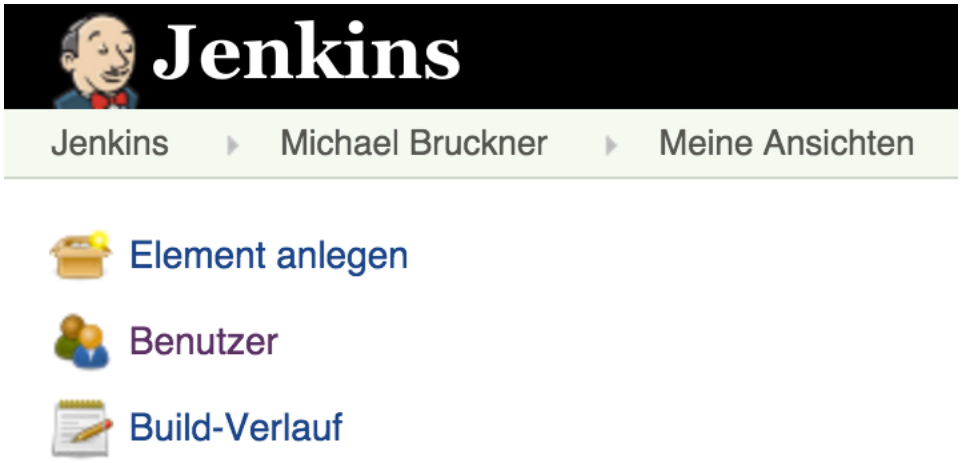
CONTINUOUS INTEGRATION

Jenkins

15.Februar, 2016



INHALTSVERZEICHNIS

ANGABE

A10 - CONTINUOUS INTEGRATION

"*Continuous Integration is a software development practice where members of a team integrate their work frequently, usually each person integrates at least daily - leading to multiple integrations per day. Each integration is verified by an automated build (including test) to detect integration errors as quickly as possible. Many teams find that this approach leads to significantly reduced integration problems and allows a team to develop cohesive software more rapidly. This article is a quick overview of Continuous Integration summarizing the technique and its current usage." M.Fowler*

Schreibe fünf Testfälle für dein CSV-Projekt und lass diese mithilfe von Jenkins automatisch bei jedem Build testen!

- Installiere auf deinem Rechner bzw. einer virtuellen Instanz das Continuous Integration System Jenkins
- Installiere die notwendigen Plugins für Jenkins (Git Plugin, Violations, Cobertura)
- Installiere Nose und Pylint (mithilfe von pip)
- Integriere dein CSV-Projekt in Jenkins, indem du es mit Git verbindest
- Schreibe fünf Unit Tests für dein CSV-Projekt
- Konfiguriere Jenkins so, dass deine Unit Tests automatisch bei jedem Build durchgeführt werden inkl. Berichte über erfolgreiche / fehlgeschlagene Tests und Coverage
- Protokolliere deine Vorgehensweise (inkl. Zeitaufwand, Konfiguration, Probleme) und die Ergebnisse (viele Screenshots!)

Viel Spaß!

ZEITAUFWAND

	Geschätzte Zeit	Benötigte Zeit	Betroffene Punkte
Konfiguration von Jenkins	3 Stunden	½ Stunde	1-4 (siehe Angabe)
Testfälle	1 Stunde	¾ Stunde	5 (siehe Angabe)
Build Konfiguration	2 Stunden	8 ½ Stunden	6 (siehe Angabe)
Gesamt	6 Stunden	9 ¾ Stunden	

AUFSETZEN VON JENKINS

Installation des Continuous Integration System Jenkins

Es gibt mehr als eine Möglichkeit Jenkins zu installieren. Ich habe diese Variante gewählt:

- *wget -q -O - http://pkg.jenkins-ci.org/debian/jenkins-ci.org.key | apt-key add -*
- *'echo deb http://pkg.jenkins-ci.org/debian binary/>/etc/apt/sources.list.d/jenkins.list' -*
- *apt-get update*
- *apt-get install jenkins*

Nachdem die Installation geklappt hat, startet man mit dem Befehl *service jenkins start* Jenkins und kann schon loslegen. Der Server ist über den Port ***8080*** erreichbar.

