
PhantomJS_2_1_1 (Linux_0_0_0) Web Shop	28 ms	1	+1	0	9	-1

Cobertura Coverage Report

Trend



Project Coverage summary

Name	Packages		Files		Classes		Methods		
Cobertura Coverage Report	100%	1/1	100%	6/6	100%	6/6	71%	12/17	56%

Coverage Breakdown by Package

Name	Files		Classes		Methods		Lines	
scripts	100%	6/6	100%	6/6	71%	12/17	56%	28/50

☒ Build periodically

Schedule

⚠ Do you really mean "every minute" when you say "*****"? Perhaps you meant "H*****" to poll once per hour
Would last have run at Saturday, May 13, 2017 11:32:37 PM CEST; would next run at Saturday, May 13, 2017 11:32:37 PM CEST.

Gitlab

Enable authentication for 'project' end-point

GitLab connections

Connection name

Local GitLab

Gitlab host URL

http://localhost

Credentials

GitLab API token

Add

API Token for Gitlab access required

API Token for accessing Gitlab

Advanced...

Success

Test Connection

Build History

trend

find

#47 Apr 8, 2017 4:33 PM

Started by GitLab push by Sander Rossel

Sander Rossel / web-shop

Project Activity Repository Pipelines Graphs Issues 0 Merge Requests 0 Wiki

Files Commits Network Compare Branches Tags

master web-shop

08 Apr, 2017 10 commits

Fix build

Sander Rossel committed less than a minute ago

Commit: running

29270b3d

Browse Files

Make build fail

Sander Rossel committed about a minute ago

b90e27e7

Browse Files

Commit

Sander Rossel committed 46 minutes ago

5d7f1570

Browse Files

#64

Apr 8, 2017 9:45 PM

#63

Apr 8, 2017 9:44 PM

#62

Apr 8, 2017 9:42 PM

SonarQube Quality Gate

Chapter 7 **ERROR**

server-side processing: **Success**

Code Smells

3h^A

Debt

11

Code Smells

7min

New Debt

3

New Code Smells

started 18 hours ago

Coverage

37.2%

Coverage

Coverage on New Code

Duplications

Bugs & Vulnerabilities

2^C

Bugs

0^A

Vulnerabilities

1

New Bugs

0

New Vulnerabilities

Leak Period: since 1.0 started 2 minutes ago

[SonarQube](#)

[Workspace](#)


[Last Successful Artifacts](#)

angular.min.js	163.21 KB	view
bootstrap.min.css	118.36 KB	view
bootstrap.min.js	36.18 KB	view
jquery.min.js	84.63 KB	view
all.css	86 B	view
index.bundle.js	1.51 KB	view



Agent Windows Slave

Connect agent to Jenkins one of these ways:

-  **Launch** Launch agent from browser
- Run from agent command line:

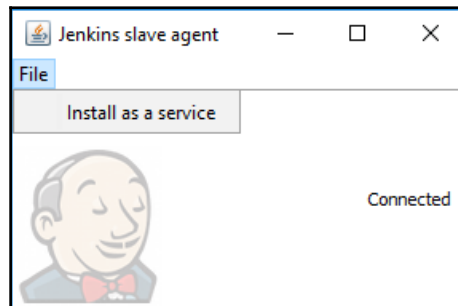
```
java -jar slave.jar -jnlpUrl http://ciserve
```

Labels

[windows](#)

Projects tied to Windows Slave

None



A NodeJS and MongoDB Web App

```

> use webshop
switched to db webshop
> db.createUser({
... user: 'sander',
... pwd: 'sander',
... roles: [{ role: 'readWrite', db: 'webshop' }]
... })
Successfully added user: {
  "user" : "sander",
  "roles" : [
    {
      "role" : "readWrite",
      "db" : "webshop"
    }
  ]
}
> exit
bye
sander@ciserver:~$

```

Robomongo 1.0-RC1

File View Options Window Help

CI Server (1)

- webshop
 - Collections (1)
 - SomeCollection
 - Functions (0)
 - Users

db.getCollection('SomeCollection')
db.getCollection('SomeCollection').find({})

CI Server ciserver:27017 webshop

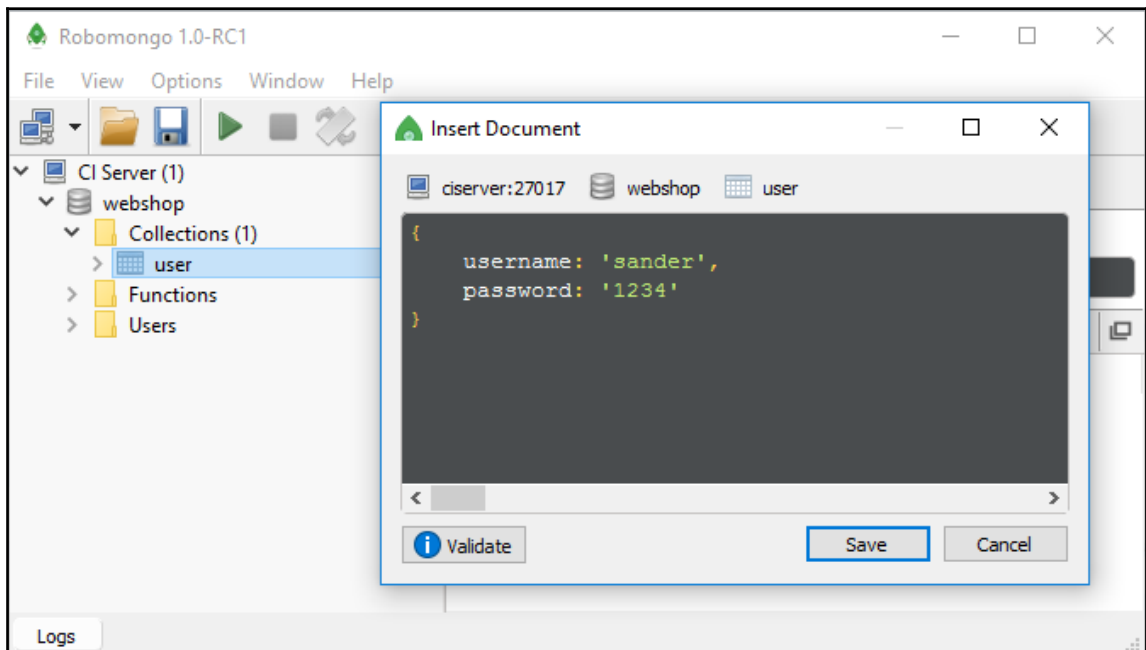
SomeCollection 0 sec. 0 50

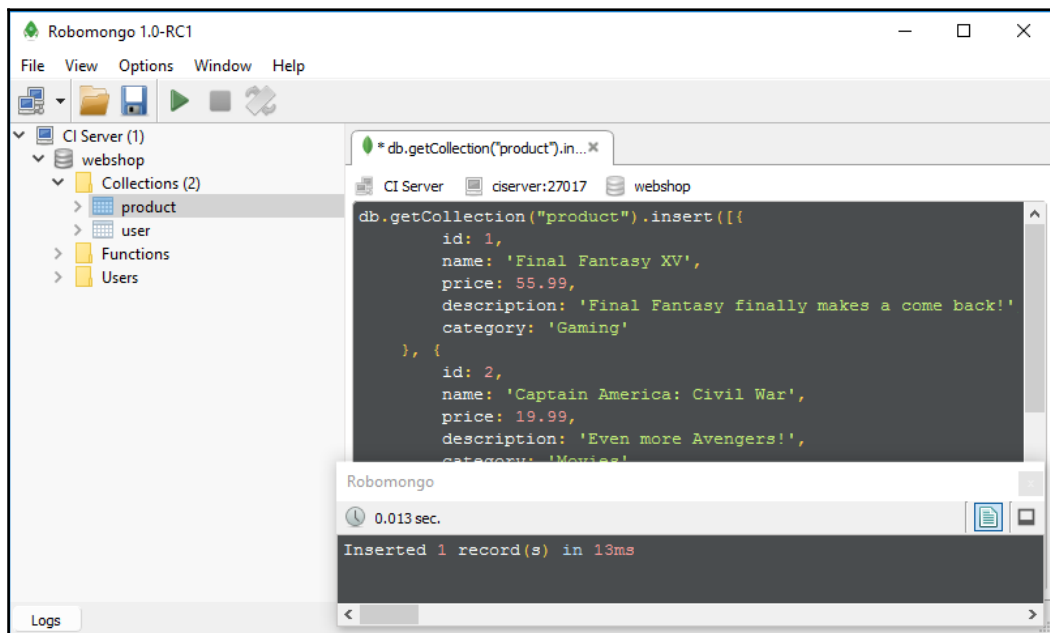
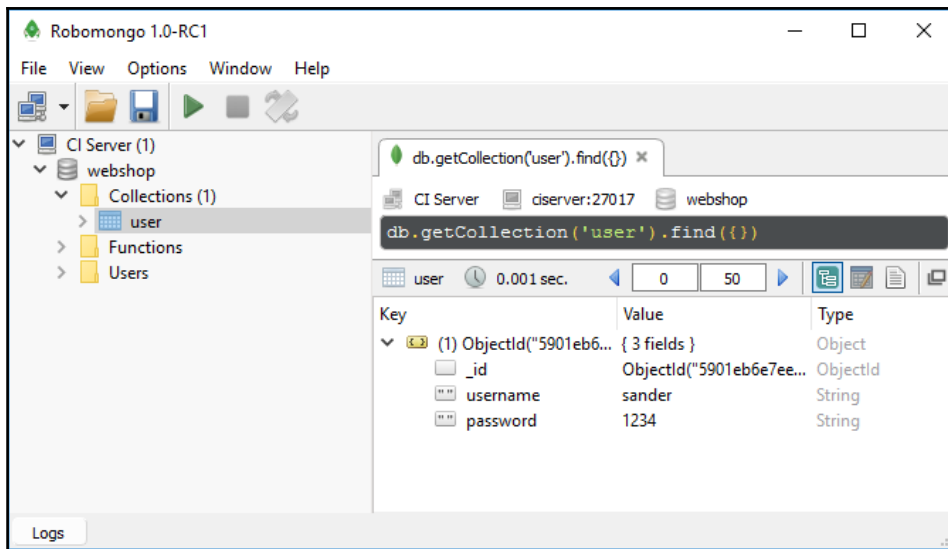
Key	Value	Type
(1) ObjectId("58f5...")	{ 3 fields }	Object
_id	ObjectId("58f5239c7ee2ba...")	ObjectId
something	Some value	String
number	42	Int32

