Facultatea Calculatoare, Informatica si Microelectronica

Universitatea Tehnica a Moldovei

Medii Interactive de Dezvoltare a Produselor Soft

Lucrarea de laborator#1

Version Control Systems si modul de setare a unui server

Autor:
Cristina Bradu

lector asistent:
Irina Cojanu
lector superior:
Radu Melnic

Lucrarea de laborator nr.1

1 Scopul lucrarii de laborator

De a se invata utilizarea unui Version Control System si modul de setare a unui server.

2 Obiective

Studierea Version Control Systems (git).

3 Analiza lucrarii de laborator

3.1 Cerintele implementate

Initializarea unui nou repozitoriu.
Configurarea VCS.
Commit, Push pe branch.
Folosirea fisierului .gitignore.
Revenire la versiunele anterioare.
Crearea branch-urilor noi.
Commit pe ambele branch-uri.
Merge la 2 branchuri.
Rezolvarea conflictelor.

3.2 Continutul lucrarii

Link-ul repozitoriului:

https://github.com/BraduCristina/MIDPS

Pentru a incepe lucrul cu git-ul, am configurat numele utilizatorului pe github.com si e-mail-ul meu, utilizind comenzile date de figure 1.

In mod scris, acestea arata astfel:

git config –global user.name "NumeUtilizator"
git config –global user.email "email@mail.ru"

Pentru a configura numele si e-mailul, facem urmatorii pasi:
Scriem urmatoarele comenzi: (figure 2)

git config global user.name "NUMELE"

git config global user.email EMAIL

git config –list afiseaza e-mail-ul si numele utilizatorului(figure 3).

git help commit ofera ajutor in lucrul cu git.
Analog este **git commit -help** (figure 4).

git status arata statutul
repozitoriului nostru.
Initial, pentru apelarea acestuia, este necesara indicarea mapei in care se afla fisierele noastre.

cd numemapa. In cazul nostru vom folosi instructiunea din figure 5.

cd MIDPS

Pentru a lucra cu fisierul .gitignore, initializam fisierele *README.md* si un *.gitignore*. Fisierul README.md il completam cu ceva informatie care dorim sa fie afisata, iar in fisierul .gitignore adaugam toate fisierele ce trebuie ignorate. (figure 6)

Fisierele noi create le incarcam pe repozitoriul nopstru. Pentru aceasta vom avea nevoie de urmatoarele comenzi : (figure 7)

git add . - comanda indexeaza toate fisierele.

git commit -m "some text" - facem snapshot la comenzi.

git push- incarcam fisierele indexate pe git.

Pentru asigurarea corectitudinii pasilor facuti,
utilizam comenzile din figure 8 si figure 9.

git status

git show

Una dintre caracteristicele principale ale unui VCS este faptul ca ne permite sa revenim la o versiune mai veche.
Aceasta poate fi efectuata cu ajutorul comenzii (figure 10) **git reset TYPE "codul commitului"**
Exista diferenta intre soft si hard , cind facem soft reset, indexurile ramin neschimbate.
Iar in cazul cind facem hard reset, pierdem indexurile.

Am creat un fisier nou *revert.txt* in versiunea 1. Dupa care l-am sters si am facut commit la versiunea 2, in care am sters fisierul revert.txt si dorim sa revenim la versiunea1. La inceput vom lansa comanda

git log

care ne arata logul de commituri si codul pentru fiecare commit. Pentru aceasta preluam primele 8 cifre de la commit-ul anterior(figure 11)

VCS ne permite sa avem mai multe branch-uri(ramuri).
Branch-urile sunt utilizate mai des la lucrul in echipa sau cind
lucram paralel la un proiect si apoi dorim sa unim toate modificarile. (figure 12)

git branch "name" - creeaza un branch nou cu numele "name".

git branch - vizualizarea branchurilor (* indica branchul curent).

git branch -d "nume" - sterge branchul "nume".

git checkout -b "name" - creeaza un branch nou cu numele "name" si face switch la el.

git checkout "nume" - face switch la branchul "nume".

Comenzi noi:
Operarea cu ele e prezentata in figure 13.

git branch -u upstream/name - face track la branchul indicat din branchul curent.

git branch -u upstream/name "nume" - face track din branchul "nume" la branch-ul indicat.

git branch track "name" upstream/name - creeaza branch-ul "name" si ii face track la branch-ul indicat.

git branch unset-usptream - scoate tracking-ul la branch-ul in care ne aflam.
(figure 13)

Putem avea conflicte in cazul cind dorim sa facem merge la 2 branchuri si unele rinduri sunt diferite. In asa caz ne vine in ajutor un mergetool. Drept mergetool am ales *kdiff3*. Pentru a seta kdiff3 ca mergetool default, folosim comanda:

git config global merge.tool kdiff3

In continuare vom lucra cu 2 branchuri - "master" si "new".
Vom crea in fiecare branch cite un fisier *"tomerge"*, continutul caruia va fi diferit.(figure 14)

In continuare vom incerca sa facem merge si sa
rezolvam acest conflict. (figure 15)

4 Anexa 1 (figures)

```
703KM@Cristina-PC MINGW32 ~
$ git config --global user.name "BraduCristina"

703KM@Cristina-PC MINGW32 ~
$ git config --global user.email "cristina_bradu@mail.ru
> "
```

