## Ministerul Educației al Republicii Moldova Universitatea Tehnică a Moldovei

# **RAPORT**

La lucrarea de laborator nr. 2 la disciplina «MIDPS»

«Version Control Systems si modul de setare a unui server»

A efectuat: studentul gr. T-145 Ialticenco A. A verificat: lector univ. Cojocaru S.

### Obiectivele lucrării

- Intelegerea si folosirea CLI (basic level)
- Administrarea remote a masinilor linux machine folosind SSH (remote code editing)
- Version Control Systems (git || mercurial || svn)
- Compileaza codul C/C++/Java/Python prin intermediul CLI, folosind compilatoarele gcc/g++/javac/python

#### Sarcina lucrarii

· Advanced Level (nota 9 | 10):

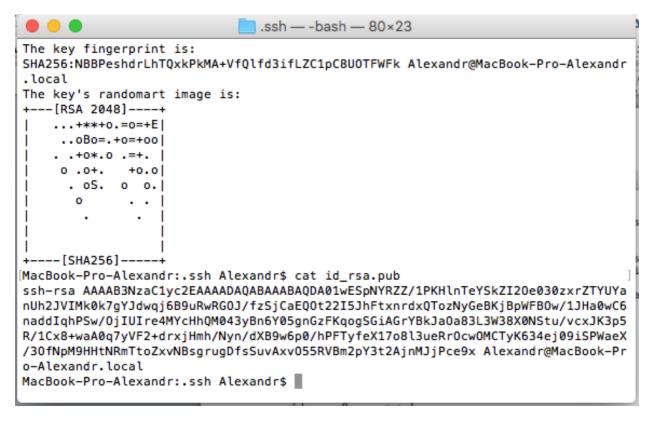
setează un branch to track a remote origin pe care vei putea să faci push (ex. Github, Bitbucket or custom server) resetează un branch la commit-ul anterior merge 2 branches conflict solving between 2 branches

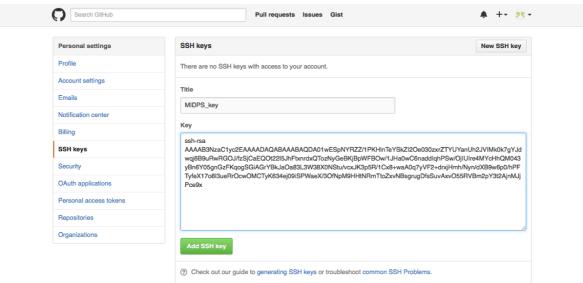
· Bonus Point:

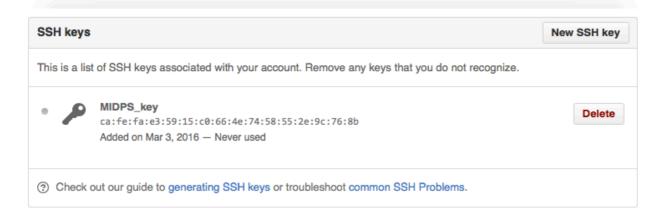
Scrie un script care va compila HelloWolrdPrograms projects.

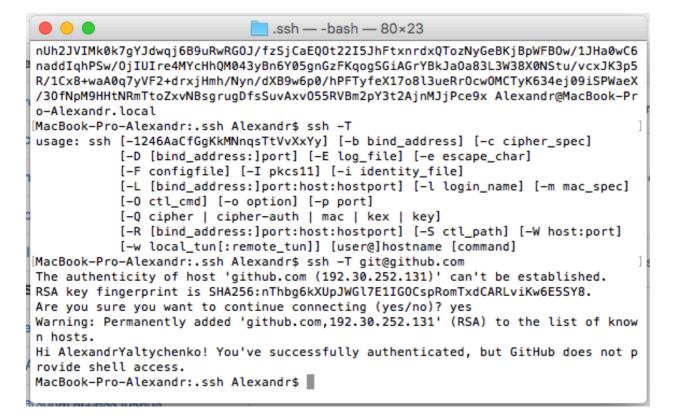
1. Configurarea autentificarii ssh

```
.ssh — -bash — 80×23
[MacBook-Pro-Alexandr:.ssh Alexandr$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/Users/Alexandr/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /Users/Alexandr/.ssh/id_rsa.
Your public key has been saved in /Users/Alexandr/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:NBBPeshdrLhTQxkPkMA+VfQlfd3ifLZC1pC8U0TFWFk Alexandr@MacBook-Pro-Alexandr
.local
The key's randomart image is:
  --[RSA 2048]---+
    ...+**+0.=0=+E|
     ..oBo=.+o=+oo|
    . .+0*.0 .=+.
     0 .0+.
             +0.0
      . oS.
            0 0.
       0
+----[SHA256]----+
MacBook-Pro-Alexandr:.ssh Alexandr$
```