Logs

```
C:\Windows\System32\cmd.exe - nodemon index.js

C:\Users\sander.rossel\Desktop\web-shop>nodemon index.js
[nodemon] 1.11.0
[nodemon] to restart at any time, enter `rs`
[nodemon] watching: *.*
[nodemon] starting `node index.js`
Server running at http://127.0.0.1:80/
[nodemon] restarting due to changes...
[nodemon] starting `node index.js`
Server running at http://127.0.0.1:80/
```






```
C:\Windows\System32\cmd.exe
C:\Users\sander.rossel\Desktop\web-shop>pm2 start index.js
[PM2] Starting C:\Users\sander.rossel\Desktop\web-shop\index.js in fork_mode (1 instance)
[PM2] Done.
```

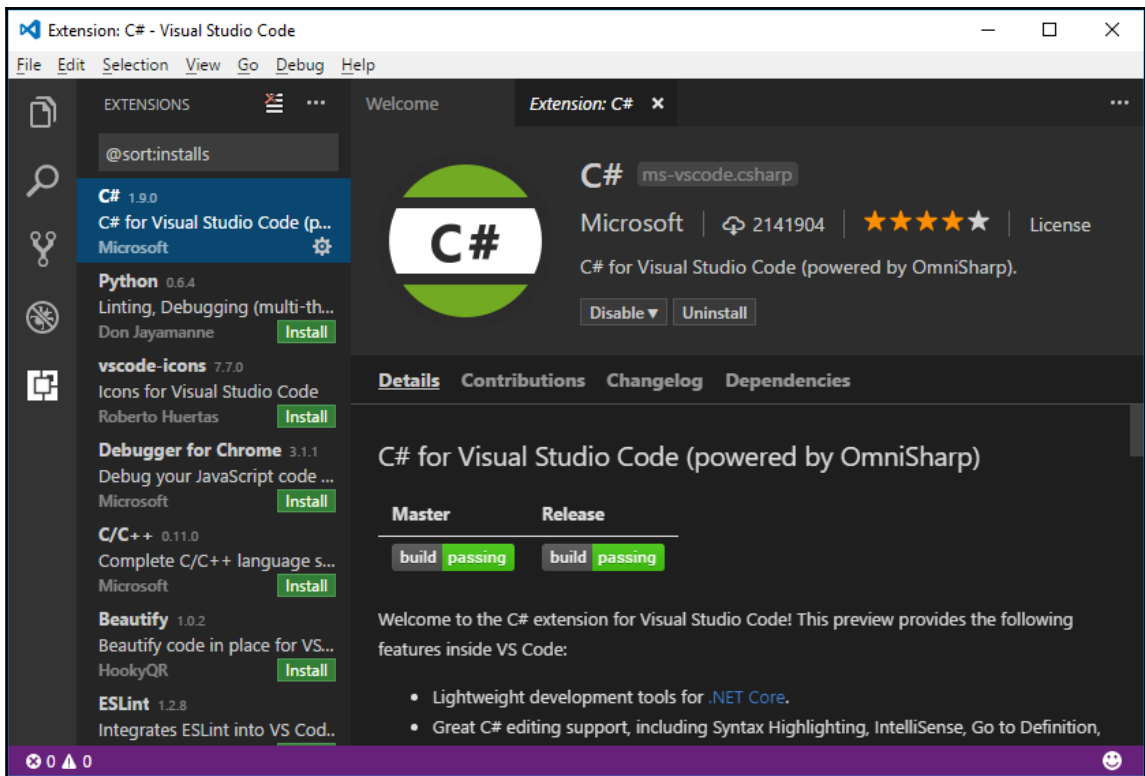
App name	id	mode	pid	status	restart	uptime	cpu	mem	watching
index	0	fork	3164	online	0	0s	7%	6.8 MB	disabled

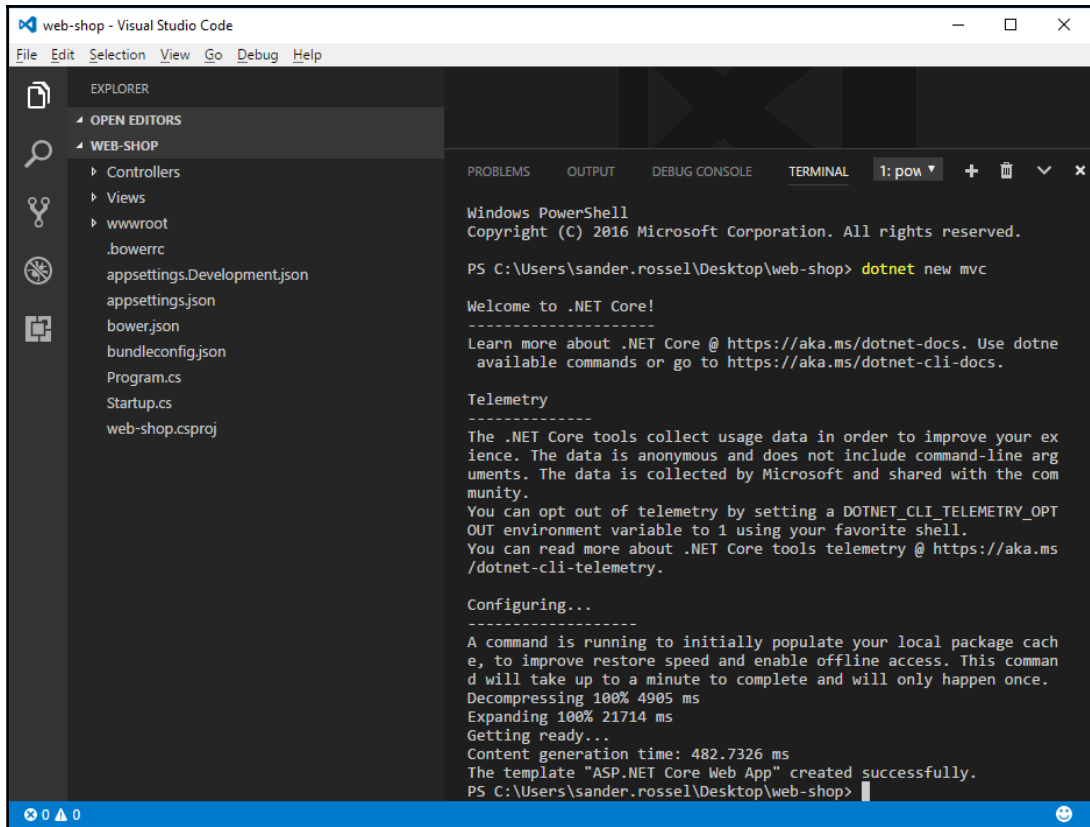
Use `pm2 show <id|name>` to get more details about an app

```
C:\Users\sander.rossel\Desktop\web-shop>pm2 show 0
Describing process with id 0 - name index
```