Figure 1: Configurare nume/email

```
703KM@Cristina-PC MINGW32 ~
$ cd MIDPS

703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ git config --global user.name "CristinaBradu"

703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ git config --global user.email "cristinabradu@mail.ru"

703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ git config --list
core.symlinks=false
core.autocrlf=true
core.fscache=true
color.diff=auto
color.status=auto
color.branch=auto
color.interactive=true
pack.packsizelimit=2g
help.format=html
http.sslcainfo=C:/Program Files/Git/mingw32/ssl/certs/ca-bundle.crt
diff.astextplain.textconv=astextplain
rebase.autosquash=true
credential.helper=manager
user.email=cristinabradu@mail.ru
user.name=CristinaBradu
core.repositoryformatversion=0
core.filemode=false
core.bare=false
core.logallrefupdates=true
core.symlinks=false
core.ignorecase=true
remote.origin.url=git@github.com:BraduCristina/MIDPS.git
remote.origin.fetch=+refs/heads/*:refs/remotes/origin/*
branch.master.remote=origin
branch.master.merge=refs/heads/master
branch.new.remote=origin
branch.new.merge=refs/heads/master
branch.new_2.remote=origin
branch.new_2.merge=refs/heads/master
merge.toole=vimdiff
merge.conflictstyle=diff3
mergetool.prompt=false
```

Figure 2: Afisarea desfasurata a datelor utilizatorului

```
703KM@Cristina-PC MINGW32 ~
$ git config --list
core.symlinks=false
core.autocrlf=true
core.fscache=true
color.diff=auto
color.status=auto
color.branch=auto
color.interactive=true
pack.packsizelimit=2g
help.format=html
http.sslcainfo=C:/Program Files/Git/mingw32/ssl/certs/ca-bundle.crt
diff.astextplain.textconv=astextplain
rebase.autosquash=true
credential.helper=manager
user.email=cristina_bradu@mail.ru

user.name=BraduCristina
```

