Calculatoare, Informatica si Microelectronica
Universitatea Tehnica a Moldovei

Medii Interactive De Dezvoltare A Produselor Soft

Lucrarea de laborator1

Version Control Systems Si Modul De Setare A Unui Server

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Part I

Lucrarea de laborator 1

1 Scopul lucrarii de laborator:

In aceasta lucrare se va studia despre Versiunea de Control, o scurt istorie a Git, bazele GIT, linia de comanda.

2 Obiective

Version Control Systems (git,bitbucket,mercurial,svn)

3 Basic Level (nota 5 —— 6) :

3.1 Tasks and Points

A:Initializeaza un nou repositoriu.
B:Configureaza-ti VCS
C:Crearea branch-urilor (creeaza cel putin 2 branches)
D:Commit pe ambele branch-uri (cel putin 1 commit per branch)

3.2 Analiza Level

A: Am creat un repository nou, in coltul din dreapta sus, linga avatarul sau identicon, am facut clic si am selectat noul repository cu numele MIDPS. Am initializat acest repository cu un README. Un repository poate contine foldere arhive si fisiere, imagini, clipuri video, foi de calcul si seturi de date - orice are nevoie de proiectul meu.

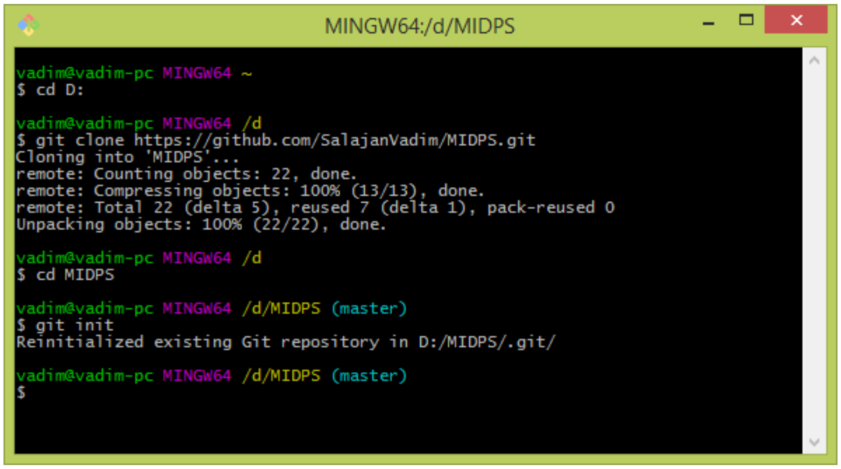
B:Am descarcat si instalat gitbash. Dupa aceasta am adaugat o noua cheie SSH pentru contul meu. GitHub.
In cazul in care SSH fisier cheie are un nume diferit de codul de exemplu, modificam numele de fisier pentru a se potrivi

configuratia curenta. Atunci cind copiez cheia, nu adaug liniile noi sau spatii goale: "$Clip < \ /.ssh/id_rsa.pub$" . In coltul din dreapta sus al paginii, am facut clic pe fotografia de profil, apoi clic pe Setari. In bara laterala setarile de utilizator, am facut clic pe Key SSH si GPG. In cimpul "Titlu", am adaugat o eticheta descriptiva pentru noua cheie. Am facut clic pe Add SSH key.Sa nu uitam sa indicam directorul proiectului in cazul meu:**cd MIDPS**, astfel va fi eroare. Urmatorul pas este clonarea(copierea tuturor fisierelor care se afla in MIDPS): Figura 1. Daca este prima clonare s-ar putea sa ceara configurarea adica email si numele personal de pe git.hub(Figura 2 si 3). Initializam gitul. Dupa ce facem ceva modificari folosim **git add *** , acesta adauga absolut toate modificarile efectuate inafara de stergeri, de stergeri se ocupa comanda: **git add ..**

C: Atunci cind cream comitul initial, ne este dat ramura master. Cu fiecare nou comit, se misca inainte in mod automat (Figura 5). Putem creea usor o noua ramura si sa o numim spre exemplu testing cu comanda: **git branch teesting**. Git stie ce ramura sunt la moment. Se pastreaza un indicator special numit HEAD (virful). Eu am creat ramura dar nu am acces inca la ea (Figura 6).Pentru a comuta la o ramura existenta, am nevoie pentru a executa:**git checkout teesting**.Aceasta actiune va muta HEAD astfel incit sa indice ramura teesting(Figura 7 si 8).

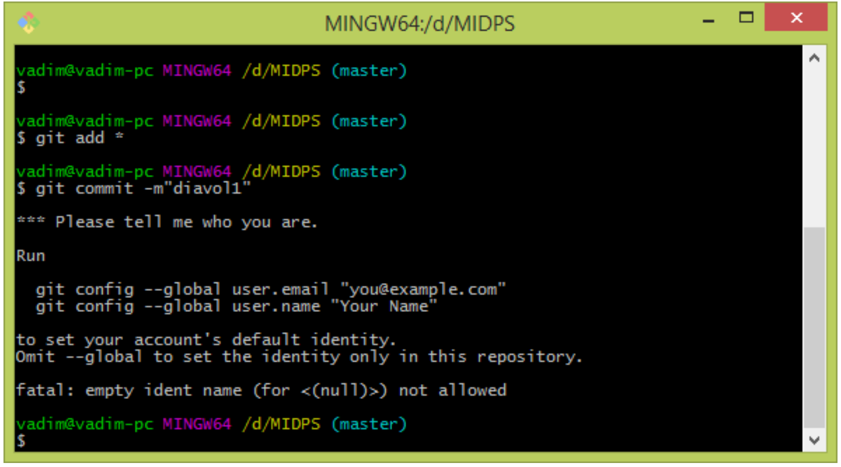
D: Pentru a indexa toate schimbarile flosim comanda **git commit -m "scriem orice"**.