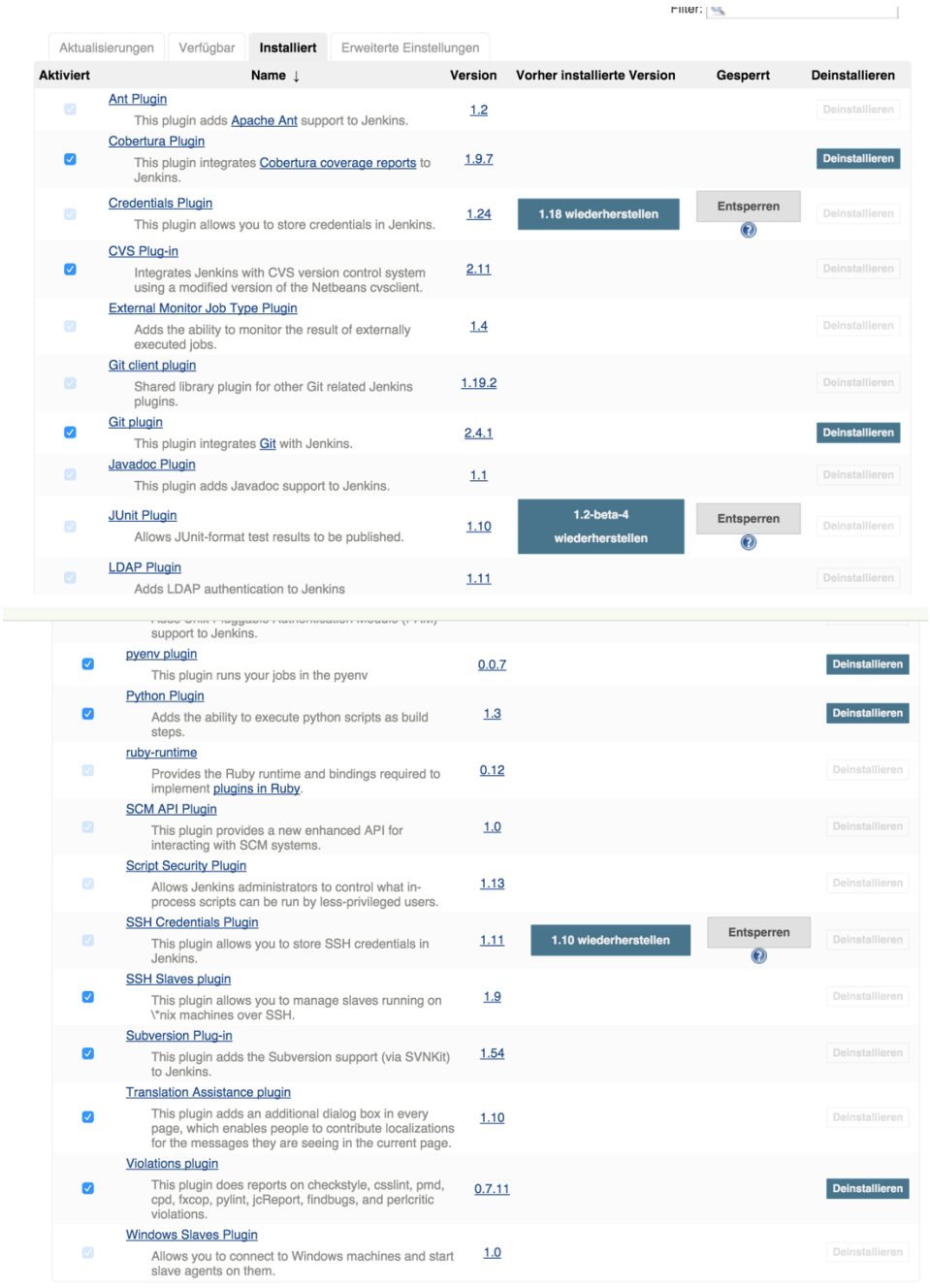
Um den Zugriff von anderen Usern im selben Netzwerk zu verhindern, können die Sicherheitseinstellungen geändert werden. Da wir aber mit Jenkins nur unsere Tests checken wollen ist die Sicherheit eher unwichtig, kann aber unter dem Punkt ***Manage Jenkins > Setup Security*** eingestellt werden.