Figure 3: Afisarea datelor utilizatorului

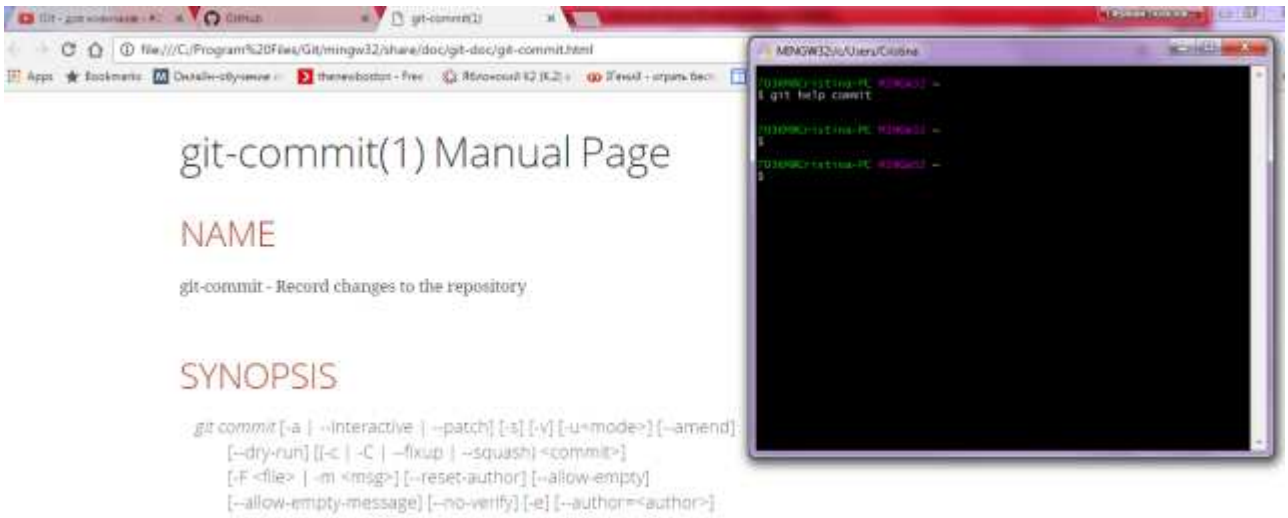


Figure 4: Ajutor in lucrul cu git

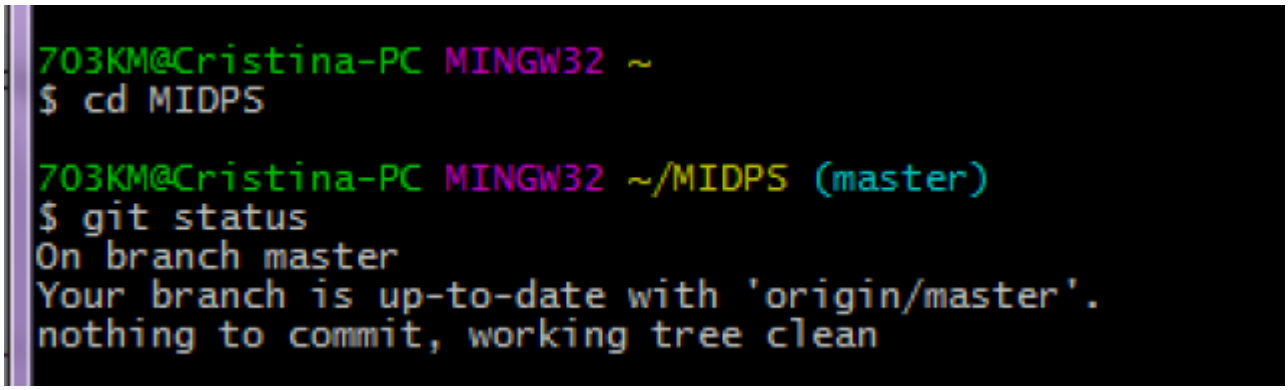


Figure 5: Afisarea statutului repozitoriului

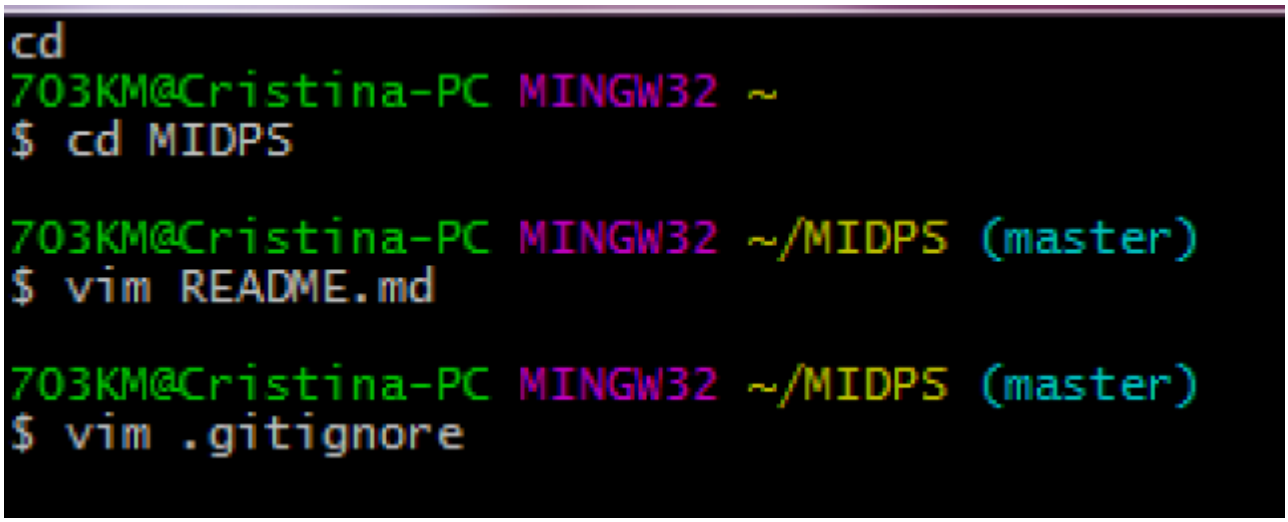


Figure 6: Adaugarea fisierelor .gitignore si README.md

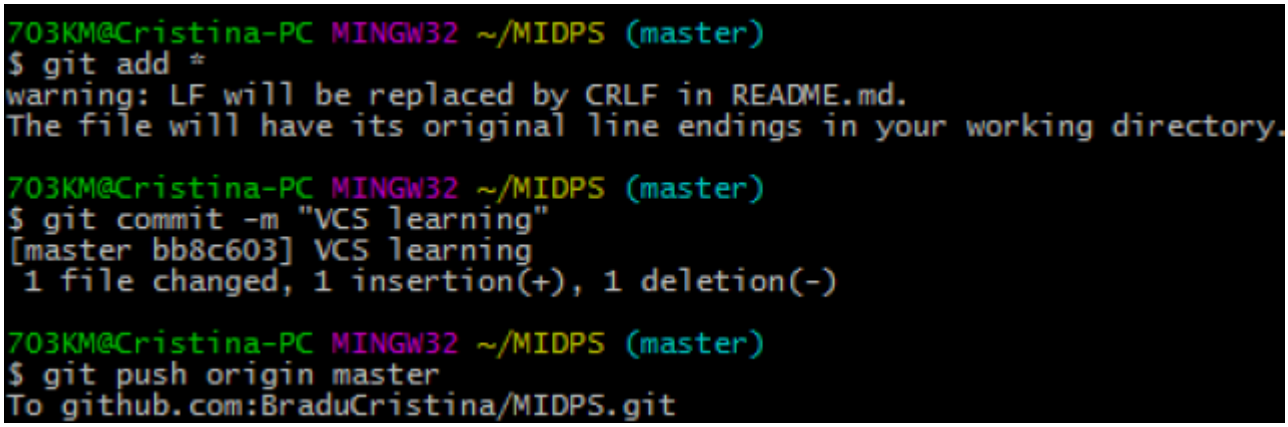


Figure 7: Adaugarea fisierelor pe github.com

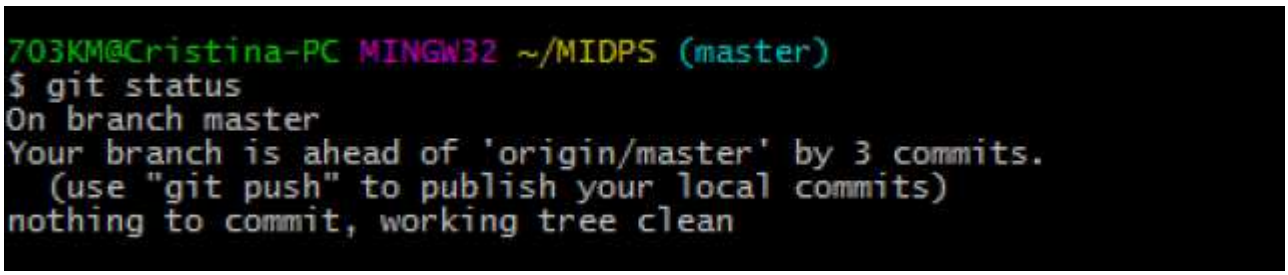


Figure 8: Verificarea corectitudinii pasilor

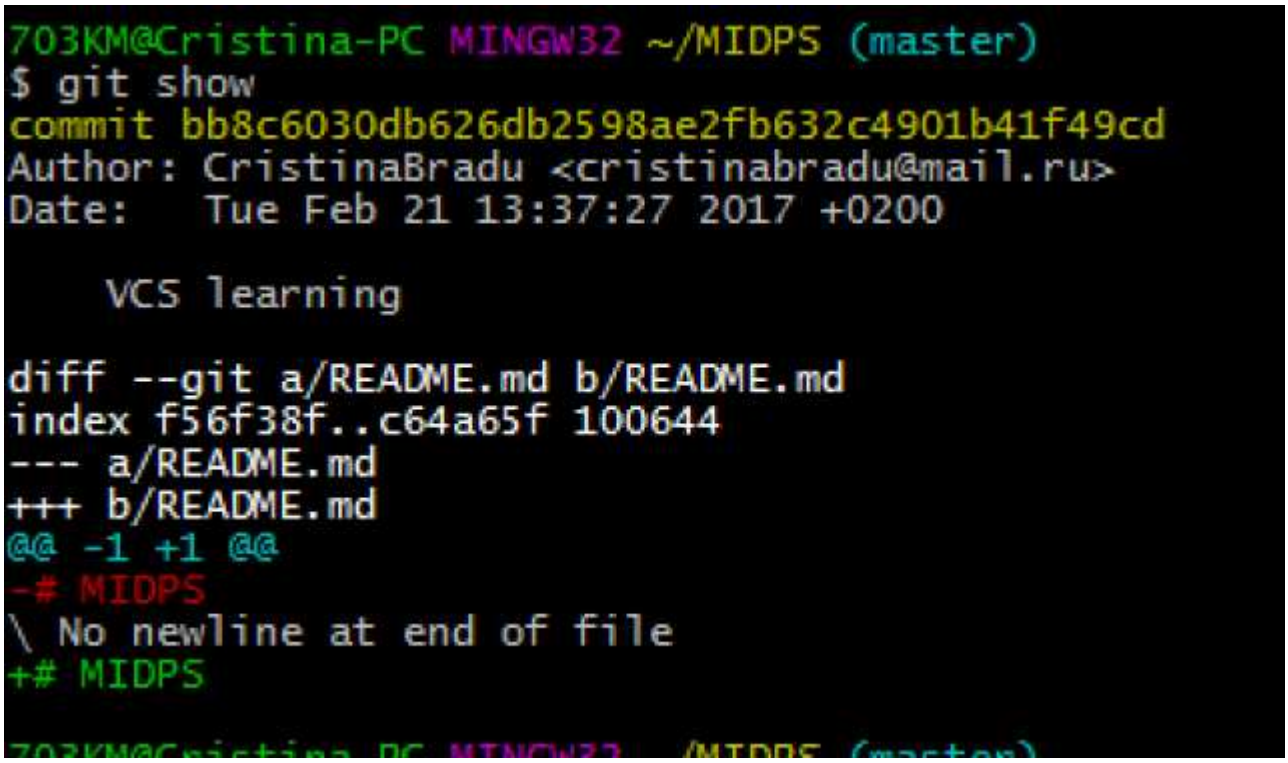


Figure 9: Verificarea corectitudinii pasilor implementati

```
703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ ls
hello.txt  MIDPS/  README.md  zoo/

703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ vim revert.txt

703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ ls
hello.txt  MIDPS/  README.md  revert.txt  zoo/

703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ git add *
warning: LF will be replaced by CRLF in revert.txt.
The file will have its original line endings in your working directory.

703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ git commit -m "test 1"
[master 2f875fe] test 1
 1 file changed, 1 insertion(+)
 create mode 100644 revert.txt
```

MINGW32:/c/Users/Cristina/MIDPS

```
703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ git pull
remote: Counting objects: 6, done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 6 (delta 1), reused 2 (delta 0), pack-reused 0
Unpacking objects: 100% (6/6), done.
From github.com:BraduCristina/MIDPS
   447a7e3..b00868e  master     -> origin/master
Auto-merging README.md
CONFLICT (content): Merge conflict in README.md
Automatic merge failed; fix conflicts and then commit the result.
```