3.3 Imagini



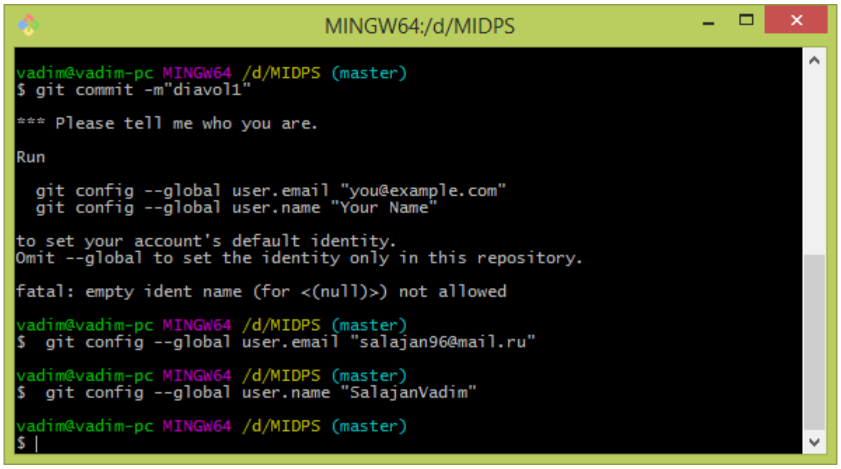
```
vadim@vadim-pc MINGW64 ~
$ cd D:

vadim@vadim-pc MINGW64 /d
$ git clone https://github.com/SalajanVadim/MIDPS.git
Cloning into 'MIDPS'...
remote: Counting objects: 22, done.
remote: Compressing objects: 100% (13/13), done.
remote: Total 22 (delta 5), reused 7 (delta 1), pack-reused 0
Unpacking objects: 100% (22/22), done.

vadim@vadim-pc MINGW64 /d
$ cd MIDPS

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git init
Reinitialized existing Git repository in D:/MIDPS/.git/

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$
```

Figura 1.



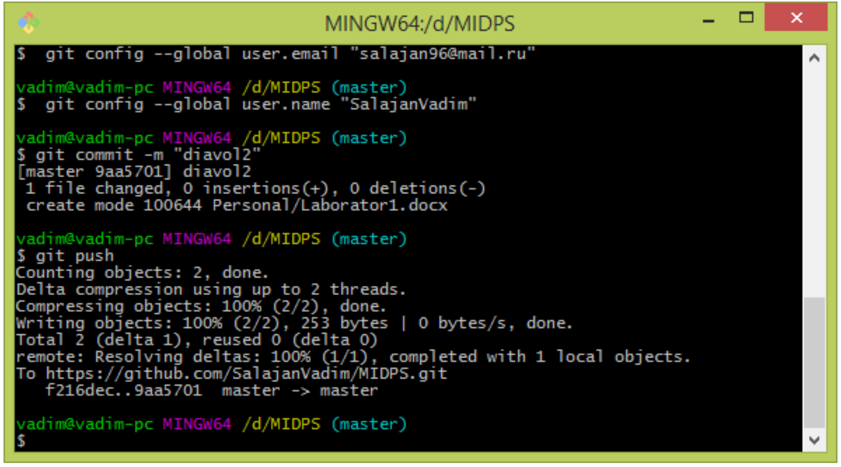
```
vadim@vadim-pc MINGW64 /d/MIDPS (master)
$

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git add *

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git commit -m"diavol1"

*** Please tell me who you are.

Run

  git config --global user.email "you@example.com"
  git config --global user.name "Your Name"

to set your account's default identity.
Omit --global to set the identity only in this repository.

fatal: empty ident name (for <(null)>) not allowed

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$
```

Figura 2.



```
vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git commit -m"diavol1"

*** Please tell me who you are.

Run

  git config --global user.email "you@example.com"
  git config --global user.name "Your Name"

to set your account's default identity.
Omit --global to set the identity only in this repository.

fatal: empty ident name (for <(null)>) not allowed

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$  git config --global user.email "salajan96@mail.ru"

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$  git config --global user.name "SalajanVadim"

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ |
```

Figura 3.



```
$  git config --global user.email "salajan96@mail.ru"

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$  git config --global user.name "SalajanVadim"

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git commit -m "diavol2"
[master 9aa5701] diavol2
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 Personal/Laborator1.docx

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git push
Counting objects: 2, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 253 bytes | 0 bytes/s, done.
Total 2 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local objects.
To https://github.com/SalajanVadim/MIDPS.git
   f216dec..9aa5701  master -> master

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$
```

Figura 4.

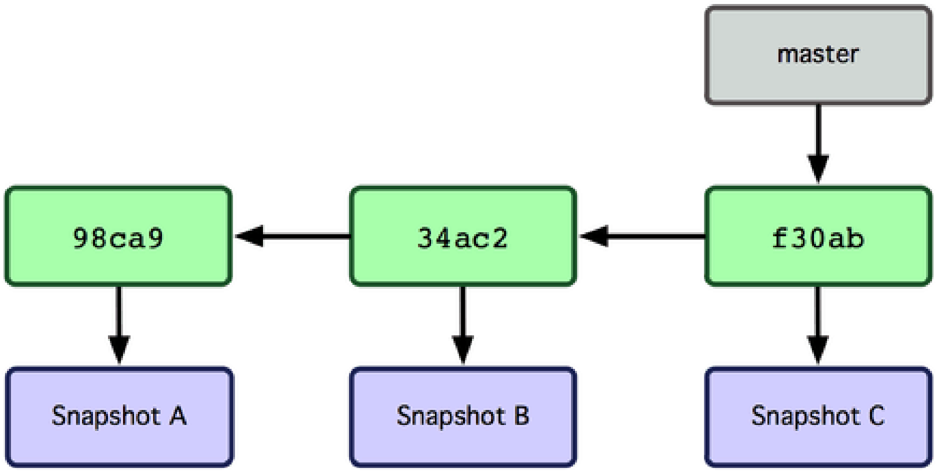


Figura 5.