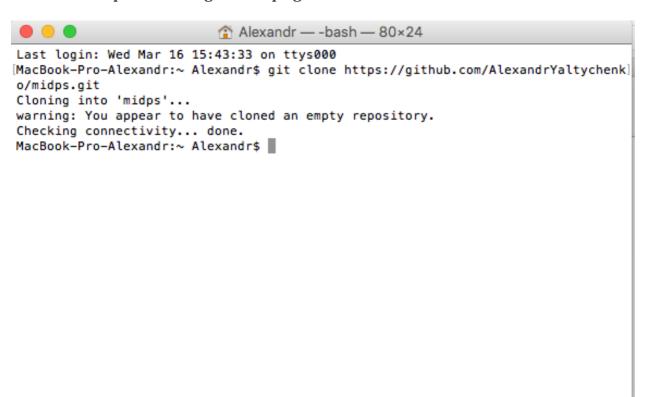




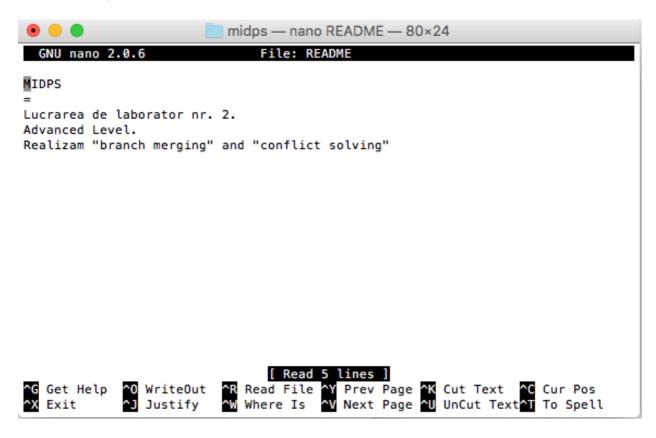




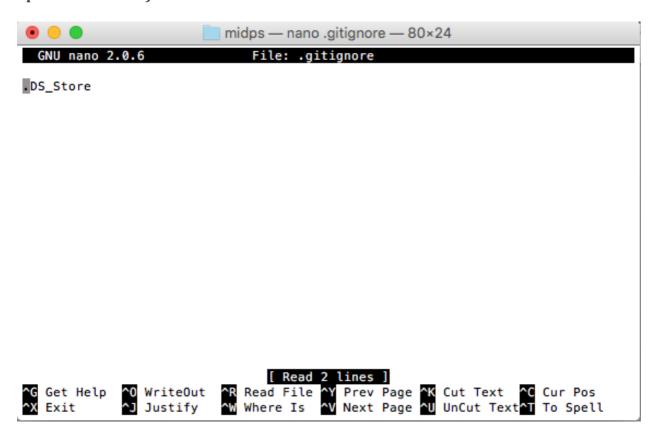
### 2. Clonarea repozitoriului gol creat pe github.com



3. Crearea fișierului README în nano



4. Crearea fișierului README în nano (ca sa fie ignorat fișierul .DS\_Store generat de sistemul de operare Mac OS X)



5. Desfășurarea primului commit

```
midps — -bash — 80×24
On branch master
Initial commit
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        .gitignore
        README
nothing added to commit but untracked files present (use "git add" to track)
[MacBook-Pro-Alexandr:midps Alexandr$ git add .
[MacBook-Pro-Alexandr:midps Alexandr$ git status
On branch master
Initial commit
Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:
                    .gitignore
        new file:
                    README
MacBook-Pro-Alexandr:midps Alexandr$
```