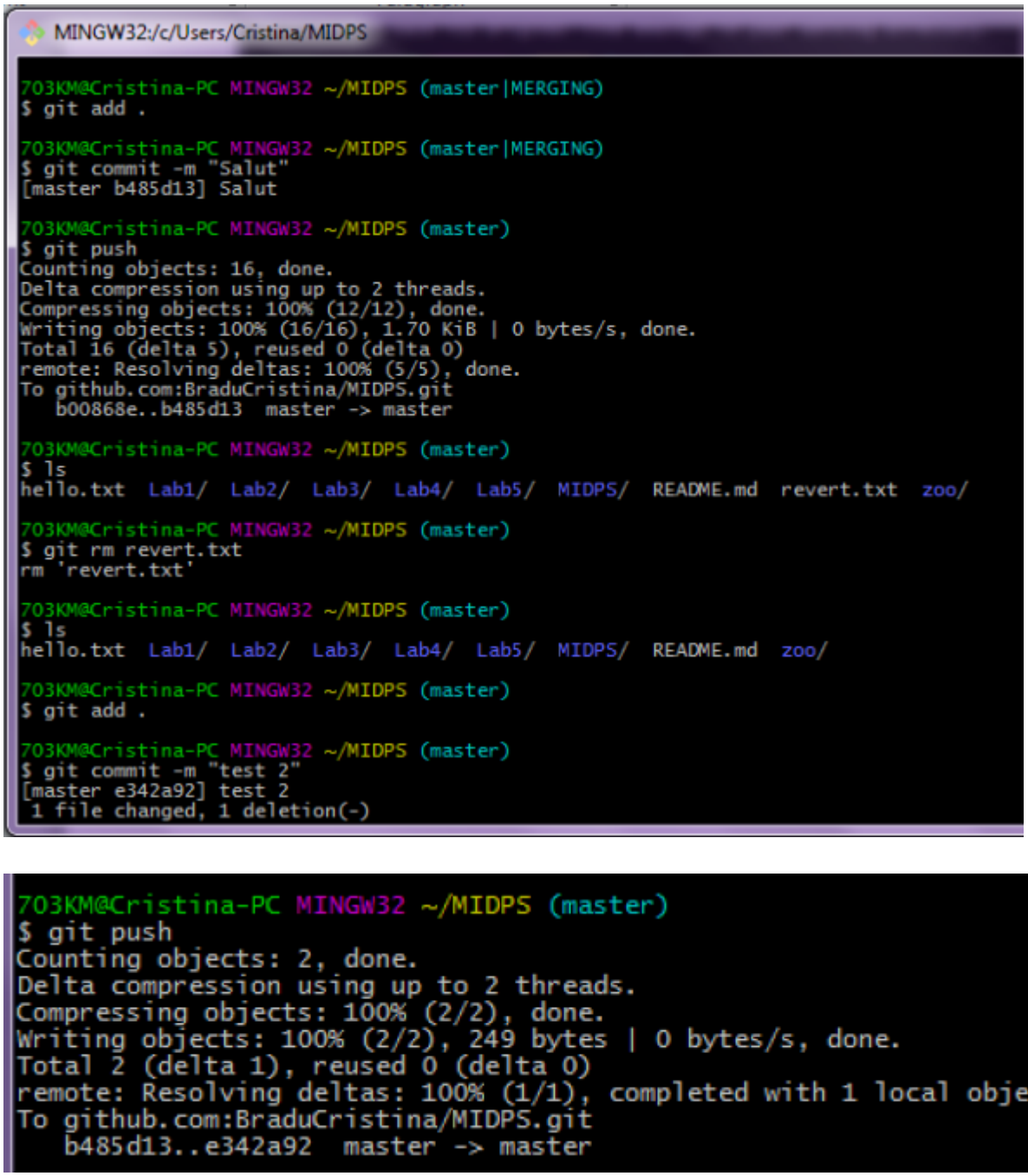


Figure 10: Revenirea la o versiune mai veche

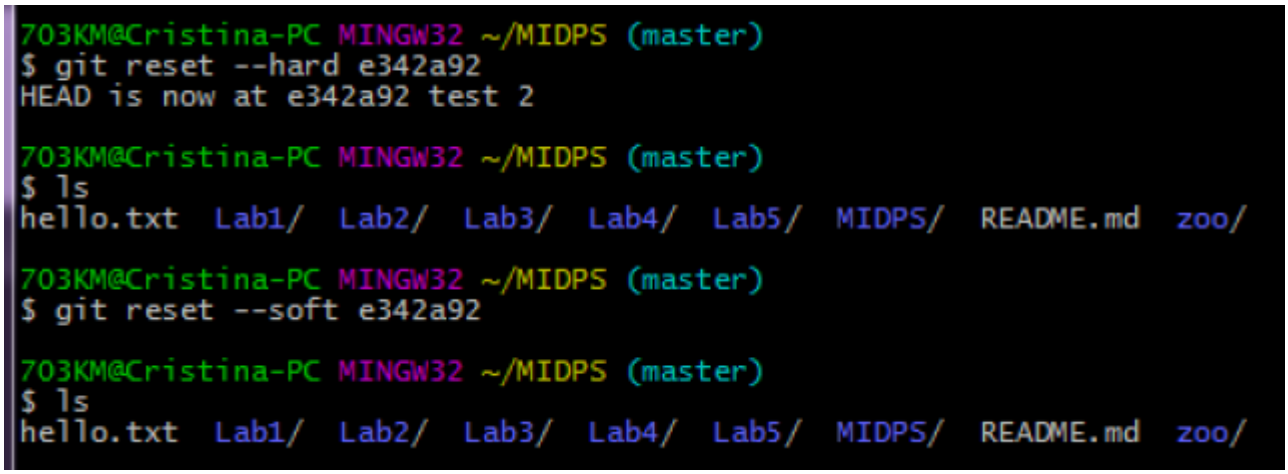
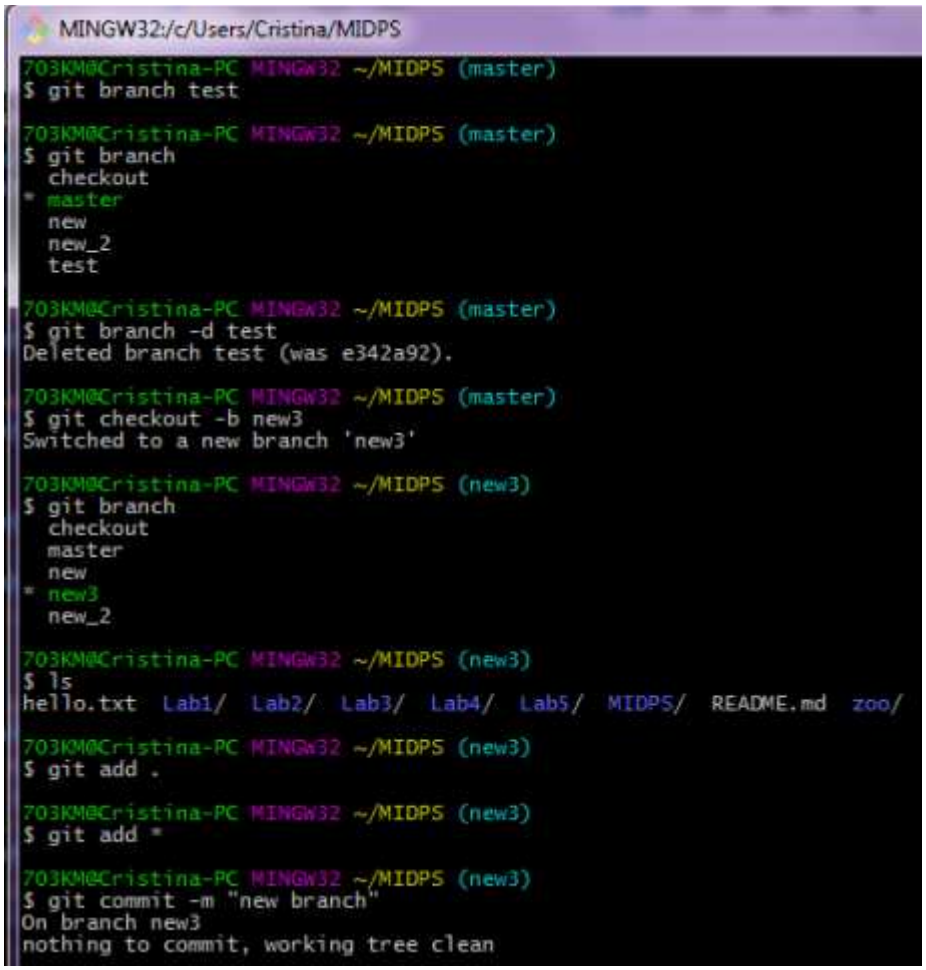