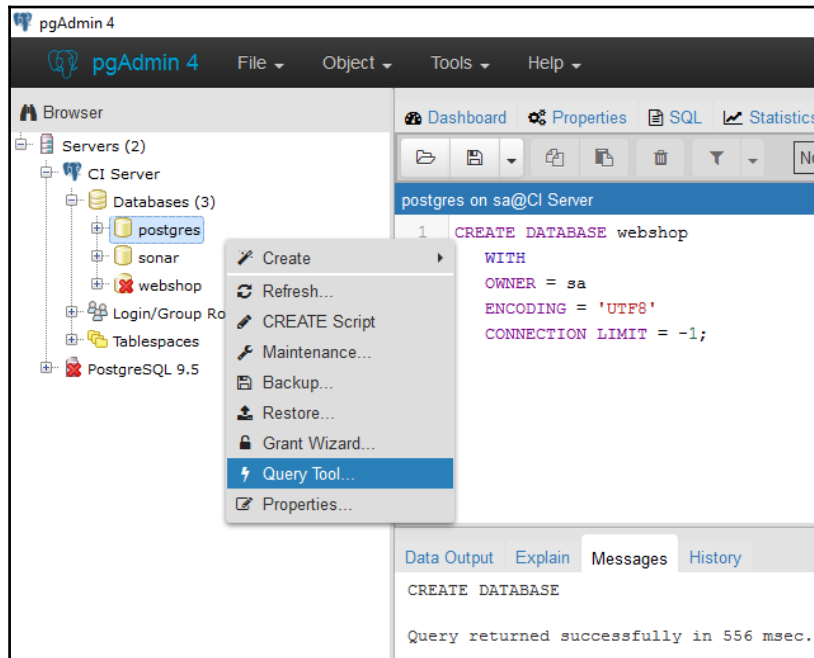
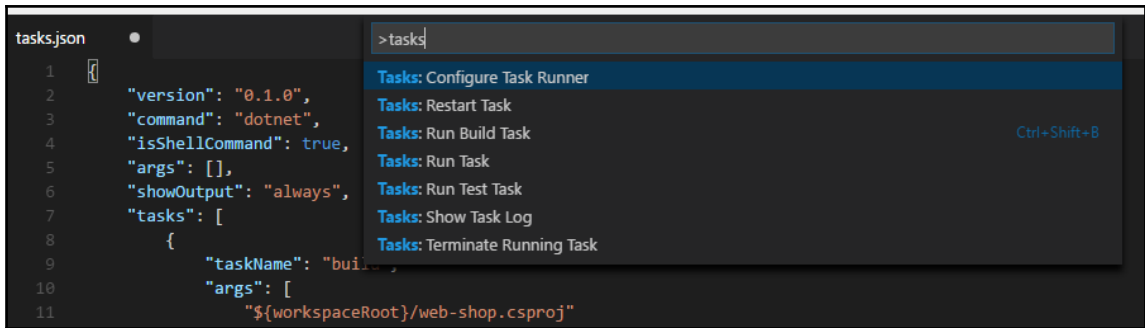
status	online
name	index
restarts	0
uptime	6s
script path	C:\Users\sander.rossel\Desktop\web-shop\index.js
script args	N/A
error log path	C:\Users\sander.rossel\.pm2\logs\index-error-0.log
out log path	C:\Users\sander.rossel\.pm2\logs\index-out-0.log
pid path	C:\Users\sander.rossel\.pm2\pids\index-0.pid
interpreter	node
interpreter args	N/A
script id	0
exec cwd	C:\Users\sander.rossel\Desktop\web-shop
exec mode	fork_mode
node.js version	6.9.4
watch & reload	<input type="checkbox"/>
unstable restarts	0

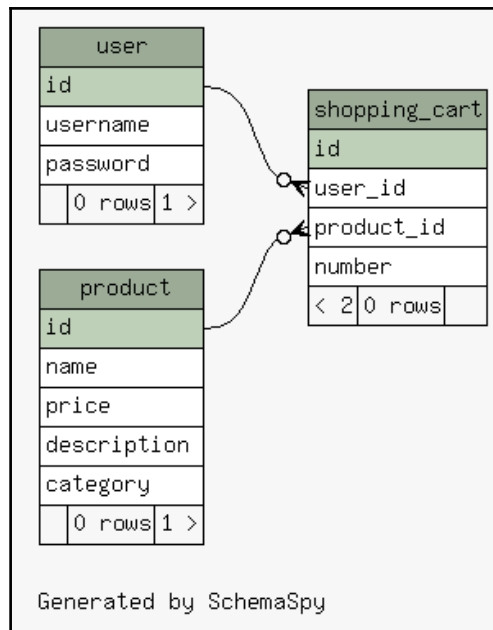
A C# .NET Core and PostgreSQL Web App





```
0 references
5     class Program
6     {
7         0 references
8         static void Main(string[] args)
9         {
10            Console.WriteLine("Hello World!");
11        }
12    }
13
```

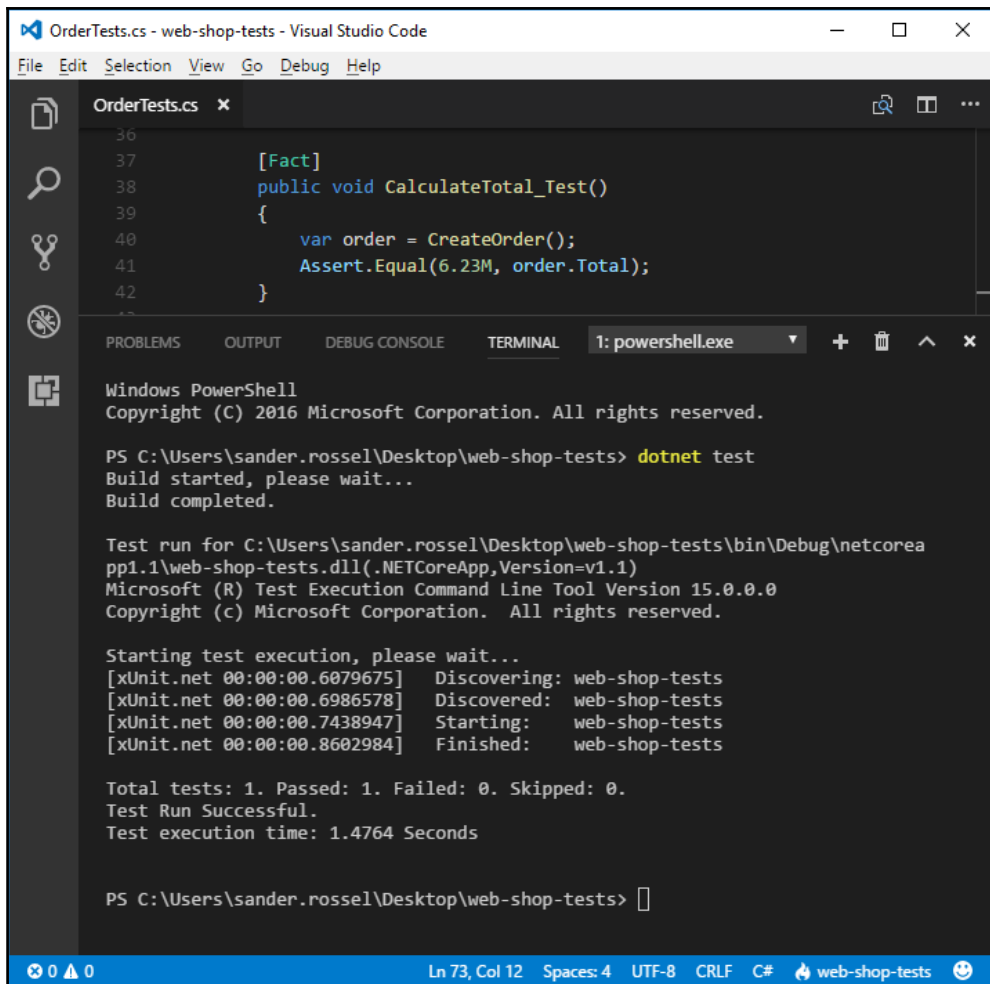




```
Command Prompt
C:\Program Files\PostgreSQL\9.5\bin>psql -U sa -h ciserver -d webshop -f C:\Users\sander.rossel\Desktop\web-shop\test\sql\test.sql
Password for user sa:
1..1
ok 1 - The products should be inserted into the shopping cart.
psql:C:/Users/sander.rossel/Desktop/web-shop/test/sql/test.sql:35: WARNING:  there is no transaction in progress
C:\Program Files\PostgreSQL\9.5\bin>
```

```
Command Prompt
C:\Program Files\PostgreSQL\9.5\bin>psql -U sa -h ciserver -d webshop -f C:\Users\sander.rossel\Desktop\web-shop\test\sql\test.sql
Password for user sa:
1..1
not ok 1 - The products should be inserted into the shopping cart.
# Failed test 1: "The products should be inserted into the shopping cart."
#   Results differ beginning at row 1:
#       have: (1,1,3)
#       want: (1,1,2)
# Looks like you failed 1 test of 1
psql:C:/Users/sander.rossel/Desktop/web-shop/test/sql/test.sql:35: WARNING:  there is no
transaction in progress

C:\Program Files\PostgreSQL\9.5\bin>
```



The screenshot shows the Visual Studio Code interface. The editor window displays a file named `OrderTests.cs` with the following code:

```
36
37     [Fact]
38     public void CalculateTotal_Test()
39     {
40         var order = CreateOrder();
41         Assert.Equal(6.23M, order.Total);
42     }
```

The bottom panel shows the **TERMINAL** tab with the following output:

```
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.

PS C:\Users\sander.rossel\Desktop\web-shop-tests> dotnet test
Build started, please wait...
Build completed.

Test run for C:\Users\sander.rossel\Desktop\web-shop-tests\bin\Debug\netcorea
pp1.1\web-shop-tests.dll(.NETCoreApp,Version=v1.1)
Microsoft (R) Test Execution Command Line Tool Version 15.0.0.0
Copyright (c) Microsoft Corporation. All rights reserved.

Starting test execution, please wait...
[xUnit.net 00:00:00.6079675]    Discovering: web-shop-tests
[xUnit.net 00:00:00.6986578]    Discovered:  web-shop-tests
[xUnit.net 00:00:00.7438947]    Starting:   web-shop-tests
[xUnit.net 00:00:00.8602984]    Finished:   web-shop-tests

Total tests: 1. Passed: 1. Failed: 0. Skipped: 0.
Test Run Successful.
Test execution time: 1.4764 Seconds

PS C:\Users\sander.rossel\Desktop\web-shop-tests> 
```