6. Desfașurarea primului commit

```
midps — -bash — 80×24
   (use "git add <file>..." to include in what will be committed)
        .gitignore
        README
nothing added to commit but untracked files present (use "git add" to track)
[MacBook-Pro-Alexandr:midps Alexandr$ git add .
[MacBook-Pro-Alexandr:midps Alexandr$ git status
On branch master
Initial commit
Changes to be committed:
   (use "git rm --cached <file>..." to unstage)
        new file:
                    .gitignore
        new file:
                    README
[MacBook-Pro-Alexandr:midps Alexandr$ git commit -m "Primul commit"
[master (root-commit) 01f9ec2] Primul commit
 2 files changed, 7 insertions(+)
 create mode 100644 .gitignore
 create mode 100644 README
MacBook-Pro-Alexandr:midps Alexandr$
```

7. Setarea unui branch to track a remote origin pe care va putea fi facut push

```
midps — -bash — 80×37
[MacBook-Pro-Alexandr:midps Alexandr$ git commit -m "Primul commit"
[master (root-commit) 01f9ec2] Primul commit
 2 files changed, 7 insertions(+)
 create mode 100644 .gitignore
 create mode 100644 README
[MacBook-Pro-Alexandr:midps Alexandr$ git push
warning: push.default is unset; its implicit value has changed in
Git 2.0 from 'matching' to 'simple'. To squelch this message
and maintain the traditional behavior, use:
  git config --global push.default matching
To squelch this message and adopt the new behavior now, use:
  git config --global push.default simple
When push.default is set to 'matching', git will push local branches
to the remote branches that already exist with the same name.
Since Git 2.0, Git defaults to the more conservative 'simple'
behavior, which only pushes the current branch to the corresponding
remote branch that 'git pull' uses to update the current branch.
See 'git help config' and search for 'push.default' for further information.
(the 'simple' mode was introduced in Git 1.7.11. Use the similar mode
'current' instead of 'simple' if you sometimes use older versions of Git)
Counting objects: 4, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 362 bytes | 0 bytes/s, done.
Total 4 (delta 0), reused 0 (delta 0)
To https://github.com/AlexandrYaltychenko/midps.git
* [new branch]
                  master -> master
MacBook-Pro-Alexandr:midps Alexandr$
MacBook-Pro-Alexandr:midps Alexandr$
```

### 8. Adăugarea unui nou fișier hello.java la repozitoriul github

```
midps — -bash — 80×26
  (use "qit add <file>..." to include in what will be committed)
nothing added to commit but untracked files present (use "git add" to track)
MacBook-Pro-Alexandr:midps Alexandr$ git add .
[MacBook-Pro-Alexandr:midps Alexandr$ git status
On branch master
Your branch is up-to-date with 'origin/master'.
Changes to be committed:
 (use "git reset HEAD <file>..." to unstage)
        new file: java/hello.java
[MacBook-Pro-Alexandr:midps Alexandr$ git commit -m "Am adaugat fisierul hello.ja]
va"
[master 80b3552] Am adaugat fisierul hello.java
 1 file changed, 5 insertions(+)
 create mode 100644 java/hello.java
[MacBook-Pro-Alexandr:midps Alexandr$ git push
warning: push.default is unset; its implicit value has changed in
Git 2.0 from 'matching' to 'simple'. To squelch this message
and maintain the traditional behavior, use:
  git config --global push.default matching
```

```
midps — -bash — 80×26
  git config --global push.default matching
To squelch this message and adopt the new behavior now, use:
  git config --global push.default simple
When push.default is set to 'matching', git will push local branches
to the remote branches that already exist with the same name.
Since Git 2.0, Git defaults to the more conservative 'simple'
behavior, which only pushes the current branch to the corresponding
remote branch that 'git pull' uses to update the current branch.
See 'git help config' and search for 'push.default' for further information.
(the 'simple' mode was introduced in Git 1.7.11. Use the similar mode
'current' instead of 'simple' if you sometimes use older versions of Git)
Counting objects: 4, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 458 bytes | 0 bytes/s, done.
Total 4 (delta 0), reused 0 (delta 0)
To https://github.com/AlexandrYaltychenko/midps.git
   01f9ec2..80b3552 master -> master
MacBook-Pro-Alexandr:midps Alexandr$
```