Figure 11: Log-ul de commit-uri


MINGW32:/c/Users/Cristina/MIDPS
703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ git branch test
703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ git branch
checkout
* master
new
new_2
test
703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ git branch -d test
Deleted branch test (was e342a92).
703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ git checkout -b new3
Switched to a new branch 'new3'
703KM@Cristina-PC MINGW32 ~/MIDPS (new3)
$ git branch
checkout
master
new
* new3
new_2
703KM@Cristina-PC MINGW32 ~/MIDPS (new3)
$ ls
hello.txt Lab1/ Lab2/ Lab3/ Lab4/ Lab5/ MIDPS/ README.md zoo/
703KM@Cristina-PC MINGW32 ~/MIDPS (new3)
$ git add .
703KM@Cristina-PC MINGW32 ~/MIDPS (new3)
$ git add *
703KM@Cristina-PC MINGW32 ~/MIDPS (new3)
$ git commit -m "new branch"
On branch new3
nothing to commit, working tree clean

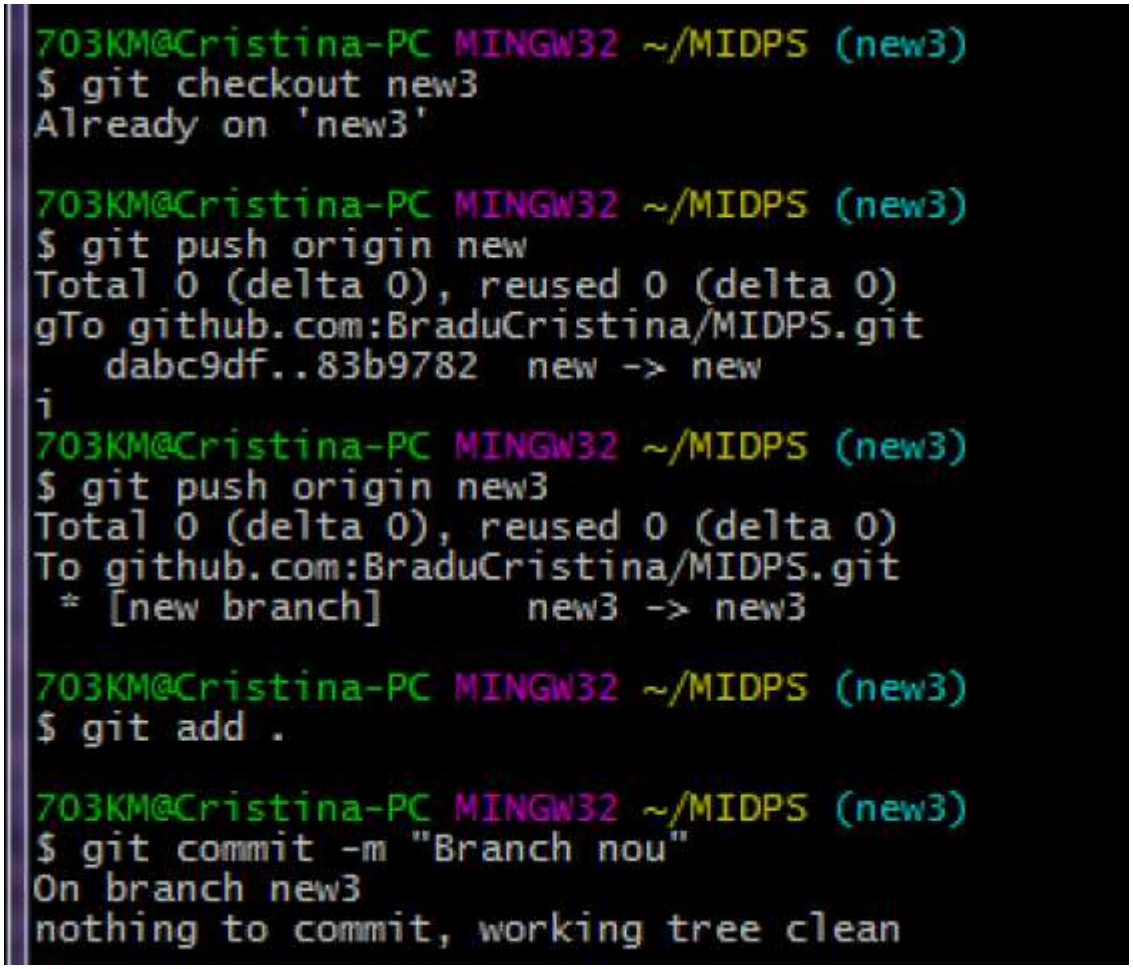
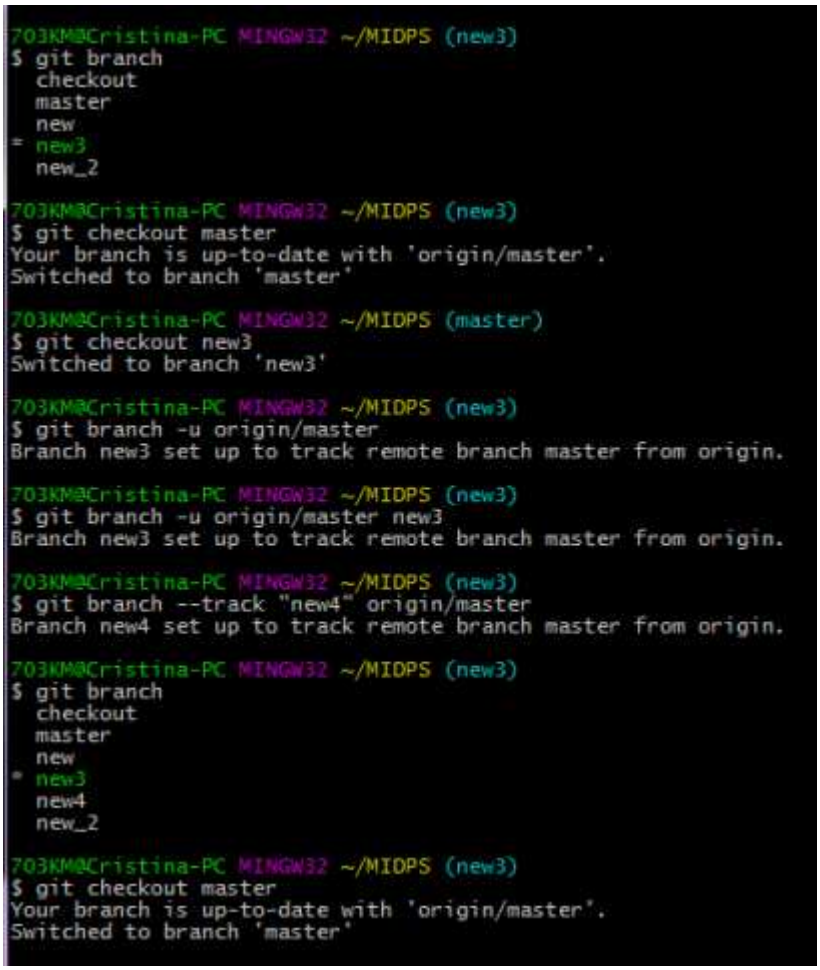