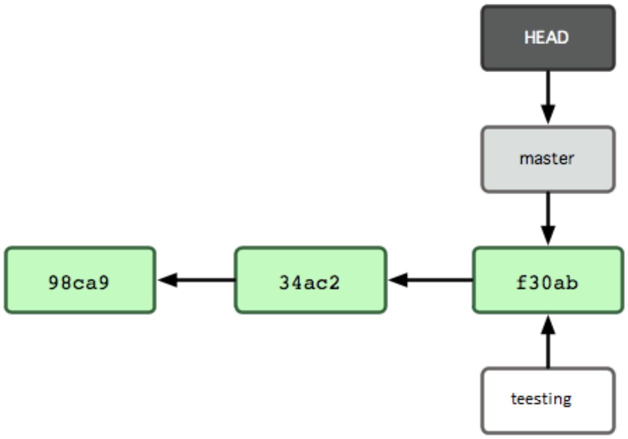


Figura 6.

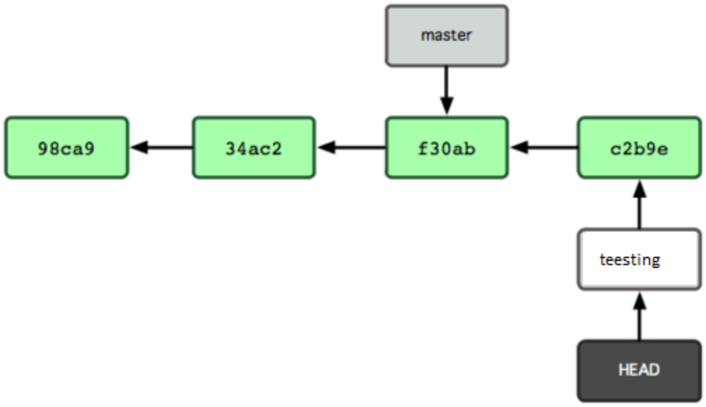
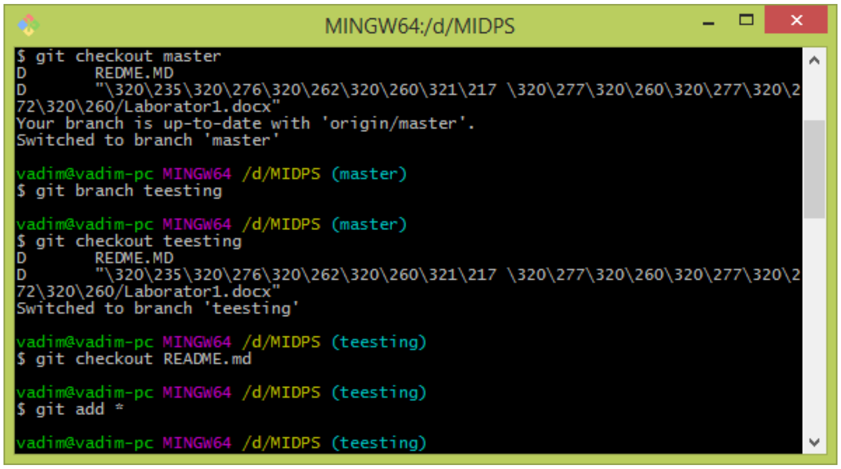
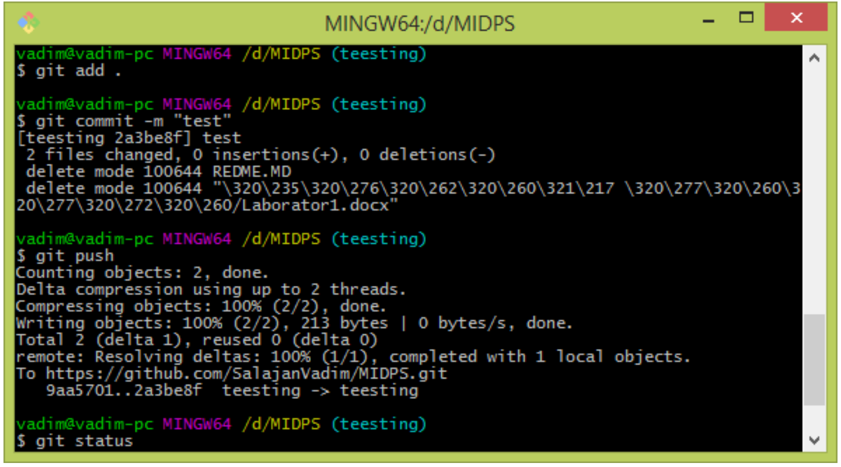


Figura 7.



```
$ git checkout master
D       REDME.MD
D       "\320\235\320\276\320\262\320\260\321\217 \320\277\320\260\320\277\320\2
72\320\260/Laborator1.docx"
Your branch is up-to-date with 'origin/master'.
Switched to branch 'master'

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git branch teesting

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git checkout teesting
D       REDME.MD
D       "\320\235\320\276\320\262\320\260\321\217 \320\277\320\260\320\277\320\2
72\320\260/Laborator1.docx"
Switched to branch 'teesting'

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git checkout README.md

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git add *

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
```