### 9. Editarea mesajului afișat în hello.java

```
. .
                          java - nano hello.java - 80×26
GNU nano 2.0.6
                             File: hello.java
                                                                     Modified
class HelloWorld {
public static void main (String args []) {
System.out.println ("Hello MIDPS!");
}
                         AR Read File AY Prev Page AK Cut Text Cur Pos
  Get Help
             '0 WriteOut
  Exit
             ^J Justify
                          ^W Where Is
                                      ^V Next Page ↑U UnCut Text↑T To Spell
```

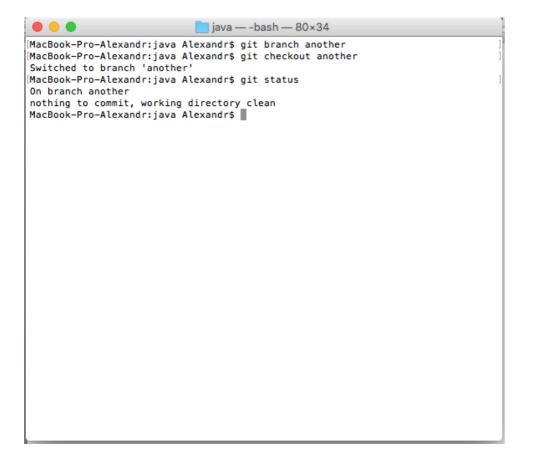
## 10. Înca un commit si push

```
📘 java — -bash — 80×34
[MacBook-Pro-Alexandr:java Alexandr$ git add .
MacBook-Pro-Alexandr: java Alexandr$ git commit -m "Am schimbat textul salutarii"
[master 957ce69] Am schimbat textul salutarii
1 file changed, 1 insertion(+), 1 deletion(-)
[MacBook-Pro-Alexandr:java Alexandr$ git push
warning: push.default is unset; its implicit value has changed in
Git 2.0 from 'matching' to 'simple'. To squelch this message
and maintain the traditional behavior, use:
  git config --global push.default matching
To squelch this message and adopt the new behavior now, use:
  git config --global push.default simple
When push.default is set to 'matching', git will push local branches
to the remote branches that already exist with the same name.
Since Git 2.0, Git defaults to the more conservative 'simple'
behavior, which only pushes the current branch to the corresponding
remote branch that 'git pull' uses to update the current branch.
See 'git help config' and search for 'push.default' for further information.
(the 'simple' mode was introduced in Git 1.7.11. Use the similar mode
'current' instead of 'simple' if you sometimes use older versions of Git)
Counting objects: 4, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 348 bytes | 0 bytes/s, done.
Total 4 (delta 2), reused 0 (delta 0)
To https://github.com/AlexandrYaltychenko/midps.git
   80b3552..957ce69 master -> master
MacBook-Pro-Alexandr: java Alexandr$
```

### 11. Implementarea recomandărilor lui git pentru ca warning-urile să nu fie afișate

```
java — -bash — 80×34
[master 957ce69] Am schimbat textul salutarii
 1 file changed, 1 insertion(+), 1 deletion(-)
[MacBook-Pro-Alexandr:java Alexandr$ git push
warning: push.default is unset; its implicit value has changed in
Git 2.0 from 'matching' to 'simple'. To squelch this message
and maintain the traditional behavior, use:
  git config --global push.default matching
To squelch this message and adopt the new behavior now, use:
  git config --global push.default simple
When push.default is set to 'matching', git will push local branches
to the remote branches that already exist with the same name.
Since Git 2.0, Git defaults to the more conservative 'simple'
behavior, which only pushes the current branch to the corresponding
remote branch that 'git pull' uses to update the current branch.
See 'git help config' and search for 'push.default' for further information.
(the 'simple' mode was introduced in Git 1.7.11. Use the similar mode
'current' instead of 'simple' if you sometimes use older versions of Git)
Counting objects: 4, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 348 bytes | 0 bytes/s, done.
Total 4 (delta 2), reused 0 (delta 0)
To https://github.com/AlexandrYaltychenko/midps.git
   80b3552..957ce69 master -> master
[MacBook-Pro-Alexandr:java Alexandr$ git config --global push.default matching
[MacBook-Pro-Alexandr:java Alexandr$ git config --global push.default simple
MacBook-Pro-Alexandr: java Alexandr$
```