Figure 12: Crearea si lucrul cu branch-urile


703KM@Cristina-PC MINGW32 ~/MIDPS (new3)
$ git branch
checkout
master
new
* new3
new_2
703KM@Cristina-PC MINGW32 ~/MIDPS (new3)
$ git checkout master
Your branch is up-to-date with 'origin/master'.
Switched to branch 'master'
703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ git checkout new3
Switched to branch 'new3'
703KM@Cristina-PC MINGW32 ~/MIDPS (new3)
$ git branch -u origin/master
Branch new3 set up to track remote branch master from origin.
703KM@Cristina-PC MINGW32 ~/MIDPS (new3)
$ git branch -u origin/master new3
Branch new3 set up to track remote branch master from origin.
703KM@Cristina-PC MINGW32 ~/MIDPS (new3)
$ git branch --track "new4" origin/master
Branch new4 set up to track remote branch master from origin.
703KM@Cristina-PC MINGW32 ~/MIDPS (new3)
$ git branch
checkout
master
new
* new3
new4
new_2
703KM@Cristina-PC MINGW32 ~/MIDPS (new3)
$ git checkout master
Your branch is up-to-date with 'origin/master'.
Switched to branch 'master'

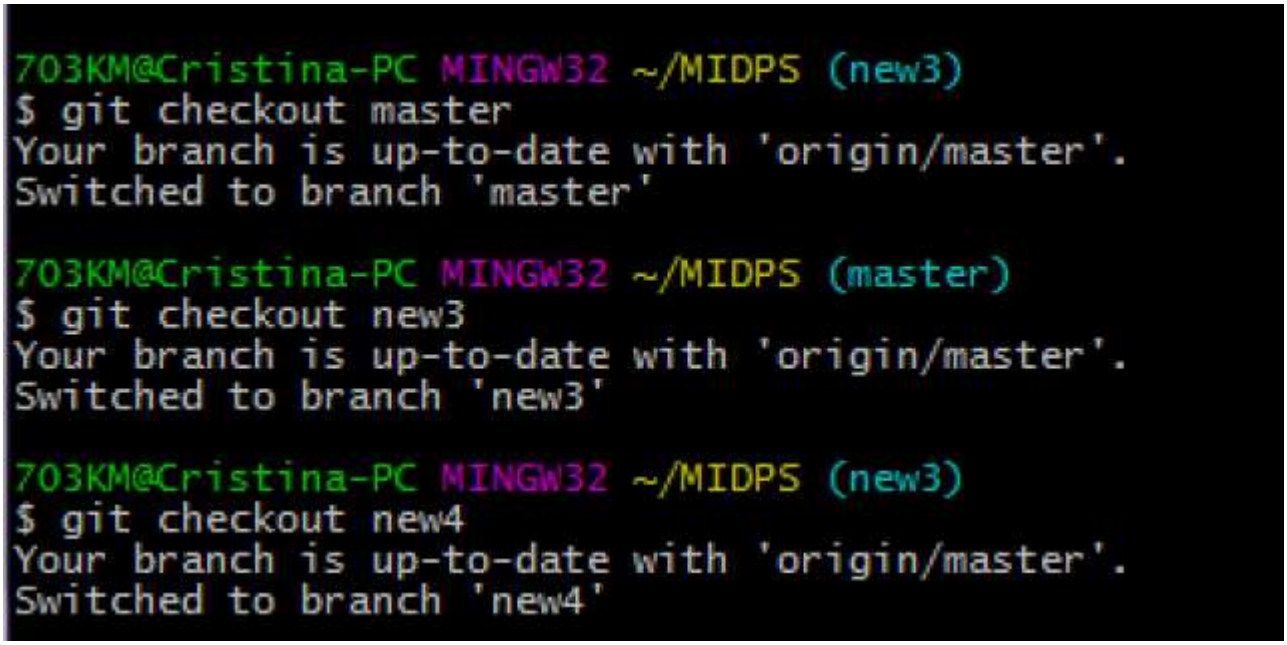


Figure 13: Crearea si lucrul cu tracking

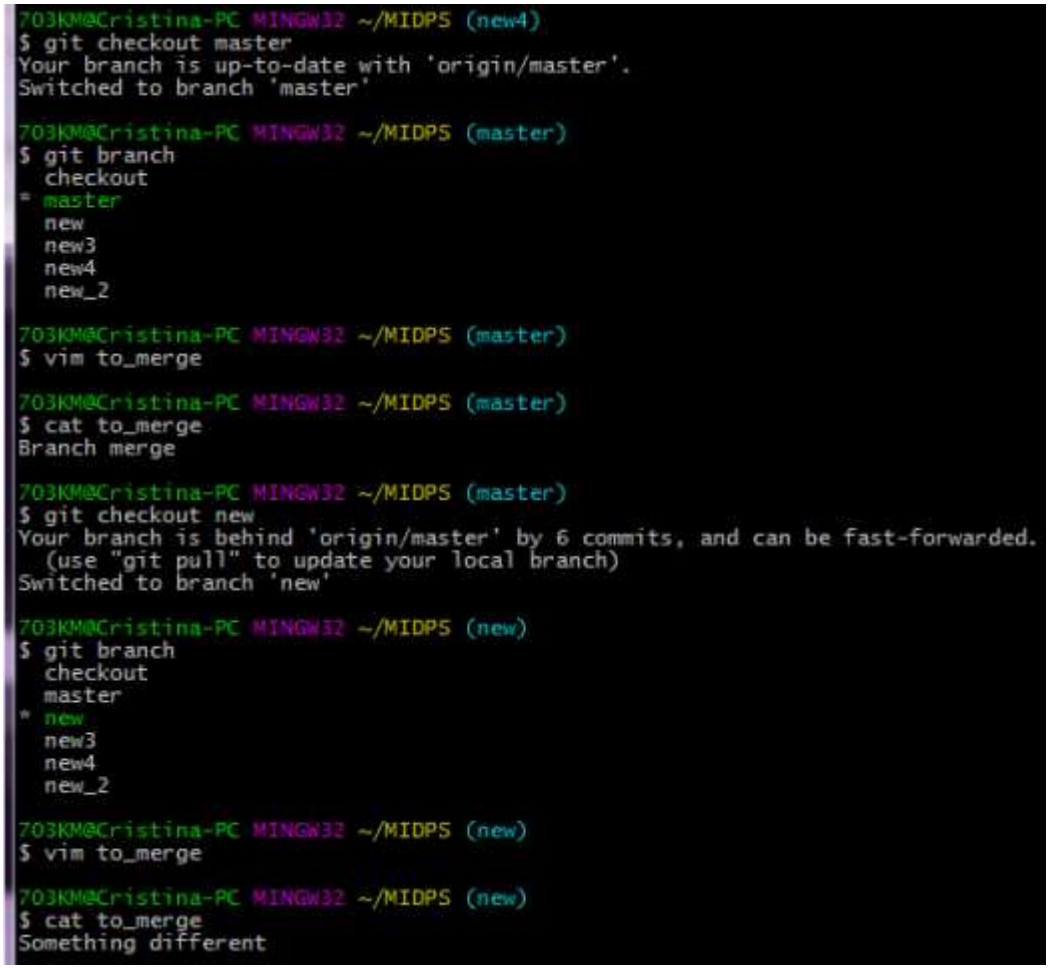


Figure 14: Crearea fisierului tomerge

```
703KM@Cristina-PC MINGW32 ~/MIDPS (new)
$ git branch
  checkout
  master
* new
  new3
  new4
  new_2

703KM@Cristina-PC MINGW32 ~/MIDPS (new)
$ git checkout master
Your branch is up-to-date with 'origin/master'.
Switched to branch 'master'

703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ git branch
  checkout
* master
  new
  new3
  new4
  new_2

703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ git merge new