Figura 8.



```
vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git add .

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git commit -m "test"
[teesting 2a3be8f] test
 2 files changed, 0 insertions(+), 0 deletions(-)
 delete mode 100644 REDME.MD
 delete mode 100644 "\320\235\320\276\320\262\320\260\321\217 \320\277\320\260\3
20\277\320\272\320\260/Laborator1.docx"

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git push
Counting objects: 2, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 213 bytes | 0 bytes/s, done.
Total 2 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local objects.
To https://github.com/SalajanVadim/MIDPS.git
   9aa5701..2a3be8f  teesting -> teesting

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git status
```

Figura 9.

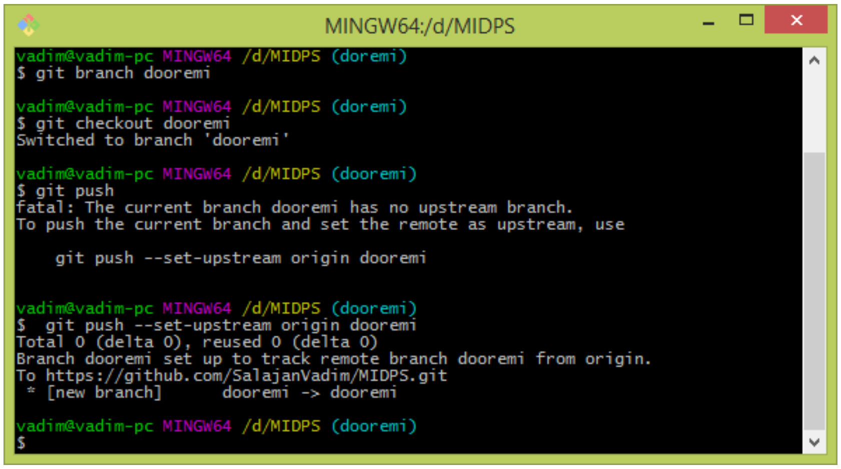
3.4 Normal Level (nota 7 —— 8):

A:Seteaza un branch to track a remote origin pe care vei putea sa faci push (ex. Github, Bitbucket or custom server).
B:Reseteaza un branch la commit-ul anterior.
C:Salvarea temporara a schimbarilor care nu se vor face commit imediat.
D:Folosirea fisierului .gitignore.

3.5 Analiza Level

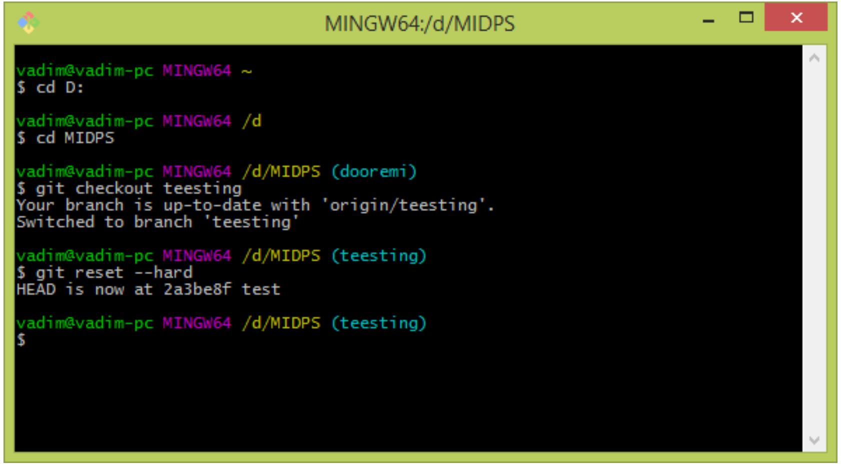
A: In caz ca avem un branch neclonat la sfirsit vom folosi comanda: **git push –set-upstream origin dooremi**, pentru salvarea schimbarilor (Figura 10).
B: Pentru resetarea unui branch la commit-ul anterior vom folosi comanda: **git reset –hard**. Aceasta comanda permite reinitializarea indexului si arborelui de lucru la starea ultimului comite(Figura 11).
C: Utilizam comanda: **git stash** atunci cind dorim sa inregistram starea curenta a directorului de lucru si indicele, dar doresc sa se intoarca la un director de lucru curat. Comanda salveaza modificarile locale la distanta si restabileste directorul de lucru pentru a se potrivi HEAD comite,salveaza temporar modificarile pe care nu doriti sa se angajeze imediat. Tonuri de git stash fara nici un argument este echivalenta cu ascunzatoarea de salvare(Figura 12).
D: De multe ori, avem un grup de fisiere pe care nu numai ca nu dorim sa adaugam automat la magazia, dar, de asemenea, observate in listele care nu sunt urmarite. Aceste fisiere sunt, in general, fisierele generate automat (diverse busteni, ansamblul de programe, etc.). In acest caz, putem crea un fisier de listare a modelelor .gitignore corespunzatoare astfel de fisiere. In fisierul .gitignore scriem:***.[ere]**, aceasta inseamna ca toate fisierele care se termina cu "ere" vor fi ignorate. Comanda folosita care ne va arata ceea ce am scris in fisier: **cat .gitignore**(Figura 13),putem utiliza comanda: **git status** care ne va arata starea fisierelor in index fata de directorul de lucru.