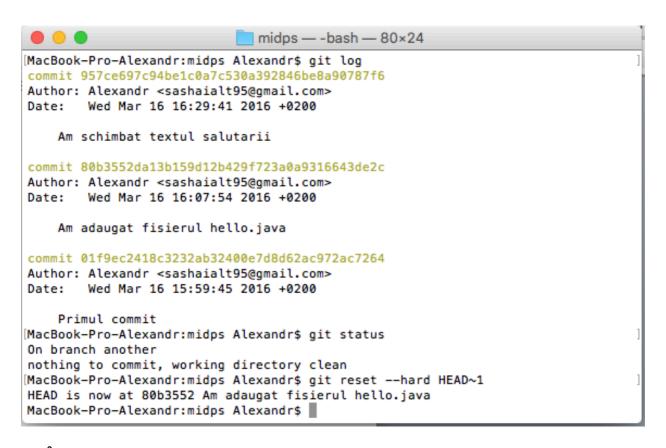
### 12. Crearea branch-ului 'another' și selectarea acestuia



# 13. Găsirea solutiei pe Stack Overflow cum poate fi ușor îndeplinită resetarea ultimului commit



### 14. Verificarea git-log-ului al branch-ului 'another' si resetarea ultimului commit



## 15. Încă un push

```
midps — -bash — 80×24
    Am adaugat fisierul hello.java
commit 01f9ec2418c3232ab32400e7d8d62ac972ac7264
Author: Alexandr <sashaialt95@gmail.com>
      Wed Mar 16 15:59:45 2016 +0200
    Primul commit
[MacBook-Pro-Alexandr:midps Alexandr$ git status
On branch another
nothing to commit, working directory clean
[MacBook-Pro-Alexandr:midps Alexandr$ git reset --hard HEAD~1
HEAD is now at 80b3552 Am adaugat fisierul hello.java
[MacBook-Pro-Alexandr:midps Alexandr$ git push
fatal: The current branch another has no upstream branch.
To push the current branch and set the remote as upstream, use
    git push --set-upstream origin another
[MacBook-Pro-Alexandr:midps Alexandr$ git push --set-upstream origin another
Total 0 (delta 0), reused 0 (delta 0)
To https://github.com/AlexandrYaltychenko/midps.git
* [new branch] another -> another
Branch another set up to track remote branch another from origin.
MacBook-Pro-Alexandr:midps Alexandr$
```

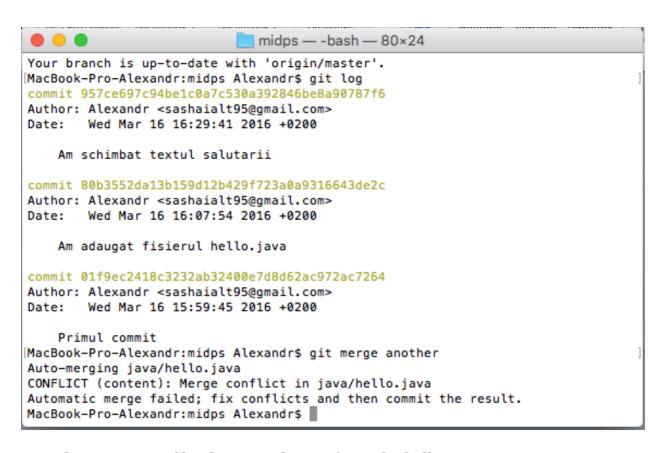
### 16. Încă o editare a fișierului hello.java (branch-ul 'another')

```
midps — -bash — 80×24
MacBook-Pro-Alexandr:java Alexandr$ cat hello.java
class HelloWorld {
public static void main (String args []) {
System.out.println ("Hello World");
}
MacBook-Pro-Alexandr:java Alexandr$ nano hello.java
MacBook-Pro-Alexandr:java Alexandr$ cd..
-bash: cd..: command not found
MacBook-Pro-Alexandr:java Alexandr$ cd ..
MacBook-Pro-Alexandr:midps Alexandr$ git status
On branch another
Your branch is up-to-date with 'origin/another'.
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: java/hello.java
no changes added to commit (use "git add" and/or "git commit -a")
[MacBook-Pro-Alexandr:midps Alexandr$ git add .
[MacBook-Pro-Alexandr:midps Alexandr$ git commit -m "Am adaugat in salutare cuvin]
tul Chisinau"
[another 99aebfa] Am adaugat in salutare cuvintul Chisinau
```