Installation der notwendigen Plugins

Laut der Angabe, benötigen wir folgende Plugins:

- *Git Plugin*
- *Cobertura*
- *Violations*

Die Plugins können direkt in Jenkins installiert werden unter dem Punkt ***Manage Jenkins > Plugins.***



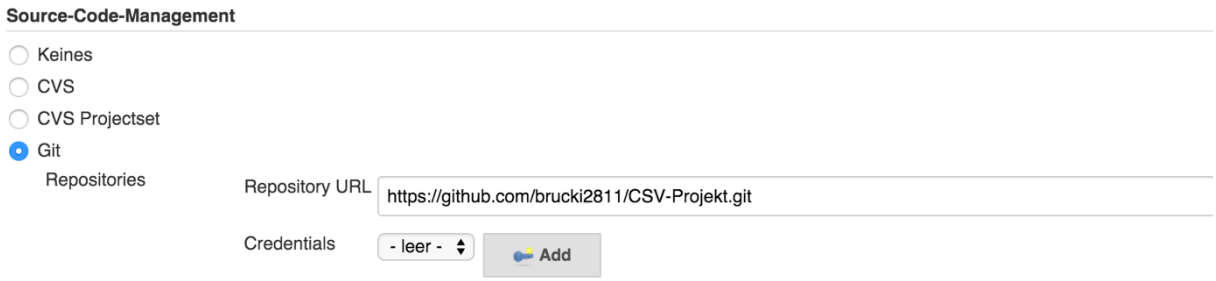
Installation von Nose und Pylint

Die Installation von nose und pylint über pip funktioniert so:

- *pip install nosetests-3.4*
- *pip install nosexcover*
- *pip install pylint*

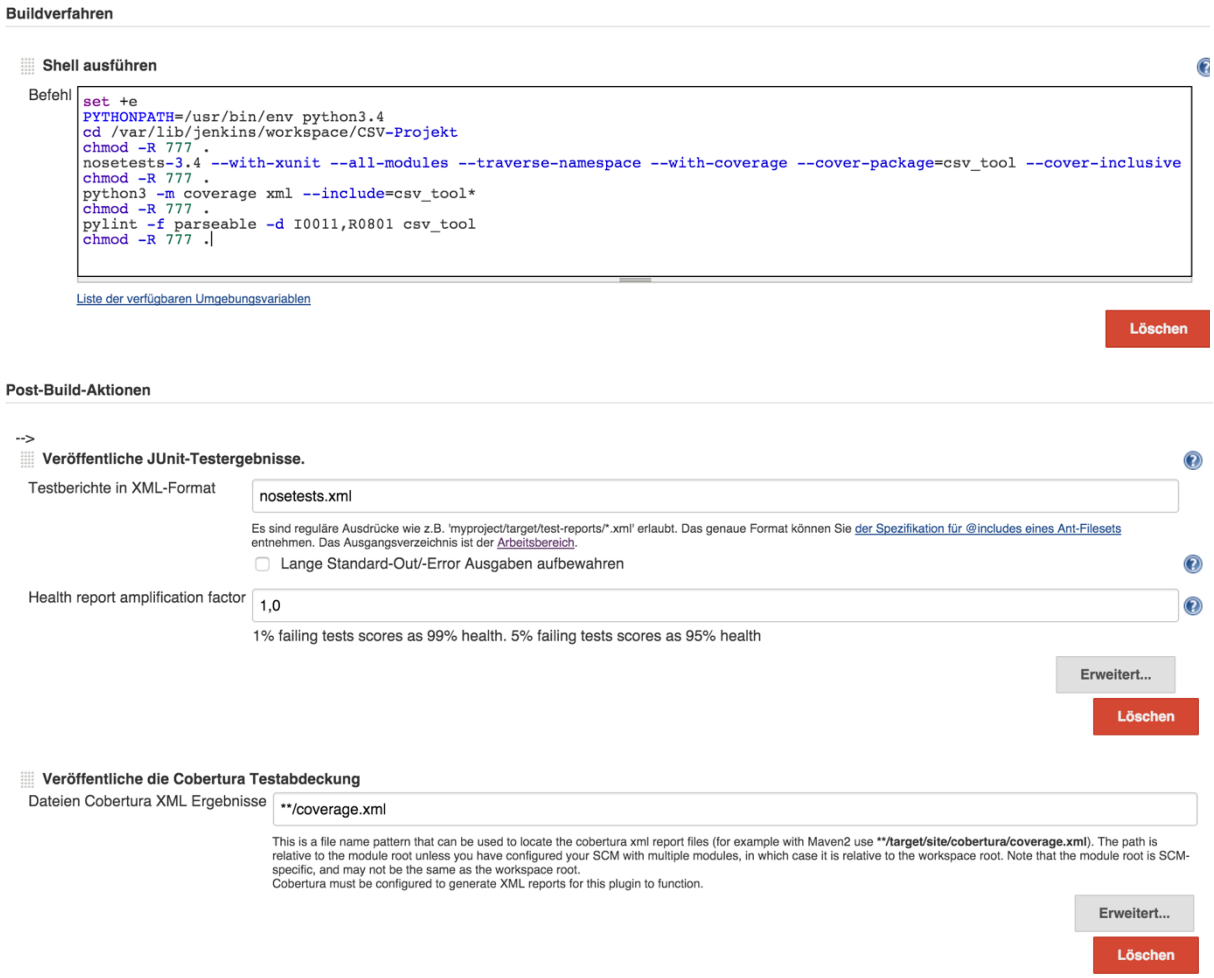
Integration des CSV-Projektes

Mithilfe des Git Plugins können wir nun das CSV-Projekt importieren.



BUILD KONFIGURATION

Die Build Konfiguration wird unter ***Configuration*** im Projekt eingestellt.



PROBLEME

Ich hatte zuerst Problem damit die Tests zum Laufen zu bringen, da meine Konfiguration fehlerhaft war. Nachdem ich mir die Konfiguration von dem Herrn Melichar angesehen habe, habe ich meinen Input in der Build-Shell verändert.

Nun erhalte ich folgenden Fehler:

Fehler behoben!

```
Started by user Michael Bruckner
Building in workspace /var/lib/jenkins/workspace/CSV-Projekt
 > git rev-parse --is-inside-work-tree # timeout=10
Fetching changes from the remote Git repository
 > git config remote.origin.url https://github.com/brucki2811/CSV-Projekt.git # timeout=10
Fetching upstream changes from https://github.com/brucki2811/CSV-Projekt.git
 > git --version # timeout=10
 > git -c core.askpass=true fetch --tags --progress https://github.com/brucki2811/CSV-Projekt.git
+refs/heads/*:refs/remotes/origin/*
 > git rev-parse refs/remotes/origin/master^{commit} # timeout=10
 > git rev-parse refs/remotes/origin/origin/master^{commit} # timeout=10
Checking out Revision 3eedfcc3ae5322376d36bf697ad2c2054ac53e21 (refs/remotes/origin/master)
 > git config core.sparsecheckout # timeout=10
 > git checkout -f 3eedfcc3ae5322376d36bf697ad2c2054ac53e21
 > git rev-list 3eedfcc3ae5322376d36bf697ad2c2054ac53e21 # timeout=10
[CSV-Projekt] $ /bin/sh -xe /tmp/hudson2396529561406396371.sh
+ set +e
+ PYTHONPATH=/usr/bin/env python3.4
+ cd /var/lib/jenkins/workspace/CSV-Projekt
+ chmod -R 777 .
+ nosetests-3.4 --with-xunit --all-modules --traverse-namespace --with-coverage --cover-package=csv_tool --cover-
inclusive

Name                    Stmts   Miss  Cover   Missing
-----------------------------------------------------
csv_tool/CSVUebung.py      23     23     0%   1-39
----------------------------------------------------------------------
Ran 0 tests in 0.007s

OK
+ chmod -R 777 .
+ python3 -m coverage xml --include=csv_tool*
+ chmod -R 777 .
+ pylint -f parseable -d I0011,R0801 csv_tool
No config file found, using default configuration
*************
csv_tool/__init__.py:1: [F0010(parse-error), ] error while code parsing: Unable to load file
'csv_tool/__init__.py' ([Errno 2] No such file or directory: 'csv_tool/__init__.py')
+ chmod -R 777 .
Recording test results
ERROR: Step 'Publish JUnit test result report' failed: None of the test reports contained any result
Skipping Cobertura coverage report as build was not UNSTABLE or better ...
Finished: FAILURE
```

Fehler behoben!