3.6 Imagini



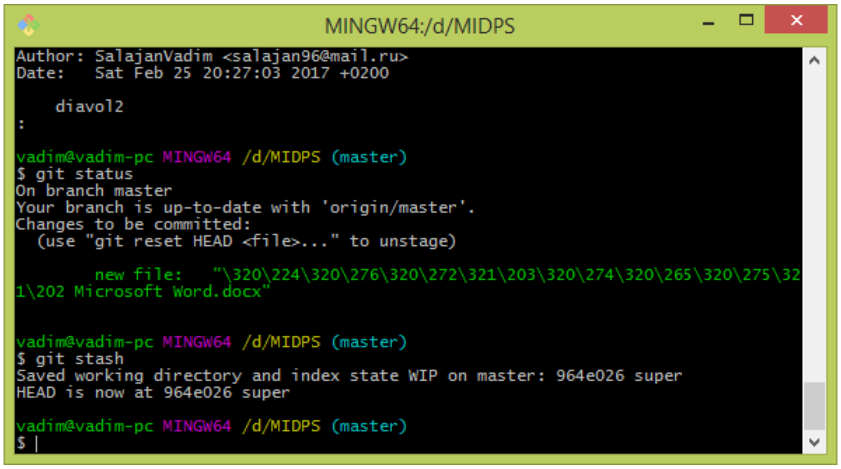
```
vadim@vadim-pc MINGW64 /d/MIDPS (doremi)
$ git branch dooremi

vadim@vadim-pc MINGW64 /d/MIDPS (doremi)
$ git checkout dooremi
Switched to branch 'dooremi'

vadim@vadim-pc MINGW64 /d/MIDPS (dooremi)
$ git push
fatal: The current branch dooremi has no upstream branch.
To push the current branch and set the remote as upstream, use

    git push --set-upstream origin dooremi


vadim@vadim-pc MINGW64 /d/MIDPS (dooremi)
$  git push --set-upstream origin dooremi
Total 0 (delta 0), reused 0 (delta 0)
Branch dooremi set up to track remote branch dooremi from origin.
To https://github.com/SalajanVadim/MIDPS.git
 * [new branch]      dooremi -> dooremi

vadim@vadim-pc MINGW64 /d/MIDPS (dooremi)
$
```

Figura 10.



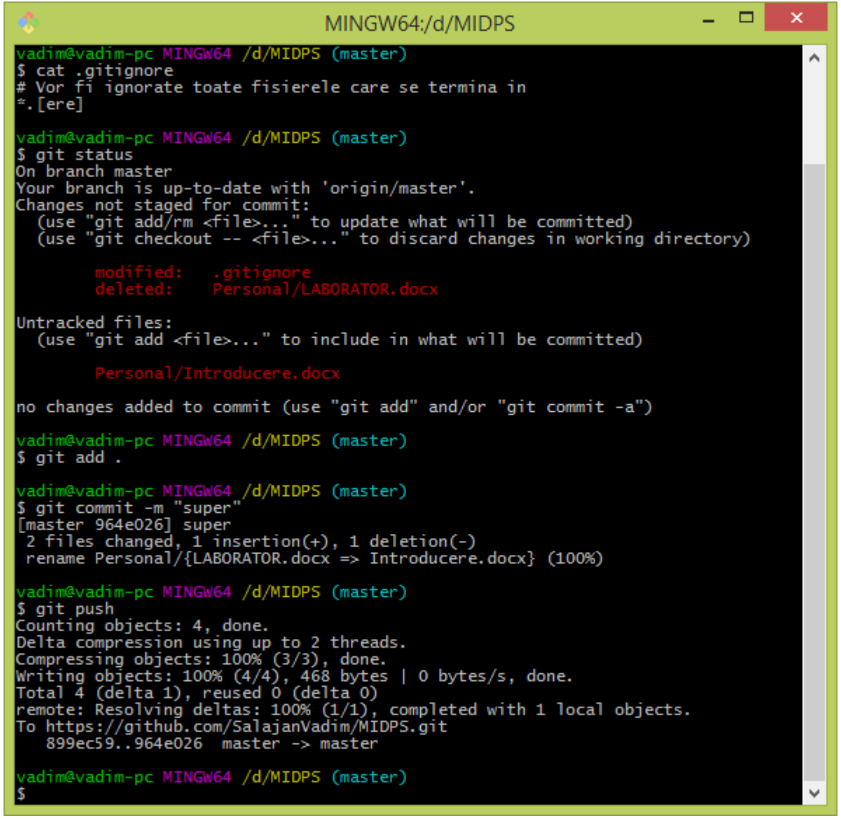
```
vadim@vadim-pc MINGW64 ~
$ cd D:

vadim@vadim-pc MINGW64 /d
$ cd MIDPS

vadim@vadim-pc MINGW64 /d/MIDPS (dooremi)
$ git checkout teesting
Your branch is up-to-date with 'origin/teesting'.
Switched to branch 'teesting'

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git reset --hard
HEAD is now at 2a3be8f test

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$
```

Figura 11.



```
Author: SalajanVadim <salajan96@mail.ru>
Date:   Sat Feb 25 20:27:03 2017 +0200

    diavol2
:

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ 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:   "\320\224\320\276\320\272\321\203\320\274\320\265\320\275\32
1\202 Microsoft Word.docx"


vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git stash
Saved working directory and index state WIP on master: 964e026 super
HEAD is now at 964e026 super

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ |
```

Figura 12.



```
vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ cat .gitignore
# Vor fi ignorate toate fisierele care se termina in
*.[ere]

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git status
On branch master
Your branch is up-to-date with 'origin/master'.
Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

        modified:   .gitignore
        deleted:    Personal/LABORATOR.docx

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

        Personal/Introducere.docx

no changes added to commit (use "git add" and/or "git commit -a")

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git add .

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git commit -m "super"
[master 964e026] super
 2 files changed, 1 insertion(+), 1 deletion(-)
 rename Personal/{LABORATOR.docx => Introducere.docx} (100%)

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git push
Counting objects: 4, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 468 bytes | 0 bytes/s, done.
Total 4 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local objects.
To https://github.com/SalajanVadim/MIDPS.git
   899ec59..964e026  master -> master

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$
```

Figura 13.