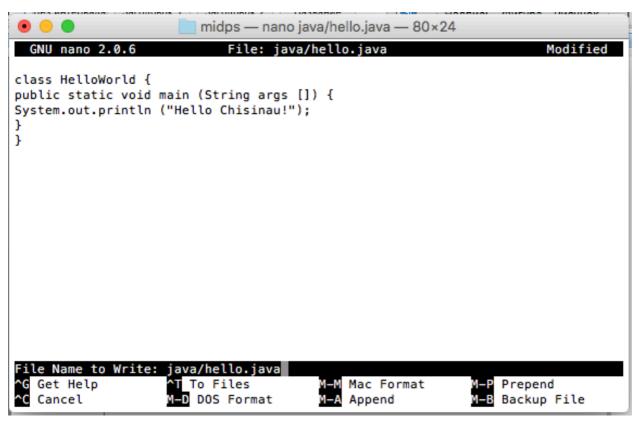
#### 17. Selectarea branch-ului 'master'

```
| MacBook-Pro-Alexandr:midps Alexandr$ git checkout master | Switched to branch 'master' | Your branch is up-to-date with 'origin/master'. | MacBook-Pro-Alexandr:midps Alexandr$ | |
```

### 17. Verificarea log-ului si "branch merging" (apare conflictul)



18. Soluționarea confilctului prin editarea fișierului hello.java



19. Terminarea procesului de «branch merging»

```
midps — -bash — 80×24
commit 01f9ec2418c3232ab32400e7d8d62ac972ac7264
Author: Alexandr <sashaialt95@gmail.com>
Date:
        Wed Mar 16 15:59:45 2016 +0200
    Primul commit
MacBook-Pro-Alexandr:midps Alexandr$ git merge another
Auto-merging java/hello.java
CONFLICT (content): Merge conflict in java/hello.java
Automatic merge failed; fix conflicts and then commit the result.
[MacBook-Pro-Alexandr:midps Alexandr$ nano java/hello.java
MacBook-Pro-Alexandr:midps Alexandr$ git status
On branch master
Your branch is up-to-date with 'origin/master'.
You have unmerged paths.
  (fix conflicts and run "git commit")
Unmerged paths:
  (use "git add <file>..." to mark resolution)
        both modified:
                         java/hello.java
no changes added to commit (use "git add" and/or "git commit -a")
MacBook-Pro-Alexandr:midps Alexandr$
```

### **Bonus Point:**

Bash-script-ul pentru compilarea hello\_world-urilor in limbaje C, Java, C++, Python:

```
#!/bin/bash
gcc hello_c.c -o hello_c
javac hello_java.java
g++ hello_c++.cpp -o hello_c++
python -m py_compile hello_python.py
```

### Concluziile

În cadrul acestei lucrări de laborator am studiat principiile și modul de utilizare a sistemului de control al versiunilor – Git. Prin intermediul CL am configurat SSH autentificarea, am făcut primul git commit și am sincronizat dispozitoriul local cu cel remote, plasat pe server. Mai departe am reusit sa fac "branch merging" si solutionez conflictul care a aparut. Cunoștințele, obtinute pe parcursul desfășurarii lucrării de laborator vor fi foarte utile pentru realizarea proiectelor, ce urmeaza.

## Bibliografie

1.	https://training.github.com/kit/downloads/github-git-cheat-sheet.pdf - Git Cheat Sheet	