The status bar at the bottom indicates the current position is **Ln 73, Col 12**, with **Spaces: 4**, **UTF-8** encoding, **CRLF** line endings, and the file is named **web-shop-tests**.

```

Starting test execution, please wait...
[xUnit.net 00:00:00.6045309] Discovering: web-shop-tests
[xUnit.net 00:00:00.6971649] Discovered: web-shop-tests
[xUnit.net 00:00:00.7490012] Starting: web-shop-tests
[xUnit.net 00:00:00.8773519] web_shop_tests.OrderTests.CalculateTotal_Test [FAIL]
[xUnit.net 00:00:00.8784274] Assert.Equal() Failure
[xUnit.net 00:00:00.8785371] Expected: 7.23
[xUnit.net 00:00:00.8784274] Assert.Equal() Failure
[xUnit.net 00:00:00.8785371] Expected: 7.23
[xUnit.net 00:00:00.8785834] Actual: 6.23
[xUnit.net 00:00:00.8795181] Stack Trace:
[xUnit.net 00:00:00.8805833] C:\Users\sander.rossel\Desktop\web-shop-tests\Ord
erTests.cs(41,0): at web_shop_tests.OrderTests.CalculateTotal_Test()
[xUnit.net 00:00:00.8942034] Finished: web-shop-tests
Failed web_shop_tests.OrderTests.CalculateTotal_Test
Error Message:
  Assert.Equal() Failure
Expected: 7.23
Actual: 6.23
Stack Trace:
  at web_shop_tests.OrderTests.CalculateTotal_Test() in C:\Users\sander.rossel\Deskt
op\web-shop-tests\OrderTests.cs:line 41

Total tests: 1. Passed: 0. Failed: 1. Skipped: 0.
Test execution time: 1.5109 Seconds
Test Run Failed.

```

```

C:\Windows\System32\cmd.exe
C:\Users\sander.rossel\Desktop\web-shop-tests>C:\Program Files (x86)\OpenCover\OpenCover.Console.exe" -target:"C:\Program Files\dotnet\dotnet.exe" -targetargs:"test" -register:user -filter:"+[web-shop]*" -[web-shop-tests]*" -output:"TestResults\OpenCover Coverage.xml" -oldStyle
Executing: C:\Program Files\dotnet\dotnet.exe
Build started, please wait...
Build completed.

Test run for C:\Users\sander.rossel\Desktop\web-shop-tests\bin\Debug\netcoreapp1.1\web-shop-tests.dll(.NETCoreApp,Version=v1.1)
Microsoft (R) Test Execution Command Line Tool Version 15.0.0.0
Copyright (c) Microsoft Corporation. All rights reserved.

Starting test execution, please wait...
[xUnit.net 00:00:01.2598504] Discovering: web-shop-tests
[xUnit.net 00:00:01.3634937] Discovered: web-shop-tests
[xUnit.net 00:00:01.4183310] Starting: web-shop-tests
[xUnit.net 00:00:01.5713126] Finished: web-shop-tests

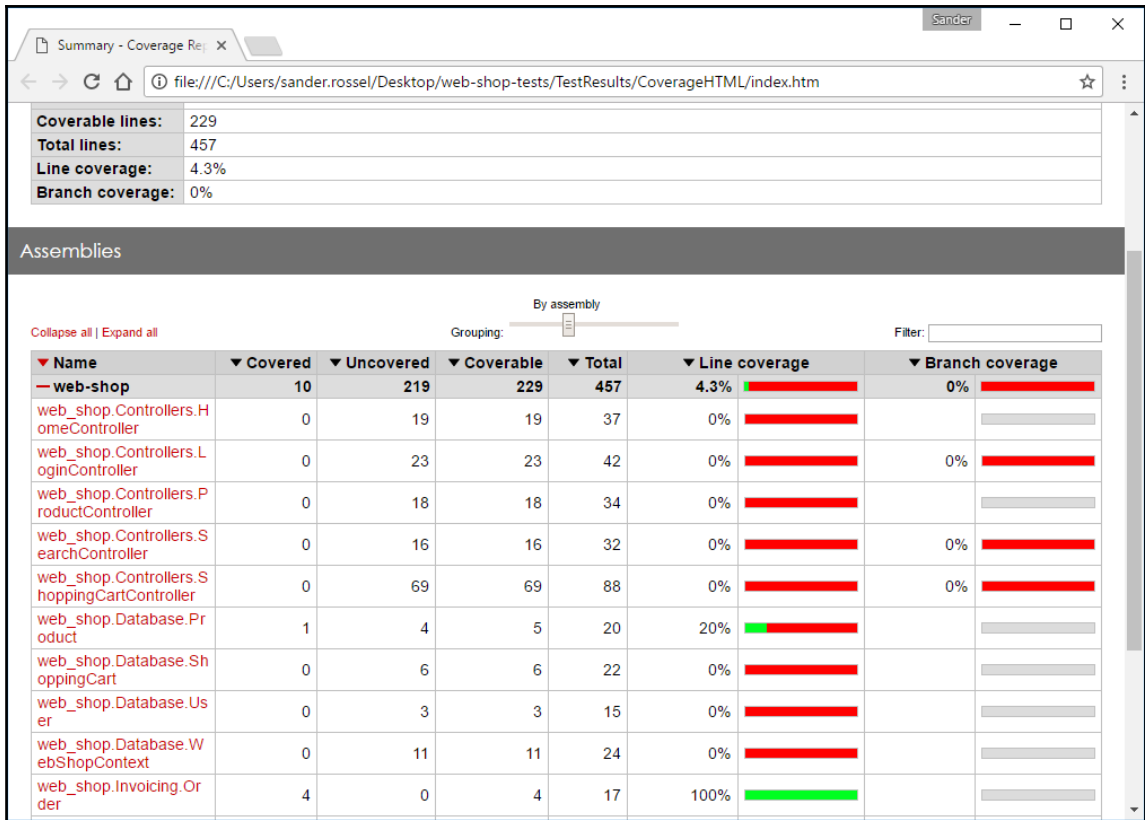
Total tests: 4. Passed: 4. Failed: 0. Skipped: 0.
Test Run Successful.
Test execution time: 3.6553 Seconds

Committing...
Visited Classes 4 of 17 (23.53)
Visited Methods 11 of 72 (15.28)
Visited Points 15 of 193 (7.77)
Visited Branches 11 of 84 (13.10)

==== Alternative Results (includes all methods including those without corresponding source) ====
Alternative Visited Classes 4 of 28 (14.29)
Alternative Visited Methods 16 of 133 (12.03)


C:\Users\sander.rossel\Desktop\web-shop-tests>

```

```
4 namespace web_shop.Database
5 {
6     [Table("product")]
7     public class Product
8     {
9         [Column("id")]
10        public int Id { get; set; }
11        [Column("name")]
12        public string Name { get; set; }
13        [Column("price")]
14        public decimal Price { get; set; }
15        [Column("description")]
16        public string Description { get; set; }
17        [Column("category")]
18        public string Category { get; set; }
19    }
20 }
```


0 failures

4 tests
Took 0 ms.
 [add description](#)

All Tests

	Duration	Status	Skip	Todo
1 - - Table shopping_cart should exist	0 ms	OK	No	No
2 - - Column shopping_cart.number should exist	0 ms	OK	No	No
3 - - Column shopping_cart.number should be type integer	0 ms	OK	No	No
4 - - The products should be inserted into the shopping cart.	0 ms	OK	No	No

Additional Jenkins Plugins

All +

S	W	Name ↓
		Build Web Shop

Name

JS Web Shop

Description

[Plain text] [Preview](#)

Filter build queue

☐

?

Filter build executors

☐

?

Job Filters

Status Filter

All selected jobs

?

Recurse in subfolders

☐

Jobs

☒ Build Web Shop

☐ Chapter 7

☐ Chapter 7-test

☐ CSharp Web Shop - Build

☐ CSharp Web Shop - Database

☐ CSharp Web Shop - E2E

☐ CSharp Web Shop - Test

☐ Test

☐ Test Cleanup

☒ Test Web Shop

☐ Use a regular expression to include jobs into the view

?

Columns

Status

Delete









Weather

Delete

OK

Apply

AllCSharp Web ShopJS Web Shop+

S	W	Name ↓
		CSharp Web Shop - Build
		CSharp Web Shop - Database
		CSharp Web Shop - E2E
		CSharp Web Shop - Test

Icon: [S](#) [M](#) [L](#)

Delete workspace when build is done

Patterns for files to be deleted

Include

bin/**

Add

Apply pattern also on directories

Clean when status is

☒ Success

☒ Unstable

☒ Failure

☒ Not Built

☒ Aborted

Don't fail the build if cleanup fails

External Deletion Command

Build Environment

☒ Delete workspace before build starts

Patterns for files to be deleted

Exclude

src

Add

Apply pattern also on directories

☒

Check parameter

External Deletion Command

Conditional step (single)

X

?

Run?

Build Cause

?

Build Cause

TimerTrigger

?

Exclusive Cause

☐

?

On evaluation failure

Fail the build

?

Builder

Execute shell

?

Command

See [the list of available environment variables](#)

Exit code to set build unstable

?