3.7 Advanced Level (nota 9 —— 10):

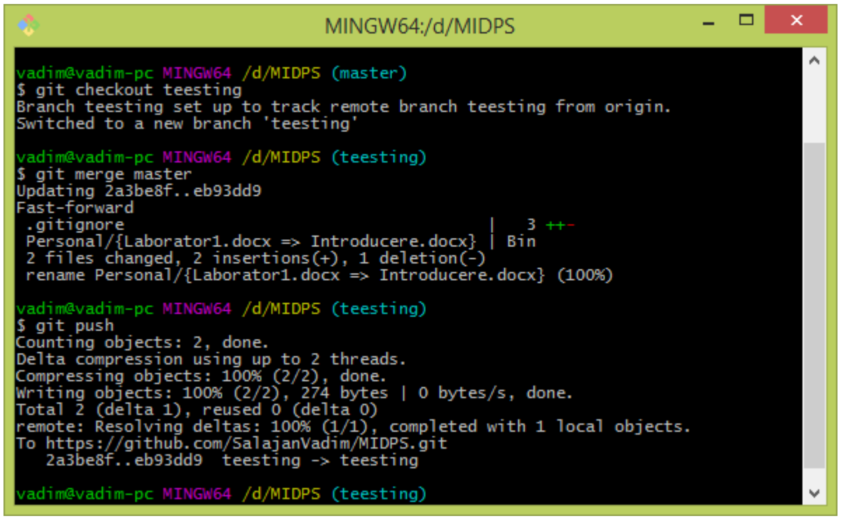
A: Merge 2 branches.
B: Rezolvarea conflictelor a 2 branches.
C: Tags.

3.8 Analiza Level

A: Aici are loc contopirea a una sau a mai multe ramuri in ramura curenta si creeaza in mod automat un nou comite n cazul in care nu exista conflicte(Figura 14), am folosit comanda:**git merge master**.
B: Conflictul in cazul meu a fost din cauza ca informatiile din fisier nu corespondeau in ambele ramuri,am rezolvat conflictul corectind informatia in una dintre ramuri astfel incit informatia sa fie asemanatoare cu informatia din cealalta ramura(Figurile 15-19).

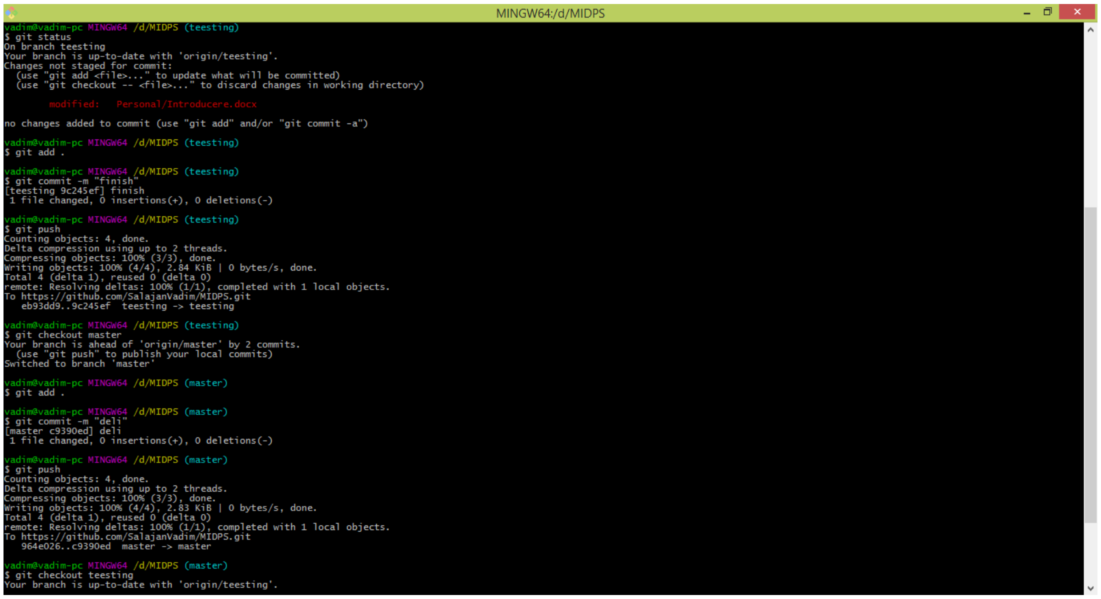
C: Am creat un tag, apoi am folosit comanda:**git show v1.4**,pentru a vedea informatia despre tag impreuna cu commite(Figura 19).