Nun funktionieren einige Zeilen im CSV-Code nicht, aber im Großen und Ganzen sollte nun eine vollständige und überwiegend korrekte Konfiguration zu Stande gekommen sein.

Meldung:

Fehler behoben!

```
Started by user Michael Bruckner
Building in workspace /var/lib/jenkins/workspace/CSV-Projekt
 > git rev-parse --is-inside-work-tree # timeout=10
Fetching changes from the remote Git repository
 > git config remote.origin.url https://github.com/brucki2811/CSV-Projekt.git # timeout=10
Fetching upstream changes from https://github.com/brucki2811/CSV-Projekt.git
 > git --version # timeout=10
 > git -c core.askpass=true fetch --tags --progress https://github.com/brucki2811/CSV-Projekt.git
+refs/heads/*:refs/remotes/origin/*
 > git rev-parse refs/remotes/origin/master^{commit} # timeout=10
 > git rev-parse refs/remotes/origin/origin/master^{commit} # timeout=10
Checking out Revision 1c621c612113f8aa7225acdc781b5efc0e90de9c (refs/remotes/origin/master)
 > git config core.sparsecheckout # timeout=10
 > git checkout -f 1c621c612113f8aa7225acdc781b5efc0e90de9c
 > git rev-list 5b62b634d2e101bba64cd3fff529123d5195e0b7 # timeout=10
[CSV-Projekt] $ /bin/sh -xe /tmp/hudson8538853897619250250.sh
+ set +e
+ PYTHONPATH=
+ cd /var/lib/jenkins/workspace/CSV-Projekt
+ chmod -R 777 .
+ nosetests-3.4 --with-xunit --all-modules --traverse-namespace --with-coverage --cover-package=csv_tool --cover-
inclusive

Name          Stmts   Miss  Cover   Missing
---------------------------------------------
csv_tool.py      23     15    35%   15-16, 22-33, 39-41
----------------------------------------------------------------------
Ran 0 tests in 0.015s

OK
+ chmod -R 777 .
+ python3 -m coverage xml --include=csv_tool*
No source for code: '/var/lib/jenkins/workspace/CSV-Projekt/csv_tool/CSVUebung.py'.
+ chmod -R 777 .
+ tee pylint.out
+ pylint -f parseable -d I0011,R0801 csv_tool
No config file found, using default configuration
************* Module csv_tool
csv_tool/__init__.py:21: [C0326(bad-whitespace), ] Exactly one space required after comma
    def read(self,filename):
                 ^
csv_tool/__init__.py:38: [C0326(bad-whitespace), ] Exactly one space required after comma
    def write(self,filename):
                  ^

csv_tool/__init__.py:1: [C0111(missing-docstring), ] Missing module docstring
csv_tool/__init__.py:10: [C0413(wrong-import-position), ] Import "import csv" should be placed at the top of the
module
csv_tool/__init__.py:12: [C0103(invalid-name), csvwr] Invalid class name "csvwr"
csv_tool/__init__.py:12: [C0111(missing-docstring), csvwr] Missing class docstring
csv_tool/__init__.py:20: [W0105(pointless-string-statement), csvwr] String statement has no effect
csv_tool/__init__.py:21: [C0111(missing-docstring), csvwr.read] Missing method docstring
csv_tool/__init__.py:22: [C0103(invalid-name), csvwr.read] Invalid variable name "f"
csv_tool/__init__.py:25: [W0702(bare-except), csvwr.read] No exception type(s) specified
csv_tool/__init__.py:30: [C0103(invalid-name), csvwr.read] Invalid variable name "n"
csv_tool/__init__.py:37: [W0105(pointless-string-statement), csvwr] String statement has no effect
csv_tool/__init__.py:38: [C0111(missing-docstring), csvwr.write] Missing method docstring
csv_tool/__init__.py:39: [C0103(invalid-name), csvwr.write] Invalid variable name "f"


Report
======
26 statements analysed.

Statistics by type
------------------

+---------+-------+-----------+-----------+------------+---------+
|type     |number |old number |difference |%documented |%badname |
+=========+=======+===========+===========+============+=========+
|module   |1      |NC         |NC         |0.00        |0.00     |
+---------+-------+-----------+-----------+------------+---------+
|class    |1      |NC         |NC         |0.00        |100.00   |
+---------+-------+-----------+-----------+------------+---------+
|method   |3      |NC         |NC         |33.33       |0.00     |
+---------+-------+-----------+-----------+------------+---------+
|function |0      |NC         |NC         |0           |0        |
+---------+-------+-----------+-----------+------------+---------+
```