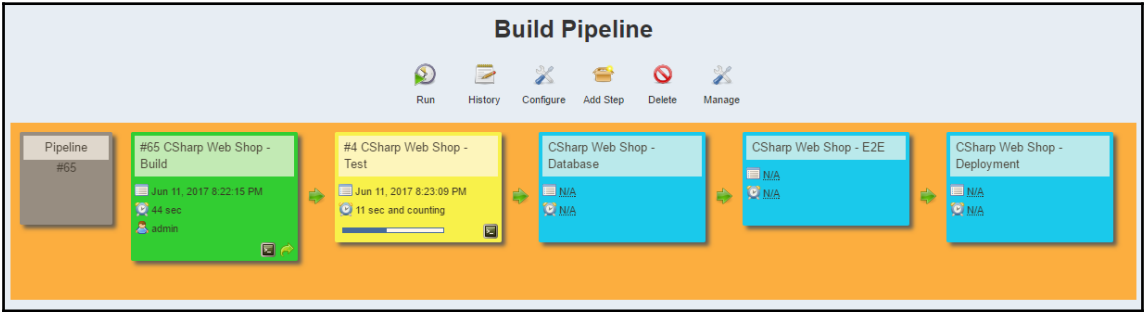
Conditional steps (multiple)

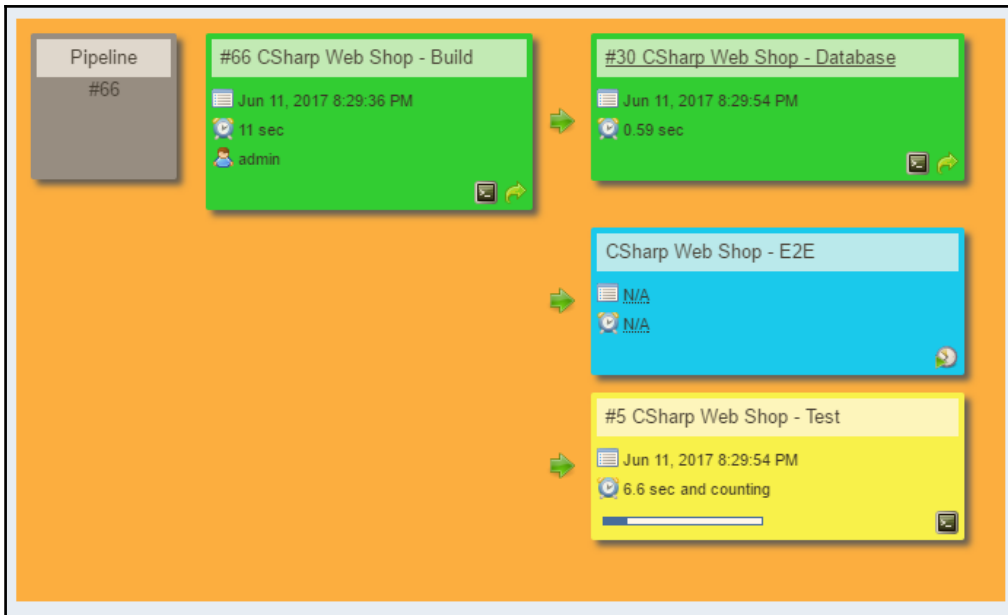
Run? Always

Advanced...

Steps to run if condition is met

Add step to condition





Jenkins Blue Ocean

ciserver:8080/blue/organizations/jenkins/pipelines

Sander

Jenkins

PipelinesAdministration

Logout

Pipelines

New Pipeline

Name	Health	Branches	PR	
Build Web Shop		-	-	
Chapter 7		-	-	
Chapter 7-test		-	-	
CSharp Web Shop - Build		-	-	
CSharp Web Shop - Database		-	-	
CSharp Web Shop - Deployment		-	-	

Where do you store your code?

Git

Github

Which organization does the repository belong to?

SanderRossel

Create a single Pipeline or discover all Pipelines?

New Pipeline – Recommended

Create a Pipeline from a single repository.

Auto-discover Jenkinsfiles – Advanced

Create Pipelines for any repository in this organization that contain a *Jenkinsfile*.

Complete

Jenkins

PipelinesAdministration

Logout

Cancel

Start

+

Pipeline Settings

Agent

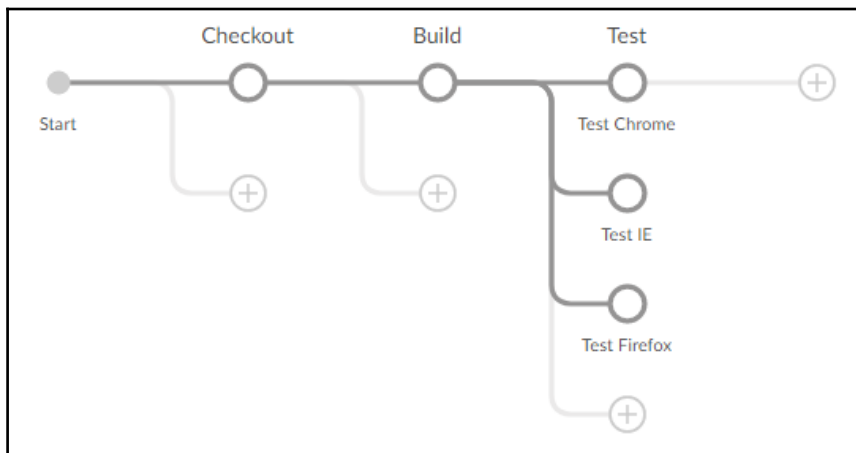
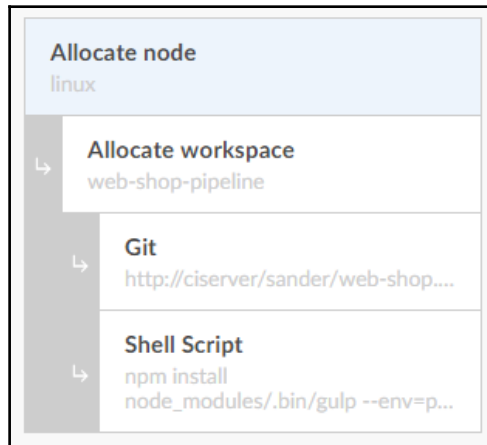
any

Environment

Name



Value

+



Status	Build ID	Name	
External			
passed	#162 external	Build	00:38 2 minutes ago
passed	#163 external	Test Chrome	00:23 about a minute ago
passed	#165 external	Test Firefox	00:23 about a minute ago
failed	#164 external	Test IE	00:01 2 minutes ago

Matrix-based security


User/group	Overall	Credentials					Agent										
	Administer	Read	Create	Delete	Manage	Domains	Update	View	Build	Configure	Connect	Create	Delete	Disconnect	Build	Cancel	
 admin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Anonymous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
 sander	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

User/group to add:

Add


☒ Enable project-based security

☐ Block inheritance of global authorization matrix

User/group	Credentials					Job								Run		Promotion	SCM		
	Create	Delete	Manage	Domains	Update	View	Build	Cancel	Configure	Delete	Discover	Move	Read	Workspace	Delete	Replay	Update	Promote	Tag
 sander	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Anonymous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



User/group to add:

Add



Assign Roles


Global roles

User/group	admin	user
 admin	<input checked="" type="checkbox"/>	<input type="checkbox"/>
 sander	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Anonymous	<input type="checkbox"/>	<input type="checkbox"/>

User/group to add

Add

Item roles

User/group	CSharp Web Shop
 sander	<input checked="" type="checkbox"/>
Anonymous	<input type="checkbox"/>

Jenkins Pipelines

Pipeline

Definition

Pipeline script

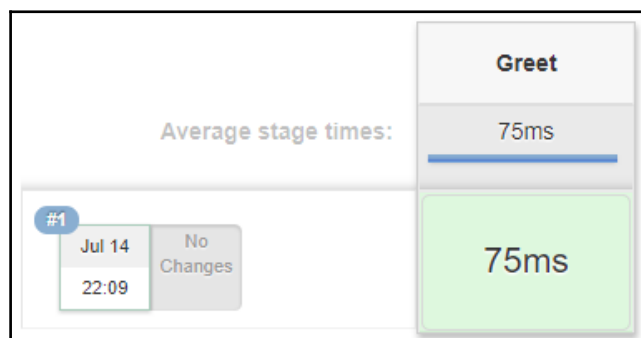
Script

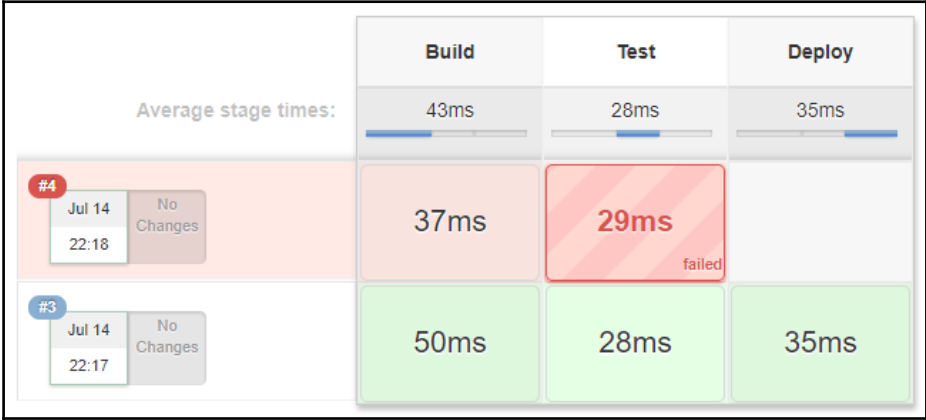
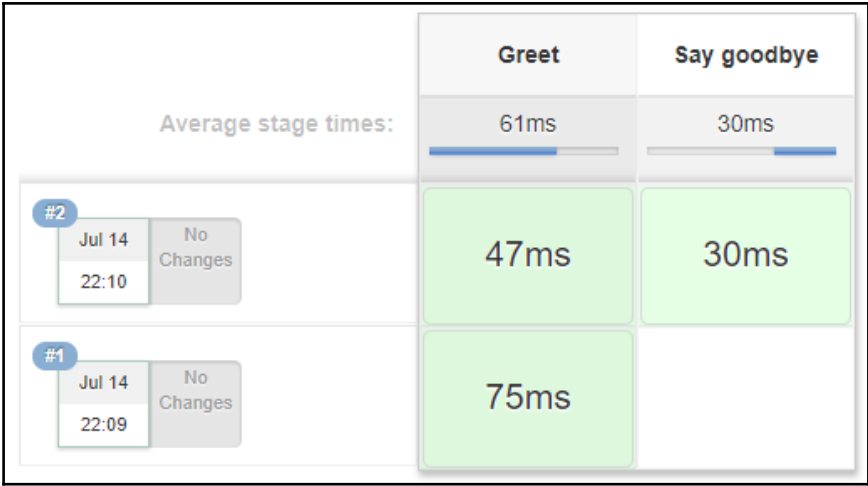
1