3.9 Imagini



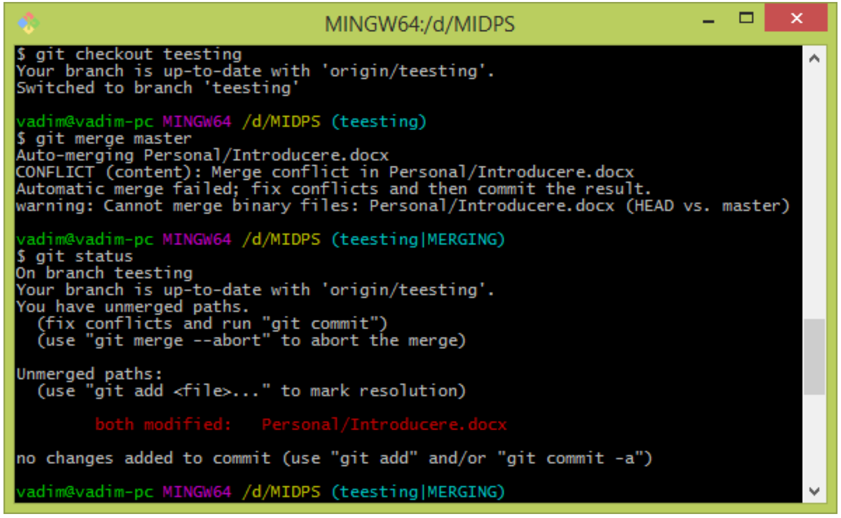
```
vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git checkout teesting
Branch teesting set up to track remote branch teesting from origin.
Switched to a new branch 'teesting'

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git merge master
Updating 2a3be8f..eb93dd9
Fast-forward
 .gitignore                                      |   3 ++-
 Personal/{Laborator1.docx => Introducere.docx} | Bin
 2 files changed, 2 insertions(+), 1 deletion(-)
 rename Personal/{Laborator1.docx => Introducere.docx} (100%)

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git push
Counting objects: 2, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 274 bytes | 0 bytes/s, done.
Total 2 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local objects.
To https://github.com/SalajanVadim/MIDPS.git
   2a3be8f..eb93dd9  teesting -> teesting

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
```

Figura 14.



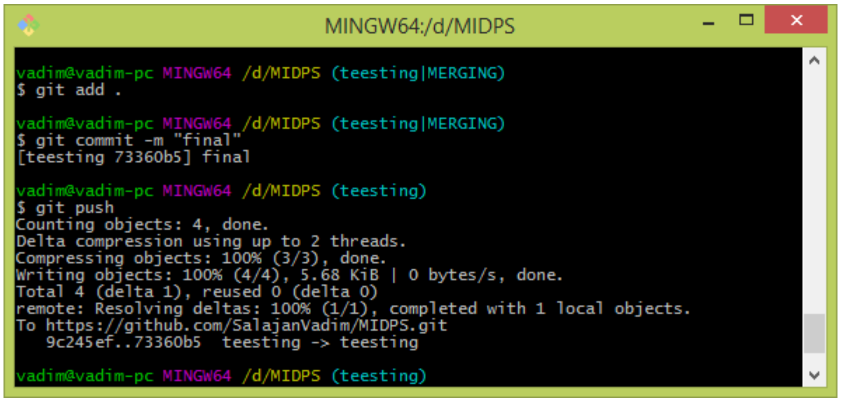
```
vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git status
On branch teesting
Your branch is up-to-date with 'origin/teesting'.
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

        modified:   Personal/Introducere.docx

no changes added to commit (use "git add" and/or "git commit -a")

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git add .

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git commit -m "finish"
[teesting 9c245ef] finish
 1 file changed, 0 insertions(+), 0 deletions(-)

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git push
Counting objects: 4, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 2.84 KiB | 0 bytes/s, done.
Total 4 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local objects.
To https://github.com/SalajanVadim/MIDPS.git
   eb93dd9..9c245ef  teesting -> teesting

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git checkout master
Your branch is ahead of 'origin/master' by 2 commits.
  (use "git push" to publish your local commits)
Switched to branch 'master'

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git add .

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git commit -m "deli"
[master c9390ed] deli
 1 file changed, 0 insertions(+), 0 deletions(-)

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git push
Counting objects: 4, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 2.83 KiB | 0 bytes/s, done.
Total 4 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local objects.
To https://github.com/SalajanVadim/MIDPS.git
   964e026..c9390ed  master -> master

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git checkout teesting
Your branch is up-to-date with 'origin/teesting'.
```

Figura 15.



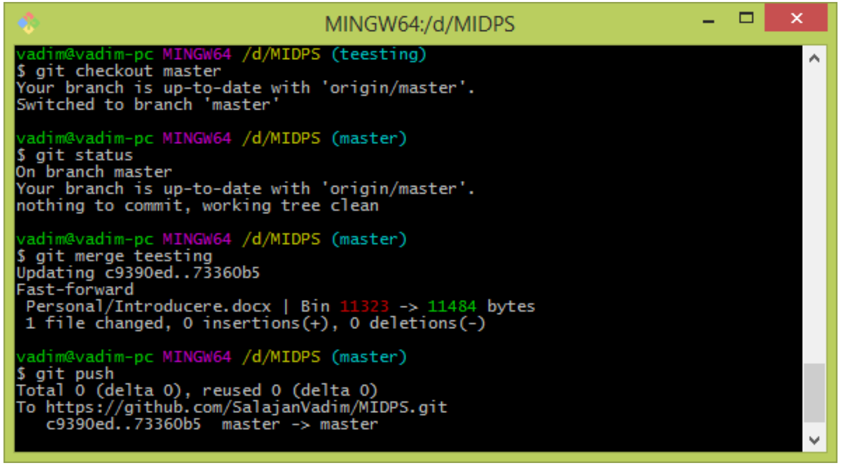
```
$ git checkout teesting
Your branch is up-to-date with 'origin/teesting'.
Switched to branch 'teesting'

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git merge master
Auto-merging Personal/Introducere.docx
CONFLICT (content): Merge conflict in Personal/Introducere.docx
Automatic merge failed; fix conflicts and then commit the result.
warning: Cannot merge binary files: Personal/Introducere.docx (HEAD vs. master)

vadim@vadim-pc MINGW64 /d/MIDPS (teesting|MERGING)
$ git status
On branch teesting
Your branch is up-to-date with 'origin/teesting'.
You have unmerged paths.
  (fix conflicts and run "git commit")
  (use "git merge --abort" to abort the merge)

Unmerged paths:
  (use "git add <file>..." to mark resolution)

        both modified:   Personal/Introducere.docx

no changes added to commit (use "git add" and/or "git commit -a")

vadim@vadim-pc MINGW64 /d/MIDPS (teesting|MERGING)
```

Figura 16.