Already up-to-date.

703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ git mergetool

This message is displayed because 'merge.tool' is not configured.
See 'git mergetool --tool-help' or 'git help config' for more details.
'git mergetool' will now attempt to use one of the following tools:
opendiff kdiff3 tkdiff xxdiff meld tortoisemerge gvimdiff diffuse diffmerge ecmerge
rge araxis bc codecompare emerge vimdiff
No files need merging
```

```
703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ ls
hello.txt  Lab1/  Lab2/  Lab3/  Lab4/  Lab5/  MIDPS/  README.md  to_merge  zoo/

703KM@Cristina-PC MINGW32 ~/MIDPS (master)
$ cat to_merge
Something different
```

Figure 15: Rezolvarea conflictului

Concluzie

In lucrarea de laborator nr.1 la disciplina MIDPS, am facut cunostinta cu VCS(Version Control System). VCS reprezinta niste tool-uri software, care usureaza lucrul in echipa asupra unui proiect propus. Gratie VCS, echipa data isi poate organiza modificarile efectuate in cod in orice moment. Acesta salveaza track-urile modificarilor, astfel, sistemul dat devenind destul de eficient si ofera posibilitatea de a lucra in paralel asupra unui proiect intr-un timp mult mai scurt. Revenirea la o versiune mai veche la fel este un avantaj al VCS. Pentru a indeplini lucrarea de laborator, am atins asa obiective, ca crearea fisierelor, editarea lor, crearea ramurilor si rezolvarea conflictelor aparute. Efectuarea commit-urilor la fel a fost un punct care urma sa-l implementez, ceea ce am si reusit sa fac. Toate comenzile care le-am utilizat, le-am indeplinit pe Windows 7.