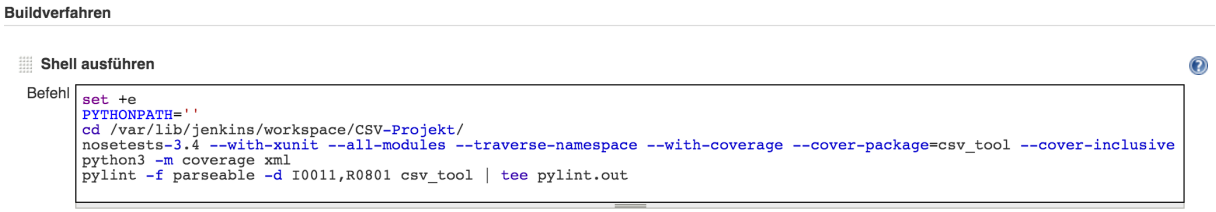
```
Raw metrics
-----------

+----------+-------+------+---------+-----------+
|type      |number |%     |previous |difference |
+==========+=======+======+=========+===========+
|code      |31     |70.45 |NC       |NC         |
+----------+-------+------+---------+-----------+
|docstring |4      |9.09  |NC       |NC         |
+----------+-------+------+---------+-----------+
|comment   |1      |2.27  |NC       |NC         |
+----------+-------+------+---------+-----------+
|empty     |8      |18.18 |NC       |NC         |
+----------+-------+------+---------+-----------+


Duplication
-----------

+-------------------------+------+---------+-----------+
|                         |now   |previous |difference |
+=========================+======+=========+===========+
|nb duplicated lines      |0     |NC       |NC         |
+-------------------------+------+---------+-----------+
|percent duplicated lines |0.000 |NC       |NC         |
+-------------------------+------+---------+-----------+


Messages by category
--------------------

+-----------+-------+---------+-----------+
|type       |number |previous |difference |
+===========+=======+=========+===========+
|convention |11     |NC       |NC         |
+-----------+-------+---------+-----------+
|refactor   |0      |NC       |NC         |
+-----------+-------+---------+-----------+
|warning    |3      |NC       |NC         |
+-----------+-------+---------+-----------+
|error      |0      |NC       |NC         |
+-----------+-------+---------+-----------+

    .           .       .         .           .


    Messages
    --------

    +---------------------------+------------+
    |message id                 |occurrences |
    +===========================+============+
    |missing-docstring          |4           |
    +---------------------------+------------+
    |invalid-name               |4           |
    +---------------------------+------------+
    |pointless-string-statement |2           |
    +---------------------------+------------+
    |bad-whitespace             |2           |
    +---------------------------+------------+
    |wrong-import-position      |1           |
    +---------------------------+------------+
    |bare-except                |1           |
    +---------------------------+------------+


    Global evaluation
    -----------------
    Your code has been rated at 4.62/10

    + chmod -R 777 .
    Recording test results
    ERROR: Step ‘Publish JUnit test result report’ failed: None of the test reports contained any result
    Skipping Cobertura coverage report as build was not UNSTABLE or better ...
    Finished: FAILURE
```

Fehler behoben!

Lösung:

Ich habe das File __init__.py falsch verwendet. In dem eben genannten File soll nichts stehen und der Code, den ich darin hatte, habe ich in das File CSVUebung.py geschrieben. Nun habe ich noch eine Kleinigkeit in der Build-Shell verändert und die Tests zum Laufen gebracht.

Build-Shell:



Ergebnis:

```
Name           Stmts   Miss  Cover   Missing
--------------------------------------------
csv_tool.py        0      0   100%
----------------------------------------------------------------------
Ran 0 tests in 0.010s
```