try sample Pipeline...

☒ Use Groovy Sandbox

[Pipeline Syntax](#)





Stage Logs (Test)

☑ Restore files previously stashed -- Everything -- (self time 2s)

☑ Windows Batch Script -- npm install && node_modules\.bin\gulp.cmd test-min --env=prod --browsers=Chrome -- (self time 28s)

[web-shop-pipeline] Running batch script

```
C:\Jenkins\web-shop-pipeline>npm install && node_modules\.bin\gulp.cmd test-min --env=prod --browsers=Chrome
```

```
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@^1.0.0 (node_modules\chokidar\node_modules\fsevents):
```

```
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@1.1.2: wanted {"os":"darwin","arch":"any"} (current: {"os":"win32","arch":"x64"})
```

```
[21:47:00] Environment: prod
```

```
[21:47:00] Environment: Chrome
```

```
[21:47:00] Using gulpfile C:\Jenkins\web-shop-pipeline\gulpfile.js
```

```
[21:47:00] Starting 'clean'...
```

```
[21:47:00] Finished 'clean' after 11 ms
```

```
[21:47:00] Starting 'js'...
```

```
[21:47:00] Starting 'css'...
```

```
[21:47:00] Starting 'html'...
```

```
[21:47:00] Finished 'html' after 108 ms
```

```
[21:47:00] Finished 'css' after 195 ms
```

```
[21:47:00] Before minification login.bundle.js 3.34 kB
```

☑ General Build Step -- test/junit/*.xml -- (self time 2s)

☑ Publish HTML reports (self time 315ms)

☑ Restore files previously stashed -- Everything -- (self time 2s)

☑ Windows Batch Script -- npm install && node_modules\.bin\gulp.cmd test-min --env=prod --browsers=IE -- (self time 30s)

☑ General Build Step -- test/junit/*.xml -- (self time 339ms)

☑ Restore files previously stashed -- Everything -- (self time 2s)

☑ Windows Batch Script -- npm install && node_modules\.bin\gulp.cmd test-min --env=prod --browsers=Firefox -- (self time 1min 38s)

☑ General Build Step -- test/junit/*.xml -- (self time 168ms)

Steps

Sample Step

git: Git

Repository URL

http://ciserver/sander/web-shop.git

Branch

master

Credentials

sander.rossel@gmail.com/*****

Add

☒ Include in polling?

☐ Include in changelog?

Generate Pipeline Script

git changelog: false, credentialsId: 'GitLabCreds', url: 'http://ciserver/sander/web-shop.git'

Build Executor Status			
master			
1	part of Pipeline Test	#11	
2	part of Pipeline Test	#11	
Windows Slave			
1	Idle		
2	Idle		

Build Queue (1)

part of web-shop » master #21

Build Executor Status

master

1 part of web-shop » master

#21

2 Idle

Windows Slave

1 part of web-shop » master

#21

2 part of web-shop » master

#21

Up

Status

Configure

Scan Multibranch Pipeline Now

Scan Multibranch Pipeline Log

Multibranch Pipeline Events

Delete Multibranch Pipeline

People

Build History

Project Relationship

Check File Fingerprint

Open Blue Ocean

Pipeline Syntax

Credentials

JS Web Shop - Pipeline







Branches (3)



S	W	Name ↓	Last Success	Last Failure	Last Duration	Fav
		Development	49 sec - #1	2.4 sec - #2	3 sec	
		master	8 min 12 sec - #1	N/A	1.9 sec	
		Production	49 sec - #1	N/A	3.4 sec	

Icon: [S](#) [M](#) [L](#)

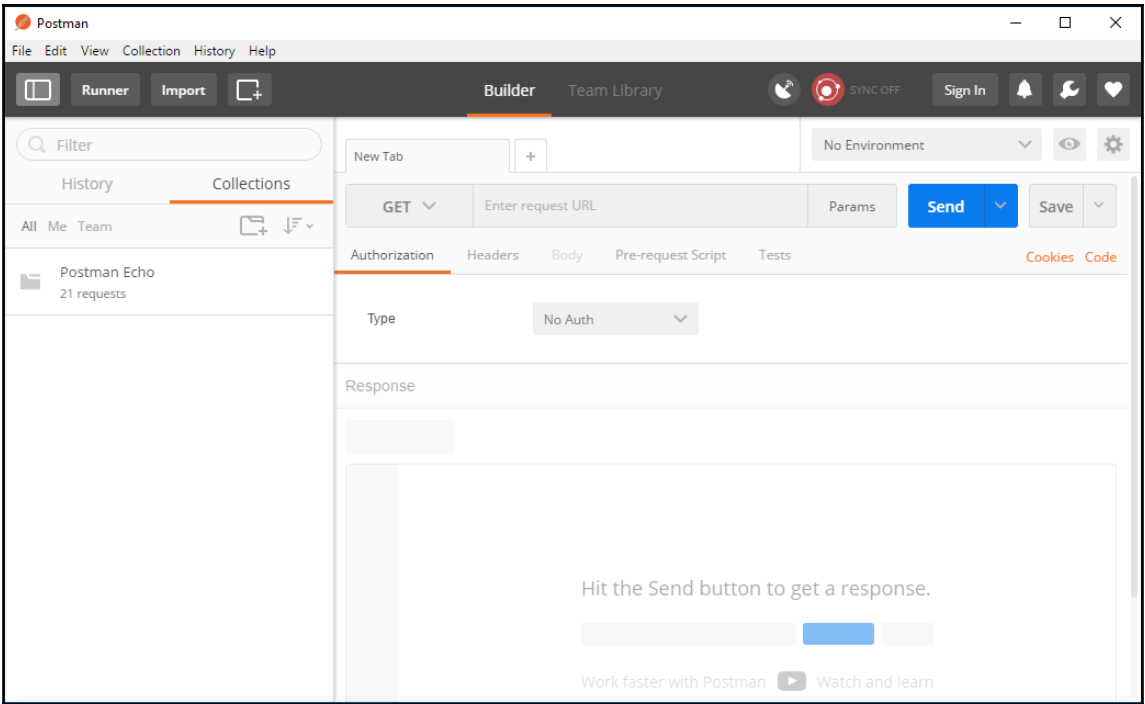
[Legend](#) [RSS for all](#) [RSS for failures](#) [RSS for just latest builds](#)

