1
   a. Using a command "git log --graph" the version history for the class repository was plotted in terminal.

```
Last login: Thu Sep 21 09:26:15 on ttys001
(base)                                    GRA-4152 % git log --graph
* commit dc730e88e9e4ad1cf94c0511b50d4d3135eb7383 (HEAD -> master, origin/master, origin/HEAD)
| Author: A1910329 <rogelio.mancisidor@gmail.com>
| Date:   Wed Oct 26 12:48:02 2022 +0200
|
|     adding colab notebooks
|
* commit e5c1c97fa8aaeb1f3c377a1ecb403d16140212d5
| Author: rogelioandrade <rogelio.a.mancisidor@bi.no>
| Date:   Wed Oct 26 11:54:47 2022 +0200
|
|     adding material lec 10
|
* commit ff60de77f3c18f8d0a8ee3b6918cd4db24bdf721
| Author: rogelioandrade <rogelio.a.mancisidor@bi.no>
| Date:   Wed Oct 19 11:19:43 2022 +0200
|
|     adding material lecture 9
|
* commit e6ac53804aaa4bdcac8561c891e3013a8868de3c
| Author: rogelioandrade <rogelio.a.mancisidor@bi.no>
| Date:   Wed Oct 5 11:32:15 2022 +0200
|
:...skipping...
* commit dc730e88e9e4ad1cf94c0511b50d4d3135eb7383 (HEAD -> master, origin/maste, origin/HEAD)
| Author: A1910329 <rogelio.mancisidor@gmail.com>
| Date:   Wed Oct 26 12:48:02 2022 +0200
|
|     adding colab notebooks
|
* commit e5c1c97fa8aaeb1f3c377a1ecb403d16140212d5
| Author: rogelioandrade <rogelio.a.mancisidor@bi.no>
| Date:   Wed Oct 26 11:54:47 2022 +0200
|
|     adding material lec 10
|
* commit ff60de77f3c18f8d0a8ee3b6918cd4db24bdf721
| Author: rogelioandrade <rogelio.a.mancisidor@bi.no>
| Date:   Wed Oct 19 11:19:43 2022 +0200
|
|     adding material lecture 9
|
* commit e6ac53804aaa4bdcac8561c891e3013a8868de3c
| Author: rogelioandrade <rogelio.a.mancisidor@bi.no>
| Date:   Wed Oct 5 11:32:15 2022 +0200
|
|     material lecture 7
:...skipping...
* commit dc730e88e9e4ad1cf94c0511b50d4d3135eb7383 (HEAD -> master, origin/master, origin/HEAD)
```

   b. The last time README.md was modified was Wednesday, August 31, 09:59:14, 2022 +0200. The time was retrieved using the following git command: "git log README.md"

```
Last login: Thu Sep 21 09:27:38 on ttys001
[(base)                                          . GRA-4152 % git log README.md
commit 71f261f8dbb09c828afd2be1ad664a14b1fbc498
Author: rogelioandrade <rogelio.a.mancisidor@bi.no>
Date:   Wed Aug 31 09:59:14 2022 +0200

    added honor code

commit 0fb7842d8311144c4d1941b8e9d828059e11c500
Author: rogelioandrade <rogelio.a.mancisidor@bi.no>
Date:   Mon Aug 22 08:50:07 2022 +0200

    adding instructions for UML

commit 20b88515dc1668bed7942359e3ad183f51961f62
Author: rogelioandrade <rogelio.a.mancisidor@bi.no>
Date:   Fri Aug 19 08:48:04 2022 +0200

    initial commit
```

   c.   As it was shown it part b of this exercise (screenshot above), the commit message associated with the last modification to the README.md was "added honor code".

2. I have added a .gitignore file to my portfolio code repository and excluded a file foo.py from being managed by Git by placing its file name into the .gitignore file.

3. I have cloned a repository for another course in the program, GRA4157.
   a.   I got a message in terminal "Saved working directory and index state WIP on main: 3d74726 Update README.md". As I understand it, that means that the changes I did were stashed for now, but not yet commited.
   b.   I got the following output with stashed changes highlighted separately:

```
2f43ce2 (refs/stash) WIP on main: 3d74726 Update README.md
084b231 index on main: 3d74726 Update README.md
3d74726 (HEAD -> main, origin/main, origin/HEAD) Update README.md
9bdf357 Update README.md
00a1330 Update README.md
7a14bae Merge branch 'main' of github.com:BI-DS/GRA4157
4744f14 added lecture 4
f3aff2c Update README.md
d372ce9 Update README.md
6f8d8aa Update README.md
84b8c83 Update README.md
c737e08 lecture 3
1485293 Merge branch 'main' of github.com:BI-DS/GRA4157
c2ead37 added solutons for textbook exercises for lecture 1
e2d6680 Update README.md
5db25df Update README.md
4d0387c Update README.md
:...skipping...
```

   c.   It might be useful in a case when I want to make a test on my code (or if I have a thought about how to improve it and I want to experiment), but the changes that are done to the repository after such testing or an experiment are not worth a separate commit (or are not yet ready for a commit). In such a case I might stash the changes

so that the changes are tracked. At the same time, it gives me flexibility to work on other tasks in the same repository and return to the stashed changes a bit later.

d. For this part I have stashed the changes again, got an id for such changes using "git stash list"

```
stash@{0}: WIP on main: 3d74726 Update README.md
```

Using the command "git stash drop stash@{0}" I have dropped the stash I'd made before.

e. After modifying and stashing changes, and after that making new modifications to the same file and committing such changes, and doing "git stash pop" after such steps, I can see both the changes I did for making a commit, and the changes that I did for stashing. That means that "git stash pop" did not delete the changes I'd made for stashing. Those changes were also committed as they were in the same file with the modifications for a commit. That's why stashing and then forgetting about stashes might be dangerous.

4.

```
Last login: Thu Sep 21 10:49:51 on ttys002
(base)                                    GRA4152 % git checkout -b my_test_branch master
Switched to a new branch 'my_test_branch'
(base)                                    GRA4152 % git status
On branch my_test_branch
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        .DS_Store
        .gitignore

nothing added to commit but untracked files present (use "git add" to track)
```

a. Using "git checkout master" I switched to master branch. And using "git checkout my_test_branch" I switched again to my_test_branch.

```
(base)                                    GRA4152 % git checkout master
Switched to branch 'master'
Your branch is up to date with 'origin/master'.
(base)                                    GRA4152 % git status
On branch master
Your branch is up to date with 'origin/master'.

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

nothing added to commit but untracked files present (use "git add" to track)
```

b. Added a line and committed while being in my_test_branch (the line added is in the screenshot).

```
README.md > abc # GRA4152
1    # GRA4152
2    Repo for GRA4152 submissions
3
4    A line for testing branching
```

c. After that I have switched to master branch using "git checkout master". And after that I have used "git merge my_test_branch" and got an output message that the branches have been merged fast-forward.

```
Updating ac86dd5..357e9a6
Fast-forward
 README.md | 2 ++
 1 file changed, 2 insertions(+)
```

5. I have created a file S1089023.txt for a forked repository and sent a pull request to add the text file to the original repository owned by BI-DS.