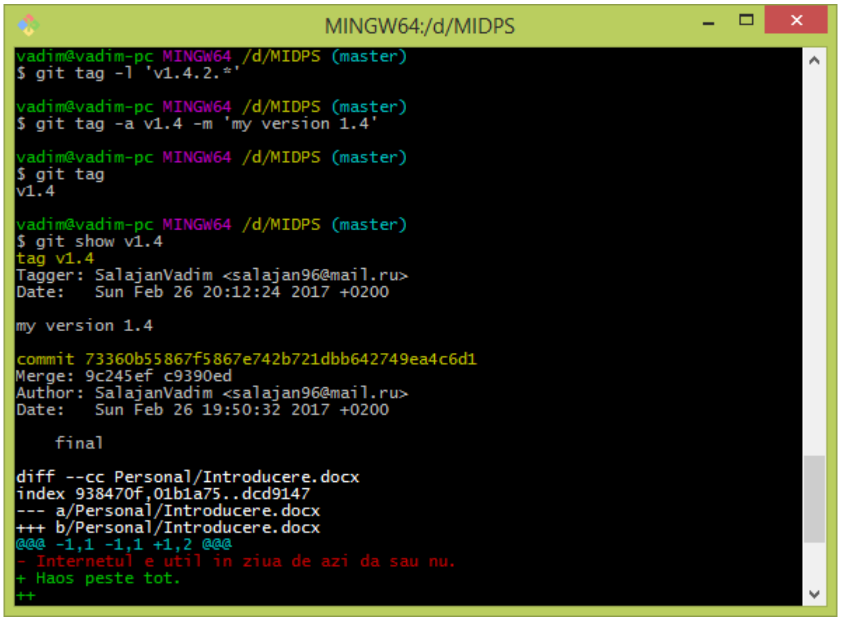
```
vadim@vadim-pc MINGW64 /d/MIDPS (teesting|MERGING)
$ git add .

vadim@vadim-pc MINGW64 /d/MIDPS (teesting|MERGING)
$ git commit -m "final"
[teesting 73360b5] final

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git push
Counting objects: 4, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 5.68 KiB | 0 bytes/s, done.
Total 4 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local objects.
To https://github.com/SalajanVadim/MIDPS.git
   9c245ef..73360b5  teesting -> teesting

vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
```

Figura 17.



```
vadim@vadim-pc MINGW64 /d/MIDPS (teesting)
$ git checkout master
Your branch is up-to-date with 'origin/master'.
Switched to branch 'master'

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git status
On branch master
Your branch is up-to-date with 'origin/master'.
nothing to commit, working tree clean

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git merge teesting
Updating c9390ed..73360b5
Fast-forward
 Personal/Introducere.docx | Bin 11323 -> 11484 bytes
 1 file changed, 0 insertions(+), 0 deletions(-)

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git push
Total 0 (delta 0), reused 0 (delta 0)
To https://github.com/SalajanVadim/MIDPS.git
   c9390ed..73360b5  master -> master
```

Figura 18.



```
vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git tag -l 'v1.4.2.*'

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git tag -a v1.4 -m 'my version 1.4'

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git tag
v1.4

vadim@vadim-pc MINGW64 /d/MIDPS (master)
$ git show v1.4
tag v1.4
Tagger: SalajanVadim <salajan96@mail.ru>
Date:   Sun Feb 26 20:12:24 2017 +0200

my version 1.4

commit 73360b55867f5867e742b721dbb642749ea4c6d1
Merge: 9c245ef c9390ed
Author: SalajanVadim <salajan96@mail.ru>
Date:   Sun Feb 26 19:50:32 2017 +0200

    final

diff --cc Personal/Introducere.docx
index 938470f,01b1a75..dcd9147
--- a/Personal/Introducere.docx
+++ b/Personal/Introducere.docx
@@@ -1,1 -1,1 +1,2 @@@
- Internetul e util in ziua de azi da sau nu.
+ Haos peste tot.
++
```

Figura 19.

3.10 Concluzie:

In urma efectuarii acestei lucrari de laborator au fost capatate primele deprinderi de baza in lucrul cu un VCS. In aceasta lucrare de laborator a fost folosit GIT ca fiind unul dintre cele mai populare DVCS si unul dintre cele mai comode in lucru. Am capatat deprinderi in lucrul cu repozitoriul atit online cit si local. Am invatat sa initializez un repozitoriu sa-l clonez s.a. Pe linga aceste doua manipulari cu repozitoriul am folosit si alte posibilitati asa cum: crearea unui nou branch, am facut unirea a doua branch-uri, am invatat cum sa hotarim unele conflicte care pot aparea cind facem merge la branch-uri. De asemenea am folosit si tags care au proprietatea de a insemna momente importante pe parcursul unei proceduri.
LINK https://github.com/SalajanVadim/MIDPS