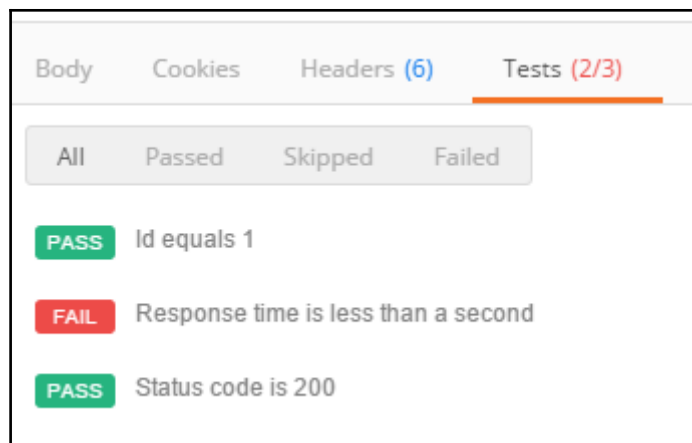
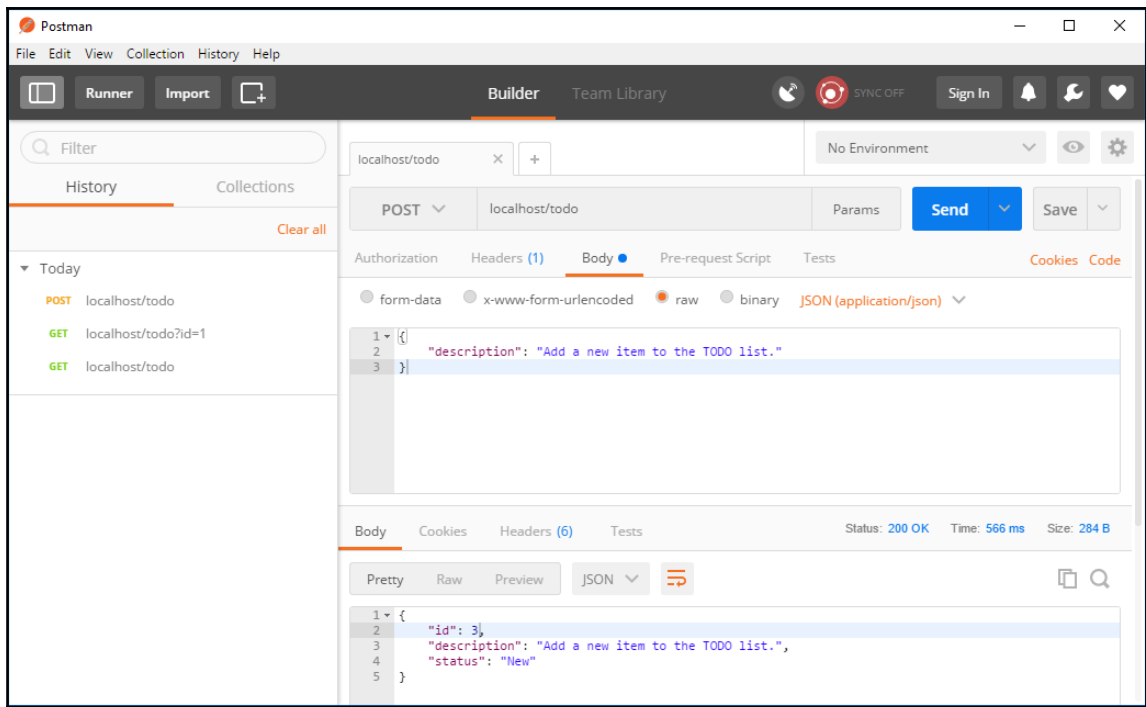
		CSharp Web Shop - Test	5 days 18 hr - #12	N/A	27 sec	
		JS Web Shop - Pipeline	3 min 41 sec - log	N/A	0.69 sec	
		JS Web Shop - Test Linux	N/A	9 days 16 hr - #14	2 min 7 sec	

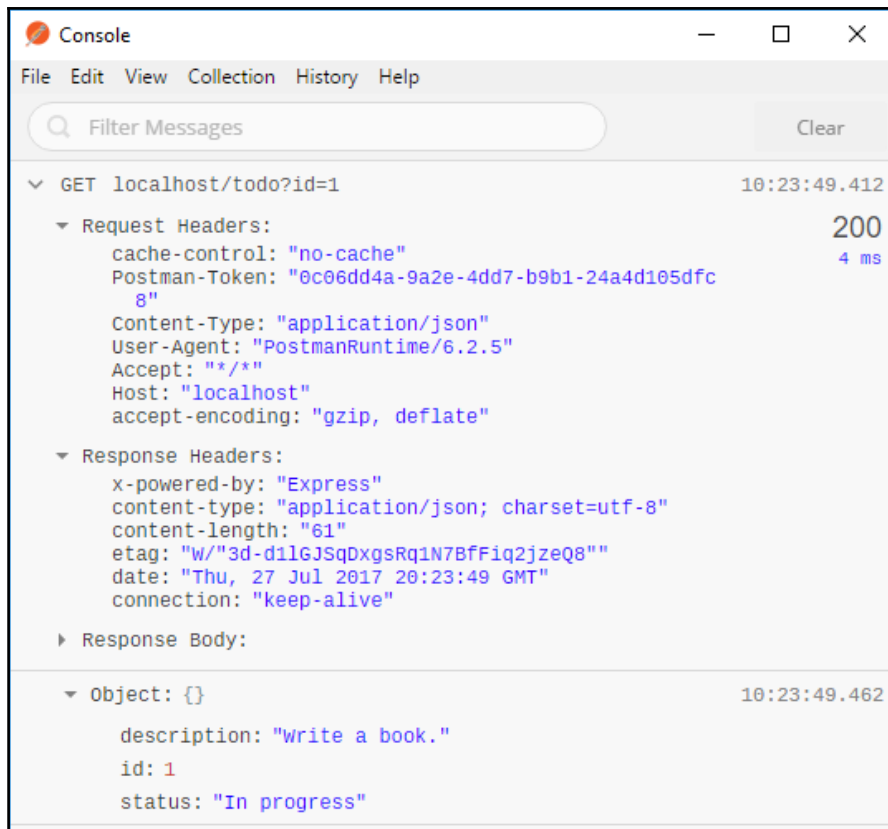
CSharp Web Shop - Test		-	-	
JS Web Shop - Pipeline		3 passing		
JS Web Shop - Test Linux		-	-	

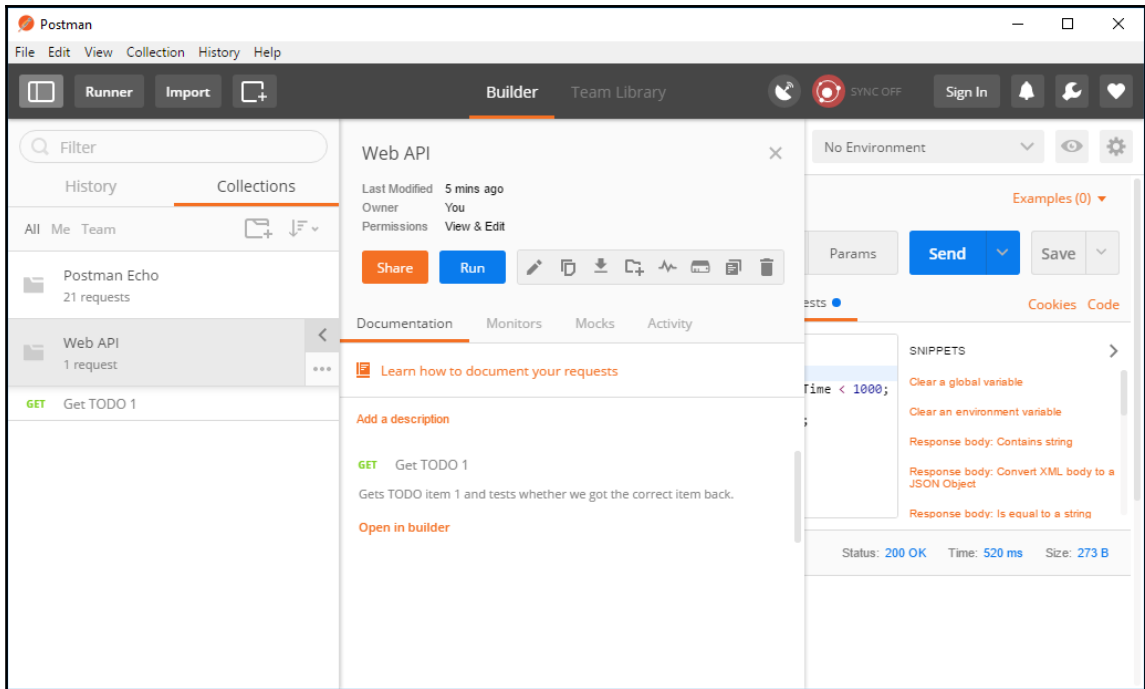
JS Web Shop - Pipeline		1 failing		
------------------------	---	-----------	--	---

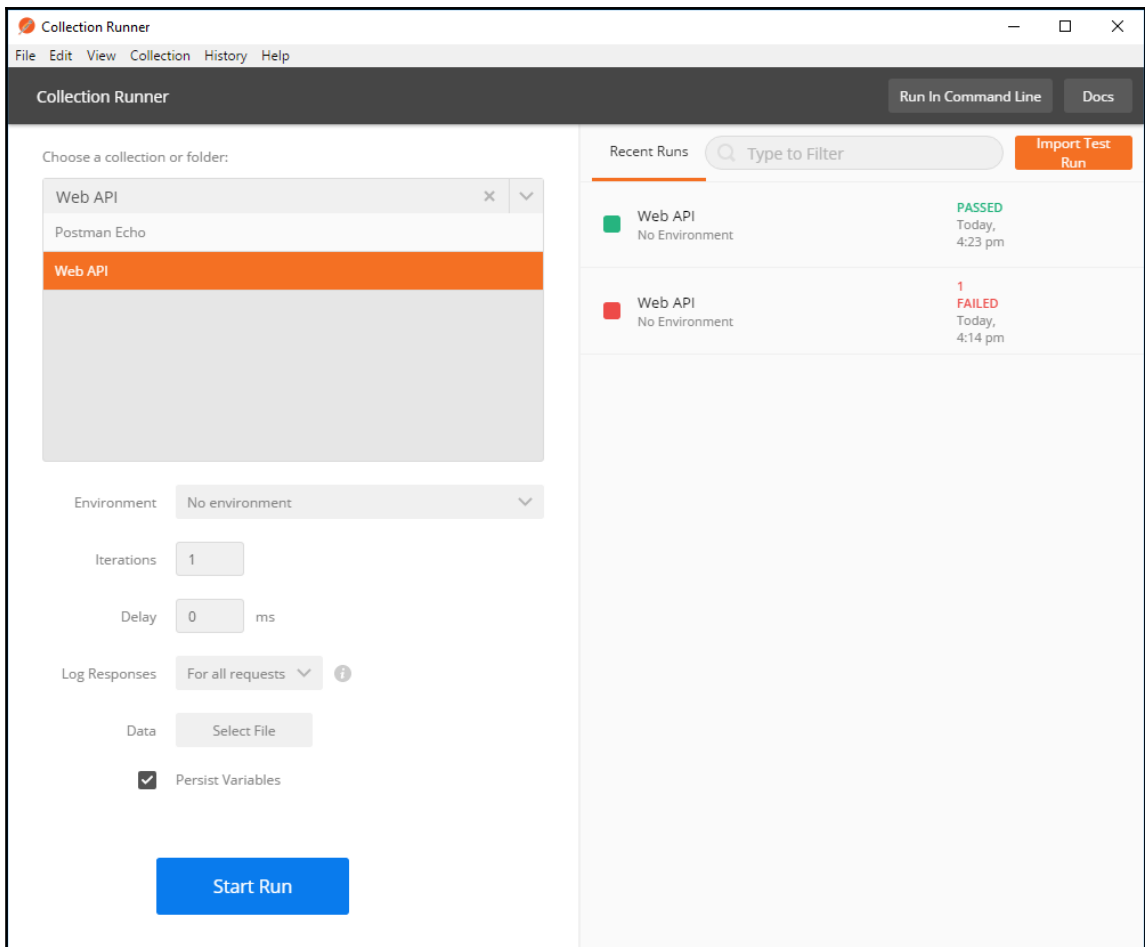
Testing a Web API











Collection Runner

File Edit View Collection History Help

Collection RunnerRun ResultsRun In Command LineDocs

3
PASSED

0
FAILED

Web API
2 mins ago

No
Environment

Run
Summary >

Export
Results

Retry

New

Iteration 1

1

GET Get TODO 1 localhost/todo?id=1

200 OK533 ms61 B

PASS Id equals 1

PASS Response time is less than a second

PASS Status code is 200


```
C:\Windows\System32\cmd.exe

✓ Status equals 'New'
✓ Response time is less than a second
✓ Status code is 200

→ Delete TODO
DELETE localhost/todo [200 OK, 299B, 3ms]
✓ Id equals 4
✓ Description equals request description
✓ Status equals 'New'
✓ Response time is less than a second
✓ Status code is 200

→ Get deleted TODO
GET localhost/todo?id=4 [404 Not Found, 230B, 2ms]
✓ Response time is less than a second
✓ Status code is 404
```

	executed	failed
iterations	1	0
requests	9	0
test-scripts	9	0
prerequisite-scripts	0	0
assertions	38	0
total run duration: 1091ms		
total data received: 644B (approx)		
average response time: 77ms		

```
C:\Users\sander.rossel\Desktop\web-api\tests>
```

```
C:\Windows\System32\cmd.exe
✓ Status code is 200
→ Get deleted TODO
GET localhost/todo?id=4 [500 Internal Server Error, 242B, 2ms]
✓ Response time is less than a second
1. Status code is 404
```

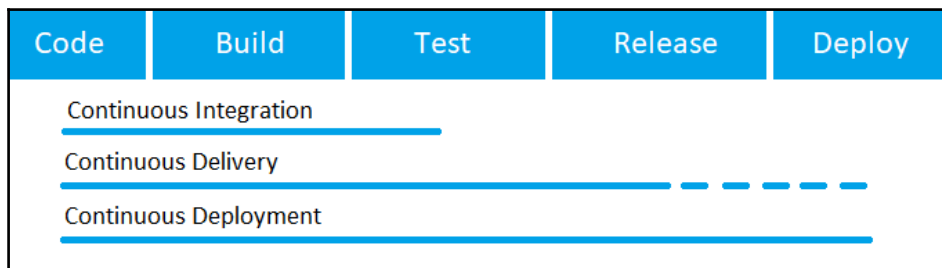
	executed	failed
iterations	1	0
requests	9	0
test-scripts	9	0
prerequest-scripts	0	0
assertions	38	1

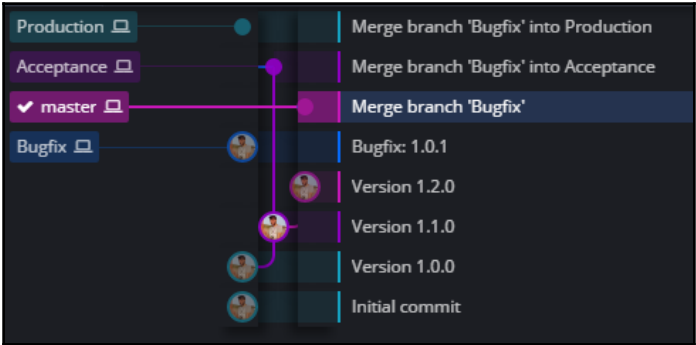
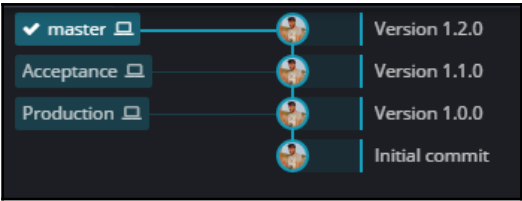
```
total run duration: 964ms
total data received: 644B (approx)
average response time: 66ms

# failure      detail
1. AssertionF... Status code is 404
                  at assertion:2 in test-script
                  inside "Get deleted TODO"

C:\Users\sander.rossel\Desktop\web-api\tests>
```

Continuous Delivery





Login

New Site
sander@cserver

Session

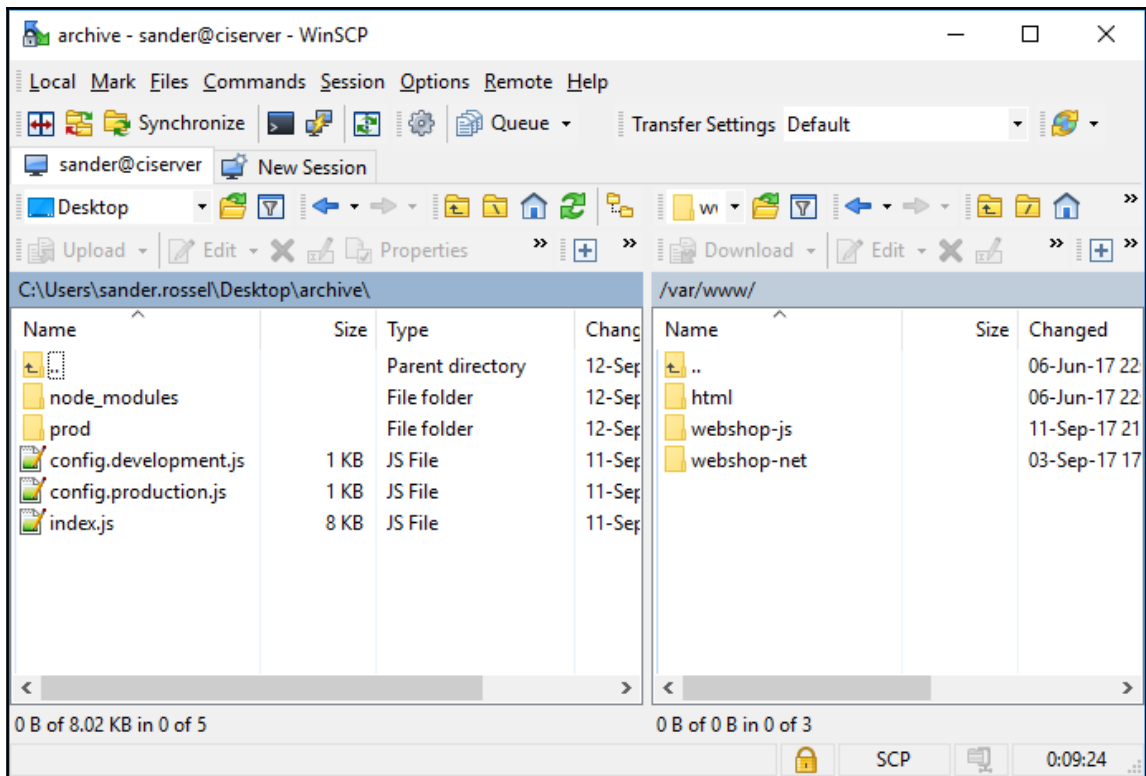
File protocol:
SCP

Host name: cserver Port number: 22

User name: sander Password:

Edit Advanced...

Tools Manage Login Close Help



Continuous Deployment

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\sander.rossel\Desktop\Flyway demo>..\flyway-4.2.0\flyway migrate
Flyway 4.2.0 by Boxfuse

Database: jdbc:postgresql://ciserver:5432/flyway_demo (PostgreSQL 9.5)
Successfully validated 1 migration (execution time 00:00.011s)
Creating Metadata table: "public"."schema_version"
Current version of schema "public": << Empty Schema >>
Migrating schema "public" to version 1.0 - Create tables
Successfully applied 1 migration to schema "public" (execution time 00:00.058s).

C:\Users\sander.rossel\Desktop\Flyway demo>
```

installed_rank [PK] integer	version character	description character varying	type character	script character varying (1000)	checksum integer	installed_by character varying	installed_on timestamp without time zone	execution_time integer	success boolean
1	1.0	Create tables	SQL	V1_0__Create tables.sql	332611729	sa	2017-09-06 20:10:11.123	5	true

Table of Contents

Index

2

Index